Adelaide Wind Power Project: Year 3 Post-Construction Wildlife Monitoring Report (2017)

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Sign-off Sheet

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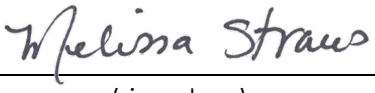
Prepared by 
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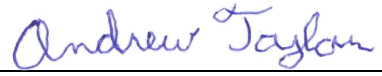
Reviewed by 
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Executive Summary

Suncor Adelaide Wind Limited Partnership (Suncor) is operating the Adelaide Wind Power Project (Adelaide) north of Strathroy, Ontario, in the Municipality of Adelaide Metcalfe in Middlesex County. The 40-megawatt facility includes 18 wind turbines, associated access roads, meteorological tower, underground collector lines, and a substation. Adelaide became fully operational on January 29, 2015.

The Renewable Energy Approval (REA) for Adelaide was issued on December 11, 2013 under the *Environmental Protection Act* section 47.3(1) (REA No. 8279-9AUP2B). Section I of the REA includes the post-construction monitoring requirements for the facility, including reporting requirements, and applicable performance measures (i.e. mortality thresholds).

An Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat (EEMP) was prepared for Adelaide (Stantec 2012a). The EEMP details the wildlife and wildlife habitat monitoring program, which includes both pre-construction habitat use studies as well as the post-construction monitoring program. In considering both the EEMP and Section I of the REA, the Adelaide post-construction monitoring program for the first year of operation in 2015 included the following components:

- mortality monitoring for birds, bats and raptors
- disturbance monitoring for breeding amphibians

Post-construction mortality monitoring was conducted for bats, birds and raptors using standard methodologies for mortality surveys, in accordance with *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR, 2011a) and *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR, 2011b). Bi-weekly searches were conducted at 10 turbines from May- October, with monthly searches at all turbines for raptors May-November. Weekly monitoring at the same 10 turbine subset for raptors occurred through November.

Fatalities recorded during the May - October bi-weekly mortality monitoring program in 2015 included 4 raptor fatalities (2 species), 10 bird fatalities (6 species) and 36 bat fatalities (4 species). One Little Brown Myotis (*Myotis lucifugus)*, a species designated endangered both provincially and federally, was recovered in 2015.

Correcting for searcher efficiency, scavenger removal, and percent area searched, the 2015 mortality rates at the Adelaide Wind Energy Project were:

- 0.46 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 2.32 small birds/turbine/year across the wind power project
  - range of 0 – 6.93 birds/turbine at individual turbines

- 8.57 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 2 birds at any one turbine
- 2 birds (including raptors) at multiple turbines

These recorded mortality rates did not exceed thresholds (MNR 2011a, 2011b; REA Section I5) for small birds, tracked raptors, or bats. However, the observed raptor mortality rate of 0.46 raptors/turbine/year exceeded the 0.2 raptors/turbine/year threshold.

Disturbance studies conducted in 2015 consisted of amphibian call count surveys at features containing significant breeding habitat (woodland and wetland) located within 120 m of Project components (e.g., substation, turbines, or access roads). Six species were recorded during these surveys: spring peeper (*Pseudacris crucifer*), western chorus frog (*Pseudacris triseriata*), American toad (*Anaxyrus americanus*), northern leopard frog (*Lithobates pipiens*), gray treefrog (*Hyla versicolor*), and northern green frog (*Lithobates clamitans*). Compared to pre-construction surveys conducted in 2013, although there was some variation in call count survey results by station, all 3 features surveyed remained significant wildlife habitat for breeding amphibians post-construction as defined by the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (Ministry of Natural Resources [MNR], 2012). One year of post-construction amphibian breeding habitat monitoring, as detailed in the EEMP, was fulfilled in 2015.

In response to the exceedance of the raptor mortality threshold in 2015, a Raptor Monitoring Plan (RMP) was created in accordance with the EEMP and Sections I8 of the REA, which detailed the proposed 2016-2017 scoped mortality and cause and effect monitoring program (Stantec 2016). This plan was updated and approved by the Ministry of Natural Resources and Forestry (MNRF) in June 2016. The wildlife monitoring program at the Adelaide facility in 2016 included:

- mortality monitoring (raptors, birds and bats)
- additional monitoring for raptors in accordance with REA Section I8, as described in the RMP:
  - scoped mortality monitoring: increasing the frequency of monthly raptor monitoring at non-subset turbines to bi-monthly in May and weekly in June and July
  - cause and effect monitoring: background review (once), twice annual habitat mapping of suitable nest and foraging habitat (April, mid-May/June), behavioural monitoring weekly in June and July, and adaptive monitoring in response to a Red-tailed Hawk (*Buteo jamaicensis*) mortality in May

Fatalities recorded during the May- October bi-weekly mortality monitoring program included 4 raptor fatalities (2 species), 1 bird fatality (1 species) and 11 bat fatalities (4 species). No species at risk were recovered during the bi-weekly monitoring program, however; one Bobolink (*Dolichonyx oryzivorus*) was recovered incidentally in 2016.

Correcting for searcher efficiency, scavenger removal, and percent area searched, the following mortality rates were recorded at the Adelaide Wind Energy Project during the second year of monitoring in 2016:

- 0.80 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 0.18 small birds/turbine/year across the wind power project
  - range of 0 – 1.93 birds/turbine at individual turbines
- 4.08 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 1 bird at any one turbine
- 1 bird (including raptors) at multiple turbines

The recorded mortality rates at Adelaide in 2016 did not exceed thresholds for small birds, tracked raptors, or bats. However, the observed raptor mortality rate of 0.80 raptors/turbine/year exceeds the 0.2 raptors/turbine/year established threshold (MNR 2011a, 2011b; REA Section I5).

Scoped mortality monitoring in 2016 for raptors occurred at all turbines twice-monthly in May, weekly in June and July, and monthly August-November. Results of these surveys were not included in the regular mortality monitoring program described above. Cause and effect monitoring included a background review, habitat mapping, and behavioural surveys for Turkey Vulture (*Cathares aura*), Red-tailed Hawk, and Osprey (*Pandion haliaetus*).

Results of the first year of scoped mortality and cause and effect monitoring in 2016 identified the following:

- No additional raptor mortalities were recovered during scoped mortality surveys.
- Historical Red-tailed Hawk records were identified within the raptor Study Area.
- One active Red-tailed Hawk nest was identified in 2016, located within 181m of the blade sweep of turbine 12.
- Suitable nesting and foraging habitat was identified within the Project Boundary for Turkey Vultures.
- Behavioural surveys documented an apparent avoidance of turbines by Red-tailed Hawks nesting in proximity to turbine 12 although both Red-tailed Hawks and Turkey Vultures exhibited high risk behaviour (i.e., flying within blade sweep range within 200 m of turbines).
- Both Red-tailed Hawk fatalities in 2016 (May 2 and September 26) occurred within one kilometer of the Red-tailed Hawk nest. However, behavioral surveys recorded Red-tailed Hawk activity in proximity to the nest throughout the breeding season, suggesting the nest

continued to be active. Therefore, an increased risk of turbine mortality may exist for raptors in proximity to active nests, although it may not be associated with the nesting pair.

In response to the repeated exceedance of the raptor mortality threshold in 2016, an Addendum to the RMP was created in accordance with the EEMP and the REA (Section I10) to guide the scoped mortality and cause and effect monitoring in 2017. The 2017 wildlife monitoring program included:

- mortality monitoring (raptors, birds and bats)
- RMP monitoring for raptors in accordance with REA Sections I8 and I10:
  - scoped mortality monitoring: increasing the frequency of monthly raptor monitoring at non-subset turbines to weekly (May-October)
  - cause and effect monitoring: twice annual habitat mapping of suitable nest and foraging habitat (April, mid-May/June)
  - behavioural surveys: weekly at active nests (if applicable) May-October
  - notifications of raptor mortalities to MNRF via online registry and email (ongoing)

Fatalities recorded during the May- early November bi-weekly mortality monitoring program included 2 raptor fatalities (2 species), 10 bird fatalities (10 species) and 7 bat fatalities (5 species). One species at risk, Little Brown Myotis, was recovered in 2017.

Correcting for searcher efficiency, scavenger removal, and percent area searched, the following mortality rates were recorded at the Adelaide Wind Energy Project during the third year of monitoring:

- 0.24 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 2.55 small birds/turbine/year across the wind power project
  - range of 0 – 11.20 birds/turbine at individual turbines
- 2.66 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 1 bird at any one turbine
- 2 bird (including raptors) at multiple turbines

The recorded mortality rates at Adelaide in 2017 do not exceed thresholds for small birds, tracked raptors, or bats. However, the observed raptor mortality rate of 0.24 raptors/turbine/year exceeds the 0.2 raptors/turbine/year established threshold (MNR 2011a, 2011b; REA Section I5) by 0.04 raptors/turbine/year.

Scoped mortality monitoring for raptors as per the RMP occurred at all turbines weekly May-October and was tabulated separately from the bi-weekly monitoring program described above. Cause and effect monitoring included nest habitat mapping and behavioural surveys for Turkey Vulture and Red-tailed Hawk.

Results of the second year of scoped mortality and cause and effect monitoring in 2017 identified the following:

- One additional raptor mortality was recorded on October 27, 2017, recovered as part of the supplemental raptor monitoring program.
- The active Red-tailed Hawk nest identified in 2016 was reused in 2017, located within 181m of the blade sweep of turbine 12.
- Behavioural surveys documented an apparent avoidance of turbines by Red-tailed Hawks nesting in proximity to turbine 12 although both Red-tailed Hawks and Turkey Vultures exhibited high risk behaviour (i.e., flying within blade sweep range within 200 m of turbines).
- Support was gathered in 2017 that an increased risk of turbine mortality may exist for raptors in proximity to active nests, although it may not be associated with the nesting pair, including:
  - Ongoing activity at the Red-tailed Hawk nest at turbine 12 throughout the monitoring period (May-October)
  - Direct observation of Red-tailed Hawk territorial behaviour, documented chasing a Turkey Vulture in September 2017.

The repeated exceedance of the raptor threshold triggers REA Section I10, which requires the implementation of mitigation measures in consultation with the MNRF. Stantec and Suncor are currently preparing a mitigation plan proposed for implementation in 2018 that will be sent to the MNRF for their reivew.

Abbreviations

C	Corrected number of birds or bats
c	Raw number of birds or bats
CI	Confidence Interval
EEMP	Environmental Effects Monitoring Plan
GPS	Global Positioning System
KV	Kilovolt
MNRF/MNR	Ministry of Natural Resources and Forestry
MW	Megawatt
NHA/EIS	Natural Heritage Assessment and Environmental Impact Study
Ps	Percent area searched
REA	Renewable Energy Approval
RMP	Raptor Monitoring Plan
SARA	Species at Risk Act
SARO	Species at Risk in Ontario
Sc	Scavenger rate
Se	Searcher Efficiency rate
T	Turbine

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

Suncor Adelaide Wind Limited Partnership (Suncor) is operating the Adelaide Wind Power Project (Adelaide) north of Strathroy, Ontario, in the Municipality of Adelaide Metcalfe in Middlesex County. The Project Area is bound by Sexton Road to the west, Townsend Line and Wardell Road to the North, Hansford Road to the east, and Highway 402 to the south. The 40 megawatt (MW) facility became fully operational on January 29, 2015 and is comprised of 18 wind turbines, associated access roads, meteorological tower, underground collector lines, and a substation (**Figure 1**, **Appendix A**).

The Renewable Energy Approval (REA) for Adelaide was issued on December 11, 2013 under the *Environmental Protection Act* section 47.3(1) (REA No. 8279-9AUP2B) (**Appendix B**).

The first-year Adelaide was fully operational occurred in 2015, which was the first year of the post-construction monitoring program for wildlife. The current year, 2017, represents the third year in the monitoring program.

1.2 ENVIRONMENTAL EFFECTS MONITORING PROGRAM

An Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat (EEMP) (Stantec, 2012a) was prepared in compliance with O. Reg. 359/09, *Bats and Bat Habitats: Guidelines for Wind Power Projects* (Ministry of Natural Resources [MNR], 2011a) and *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR, 2011b). The EEMP was approved by the MNR (MNR at the time, now Ministry of Natural Resources and Forestry (MNRF)) on July 21, 2012. The confirmation letter and EEMP for Adelaide is provided in **Appendix C**.

The purpose of the EEMP is to identify performance objectives to assess the effectiveness of the proposed mitigation measures and identify contingency measures that will be implemented if performance objectives cannot be met. A comprehensive monitoring program is required to verify the accuracy of the predicted operational impacts and address concerns regarding possible negative effects for wildlife.

In accordance with methods proposed in the EEMP and requirements of the MNRF in their confirmation letter (**Appendix C**), a pre-construction monitoring program was completed in 2013 to assess habitat use (i.e., significance) of waterfowl nesting, amphibian breeding, marsh bird breeding, and shrub/early successional bird breeding habitat. Results determined that only the amphibian breeding habitat in woodlands and wetlands met the criteria for significance. As such, disturbance monitoring for amphibian breeding habitat (woodland and wetland) was included in the post-construction monitoring program for one-year post-construction and detailed in Section I3 of the REA (**Appendix B**). The single year of disturbance monitoring was completed in 2015, the results of which are summarized below in **Section 1.4.1.**

In accordance with the EEMP and REA Section I3, the 2015-2017 Adelaide Wind Power Project post-construction monitoring program included mortality monitoring for birds, bats and raptors.

Detailed performance objectives, mitigation and contingency measures for each monitoring component are provided in the EEMP (**Appendix C**). The EEMP provides thresholds for annual mortality rates of birds and bats, in accordance with the *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR 2011a), and *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR 2011b). The thresholds, as outlined in the EEMP and as included in the REA (Section I5), are:

- 0.2 raptors/turbine/year (averaged across the Project)
- 0.1 provincially tracked raptors/turbine/year (averaged across the Project)
- 14 birds/turbine/year (at individual turbines or turbine groups)
- 10 bats/turbine/year (averaged across Project)

Or if bird mortality during a single mortality monitoring survey exceeds:

- 10 or more birds at any one turbine
- 33 or more birds (including raptors) at multiple turbines.

1.3 RAPTOR MONITORING PLAN

In accordance with the EEMP and REA, a Raptor Monitoring Plan (RMP) was submitted with the 2015 Post-construction Monitoring Wildlife Report (Stantec 2016), detailing a scoped mortality and cause and effect monitoring program triggered by the exceedance of the provincial raptor mortality rate in 2015 (i.e., > 0.2 raptors/turbine/year; MNR 2011b). Updates to the proposed monitoring program were addressed in June 2016, with MNRF approval provided on June 23, 2016. As a result of comments received on the 2015 report, a final update was made to the reported raptor rate in the RMP in February 2017.

The purpose of the RMP was to provide additional information on raptor mortality and habitat use at the Adelaide Wind Power Project to inform and assist in establishing proposed mitigation measures for the facility. The results of the 2015 mortality monitoring program (e.g., species and survey timing) were used to guide the development of the RMP.

The RMP included the following monitoring components, proposed to supplement the 2016 and 2017 EEMP program:

- scoped mortality monitoring
- cause and effect monitoring, comprised of:
  - background records review
  - habitat mapping
  - behaviour surveys at active nests (weekly, May-July)

  - adaptive monitoring

Based on the results of the 2016 monitoring undertaken as part of the RMP, additional monitoring was proposed in an Addendum to the RMP. This was included as part of the 2016 year-end report which was submitted on February 24, 2017 and approved by the MNRF on July 7, 2017. It included:

- scoped mortality monitoring, consisting of:
  - weekly non-subset monitoring from May-October
  - increased reporting
    - reporting of each raptor mortality within 48 hours to MNRF
    - monthly reporting of raptor mortality rates
- cause and effect monitoring, comprised of:
  - habitat mapping
  - behaviour surveys at active nests (weekly, May-October)
  - adaptive monitoring

The approved RMP and Addendum are provided in **Appendix D**.

1.4 PREVIOUS MONITORING PROGRAMS

A Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) were completed as part of the REA application in accordance with O. Reg. 359/09 (Stantec 2012b). The NHA/EIS was confirmed by the MNRF on July 31, 2012. One subsequent addendum to the NHA (Stantec 2012c) was submitted in October 2012 and addressed modifications to the Project layout as it was presented in the original NHA. MNRF confirmation was received on October 23, 2012 for Addendum 1. Two subsequent modification memos were submitted by Stantec in February, 2013 (Stantec 2013a) and November, 2013 (Stantec 2013b) to address changes in temporary construction staging areas and underground collector-line cable locations.

As a condition of approval, pre-construction studies for amphibians were completed in spring 2013. Three features were assessed as significant, as reported to MNRF on July 4, 2013; as such, these three features were included in the EEMP monitoring.

1.4.1 Year 1 (2015)

2015 was the first year of the post-construction monitoring at the Adelaide facility. The 2015 monitoring program and results were detailed in the Adelaide Wind Power Project: Year 1 Post-Construction Wildlife Monitoring Report (2015) (Stantec, 2016).

Mortality rates in 2015 were:

- 0.46 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 2.32 small birds/turbine/year across the wind power project
  - range of 0 – 6.93 birds/turbine at individual turbines
- 8.57 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 2 birds at any one turbine
- 2 birds (including raptors) at multiple turbines

Mortality rates did not exceed thresholds (MNR 2011a, 2011b; REA Section I5) for small birds, tracked raptors, or bats. However, the 2015 observed raptor mortality rate exceeded the 0.2 raptors/turbine/year threshold. In response to the exceedance and in accordance with the EEMP and Section I8 of the REA, the RMP was developed and implemented in 2016.

Disturbance studies conducted in 2015 were comprised of amphibian call count surveys at features containing significant breeding habitat (woodland and wetland) located within 120 m of Project components (e.g., substation, turbines, or access roads). Six species were recorded during these surveys: spring peeper (*Pseudacris crucifer*), western chorus frog (*Pseudacris triseriata*), American toad (*Anaxyrus americanus*), northern leopard frog (*Lithobates pipiens*), gray treefrog (*Hyla versicolor*), and northern green frog (*Lithobates clamitans*). Compared to pre-construction surveys conducted in 2013, all 3 features surveyed remained significant wildlife habitat for breeding amphibians post-construction as defined by the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (MNR 2012).

1.4.2 Year 2 (2016)

2016 was the second year of post-construction monitoring and the first year of scoped mortality and cause and effect monitoring at the Adelaide facility, the results of which were detailed in Adelaide Wind Power Project: Year 2 Post-Construction Wildlife Monitoring Report (2016) (Stantec 2017).

Mortality rates in 2016 were:

- 0.80 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 0.18 small birds/turbine/year across the wind power project
  - range of 0 – 1.93 birds/turbine at individual turbines

- 4.08 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 1 bird at any one turbine
- 1 bird (including raptors) at multiple turbines

Mortality rates did not exceed thresholds for small birds, tracked raptors, or bats. However, the observed raptor mortality rate of 0.80 raptors/turbine/year exceeds the 0.2 raptors/turbine/year established threshold (MNR 2011a, 2011b; REA Section I5). In response to the continued exceedance, and in accordance with the EEMP and Section I8 of the REA, a RMP Addendum was developed and implemented in 2017.

Scoped mortality monitoring for raptors as per the RMP occurred at all turbines twice-monthly in May, weekly in June and July, and monthly August-November. Results of these surveys were tallied independently of the monitoring program set out in the EEMP.

Cause and effect monitoring included a background review of historical raptor observations in the raptor Study Area (within 1 km of each turbine), habitat mapping for Turkey Vulture (*Cathares aura*), Red-tailed Hawk (*Buteo jamaicensis*), and Osprey (*Pandion haliaetus*), as well as 2-hour behavioural surveys conducted weekly from May-July at the one identified Red-tailed Hawk nest located in proximity to turbine 12.

Results of the first year of scoped mortality and cause and effect monitoring in 2016 identified the following:

- No additional raptor mortalities were recovered during scoped mortality surveys.
- Historical Red-tailed Hawk records were identified within the Raptor Study Area.
- Suitable nesting and foraging habitat was identified within the Project Boundary for both Red-tailed Hawks and Turkey Vultures.
- Behavioural surveys documented an apparent avoidance of turbines by nesting Red-tailed Hawks at turbine 12, however; both Red-tailed Hawks and Turkey Vultures exhibited high risk behaviour (i.e., flying within blade sweep range within 200 m of turbines).
- Behavioral surveys recorded Red-tailed Hawk activity in proximity to the nest throughout the breeding season despite recording Red-tailed Hawk fatalities (May 2 and September 26) within one kilometer of the nest. This suggested an increased risk of turbine mortality for raptors in proximity to active nests, potentially associated with nest territoriality, but the increased risk may not be associated with the nesting pair.

2.0 METHODOLOGY

Post-construction mortality monitoring was conducted for bats, birds and raptors. Standard methodologies for mortality surveys were used, in accordance with *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR, 2011a), and *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR, 2011b), as detailed in the EEMP (**Appendix C**).

The purpose of the mortality monitoring program is to identify the number of birds, bats and raptor fatalities on an annual per turbine basis, averaged across the Adelaide Wind Power Project. An estimate of mortality is calculated based on the observed fatalities and adjusted for carcass removal, searcher efficiency and percent area searched.

The purpose of the RMP and associated Addendum (i.e., scoped mortality monitoring and cause and effect monitoring; **Appendix D**) is to provide additional information on raptor mortality and habitat use associated with the Adelaide Wind Power Project. This additional information will be used to inform and assist in establishing proposed mitigation measures for the facility. The results of the 2015 mortality monitoring program (e.g., species and timing of mortalities) were used to guide the development of the monitoring program implemented in 2016. The 2017 monitoring program outlined in the RMP Addendum was based on results of both 2015 and 2016.

Survey methods for the EEMP mortality monitoring program as well as the RMP (including the Addendum) are described below.

2.1 MORTALITY MONITORING

The regular mortality monitoring program, as per the EEMP and REA, was conducted at Adelaide from May through November 2017. The mortality monitoring consisted of:

- weekly mortality monitoring:
  - monitoring at a subset of 10 turbines (>30 % of all turbines, minimum of 10)
  - twenty-seven weeks of twice-weekly monitoring for bats, birds and raptors from the beginning of May to the beginning of November
- monthly monitoring of all turbines for raptor mortalities from May through November
- weekly monitoring for raptors at the 10-turbine subset through November
- correction factor trials:
  - searcher efficiency testing
  - scavenger trials
  - percent area searched

2.1.1 Weekly Mortality Monitoring

Turbines included in the subset were selected via a stratified random sample to provide representative coverage of the habitats and layout of the Project area. The selected turbine subset is shown on **Figure 1, Appendix A**, and is in accordance with criteria outlined by the MNRF (e.g., >30 % of the total number of turbines is included in the subset at a minimum 10 turbines; MNR 2011a, 2011b).

Carcass searches were conducted at the subset of 10 turbines twice-weekly (i.e., at alternating three- and four-day intervals) for 27 weeks from the beginning of May through to the first week of November for bats, birds and raptors. Searches continued weekly at the 10-turbine subset for four weeks through November for raptors. Carcass searches were conducted within minimally-vegetated portions (i.e., Visibility Classes 1 and 2 as per MNR, 2011a and 2011b) of a 50-m search area radius. Concentric circles spaced 5 to 6 m apart were walked, allowing for a visual search of 2.5 to 3 m on each side of the observer. The 50-m search area radius and the radius of each concentric transects were determined using a Global Positioning System (GPS).

Weather parameters (temperature, wind speed and precipitation) were recorded on each day surveys were conducted. When a bird or bat carcass was discovered, the following information was recorded:

- searcher ID
- species
- turbine number
- date and time it was found
- sex (if possible to determine)
- forearm length (applicable only to bat fatalities)
- UTM coordinates
- state of decomposition (see **Table 2.1, Appendix E**)
- estimated days since death
- injury sustained (if applicable)
- distance and direction from the nearest turbine
- substrate upon which the carcass was found
- visibility class (see **Table 2.2, Appendix E**)

Carcasses found in the field were photographed and collected for confirmation of species. For bat specimens, a measurement of forearm length was taken using a digital caliper to assist in species identification. Suitable carcasses (i.e., those in reasonable condition) were later used in

searcher efficiency or scavenger trials, excluding species at risk (i.e., threatened or endangered federally or provincially).

2.1.2 Raptor Mortality Monitoring

For the purposes of this post-construction monitoring and reporting of results, "raptors" refers to Osprey (family Pandionidae), hawks and eagles (members of the family Accipitridae), falcons (members of the family Falconidae), and vultures (members of the family Cathartidae). Raptors determined to be of conservation concern by the MNRF Natural Heritage Information Center are described as tracked raptors, which in the province of Ontario include: Bald Eagle (*Haliaeetus leucocephalus*), Golden Eagle (*Aquila chrysaetos*), Rough-legged Hawk (*Buteo lagopus*), and Peregrine Falcon (*Falco peregrinus*).

Two raptor mortality monitoring programs were undertaken at the Adelaide Wind Power Project in 2017, including the third year of the regular mortality monitoring program (as per the EEMP) and the second year of the scoped mortality monitoring program for raptors (as per the RMP and Addendum; **Appendix D**). Methods for these monitoring programs are described below.

2.1.2.1 Raptor Monitoring (EEMP)

In addition to the weekly mortality monitoring program, supplemental raptor mortality monitoring was conducted at the remaining 8 turbines that were not included in the regular mortality monitoring subset. Each turbine was searched once a month in May through November within 50 m of turbines by walking in concentric circles. Surveys focused on large-bodied birds, and as such were often completed quicker than weekly monitoring described above.

During the month of November, in the absence of the bi-weekly regular mortality monitoring, weekly surveys at the 10-turbine subset were conducted as described above. The frequency of these surveys was conducted in accordance with *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR 2011b) to account for the potential continued presence of raptors passing through the area during migration.

2.1.2.2 Raptor Monitoring Program (RMP)

Scoped mortality monitoring, as detailed in the RMP and Addendum, is an extension of the EEMP raptor monitoring program described above. Non-subset turbines were surveyed weekly from May-October in 2017 as part of the RMP monitoring program, an increase in frequency and duration from 2016 (i.e., May-July) to account for the fall migration period, which did not document raptor mortalities in 2015 but did in 2016.

The RMP scoped mortality monitoring were conducted using the EEMP raptor monitoring protocol and used the same 50 m search radius. Because the scoped mortality monitoring was not intended to provide an estimate of mortality, but rather to help identify risk factors and inform mitigation measures, the results were not included in the calculation of thresholds.

However, scavenger trials for raptors were undertaken as part of the EEMP monitoring to determine what level, if any, of removal of raptor carcasses occurred.

2.1.3 Correction Factors

Data to calculate correction factors for searcher efficiency and scavenging rates were collected during the mortality monitoring program. Correction factors were calculated to account for carcasses that fell in areas that were not searched, for carcasses that were overlooked, and for carcasses that were removed by scavengers prior to the search.

2.1.3.1 Searcher Efficiency Trials

Searcher efficiency trials are designed to correct for carcasses that may be overlooked by searchers during the field surveys. The MNRF (MNR 2011a, 2011b) provides guidance for determining searcher efficiency, expressed as a proportion of carcasses expected to be found by individual searchers.

Searcher efficiency trials consisted of blind tests, where a "tester" placed bird or bat carcasses within the 50 m radius circle under turbines prior to the carcasses search. These were discretely marked (i.e. with thread, always placed beneath the carcass and out of sight). The "searcher" was unaware when or where trial carcasses would be placed. Trial carcasses consisted of native birds or bats. Bats were used for 48% of trial carcasses (29 of a total of 60 placed and not scavenged). The location of placed trial carcasses was checked at the end of the monitoring surveys and any remaining carcasses were collected.

Trials adhered to seasonality requirements detailed in the EEMP and MNRF (2011a, 2011b) guidance with a minimum of 10 carcasses used for each searcher per visibility class per season. No more than 3 carcasses were placed at any one time to avoid bias.

For each searcher efficiency trial, the following information was recorded per tester:

- tester and searcher
- turbine number
- date and time placed
- species
- UTM
- direction and distance from the nearest turbine
- marker type used
- carcass condition
- ground cover and visibility class (**Table 2.2, Appendix E**)

- carcass outcome (found, overlooked or scavenged)
- time when the carcass was recovered (if overlooked but not scavenged)

Individual searcher efficiencies (Se) were calculated using the following equation:

$$Se = \frac{number\ of\ test\ carcasses\ found}{(number\ of\ test\ carcasses\ placed) - (number\ of\ test\ carcasses\ scavenged)}$$

Where two surveyors conducted mortality monitoring during the same season, it was necessary to establish a weighted average that reflected the relative proportion of turbines that each technician surveyed.

The weighted average and overall Se was calculated as follows:

$$Se_o = Se_1\left(\frac{n_1}{T}\right) + Se_2\left(\frac{n_2}{T}\right) + Se_3\left(\frac{n_3}{T}\right) + \ ...$$

where:

Se_0	is the Overall Searcher Efficiency
$Se_{1, 2, 3...}$	are Individual Searcher Efficiency Ratings
$N_{1,2,3...}$	are the number of turbines surveyed by each searcher
T	is the total number of turbines surveyed

Searcher efficiency values are known to be much higher for large-bodied versus small-bodied birds (i.e. Erickson et al., 2003; Johnson et al., 2003). As a result, the Se for raptors is assumed to be 1.0 and thus was corrected separately from other bird fatalities.

2.1.3.2 Scavenger Trials

Scavenger trials are designed to correct for carcasses that are removed by scavengers before the search period. These trials involved the placement of carcasses at wind turbines followed by scheduled monitoring to determine the rate of removal. Trial carcasses were discretely marked to clearly differentiate them from turbine-related mortalities.

A scavenger trial was conducted each month in May through October, with the final trial finishing on November 3, 2017. At least 10 carcasses were used each month, consisting of native birds or bats that were thawed at the time of placement. Bats were used for 49% (32 of 65) of all scavenger trial carcasses, which exceeds the one-third (33%) requirement (MNR 2011a, 2011b). Raptors comprised 5% (3 of 65) of all scavenger trial carcasses, in accordance with MNRF comments during their review of the 2016 RMP (**Appendix D**).

Five carcasses were placed at any one time, distributed at different turbines. The following information was recorded for each carcass placement:

- turbine number
- date scavenger carcass was placed
- UTM of carcass location

- direction and distance from turbine
- visibility class (**Table 2.2**)
- species

Monitoring of each scavenger trial carcass then took place twice weekly for a 2-week period. During each monitoring event, the following records were taken:

- date
- weather conditions
- presence/absence of carcass
- condition of the carcass, if present

Separate scavenger corrections were calculated for each month of the monitoring period, calculated as follows:

$$Sc = \frac{n_{visit\ 1} + n_{visit\ 2} + n_{visit\ 3} + n_{visit\ 4}}{n_{placed} + n_{visit\ 1} + n_{visit\ 2} + n_{visit\ 3}}$$

where:

Sc	is the proportion of carcasses not removed by scavengers over the survey period
n_{placed}	is the total number of carcasses placed
$n_{visit1,2...}$	are the number of carcasses remaining on visits 1 through 4

Although raptor carcasses were included in the scavenger trials as per commitments of the Raptor Monitoring Plan (see **Section 2.1.2.2**), for consistency with previous monitoring years and provincial standards, scavenger rates for raptors were assumed to be 1.0. This is based on their longer persistence in the environment (Morrison 2002). Therefore, raptor mortality rates were corrected separately from other bird fatalities.

2.1.3.3 Proportion of Area Surveyed

In accordance with MNRF guidelines (MNR 2011a, 2011b), a 50 m radius around the base of turbines was searched. This area represents the maximum recommended search area. However, due to thick or tall vegetation, it was not always possible to search the entire 50 m radius, particularly as agricultural crops mature. Therefore, a correction factor was applied to account for portions of the 50 m radius not searched.

The 50 m search radius around each turbine in the weekly monitoring subset was mapped into visibility classes (**Table 2.2**, **Appendix E**). Those areas in visibility class 1 and 2 (i.e. easy and moderate) were included in the weekly carcass searches while portions of the search radius in visibility classes 3 and 4 (i.e. difficult to very difficult) were not included. A GPS was used to delineate and measure the area (in meters squared) of visibility class 1 and 2 that was searched.

Ps varied by turbine and survey date and thus was recorded during each survey. The Ps for each turbine was calculated on a daily basis as follows:

$$Ps_x = \frac{area\ searched\ within\ 50\ m\ radius\ circle}{total\ area\ within\ 50\ m\ radius\ circle}$$

where: Ps = percent of area searched

X=turbine number

The average monthly Ps for the entire Project (based on 10 turbines) was calculated by averaging:

$$Ps = \frac{Ps_1 + Ps_2 + Ps_3 + \ldots + Ps_{20}}{10}$$

2.1.4 Estimate of Mortality

There are numerous published and unpublished approaches to incorporating correction factors into an overall assessment of total bird and bat mortality.

Currently, MNRF recommends the following formula:

$$C = \frac{c}{Se * Sc * Ps}$$

where:

C	is the corrected number of bird or bat fatalities
c	is the number of carcasses found
Se	is the proportion of carcasses expected to be found by searchers (searcher efficiency)
Sc	is the proportion of carcasses not removed by scavengers over the survey period
Ps	is the percent of the *area surveyed*

To account for seasonal variability, bird and bat fatalities were estimated separately in each month from May through October. The corrected estimates of bird and bat fatalities were summed over the monitoring period to obtain the estimated number of fatalities for the entire monitoring period. In accordance with provincial guidelines, raptor mortality rates were calculated separately from the bird fatality rate. Estimated mortality rates were expressed per turbine and per MW by dividing the corrected estimates of bird or bat fatalities by the number of turbines or MW in the monitoring subset (i.e., 10 turbines, or 22 MW).

Estimated raptor mortality rates were based on the results of the May to first week of November weekly mortality monitoring surveys. All raptors recovered during these weekly searches are included in calculating the corrected number of raptor fatalities/turbine/year. If applicable, tracked raptors (e.g., any Bald Eagle, Golden Eagle, Peregrine Falcon, or Rough-legged Hawks) are separated from the remainder of the raptor fatalities to calculate the corrected number of

tracked raptor fatalities/turbine/year. Results of the supplementary raptor mortality monitoring (i.e., EEMP and RMP) are reported separately, for identifying individual or groups of turbines that may exceed the mortality thresholds. This is in accordance with provincial guidance and as such any raptor fatalities discovered incidentally or during the supplementary monitoring are not included in the raptor (all and tracked) corrected fatality calculations.

For the purposes of applying mortality thresholds, estimated mortality rates were calculated on a per turbine basis for birds. To facilitate this calculation, the average, monthly percent area searched was used for each individual turbine. Monthly searcher efficiency and scavenger rates were considered consistent across all turbines.

2.2 CAUSE AND EFFECT MONITORING PROGRAM

The focus of the cause and effect monitoring undertaken in 2017 was to identify any potential concentration areas and preferred habitat around operational turbines to determine any features that may increase the risk of mortality for targeted raptors (Red-tailed Hawk and Turkey Vulture). As detailed in the RMP Addendum, it was demined that Osprey is considered at low risk of turbine collision at the Adelaide facility and was therefore not included in the 2017 cause and effect monitoring.

Cause and effect monitoring consisted of the following components:

- Habitat mapping (nesting, foraging, incidental observations) of the Raptor Study Area (**Figure 2a, Appendix A**).
- Behavioural surveys at the identified Red-tailed Hawk nest (**Figure 2b, Appendix A**).
- Adaptive monitoring at the identified nest.

2.2.1 Habitat Assessment

Species-specific habitat mapping was completed on April 24, 2017 and June 14, 2017 within 1 km of each turbine located within the facility (i.e., Raptor Study Area, **Figure 2a, Appendix A**). The April survey date was chosen to coincide with optimal forest visibility conditions for nest searching prior to leaf-out. The follow up June survey date targeted foraging habitat and incidental observations as visibility for nesting habitat was greatly reduced.

Personnel and survey conditions are provided in **Table 2.3, Appendix E**.

All municipal and access roads were travelled within the Study Area. Habitat mapped included:

- nesting habitat (barns and abandoned buildings for Turkey Vultures, bulky stick nests for Red-tailed Hawks)
- foraging habitat (carrion for Turkey Vultures, grasslands and meadows for Red-tailed Hawks)

Incidental observations of all raptor species were recorded, including details on location, species, number of individuals, behaviour, and flight height.

2.2.2 Behavioural Surveys

In 2017, behavioural surveys were conducted at one active Red-tailed Hawk nest that was identified during the April 24, 2017 habitat mapping survey. Behavioural surveys were conducted for 2 hours from a stationary survey location, using a spotting scope, weekly from May-October. The nest is located in proximity to turbine 12 and is the same nest that was monitored in 2016, as shown on **Figure 2b** (**Appendix A**).

Details recorded during behavioural surveys included:

- survey date and time
- weather conditions
- field personnel
- species and age (if determined)
- flight paths (including height)
- raptor behaviour (soaring, flapping, gliding, hovering, or perched, including duration) and associated habitat

Dates the behavioural monitoring occurred are provided in **Table 2.3, Appendix E**.

2.2.3 Adaptive Monitoring

Adaptive monitoring was conducted at the Red-tailed Hawk nest included in the behavioural monitoring on May 9, 2017. This occurred after a Red-tailed Hawk mortality was documented on May 5, 2017 at nearby turbine 12. This included monitoring activity at the nest and determined if the observed mortality was an individual associated with the nest or an unrelated individual.

3.0 RESULTS

Results of the third year of mortality and second year of raptor cause and effect monitoring for the Adelaide Wind Power Project are provided below.

3.1 MORTALITY MONITORING

Results of the mortality monitoring for the 2017 field program are summarized in **Tables 3.1-3.17, Appendix E.** Raw data from the mortality monitoring is provided in **Appendix F**.

Bi-weekly bird and bat mortality monitoring took place between May 2 and November 3, 2017. Monitoring continued weekly through November for raptors. A complete summary of survey dates, times, and weather conditions during the carcass searches is provided in **Appendix F1** for the bi-weekly monitoring program and **Appendix F2** for the raptor-specific surveys (EEMP and RMP mortality programs). Although all reasonable effort was made to conduct surveys as scheduled, surveys were not conducted if weather (e.g. lightning, severe fog) or site work (e.g., farming, turbine, or access road maintenance) presented safety concerns. **Appendix F3** and **Appendix F4** summarize instances where turbine searches were not conducted due to weather or other safety concerns.

Field forms for the mortality monitoring program, including correction factor trials, are provided in **Appendix G1**.

3.1.1 Searcher Efficiency Trials

One searcher conducted all surveys in 2017, with seasonal efficiency rates of 85 % (spring), 70 % (summer) and 90 % (fall) (**Table 3.1, Appendix E**).

Raw data for the searcher efficiency trials are provided in **Appendix F5** and summarized in **Appendix F6**.

3.1.2 Scavenger Trials

The results of the seasonal scavenger trials are summarized in **Table 3.2, Appendix E**. The proportion of carcasses not removed by scavengers remained relatively consistent over the entire survey period; lowest at 69% in the summer to 76% in the fall and highest at 79% during the spring months.

Raw data for the scavenger trials are provided in **Appendix F7** and summarized in **Appendix F8.**

3.1.3 Proportion of Area Searched

The proportion of the 50 m radius that was searched at each turbine is summarized by month in **Table 3.3**, **Appendix E**.

The average search area generally decreased over the monitoring period as agricultural crops matured, highest in May at 85%, decreasing slightly in June and July (82 %), steeply dropping off in August (42%), then slightly decreasing and remaining low in the fall (35-38%).

Raw data for the proportion of area searched are provided in **Appendix F9** and summarized in **Appendix F10.**

3.1.4 Mortalities

Details of all recorded bird and bat fatalities identified during the regular weekly mortality monitoring program (May 2-November 3, 2017) are provided in **Appendix F11**. Details of all fatalities recovered during the monthly raptor mortality monitoring programs as well as incidentally (i.e., outside regular search parameters or by maintenance staff) are provided in **Appendix F12**.

3.1.4.1 Raptor Monitoring

Results of the EEMP and RMP raptor mortality monitoring programs are detailed below.

3.1.4.1.1 Raptor Monitoring (EEMP)

Two raptor fatalities were recovered during the 27-week bi-weekly monitoring program, one Red-tailed Hawk and one Osprey. Both mortalities occurred during the month of May, however the carcasses were severely scavenged which made it difficult to estimate time since death. These species are ranked S5(B), secure and common in the province year-round or during the breeding season (B). Mortalities by date are shown on **Figure 3** (**Appendix A**) and by turbine on **Figure 4** (**Appendix A**).

Correcting for percent area searched, as searcher efficiency and scavenger rates are assumed to be 1.0 for large-bodied birds, these 2 fatalities were corrected to 0.24 raptors/turbine/year (0.11 raptors/MW/year; **Table 3.5, Appendix E**). This exceeds thresholds detailed in Section I5 of the REA (i.e., 0.2 raptors/turbine/year). Fatality summaries are provided in **Appendix F11**.

One additional raptor mortality, a Turkey Vulture, was recovered during the monthly searches at the 8 non-subset turbines (May-November) on October 27, 2017. The monthly raptor surveys were conducted the last week of each month, as in 2015 and 2016, and therefore this mortality would have been recovered in the absence of the RMP.

Three additional Turkey Vultures were incidentally recovered in 2017, on May 2, August 10, and September 27, 2017. These mortalities were recovered by maintenance staff or by the searcher outside of established parameters (e.g., >50 m from the nearest turbine).

No tracked raptor fatalities were recovered during the EEMP and RMP mortality monitoring programs in 2017.

3.1.4.1.2 Raptor Monitoring (RMP)

No raptors were recovered during the scoped RMP mortality monitoring program, conducted at non-subset turbines weekly from May-October. Field forms for the RMP are provided in **Appendix G2**.

As detailed in the RMP, scavenger trials for raptors were undertaken to determine what level, if any, of removal of raptor carcasses occurred. Three raptors carcasses were used in the RMP trial. The average proportion of carcasses not removed by scavengers for the raptor trials was 81%, with 1 carcass persisting throughout the trial (100%), 1 carcass persisting for a week and a half (75%) and 1 carcass persisting for a week (67%). Based on these results, carcass removal during the RMP was anticipated to be very low. Raptor specific scavenging rates were used for the sole purpose of the RMP and do not affect standardized EEMP protocols.

3.1.4.2 Bird Mortality

Ten small bird fatalities (i.e., excluding raptors) of 8 species were recorded during the 26-week monitoring period from May through early-November, as summarized in **Table 3.7, Appendix E.** Two additional species were unidentifiable to species based on the condition of the carcass, but were identified as a warbler and a kinglet (i.e., golden-crowned or ruby-crowned). Full mortality details are provided in **Appendix F11**. All species are ranked S5(B), secure and common in the province year-round or during the breeding season (B).

The maximum number of bird fatalities (including raptors) recovered during a single mortality monitoring survey at any one turbine was 1. The maximum number of bird mortalities at all turbines in any one day was also 1 one (including raptors).

Small bird mortalities occurred between May 2 and October 17, 2017, with a maximum of 2 mortalities occurring in one day (May 2, 2017). Small bird mortalities were generally clustered in two periods, between May and early-June and again between mid-September and mid-October. One mortality did not fit these two peak periods, occurring in late July as shown on **Figure 3** (**Appendix A**). Spatially, small bird mortalities occurred across the wind farm with two mortalities at turbines 6, 19, and 27 and single mortalities at turbines 11, 12, 14, and 22. The remaining turbines in the survey subset did not experience any mortality events throughout the full 27-week monitoring period (**Table 3.7, Appendix E**; **Figure 4, Appendix A**).

Correcting for searcher efficiency, scavenger removal, and percent area searched, turbine specific rates ranged from 0 birds/turbine to 11.20 birds/turbine (**Table 3.8, Appendix E**). Averaged across the entire facility, the recovered carcass resulted in a corrected value of 2.55 bird fatalities/turbine/year (1.15 birds/ MW/year; **Table 3.9, Appendix E**).

Two additional small birds were recovered as part of the supplemental raptor monitoring program (EEMP and RMP) in 2017, a Black-billed Cuckoo (*Coccyzus erythropthalmus*) on May 19, 2017 and a male Bobolink (*Dolichonyx oryzivorus*) at turbine 15 (**Table 3.6, Appendix E**). Bobolink is ranked as SB4 in the province (Apparently Secure while breeding) but is designated as Threatened provincially under the Endangered Species Act. These fatalities are not included in the mortality calculations as they were recovered outside the bi-weekly mortality monitoring parameters. Full survey details are provided in **Appendix F12**.

The recorded mortality rates for the third year of post-construction mortality monitoring at the Adelaide Wind Power Project did not exceed thresholds detailed in Section I5 of the REA for small birds (i.e., 14 small birds/turbine/year, 10 small birds/turbine/monitoring event, 33 small birds and raptors/monitoring event).

3.1.4.3 Bat Mortality

A total of 7 bat fatalities representing 5 species were recorded during the 27-week monitoring period from May through early-November, summarized in **Table 3.10, Appendix E.** Full survey results are available in **Appendix F11.**

The distribution of bat fatalities over the monitoring period is shown on **Figure 3** (**Appendix A**). Except for the June 13, 2017 mortality, bat fatalities were concentrated between the end of July and early-October. No more than one bat mortality was recorded on a single day in 2017 (*see* **Appendix F11**).

Bat fatalities were highest at turbine 6 (4 fatalities), with turbines 11, 12, and 22 with 1 mortalities each. The remaining turbines in the survey subset did not experience any mortality events throughout the full 27-week monitoring period (**Table 3.11, Appendix E**; **Figure 4, Appendix A**).

Silver-haired Bat (*Lasionycteris noctivagan*) and Hoary Bat (*Lasiurus cinereus*) were the most abundant mortalities at 2 each (29%), followed by individual results for Big Brown Bat (*Eptesicus fuscus*), Eastern Red Bat (*Lasiurus borealis*), and Little Brown Myotis (*Myotis lucifugus)* at 14 % each.

All species have provincial S-Ranks of S5 (Secure – common, widespread and abundant in Ontario) or S4 (Apparently Secure – uncommon but not rare. Little Brown Myotis is ranked as S4 in the province (Apparently Secure) but is designated as Endangered provincially under the Endangered Species Act.

Correcting for searcher efficiency, scavenger removal, and percent area searched, the 7 recovered carcasses resulted in a corrected value of 2.66 bat fatalities/ turbine/year (1.20 fatalities/MW/year; **Table 3.12, Appendix E**).

Four additional bat fatalities were recovered incidentally during supplemental raptor searches. This includes 1 Hoary Bat, 1 Silver-haired Bat, and 2 Eastern Red Bats (**Table 3.6, Appendix E**). These fatalities are not included in the mortality calculations as they were recovered outside the bi-weekly mortality monitoring parameters.

3.1.5 Notifications

As detailed in the EEMP and REA Condition E12(2), notifications were made to MNRF when any species at risk (provincially threatened or endangered) were recovered during the mortality program. Email notifications were also made to the MNRF when any raptor species were recovered in accordance with the RMP Addendum. Both types of mortalities were registered on the Ontario government online registry to allow the possession of dead wildlife.

Eight notifications were made for individuals recovered during the 2017 monitoring program, 6 for raptor fatalities and 2 for a species at risk fatality. Copies of each notification are provided in **Appendix H.**

Raptor notifications included the following:

- Turkey Vulture mortality on May 2, 2017 at turbine 15
- Red-tailed Hawk mortality on May 5, 2017 at turbine 12
- Osprey fatality on May 24, 2017 at turbine 27
- Turkey Vulture mortality on August 10, 2017 at turbine 5
- Turkey Vulture mortality on September 27, 2017 at turbine 14
- Turkey Vulture mortality on October 27, 2017 at turbine 21

Species at risk notifications included the following:

- Bobolink mortality on May 19, 2017 at turbine 15
- Little Brown Myotis mortality on August 1, 2017 at turbine 12

As detailed in the RMP Addendum, an increased reporting commitment was made that provided the MNRF with monthly raptor mortality rates within 5 business days of the end of each month. These notifications are also provided in **Appendix H.**

3.1.6 Summary

The following mortality rates occurred at the Adelaide Wind Power Project during the third year of monitoring conducted in 2017:

- 0.24 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year

- 2.55 small birds/turbine/year across the wind power project
  - range of 0 – 11.20 birds/turbine at individual turbines
- 2.66 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 1 bird at any one turbine
- 2 bird (including raptors) at multiple turbines

3.2 CAUSE AND EFFECT MONITORING

Results of the cause and effect monitoring program, as prescribed in the RMP and associated Addendum, are summarized below.

3.2.1 Habitat Assessment

Results of the habitat mapping surveys conducted on April 24, 2017 and June 14, 2017 are summarized below. Field forms for the RMP are provided in **Appendix G2**.

3.2.1.1 Nesting Habitat

One active Red-tailed Hawk nest was observed in 2017, located 235 m from the base of turbine 12 (181 m from blade sweep) and is shown on **Figure 2b** (**Appendix A**). This nest was documented originally in 2016 and was the basis for the behaviour surveys in both 2016 and 2017(detailed in **Section 3.2.2**). Two additional stick nests were noted within the Raptor Study Area during the April survey, but were determined during subsequent visits to be inactive in 2017 and as such were not included in any future studies.

No nests were identified for Turkey Vultures within the Study Area during habitat mapping surveys, however; suitable nesting sites (e.g., barns) were identified.

3.2.1.2 Foraging Habitat

The landscape within the Raptor Study Area is primarily agricultural. As such, foraging habitat was present for both Turkey Vultures (roadkill, livestock operations) and Red-tailed Hawks (pastures and hayfields) and is found throughout the Study Area.

3.2.1.3 Incidental Observations

All incidental raptor observations are summarized in **Table 3.13** (**Appendix E**). A total of 50 Turkey Vultures and 4 Red-tailed Hawks were observed over both survey dates throughout the Raptor Study Area, with behaviour typically associated with foraging (i.e., soaring, perching).

3.2.2 Behavioural Surveys

Behavioural surveys were conducted at the active Red-tailed Hawk nest weekly from May-October. Flight patterns and behavioual observations of both Red-tailed Hawks and Turkey Vultures are detailed below.

3.2.2.1.1 Red-tailed Hawk

Adult Red-tailed Hawks were documented on or close to the nest between April 24 and June 6, 2017, followed by a juvenile bird observed on July 7, 2017 circling turbine 13. Red-tailed Hawks were observed (typically soaring, sometimes perched) in the vicinity of the nest until October 17, 2017. As in 2016, the nest became obscured after mid-May by foliage, and activity at the nest (i.e., incubating, brooding, presence of juveniles, feeding) was not visible. An interspecific interaction was recorded on September 6, 2017 between a Red-tailed Hawk and Turkey Vulture as the hawk dove at the vulture and chased it into the woodlot. All Red-tailed Hawks and Turkey Vultures (discussed below) observed during the monitoring program and their associated behaviours are summarized in **Table 3.14** (**Appendix E**).

A total of 13 flight patterns and 4 perching locations were recorded during the 2017 monitoring program for Red-tailed Hawk, as shown on **Figure 6** (**Appendix A**). The most consistently used flight patterns were south from the nest (flight path 1; used 5 times) and north towards the nest (flight path 2; used 4 times). Moderate use was shown for east to west over the woodlot in proximity to the nest (flight path 3; 3 observations) as well as south from a perch on the western edge of the woodlot (flight path 13; 2 observations), with single uses of the remaining 9 flight paths. Dates that each flight path was used are summarized in **Table 3.15** (**Appendix E**).

Except for flight path 5, and possibly flight path 4, all paths appear to avoid both turbines 12 and 13 by not passing within 200 m of blade sweep of either turbine. Flight heights were generally at or below turbine blade sweep range (i.e., blade sweep is 45-155 m), as detailed in **Table 3.14** (**Appendix E**).

Red-tailed Hawks were documented perched a total of 11 times, most of which were associated with the nest site (perch site 1; 6 observations) followed by the northwestern corner of the woodlot (perch site 3; 3 observations). The two remaining perch locations (2 and 4) were used once each, within the woodlot and once on a fencepost along the access road. Perch locations are shown on **Figure 6** (**Appendix A**) with the associated dates provided in **Table 3.16** (**Appendix E**). No hawks were observed perched at the nest site after June 6, 2017 although nest visibility was low after mid-May.

3.2.2.1.2 Turkey Vulture

Turkey Vulture observation occurred between May 24 and October 17, 2017 with most activity occurring later in the monitoring period (i.e., mid-August to mid-October). A total of 18 flight patterns were recorded for Turkey Vultures in proximity to turbine 12, as shown on **Figure 7**

(**Appendix A**) with a total of 46 observations. The most consistently used flight patterns included flight path 6 (7 observations), path 4 (4 observations), and path 17 south of the woodlot (4 observations), all of which occurred later in the season (i.e. mid-August -mid-October). Dates that each flight path was used are summarized in **Table 3.17** (**Appendix E**).

Four flight paths (1, 3, 7, and 12) occurred within approximately 200 m of turbine 12 or 13, accounting for approximately 20% of all passes (9 of 46). Flight heights were generally at turbine blade sweep range (i.e., blade sweep is 45-155 m) until mid-August, switching to above blade height after that date, as detailed in **Table 3.14** (**Appendix E**).

3.2.3 Adaptive Monitoring

The Red-tailed Hawk nest was monitored on May 9, 2017, following the recovery of an adult Red-tailed Hawk mortality at turbine 12 on May 5, 2017. An adult bird was observed on the nest at 9:15 am, flushed from the nest into the woodlot at 9:42 am, and was not observed again during the survey, which ended at 11:15 am. Therefore, the nest continued to be active after this mortality was recovered.

4.0 DISCUSSION

A review of results, a comparison to published literature and 2015-2016 results, as well as a discussion on observed patterns, if applicable, of the third year of mortality and second year of cause and effect monitoring at the Adelaide Wind Power Project are provided in the sections below.

4.1 MORTALITY MONITORING

Results presented in this 2017 post-construction monitoring report have provided the third year of mortality monitoring data, providing insight into the trends that were observed in 2015 and 2016. The thresholds in 2017 were not exceeded for tracked raptors, small birds, single mortality events, or bats; however, the raptor threshold was exceeded (>0.20 raptors/turbine/year).

Details on search parameters, results and any observed mortality patterns are provided below.

4.1.1 Searcher Efficiency Trials

Average rates in Canada for searcher efficiency are 68-71 % (BSC et al. 2017), with 2017 rates at the Adelaide facility at or well above average at 70% (summer), 85% (spring), and 90% (fall; **Table 3.1, Appendix E**). Factors that are thought to influence searcher rates may be vegetation height and thickness, ground visibility, individual observer variation, and size of birds (NWCC 2010).

4.1.2 Scavenger Trials

Rates of carcass removal were consistent throughout the spring, summer and fall of 2017 such that 69-79 % of carcasses remained after the trials (**Table 3.2, Appendix E**). These removal rates did not show a strong seasonal variation, which is consistent with rates documented in 2015 (75-79%), 2016 (76-84%) and seasonal data from wind projects across Canada (BSC et al. 2017).

4.1.3 Proportion of Area Searched

Turbine area searched was highest at the beginning of the search period (82-85 % in May-July), decreasing as crop cover increased in August, September, and October (42%, 35%, and 38%; **Table 3.3, Appendix E**). This pattern is generally consistent with results from 2015 and 2016, however; harvesting in 2015 appeared to be more thorough, with 91% percent of turbine areas searched in October 2015. It is expected that some of this annual variability can be attributed construction effects in year 1, with increased regeneration, particularly of agricultural weeds, experienced in 2016 and 2017. Delayed or partial harvesting in 2016 and 2017 due to variability in annual weather patterns may have also been a contributing factor.

4.1.4 Bird Mortality

4.1.4.1 Background

Direct mortality from collisions with wind turbines is a potential effect during operation at wind turbine facilities. Each turbine that is installed has an impact by directly adding to mortality rates (Masden et al. 2010). Whether or not this source of mortality is sufficient to impact populations is the critical issue from a conservation perspective.

Various studies have been conducted throughout North America to document bird collisions at wind facilities and to determine why and the extent to which they occur. It appears that most avian collisions are of nocturnal migratory songbirds (Kingsley and Whittam 2007, Erickson et al. 2014, AWWI 2014) based on a review of available literature, at least in part because they are the most abundant species at wind energy facilities (National Academy of Sciences 2007). In an analysis of mortality monitoring results from 116 studies at more than 70 wind energy facilities, small passerines accounted for 62.5 % of all bird fatalities, upland game birds for 8.2% and diurnal raptors for 7.8 % (Erickson et al. 2014).

Corrected mortality rates for raptors in Ontario are 0.24 (+/- 0.004, 95% confidence interval [CI]) birds/turbine with the most common mortalities belonging to Turkey Vulture (5.14%) and Red-tailed Hawk (4.83%; BSC et al. 2017). Another recent study noted that raptor fatality rates exhibit high inter-annual variation (Smallwood 2013). Considering raptor mortality alone, Strickland et al. (2011) reported raptor fatality rates ranging from 0 to 0.49 raptors per MW, with a median of 0.8 raptors per MW, at projects across North America that used modern, monopole turbines.

The most common species of small passerine reported across several North American studies are Horned Lark (*Eremophila alpestris*), along with Red-eyed Vireo (*Vireo olivaceus*), and Golden-crowned Kinglet (*Regulus satrapa*; BSC et al. 2017, Erickson et al. 2014, Zimmerling et al. 2013). In Canada, the overall estimated mortality of these species represents less than 0.01% of their Canadian populations (Zimmerling et al. 2013).

Most fatalities at operational facilities have been found from May through October (Erickson et al. 2014, Bird Studies Canada et al. (2017), with the fall migration period (August to October) exhibiting the majority of all fatalities (Environment Canada et al. 2011, Erickson et al. 2014).

The most recent compilation of available bird mortality data from wind energy facilities in North America (Erickson et al. 2014) indicates a bias-corrected estimate of overall bird mortality rate between 2.10/MW/year and 3.35/MW/year. These values are within the range reported by AWWI (2014) of 3 to 5 birds/MW/year.

Zimmerling et al. (2013) report an average of 8.2 birds (± 1.4, 95 % confidence interval [CI]) killed per turbine per year at 43 wind farms in Canada. This study used a correction factor to increase the radius around turbine from the standard 50 m to 85 m, based on results of an unpublished study by the authors.

The most recent Ontario data, compiled by Bird Studies Canada et al. (2017), indicate an average of 5.70 birds (+/- 0.06, 95% CI) killed per turbine per year based on data from 64 wind farms in Ontario. This compilation used a 50 m search radius in the mortality correction as this method is standard practice across many Canadian studies, and is the mandatory search radius for projects currently being monitored in Ontario (BSC et al. 2017).

Bird mortality rates observed at operational facilities are considered low, with no evidence of large scale fatality events or significant population impacts in Ontario (Friesen 2011). Monitoring results to date from operational facilities indicate that wind turbines are a small contributor to overall bird mortality when compared to other anthropogenic structures and industrial sectors (Arnett et al. 2007, Kingsley and Whittam 2007, National Academy of Sciences 2007, Kerlinger et al. 2011, Zimmerling et al. 2013) or other sources of anthropogenic mortality (Calvert et al. 2013). Because raptors have relatively low population densities and reproductive rates, population recovery from mortality effects can be slow (Kingsley and Whittam 2007). As such, raptors may be more susceptible to population level impacts than other bird species (Manville 2009, as referenced in Zimmerling et al. 2013).

Zimmerling et al. (2013) indicate that even a tenfold increase in total mortality from wind turbine operation in Canada would represent a mortality level that is orders of magnitude smaller than from many other sources of collision mortality in Canada. Less than 0.01 % of the continent-wide population for most species is estimated to be killed annually by collisions with wind turbines (Erickson et al. 2014).

4.1.4.2 Adelaide Wind Power Project

4.1.4.2.1 Raptor Mortality

A total of 6 raptor mortalities were reported during the third year of mortality monitoring at Adelaide in 2017. This included one Red-tailed Hawk and one Osprey recovered during the regular monitoring program, with an additional 4 Turkey Vultures recovered during supplemental monitoring or incidentally (i.e., by maintenance staff or outside of the 50-m search radius). The total number of raptors recovered in 2017 was similar to previous years, with 4 reported in 2016 (2 Red-tailed Hawks and 2 Turkey Vultures recovered during regular mortality monitoring) and 5 in 2015 (2 Red-tailed Hawks and 2 Turkey Vultures during regular monitoring, and an Osprey during supplemental monitoring). To date, Red-tailed Hawks and Turkey Vultures comprise most of the raptor mortalities at the Project, which is consistent with results across Ontario. Red-tailed Hawk comprises 4.83 % and Turkey Vulture 5.14 % of all bird mortalities in Ontario (BSC et al. 2017). The mortality of Red-tailed Hawks and Turkey Vultures in Ontario can likely be attributed to, at least in part, to the abundance of these species in the province.

Although the mortality of the Osprey in 2015 was expected to be anomalous due to the lack of suitable habitat (discussed in **Section 4.2.1**) in the Raptor Study Area and rarity of mortalities at wind farms in Ontario (comprising 0.19 % of all turbine fatalities in the province; BSC et al. 2017) a

second Osprey mortality was recovered in 2017. It is expected that both individuals were in transit through the area when they collided with the turbines.

4.1.4.2.1.1 Seasonality

Seasonal variability in mortality rates is typically attributed to periods where large numbers of migrating birds (including raptors) move through southern Ontario while travelling between their breeding and wintering grounds. Increases have been recorded most strongly during the fall migration period (August to October) which exhibits the majority of all bird fatalities (Environment Canada et al. 2011, Erickson et al. 2014, BSC et al. 2017). This pattern was observed in 2016 and 2017 at the Project, with three-quarters of raptor mortalities occurring between September 20 and 29 in 2016 and half of mortalities in 2017 occurring between August 10 and October 27, a period consistent with fall migration.

It is hypothesized that birds, including raptors, may be at higher risk of collision while distracted during flight (James 2010). Such distraction could occur while hunting, or during interactions with other raptors. Stantec (2011) conducted a study of raptor behavior to assess potential risk factors of wind turbine collision during spring and fall migration. The study documented interactions between resident Red-tailed Hawks and migrating hawks passing through their territory. These interactions are likely to result in distracted flight and may increase the risk of collision. Therefore, in addition to the increased collision risk associated with a greater abundance of migrating raptors in an area, migrants may face additional pressures from territorial behaviours of resident birds. These combined migration risks may explain the concentration of raptor mortality at the Adelaide project in September of 2016 and again between August and October in 2017, during the fall migration period.

Despite this, not all raptor mortalities at the Adelaide facility occurred during the fall migration period over the three-year monitoring program. During the first year of monitoring in 2015, all 5 raptor mortalities occurred over a short eleven-day period in June. Red-tailed Hawks are known to swoop at Turkey Vultures during feeding, with an increase in intensity of interactions in spring or late summer (Davis, 1979; cited in Kirk and Mossman, 1998). The June mortalities occurred during a time of high demand for food and increased activity at Red-tailed Hawk nests (i.e., nestling period; Preston and Bean, 2009), although it unclear why this temporal pattern did not occur in 2016 or 2017.

4.1.4.2.1.2 Proximity to Known Nests

The first year of monitoring recovered a Red-tailed Hawk mortality at turbine 11 on June 11, 2015. Studies in 2015 did not include habitat mapping, and as such it is unclear if this mortality occurred in proximity to an active nest. However; as part of the habitat mapping conducted in 2016 (discussed further in **Section 4.2.2**), an inactive nest was identified less than a kilometer away from turbine 11 (near turbine 9). It is unknown whether this nest was active in 2015 when the Red-tailed Hawk mortality occurred at turbine 11, although repeated use of a territory in this

vicinity in 2016 and 2017 at turbine 12 does allow the possibility that a nest existed in this area in 2015.

Three additional Red-tailed Hawk mortalities (2 in 2016 and 1 in 2017) occurred within approximately 1 km of the 2016 and 2017 active Red-tailed Hawk nest at turbine 12. These mortalities were recovered approximately 180 m (2016) and 250 m (2017) from turbine 12 with the September 26, 2016 mortality recovered at turbine 11. Turbine 11 is located just over 1 km away from the known Red-tailed Hawk nest at turbine 12. The known Red-tailed Hawk nest continued to be active after the May mortalities at turbine 12 recorded in both 2016 and 2017, suggesting that the mortalities were not of adult birds associated with the nest, although this cannot be confirmed. It is unclear if the Red-tailed Hawk mortality at turbine 11 on September 26, 2016 is associated with individuals from the nest at turbine 12 as behavioural monitoring was not ongoing at that time. However, in considering the ongoing activity at the nest both years after mortalities were recorded as well as demonstrated territorial behaviour (e.g., September 6, 2017 with a Turkey Vulture), it appears that the increased risk of turbine mortality may exist for raptors in proximity to active nests, although it may not be associated with the nesting pair.

Overall, results of the three-year mortality monitoring program at the Adelaide facility appears to support the hypothesis that an increased risk of turbine collision may occur in proximity to active Red-tailed Hawk nests, although there does not appear to be a strong association with seasonality. Results of the behavioural monitoring in 2016 and 2017 are discussed in **Section 4.2.2** below.

4.1.4.2.1.3 Mortality Thresholds

The raptor mortality rates recorded in 2015 (0.46 raptors/turbine/year), 2016 (0.80 raptors/turbine/year), and 2017 (0.24; **Table 4.1, Appendix E**) were above the provincial threshold of 0.2 (MNRF 2011b). No tracked raptors were recovered in any of the three years of monitoring and therefore did not exceed the REA for tracked raptors (i.e., 0).

Exceedance of the raptor mortality threshold in 2015 triggered REA Section I8, including 2 years of scoped mortality monitoring, operational mitigation for operational life of the facility, and effectiveness monitoring for 3 years following mitigation. The Raptor Monitoring Plan (RMP) was developed and implemented in 2016; a discussion of which is provided in **Section 4.2**. In response to exceeding the threshold in 2016, an addendum to the Raptor Monitoring Plan (**Appendix D**) was prepared which included increased reporting and additional behavioural studies. In accordance with the EEMP and the REA (Section I10), repeated exceedance of the raptor mortality threshold requires an appropriate response plan be prepared and implemented that includes some or all of the following measures:

- Increased reporting frequency to identify potential threshold exceedance (completed in 2017).
- Additional behavioural studies to determine factors affecting mortality rates (2017).
- Periodic shut-down of select turbines (not proposed).

- Blade feathering at specific times of year (not proposed).
- An alternative plan agreed to between the Company and MNRF (discussion proposed in 2018).

4.1.4.2.2 Small Bird Mortality

Overall, small bird fatalities were low at the Adelaide facility throughout the 3-year monitoring program. In 2017, 10 individuals were recovered, corresponding to a corrected mortality rate of 2.55 birds/turbine/year. This is an increase from the 1 European Starling recovered in 2016 (0.18 birds/turbine/year) but consistent with the 10 mortalities recovered in 2015 (2.32 birds/ turbine/year; **Table 4.1, Appendix E**). Mortality rates at the Adelaide facility identified during the three-year monitoring program are well below the Ontario threshold of 14 birds/turbine/year and lower than the current estimated provincial mortality rate of 5.70 birds (+/- 0.06, 95% CI; BSC et al. 2017).

The 10 recovered small birds in 2017 were all different species, but did include 3 species (e.g., kinglet [Golden-crowned or Ruby-crowned], Horned Lark, and Red-eyed Vireo) within the top 10 most recovered small bird species at wind farms in Ontario (13.1% or 2.71% for the kinglet, 6.08% for Horned Lark, and 5.26% for Red-eyed Vireo of all bird mortalities; BSC et al., 2017). In 2015, Tree Swallow was the most common species found at the Adelaide facility (4 individuals), followed by two Golden-crowned Kinglets and individual fatalities of each of the remaining 4 species (Cliff Swallow, Mourning Dove, Horned Lark, and Ovenbird). Except for Ovenbird, all recovered species are within the top 10 most commonly recovered species at Ontario wind power facilities (BSC et al, 2014). The single mortality in 2016 of a European Starling was of the 15th most commonly recovered species in Ontario (BSC et al. 2016).

Small bird mortalities were generally clustered in two periods in 2017, between May and early-June and again between mid-September and mid-October. These periods are generally associated with the arrival of migratory species to their breeding grounds and migration, respectively. As only one mortality was recorded in 2016, a discussion of seasonality is not possible, however; mortalities in 2015 also occurred between late-summer and late-fall, again generally corresponding to the fall migration period. Research elsewhere also documents the fall migration period (August to October) comprising the majority of all wind turbine fatalities (Environment Canada et al. 2011, Erickson et al. 2014).

Turbine specific fatality patterns were not apparent in any of the three years of monitoring (2015-2017). No notable location or pattern of turbines that experienced mortality against those that did not, or in numbers of fatalities observed.

The recorded mortality rates in 2015, 2016, and 2017 of post-construction mortality monitoring at the Adelaide Wind Power Project did not exceed thresholds detailed in Section I5 of the REA for small birds (i.e., 14 small birds/turbine/year, 10 small birds/turbine/monitoring event, 33 small birds and raptors/monitoring event).

4.1.4.2.3 Species at Risk

Two bird species at risk mortalities were recovered throughout the three-year monitoring program, both male Bobolinks, and both recovered incidentally in May. The first was recovered at turbine 17 on May 12, 2016 and the second at turbine 15 on May 19, 2017.

Bobolinks typically occur in grasslands, such as hay or pasture (COSEWIC 2010) but may nest in large wheat fields, particularly where more suitable habitat (e.g., grasslands, pastures) is lacking (McCracken et al. 2013). Turbine 17 was comprised of two crop types, approximately 50% corn and 50% winter wheat in 2016, therefore it is possible that the Bobolink had, or was trying to, establish a territory in the portion agricultural field under winter wheat. In 2017 turbine 15 was under active row crops, and as such was not expected to provide suitable nesting habitat, suggesting that the individual was passing through the area searching for a territory.

No species at risk birds were recovered in 2015.

4.1.5 Bat Mortality

The direct impact to bats through collision with wind turbines has been documented in post-construction monitoring reports and peer reviewed literature. Overall bat mortality (of all species) has been reported in the range of 0.3 to 40 bats per MW per year in projects in North America (Arnett et al. 2007, Strickland et al. 2011). Bats, as a group, are generally more commonly observed fatalities than birds at operational wind project facilities (BSC et al. 2017; AWWI 2016). In Canada, 74% of the causalities found were bats (8863 bats of 9 species found at 2570 turbines included in the monitoring results) (BSC et al. 2017). In Ontario, 74% of the casualties found were bats (8 species found at 1984 turbines included in the monitoring results).

Comprehensive studies of bat mortality rates at wind-energy facilities throughout North America indicate that bat mortalities are highest during the fall migration period (July through September, peaking in August; BSC et al. 2017) with more than 50% of the bat mortalities occurring during August (Johnson 2005; Kunz et al. 2007).

Smallwood et al. (2013) compared bat fatality rate estimates among 71 North American wind-energy projects with turbines from 18.5 to 90 m in height. Although results contain large, unadjusted biases and uncertainties in extrapolated data are high, they estimate an annual mortality of 651,000-888,000 bats in the U.S. (Smallwood et al. 2013). In Ontario, recent post-construction monitoring results indicate a total annual mortality of 42, 274 bats (BSC et al. 2017). The most recent Ontario data, compiled by Bird Studies Canada et al. (2017), indicate an average of 17.15 bats (+/- 0.16, 95% CI) killed per turbine per year based on data from 54 wind farms in Ontario. Rates ranged from 0-114.61 bats/turbine per year (BSC et al. 2017). Population-level effects are not well understood (NAS 2007), however, during a two-year study at a windfarm within an agriculture landscape in Minnesota, only an estimated small fraction (1.3%) of fall migrating bats present (more than 90,000) collided with wind turbines (Johnson et al. 2004).

4.1.5.1 Adelaide Wind Power Project

Bat mortalities at the Adelaide facility over the three-year monitoring program were all below the provincial threshold of 10 bats/year/turbines and well below the current provincial average of 17.15 bats/turbine/year (BSC et al. 2017). The corrected bat mortality rate was lowest in 2017 at 2.66 bats/turbine/year, highest in 2015 (8.57 bats/turbine/year) and moderate in 2016 (4.08 bats/turbine/year; **Table 4.1, Appendix E**).

Bat mortalities were highest at the Adelaide Wind Power Project between the end of July and early-October in both 2016 and 2017 and mid-July to early-September in 2015. These results correspond with research elsewhere that documents increased bat fatalities during the fall migration period (July through September; BSC et al. 2017). This occurs as migratory tree bats (e.g., Hoary, Eastern Red, and Silver-haired Bats) move through the area.

Comparing bat fatalities per turbine over the three years, there is no clear pattern of bat fatalities in 2015, 2016, or 2017 based on turbine location or proximity to natural features.

4.1.5.1.1 Species at Risk

Two Little Brown Myotis were recovered at the Adelaide facility during the three-year monitoring program. The first was recovered on August 25, 2015 at turbine 21 during supplemental monitoring, the second at turbine 12 during the regular monitoring program on August 1, 2017. Little Brown Myotis is provincially designated at Endangered due to recent declines associated with a fungal disease, White-nose Syndrome, contracted during hibernation. These bats are commonly found in warm sites such as buildings, attics, roof crevices, under bridges or in cavities of canopy trees in the forest (COSEWIC 2013).

Both bats were submitted to the CHWC in accordance with guidance provided by MNRF (MNR 2011a).

4.2 CAUSE AND EFFECT MONITORING

4.2.1 Habitat Assessment

The Raptor Study Area is predominantly agricultural with scattered woodlots, providing nesting habitat for both Red-tailed Hawks (woodlots) and Turkey Vultures (abandoned buildings) but not Osprey (waterways). Foraging habitat was also present for both Turkey Vultures (roadkill, livestock operations) and Red-tailed Hawks (pastures and hayfields) but again not for Osprey (waterways). This is supported by numerous raptor observations during the cause and effect monitoring in both 2017 throughout the Project Boundary.

Habitat mapping surveys in 2017 identified one active Red-tailed Hawk nest, located 235 m from the base of turbine 12 (181 m from blade sweep). This nest was documented originally in 2016 and was the basis for the behaviour surveys in both 2016 and 2017. Two additional stick nests

were noted within the Raptor Study Area during the 2017 April survey, but were determined during subsequent visits to be inactive and as such were not included in any further studies. In addition to the discovery of the turbine 12 nest in 2016, one inactive Red-tailed Hawk nest was documented approximately 164 m from turbine 9 blade sweep (a non-subset turbine). It is unknown whether this nest was active in 2015.

No Turkey Vulture nests were confirmed during the habitat assessment in either 2016 or 2017, although potential structures, such as barns were scattered throughout the Raptor Study Area. Generally, the habitat assessment found the Raptor Study Area to be relatively uniform in suitability for Turkey Vultures.

No Osprey nests were identified in 2016 and 2017, with the closest potential Osprey nesting or foraging habitat approximately 5 km to the south in Strathroy along the Sydenham River and 3 km north of the facility along the Ausable River, both within range of known hunting forays for this species (10 km; Bierregaard et al, 2016). The Parkhill Conservation Area, located approximately 15 km north of the closest turbine, includes suitable nesting and foraging habitat, however; no nests or Ospreys were documented during the April 15, 2016 survey.

4.2.2 Behavioural Surveys

The purpose of the behavioural surveys was to identify potential mortality risk factors in proximity to an active nest of a territorial species. Behavioural studies targeted Red-tailed Hawks. Turkey Vultures were not targeted as no Turkey Vultures nests were located during habitat mapping and Turkey Vultures are not highly territorial during nesting or migration (Kirk and Mossman, 1998).

Activity at the nest site was recorded between April 15 and June 6, 2017 with activity in proximity to the nest through until October 17, 2017. In mid-May the nest became obscured by foliage, and activity at the nest (i.e., incubating, brooding, presence of juveniles, feeding) was not visible. This is similar to 2016, where activity at the nest was recorded between April 15 and June 20, and again on July 4, 2016. Despite Red-tailed Hawk mortalities at turbine 12 in 2016 and 2017 during the first week of May, the continued activity at the nest and presence of a juvenile in the vicinity in 2017 suggests that the nest was likely successful in both years, although this could not be confirmed due to the obscured view.

Red-tailed Hawks typically begin nesting in April with 50% of reported egg dates in Ontario, known to occur between the 5th and 23rd of April (Cadman et al. 2007). The observations of an adult Red-tailed Hawk on the nest near turbine 12 on April 15th suggests the nest was active (i.e., laying or with eggs) at that time. The incubation and nestling period for Red-tailed Hawks is 42-46 days (Preston and Beane 2009). As such, one would expect juvenile Red-tailed Hawks capable of fledging from the nest between approximately May 17 and June 8. Fledglings stay in the immediate vicinity of the typically for another 18-25 days, which would indicate that activity in proximity to a successful nest would continue into early July. This is supported by observations of Red-tailed Hawks in proximity to the nest in both years, through June in 2016 and a juvenile bird observed on July 7, 2017 in proximity to the nest.

The risk of turbine collision may be affected by many factors, including behaviour, flight path, abundance, landscape, morphology, weather, vision, and whether the individual is a resident or breeding bird (Marques et al. 2014). Raptors, in particular Red-tailed Hawks, may be more susceptible to collisions when compared with other birds, potentially attributable to their foraging and flight behaviour (Hoover and Morrison 2005). However, Garvin et al. (2010) found some signs of turbine avoidance, where resident Red-tailed Hawks and Turkey Vultures changed flight height or direction within 100 m of a turbine. This suggests that resident birds may experience a lower risk of wind turbine collision, as they are familiar with the landscape and avoid the turbines (Drewitt and Landston 2008). As discussed in **Section 3.1.4.1**, interactions between resident Red-tailed Hawks and migrating hawks passing through their territory may result in distracted flight and increase risk of collision. During such interaction, the migratory birds, unfamiliar with the territory, may be at higher risk turbine collision.

At the Adelaide facility, results of the behavioural surveys in 2016 (5 flight paths on 3 dates) and 2017 (13 flight paths, total of 23 flights observed; **Table 3.15, Appendix E**) suggest that Red-tailed Hawks appeared to avoid turbines. Flight paths recorded during the behavioural surveys are likely to be of resident birds, associated with the active nest. The surveys recorded soaring behavior, with paths to and from the woodlot clustered on the south side, away from turbine 12 (**Figure 6, Appendix A**). Each year there were exceptions, in 2016 a northerly flight path on June 6th passed within approximately 130 m of turbine 12 and two instances in 2017, both relative to blade sweep of turbine 12, approximately 170 m on May 30 and approximately 75 m on July 7. The remainder of the flights did not appear to be within 200 m of turbines 11, 12, or 13, potentially attributable awareness and avoidance, similar to that observed by Garvin et al. 2010, as discussed above.

Turkey Vultures observed in 2017 used 18 recorded paths, for a total of 46 total observations. Four flight paths documented high-risk behaviour (within approximately 200 m of turbine 12 or 13) accounting for approximately 17% of all passes (8 of 46). Flight heights were generally at turbine blade sweep range (i.e., blade sweep is 45-155 m) until mid-August, switching to above blade height after that date, as detailed in **Table 3.14** (**Appendix E**).

Overall, the presence of active nests in proximity to wind turbines may increase collision risk for breeding or migrating raptors. To date, four adult Red-tailed Hawk mortalities (turbine 12 on May 2, 2016 and May 5, 2017; turbine 11 on June 11, 2015 and September 26, 2016) and one Osprey (turbine 9, June 21, 2015) have been recovered within approximately one km of active (or potentially active in 2015) Red-tailed Hawk nests. Red-tailed Hawk activity in proximity to the nest in both 2016 and 2017 suggests that the observed mortalities were likely not of resident birds, but other birds passing through the area, potentially interacting with resident, territorial Red-tailed Hawks. This territorial behaviour was directly observed on September 6, 2017 in which a Turkey Vulture was chased into the woodlot in proximity to the nest. Overall, increased risk of turbine mortality may exist for raptors in proximity to active nests, although it may not be associated with the nesting pair.

5.0 SUMMARY

This report summarizes the results of the third year of post-construction mortality monitoring and the second year of scoped mortality monitoring and cause and effect monitoring at the Adelaide Wind Power Project.

Correcting for searcher efficiency, scavenger removal, and percent area searched, the following mortality rates were recorded in 2017:

- 0.24 raptors/turbine/year
- 0 provincially tracked raptors/turbine/year
- 2.55 small birds/turbine/year across the wind power project
  - range of 0 – 11.20 birds/turbine at individual turbines
- 2.66 bats/turbine/year

The maximum bird mortality during a single mortality monitoring survey was:

- 1 bird at any one turbine
- 2 birds (including raptors) at multiple turbines

Thresholds for bats, small birds, tracked raptors and single mortality events were not exceeded in any of the mortality monitoring years (2015-2017). However, the recorded rates of 0.46 in 2015, 0.80 in 2016, and 0.24 raptors/turbine/year exceeded the threshold set out by the province (MNR 2011b) and as stipulated in the REA Section I5 of 0.2 raptors/turbine/year. Recommendations to compensate for the raptor mortality rate at the Adelaide facility consists of funding raptor research, rehabilitation, and education.

Timing of raptor mortalities demonstrated inter-annual variation, with 2015 mortalities occurring during the nesting period (an 11-day period in June) while 2016 and 2017 mortalities were more consistent with other published studies for birds in general, occurring primarily during the migratory period (August-October).

Results of the behavioural surveys in 2016 and 2017 suggest that Red-tailed Hawks appear to avoid turbines (i.e. not travel within 200 m) during flights to and from the monitored nest. Turkey Vultures monitored in 2017 did not appear to avoid turbines, although the majority of observations occurred during the migratory period (August-October) and as such were not likely resident birds. Increased risk of turbine mortality may exist for raptors in proximity to active nests, although it may not be associated with the nesting pair.

6.0 CLOSING

REA Section I8 was triggered by the exceedance of the raptor threshold in the first year of monitoring in 2015. In addition to triggering two years of scoped mortality and cause and effects monitoring (completed in 2016 and 2017), Section I8 requires the implementation of operational mitigation for the operating life of the facility. Operational mitigation is accompanied by 3 years of effectiveness monitoring upon implementation.

Condition I9 of the REA states that mitigation for exceedance of bird threshold will include one of the following:

- Periodic shut-down of select turbines at specific times of year, when mortality risks to the affected bird species is particularly high (i.e., migration)
- Blade feathering at specific times of year, when mortality risks to the affected bird species is particularly high (i.e., migration)
- Or an alternate plan agreed to between Suncor and MNRF

Stantec and Suncor are currently preparing a mitigation plan proposed for implementation in 2018 that will be sent to the MNRF for their review.

This report is indented to meet the annual post-construction reporting requirement of REA Section I11 and I12 for the third and final year of EEMP as well as the second and final year of scoped mortality monitoring and cause and effect monitoring at the Adelaide Wind Power Project.

7.0 REFERENCES

Allison, T.D., J.F. Cochran, E. Lonsdorf, and C. Sanders-Reed. 2017. A Review of Options for Mitigating Take of Golden Eagles at Wind Energy Facilities. *Journal of Raptor Research* 51(42017).

American Wind Wildlife Institute (AWWI). 2014. Wind Turbine interactions with wildlife and their habitats: a summary of research results and priority questions. Washington, DC. Available online at www.awwi.org.

Arnett, E. B., D. B. Inkley, D. H. Johnson, R. P. Larkin, S. Manes, A. M. Manville, J. R. Mason, M. L. Morrison, M. D. Strickland, and R. Thresher. 2007. Impacts of wind energy facilities on wildlife and wildlife habitat. Wildlife Society Technical Review 07-2. The Wildlife Society, Bethesda, Maryland, USA.

Bird Studies Canada (BSC), Canadian Wind Energy Association, Environment Canada and the Ontario Ministry of Natural Resources. 2016. Wind energy Bird and Bat Monitoring Database Summary of the Findings from Post-construction Monitoring Reports. July 2016.

Bird Studies Canada (BSC), Canadian Wind Energy Association, Environment Canada and the Ontario Ministry of Natural Resources. 2017. Wind energy Bird and Bat Monitoring Database Summary of Findings from Post-construction Monitoring Reports. July 2017.

Bierregaard, Richard O., Alan F. Poole, Mark S. Martell, Peter Pyle and Michael A. Patten. 2016. Osprey (Pandion haliaetus), version 2.0. In The Birds of North America (P. G. Rodewald, editor). Cornell Lab of Ornithology, Ithaca, New York, USA. https://doi.org/10.2173/bna.683

Cadman, M. D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Conada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 318pp

Calvert, A. M., C. A. Bishop, R. D. Elliot, E. A. Krebs, T. M. Kydd, C. S. Machtans, and G. J. Robertson. 2013. A synthesis of human-related avian mortality in Canada. *Avian Conservation and Ecology* 8(2): 11. http://dx.doi.org/10.5751/ACE-00581-080211

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2010. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 43 pp.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2013. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

Drewitt, A.L. and R.H.W. Langston. 2008. Collision effects of wind-power generators and other obstacles on birds. Ann. N. Y. Acad. Sci., 1134: 233–266.

Environment Canada, the Canadian Wind Energy Association and the Ontario Ministry of Natural Resources. 2011. Wind Energy Bird and Bat Monitoring Database Summary of the Findings from Post-construction Monitoring Reports. November 2011. 17pp.

Erickson, W.P., M.M. Wolfe, K.J. Bay, D.H. Johnson, and J.L. Gehring. 2014. A Comprehensive Analysis of Small-Passerine Fatalities from Collision with Turbines at Wind Energy Facilities. PLoS ONE 9(9): e107491.

Erickson, W., K. Kronner, and B. Gritski. 2003. Nine Canyon Wind Power Project Avian And Bat Monitoring Report: September 2002 – August 2003. Prepared For: Nine Canyon Technical Advisory Committee. October 2003.

Friesen, L. 2011. No evidence of large-scale fatality events at Ontario wind projects in Ontario Birds, Volume 29, No. 3, December 2011: pages 149- 155.

Garvin, J. C. C. S. Jennelle, D. Drake, and S.M. Grodsky. 2011. Response of raptors to a windfarm. Journal of Applied Ecology. 48: 199-209.

Hoover. S.L., and M.L. Morrison. 2005. Behavior of red-tailed hawks in a wind turbine development. Journal of Wildlife Management: 69: 150–159.

James, R.D. 2010. Wind Turbines and Birds: Behaviour of Migrant Blue Jays in Relation to Tree Cover and Wind Turbines. Ontario Birds. 28:2, August 2010.

Johnson, G.D., 2005. A review of bat mortality at wind-energy developments in the United States. Bat Research News 46(2): 45-49.

Johnson, G.D., M.K. Perlik, W.P. Erickson and M.D. Strickland. 2004. Bat activity, composition and collision mortality at a large wind plant in Minnesota. Wildlife Society Bulletin 32(4): 1278-1288.

Johnson, G., W. Erickson, J. White, and R. McKinney. 2003. Avian and Bat Mortality During the First Year of Operation at the Klondike Phase I Wind Project, Sherman County, Oregon. Prepared for: Northwestern Wind Power. March 2003.

Kerlinger, P., Curry, R., Guarnaccia, J. 2011. Bird collision impacts at wind turbines in eastern North America LLC: from "harvesting wind energy on the Delmar Virginia peninsula". <Presented September 14, 2011>.

Kingsley, A. and B. Whittam. 2007. Wind Turbines and Birds: A Background Review for Environmental Assessment. Prepared for the Canadian Wildlife Service. Draft April 2, 2007.

Kirk, D. A. and M. J. Mossman. 1998. Turkey Vulture (Cathartes aura), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/339

Kunz, T.H., E.B. Arnett, W.P. Erickson, A.R. Hoar, G.D. Johnson, R.P. Larkin, M.D. Strickland, R.W. Thresher and M.D. Tuttle. 2007. Ecological impacts of wind energy development on bats: questions, research needs, and hypotheses. Front. Ecol. Environ. 5(6): 315-324.

Marques, A.T., H. Batalha, S. Rodrigues, H. Costa, M.J.R.Pereira, C. Fonseca, M. Mascarenhas, and J. Bernaardino. 2014. Understanding Bird Collisions at Wind Farms: An Updated Review on the Causes and Possible Mitigation Strategies. Biological Conservation 179:40-52.

Masden, E.A., A.D. Fox, R.W. Furness, R. Bullman, and D.T. Haydon. 2010. Cumulative impact assessments and bird/wind farm interactions: developing a conceptual framework. Environ. Impact Assess. Rev. 30: 1–7.

McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, A. Cowie, and A.R. Couturier. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.

Morrison, M. 2002. Searcher Bias and Scavenging Rates in Bird/Wind Energy Studies. National Renewable Energy Laboratory, U.S. Department of Energy Laboratory Operated by Midwest Research Institute. 1617 Cole Boulevard Golden, Colorado 80401-3393.

National Academy of Sciences (NAS). 2007. Environmental Impacts of Wind-Energy Projects. Committee on Environmental Impacts of Wind-Energy Projects, Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Research Council of the National Academies. The National Academies Press, Washington, D.C., USA.

National Wind Coordinating Collaborative (NWCC). 2010. Wind Turbine Interactions with Birds, Bats, and their Habitats: A Summary of Research Results and Priority Questions. Spring 2010. 8p.

Ontario Ministry of Natural Resource (MNR). 2012. Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule.

Ontario Ministry of Natural Resources (MNR). 2011a. Bats and Bat Habitats. Guidelines for Wind Power Projects. 24 pp. July, 2011.

Ontario Ministry of Natural Resources (MNR). 2011b. Birds and Bird Habitats. Guidelines for Wind Power Projects. 32 pp. December 2011.

Preston, C. R. and R. D. Beane. 2009. Red-tailed Hawk (Buteo jamaicensis), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/052

Smallwood, S. 2013. Comparing Bird and Bat Fatality-Rate Estimates Among North American Wind-energy Projects. Wildlife Society bulletin 37 (1):19-33, 2013; DOI: 10.1002/wsb.260.

Stantec Consulting Ltd. 2012a. Suncor Energy Adelaide Wind Energy Project Environmental Effects Monitoring Plan For Wildlife (EEMP). July 2012.

Stantec Consulting Ltd. 2012b. Suncor Energy Adelaide Wind Energy Project Natural Heritage Assessment & Environmental Impact Study. July 2012.

Stantec Consulting Ltd. 2012c. Suncor Energy Adelaide Wind Project Addendum I. October 2012.

Stantec Consulting Ltd. 2013a. Suncor Energy Adelaide Minor Modifications. February 2013.

Stantec Consulting Ltd. 2013b. Suncor Energy Adelaide Project Modifications. November 2013.

Stantec Consulting Ltd. 2011. Wolfe Island Wind Plant Post-construction Follow-up Plan Bird and Bat Resources Monitoring Report No. 5. January – June 2011.

Stantec Consulting Ltd. 2016. Adelaide Wind Power Project: Year 1 Post-Construction Wildlife Monitoring Report (2015).

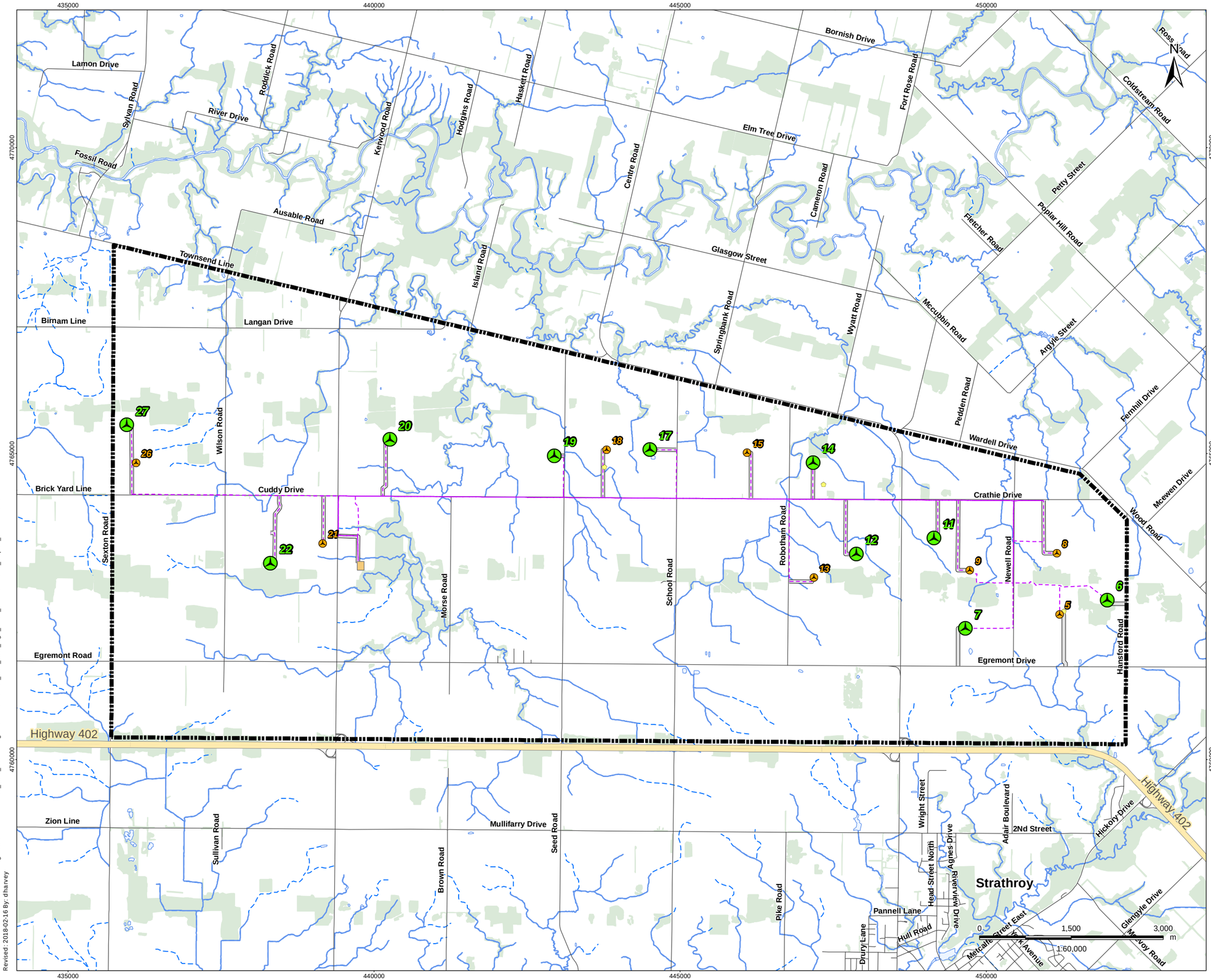
Stantec Consulting Ltd. 2017. Adelaide Wind Power Project: Year 2 Post-Construction Wildlife Monitoring Report (2016).

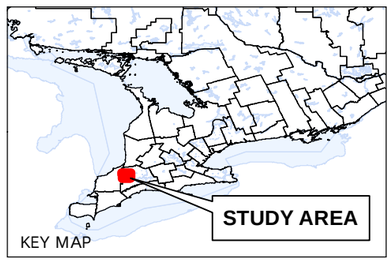
Stickland, D., E. B. Arnett, W.P. Erickson, D.H. Johnson, G.D. Johnson, M.L. Morrison, J.A. Shaffer, W. Warren-Hicks. 2011. Comprehensive Guide to Studying Wind Energy/Wildlife Interactions. Prepared for the National Wind Coordinating Collaborative. Washington D.C., USA.

U.S. Fish and Wildlife Service. Division of Migratory Bird Management. 2013. Eagle Conservation Plan Guidance. Module 1 – Land-based Wind Energy Version 2. April 2013.

Zimmerling, J.R., A.C. Pomeroy, M.V. d'Entremont, and C.M. Francis. 2013. Canadian estimate of bird mortality due to collisions and direct habitat loss associated with wind turbine developments, Avian conservation and Ecology 8(2):10. [online] URL: http://www.ace-eco.org/volXX/issYY/artZZ/

APPENDIX A: FIGURES





Notes

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160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

1

Title

Post-construction Monitoring
EEMP Turbine Subset

V:\01609\active\160960710\drawing\MXD\Terrestrial\Post_Con_Monitoring\2017\160961067_Post_Con_Fig1_EEMP_TurbineSubset_Raptor_20170216.mxd
Revised: 2018-02-16 By: dharvey

435000 440000 445000 450000

4770000 4765000 4760000

Broken Front Road
Lamon Drive
Sylvan Road
Watson Road
Roddick Road
River Drive
Hodgins Road
Haskett Road
Elm Tree Drive
Bornish Drive
Fort Rose Road
Ross Road
Coldstream Road
Ausable Road
Springbank Road
Cameron Road
Fletcher Road
Petty Street
Poplar Hill Road
Glasgow Street
Island Road
Townsend Line
Argyle Street
Mccubbin Road
Wyatt Road
Birnam Line
Langan Drive
Centre Road
Peddlen Road
Fernhill Drive
Wardell Drive
Brick Yard Line
Wilson Road
Kerwood Road
Cuddy Drive
Crathie Drive
Mcewen Drive
Wood Road
Robothain Road
Newell Road
Hansford Road
Sexton Road
Morse Road
Kent Street
Seed Road
Egremont Road
Egremont Drive
School Road
Highway 402
Zion Line
Sullivan Road
Brown Road
Mullifarry Drive
Pike Road
Wright Street
Adair Boulevard
Dolphin Road
2Nd Street
Katie Lane
Thorne Drive
Strathroy
Deruiter Drive
Hickory Drive
Meeuwy Road
Glengyle Drive
Pannell Lane
Penny Lane
Ross Lane
Saulsbury Street
Front Street East
Parkview Drive

27 26 20 19 18 17 15 14 21 22 12 11 13 9 8 7 6 5

Legend
- Raptor Study Area
- Project Components
  - MET Tower
  - Turbine Location
  - Turbine Subset
  - Access Road
  - Collector Line
  - Substation Constructible Area
- Existing Features
  - Expressway / Highway
  - Road
  - Watercourse
  - Constructed Drain
  - Waterbody

QUEBEC
ONTARIO
STUDY AREA
KEY MAP

Notes
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0 1,500 3,000 m
1:60,000

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160961067

Client/Project
Suncor Energy
Adelaide Wind Project

Figure No.
2a

Title
Raptor Study Area

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Revised: 2017-02-06 By: mkraus

446000 446500 447000 447500 448000 448500 449000 449500

4764500 4764000 4763500 4763000 4762500 4762000

Cuddy Drive

Crathie Drive

Robotham Road

Centre Road

14 12 13 11 9 7

N

0 200 400 m

1:12,000

Stantec

Legend

Raptor Study Area

Raptor Nest Location

Project Components

MET Tower

Turbine Location

Access Road

Collector Line

Substation Constructible Area

Existing Features

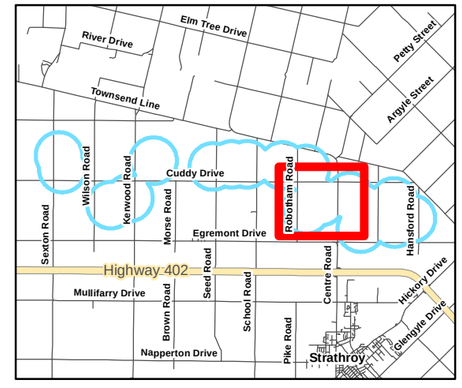
Expressway / Highway

Road

Watercourse

Constructed Drain

Waterbody



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Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

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Revised: 2017-02-06 By: mkraus

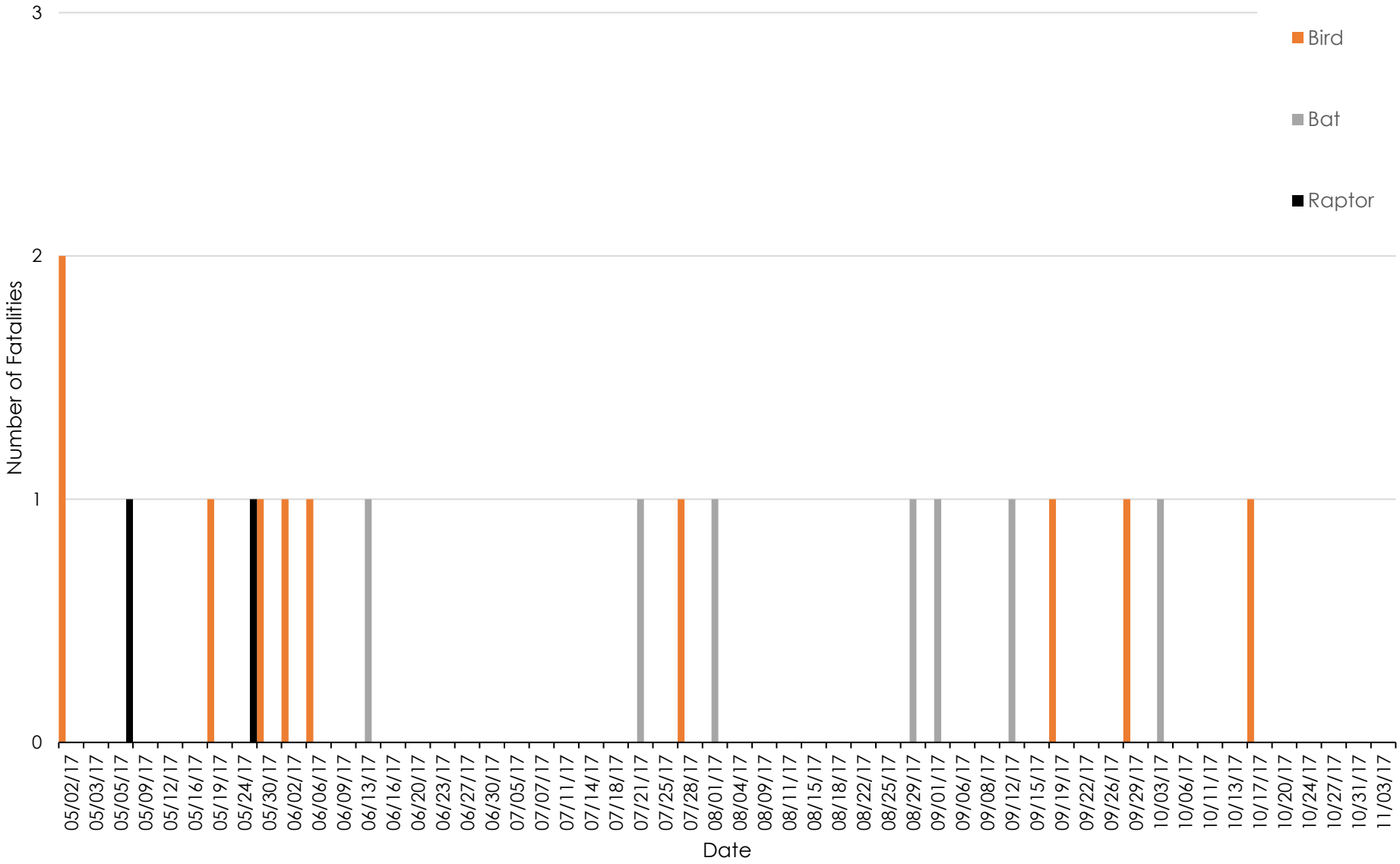


Figure 3: Fatalities at the Adelaide Wind Power Project by Date, 2017

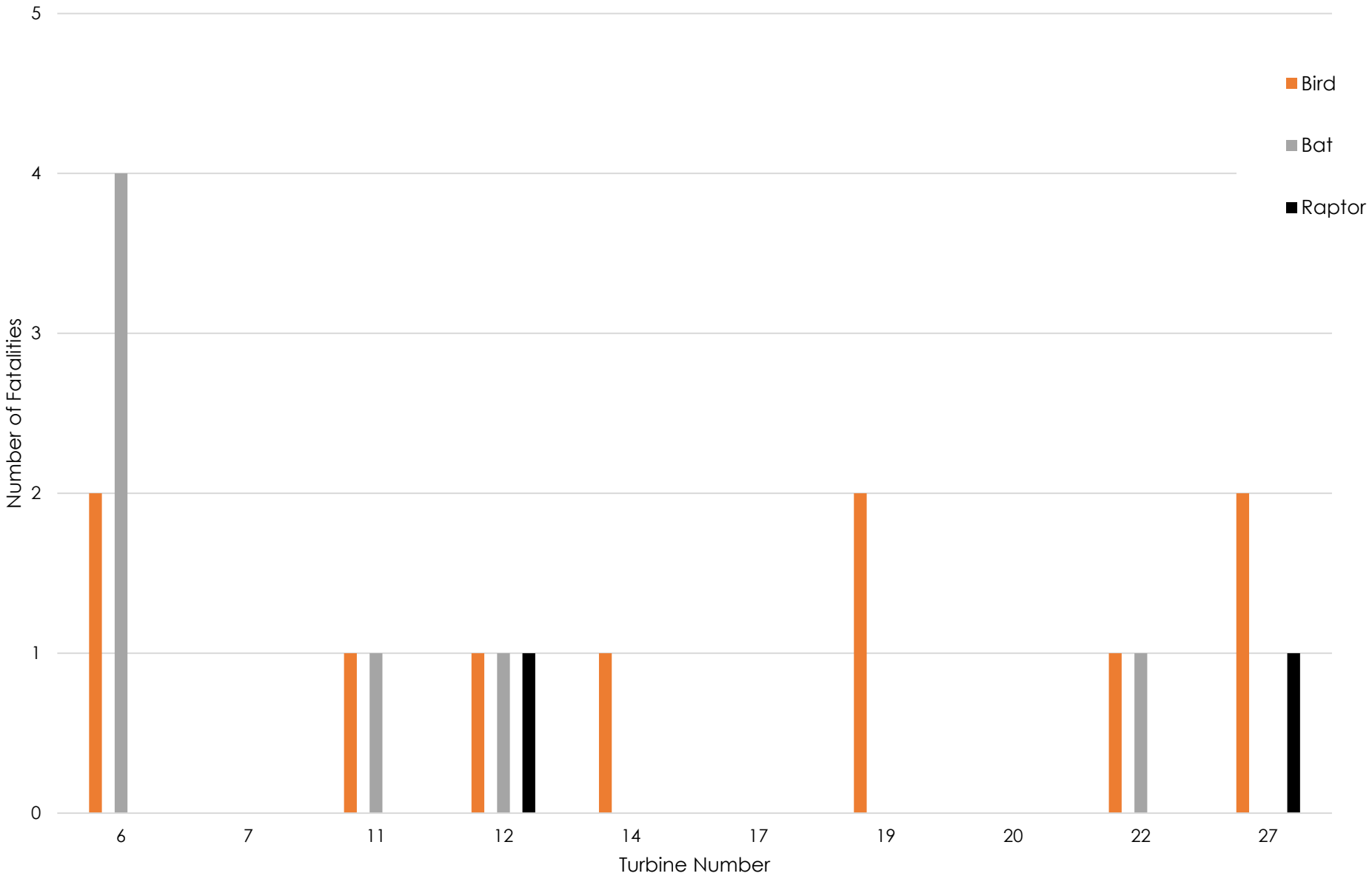
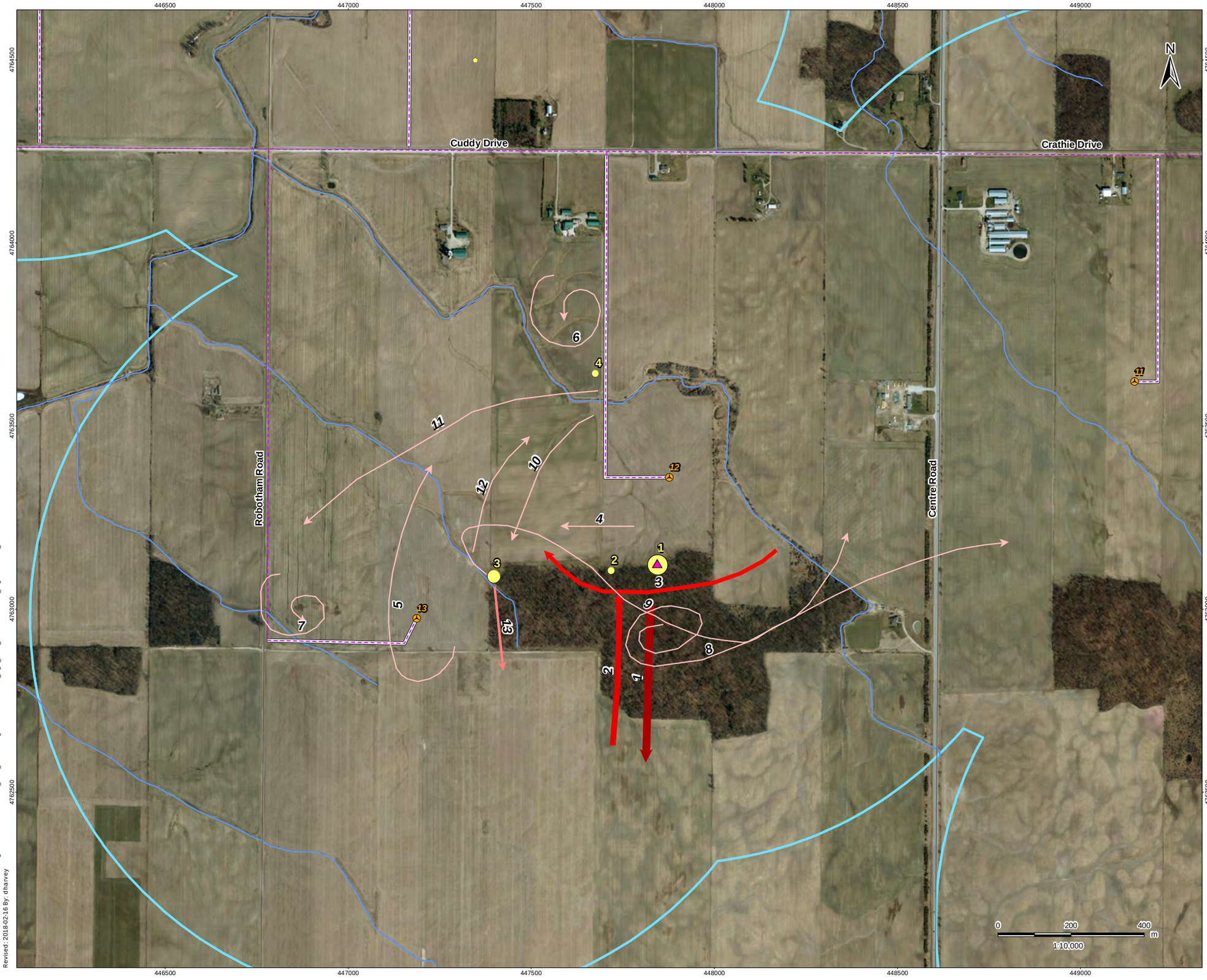


Figure 4: Fatalities at the Adelaide Wind Power Project by Turbine, 2017



Stantec

Legend

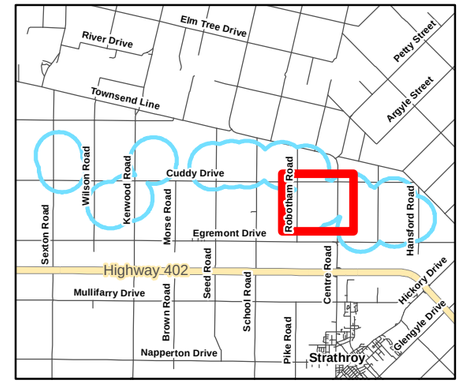
- Raptor Study Area
- Raptor Nest Location
- Perch Location (# of Time Used)
  - 1
  - 3
  - 6
- Red Tailed Hawk Flight Path (# of Flights Observed)
  - 1
  - 2
  - 3
  - 4
  - 5
- 4 Flight Path Identifier

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



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160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
5

Title

T12 Red Tailed Hawk Flight Patterns and Perch Locations

V:\1016\active\60960710\drawing\MXD\terrestial\Post_Con_Monitoring\2017\160961067_Fig5_2017_RedTailedHawk_FlightPatterns_20180216.mxd
Revised: 2018-02-16 By: dharvey

447000 447500 448000 448500 449000

4764000 4763500 4763000 4762500

Robotham Road

Centre Road

N

0 200 400 m

1:7,000

Stantec

Legend

- Raptor Study Area
- Raptor Nest Location

Turkey Vulture Flight Path (# of Flights Observed)

- 1
- 2
- 3
- 4
- 7

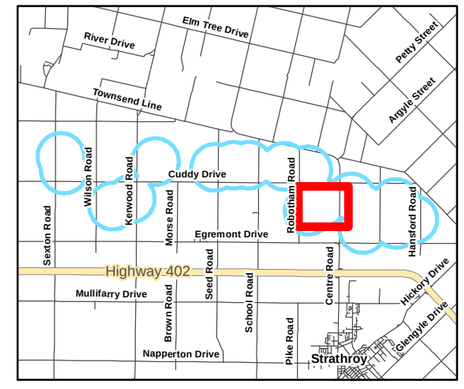
8 Flight Path Identifier

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



Notes

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160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

6

Title

T12 Turkey Vulture Flight Patterns

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Revised: 2018-02-16 By: dharvey

APPENDIX B:
RENEWAL ENERGY APPROVAL

Stantec

Ontario

Ministry of the Environment
Ministère de l'Environnement

RENEWABLE ENERGY APPROVAL

NUMBER 8279-9AUP2B
Issue Date: December 11, 2013

Suncor Energy Products Inc.
150 6th Ave SW
Calgary, Alberta T2P 3E3

Project Location: North, East, and West of 2340 Egremont Drive, R.R. #5
Township of Adelaide-Metcalfe, County of Middlesex

You have applied in accordance with Section 47.4 of the Environmental Protection Act for approval to engage in a renewable energy project in respect of a Class 4 wind facility consisting of the following:

- the construction, installation, operation, use and retiring of a Class 4 wind facility with a total name plate capacity of 40 megawatts.

For the purpose of this renewable energy approval, the following definitions apply:

1. "Acoustic Assessment Report" means the report included in the Application and entitled "Noise Assessment Report", dated July 8, 2013, prepared by HGC Engineering, signed by Ian R. Bonsma, P.Eng and Brian Howe P.Eng;

2. "Acoustic Audit - Emission" means an investigative procedure that is compliant with the IEC Standard 61400-11 and consisting of measurements and/or acoustic modelling of noise emissions produced by wind turbine generators, assessed to determine compliance with the manufacturer's noise (acoustic) equipment specifications and emission data of the wind turbine generators, included in the Acoustic Assessment Report;

3. "Acoustic Audit - Immission" means an investigative procedure consisting of measurements and/or acoustic modelling of all sources of noise emissions due to the operation of the Equipment, assessed to determine compliance with the Noise Performance Limits set out in this Approval;

4. "Acoustic Audit Report-Emission" means a report presenting the results of the Acoustic Audit - Emission;

5. "Acoustic Audit Report-Immission" means a report presenting the results of the Acoustic Audit - Immission;

6. "Acoustic Audit - Transformer Substation" means an investigative procedure that is compliant with the IEEE Standard C57.12.90 consisting of measurements and/or acoustic modelling of all noise sources comprising the transformer substation assessed to determine compliance with the Sound Power Level specification of the transformer substation described in the Acoustic Assessment Report.

7. "Acoustic Audit Report - Transformer Substation" means a report presenting the results of the Acoustic Audit - Transformer Substation.

8. "Acoustical Consultant" means a person currently active in the field of environmental acoustics and noise/vibration control, who is knowledgeable about Ministry noise guidelines and procedures and has a combination of formal university education, training and experience necessary to assess noise emissions from wind facilities;

9. "Act" means the *Environmental Protection Act* , R.S.O 1990, c.E.19, as amended;

10. "Adverse Effect" has the same meaning as in the Act;

11. "Application" means the application for a Renewable Energy Approval dated November 28, 2012, and signed by Christopher Scott, Project Developer, Suncor Energy Products Inc., and all supporting documentation submitted with the application, including amended documentation submitted up to the date this Approval is issued;

12. "Approval" means this Renewable Energy Approval issued in accordance with Section 47.4 of the Act, including any schedules to it;

13. "A-weighting" means the frequency weighting characteristic as specified in the International Electrotechnical Commission (IEC) Standard 61672, and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound. It is denoted as "A";

14. "A-weighted Sound Pressure Level" means the Sound Pressure Level modified by application of an A-weighting network. It is measured in decibels, A-weighted, and denoted "dBA";

15. "Class 1 Area" means an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum";

16. "Class 2 Area" means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas:

    1. sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00 hours);

    2. low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours);

3. no clearly audible sound from stationary sources other than from those under impact assessment.

17. "Class 3 Area" means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:

    1. a small community with less than 1000 population;

    2. agricultural area;

    3. a rural recreational area such as a cottage or a resort area; or

    4. a wilderness area.

18. "Company" means Suncor Energy Products Inc. and includes its successors and assignees;

19. "Compliance Protocol for Wind Turbine Noise" means the Ministry document entitled, Compliance Protocol for Wind Turbine Noise, Guideline for Acoustic Assessment and Measurement, PIBS# 8540e;

20. "Decibel" means a dimensionless measure of Sound Level or Sound Pressure Level, denoted as dB;

21. "Director" means a person appointed in writing by the Minister of the Environment pursuant to section 5 of the Act as a Director for the purposes of section 47.5 of the Act;

22. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Facility is geographically located;

23. "Equipment" means the eighteen (18) wind turbine generators and one (1) transformer substation, identified in this Approval and as further described in the Application, to the extent approved by this Approval;

24. "Equivalent Sound Level" is the value of the constant sound level which would result in exposure to the same total A-weighted energy as would the specified time-varying sound, if the constant sound level persisted over an equal time interval. It is denoted L_{eq} and is measured in dB A-weighting (dBA);

25. "Facility" means the renewable energy generation facility, including the Equipment, as described in this Approval and as further described in the Application, to the extent approved by this Approval;

26. "IEEE Standard C57.12.90" means the IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers, 2010.

27. "IEC Standard 61400-11" means the International Standard IEC Standard 61400-11, Wind turbine generator systems – Part 11: Acoustic noise measurement techniques, 2006;

28. "Independent Acoustical Consultant" means an Acoustical Consultant who is not representing the Company and was not involved in preparing the Acoustic Assessment Report. The Independent Acoustical Consultant shall not be retained by the Acoustical Consultant involved in the noise impact assessment;

29. "Ministry" means the ministry of the government of Ontario responsible for the Act and includes all officials, employees or other persons acting on its behalf;

30. "Noise Guidelines for Wind Farms" means the Ministry document entitled, "Noise Guidelines for Wind Farms - Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities", dated October 2008;

31. "Noise Receptor" has the same meaning as in O. Reg. 359/09;

32. "Publication NPC-233" means Ministry Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October 1995;

33. "O. Reg. 359/09" means Ontario Regulation 359/09 "Renewable Energy Approvals under Part V.0.1 of the Act" made under the Act;

34. "Point of Reception" has the same meaning as in the Noise Guidelines for Wind Farms and is subject to the same qualifications described in that document;

35. "Sound Level" means the A-weighted Sound Pressure Level;

36. "Sound Level Limit" is the limiting value described in terms of the one hour A-weighted Equivalent Sound Level L_{eq};

37. "Sound Power Level" means ten times the logarithm to the base of 10 of the ratio of the sound power (Watts) of a noise source to standard reference power of 10^{-12} Watts;

38. "Sound Pressure" means the instantaneous difference between the actual pressure and the average or barometric pressure at a given location. The unit of measurement is the micro pascal (μPa);

39. "Sound Pressure Level" means twenty times the logarithm to the base 10 of the ratio of the effective pressure (μPa) of a sound to the reference pressure of 20 μPa;

40. "UTM" means Universal Transverse Mercator coordinate system.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

A - GENERAL

A1. The Company shall construct, install, use, operate, maintain and retire the Facility in accordance with the terms and conditions of this Approval and the Application and in accordance with the following schedules attached hereto:

SCHEDULE A - Facility Description
SCHEDULE B - Coordinates of the Equipment and Noise Specifications
SCHEDULE C - Noise Control Measures

A2. Where there is a conflict between a provision of this Approval and any document submitted by the Company, the conditions in this Approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Company, the document bearing the most recent date shall take precedence.

A3. The Company shall ensure a copy of this Approval is:

(1) accessible, at all times, by Company staff operating the Facility and;

(2) submitted to the clerk of each local municipality and upper-tier municipality in which the Facility is situated.

A4. If the Company has a publicly accessible website, the Company shall ensure that the Approval and the Application are posted on the Company's publicly accessible website within five (5) business days of receiving this Approval.

A5. The Company shall, at least six (6) months prior to the anticipated retirement date of the entire Facility, or part of the Facility, review its Decommissioning Plan Report to ensure that it is still accurate. If the Company determines that the Facility cannot be decommissioned in accordance with the Decommissioning Plan Report, the Company shall provide the Director and District Manager a written description of plans for the decommissioning of the Facility.

A6. The Facility shall be retired in accordance with the Decommissioning Plan Report and any directions provided by the Director or District Manager.

A7. The Company shall provide the Director and the District Manager at least ten (10) days written notice of the following:

(1) the commencement of any construction or installation activities at the project location; and

(2) the commencement of the operation of the Facility.

A8. The Company shall, at least six (6) months prior to the anticipated retirement date of the entire Facility, or part of the Facility, contact the Ministry of Agriculture, Food and Rural Affairs to discuss its plans for the decommissioning of the Facility, and follow any directions provided by that ministry in respect of the Company's plans to restore the project location to its previous agricultural capacity.

A9. As described in SCHEDULE A of the Approval, the Company shall not construct or operate more than eighteen (18) out of the twenty two (22) wind turbine generators identified in SCHEDULE B of the Approval;

B - EXPIRY OF APPROVAL

B1. Construction and installation of the Facility must be completed within three (3) years of the later of:

(1) the date this Approval is issued; or

(2) if there is a hearing or other litigation in respect of the issuance of this Approval, the date that this hearing or litigation is disposed of, including all appeals.

B2. This Approval ceases to apply in respect of any portion of the Facility not constructed or installed before the later of the dates identified in Condition B1.

C - NOISE PERFORMANCE LIMITS

C1. The Company shall ensure that:

(1) the Sound Levels from the Equipment, at the Points of Reception identified in the Acoustic Assessment Report, comply with the Sound Level Limits set in the Noise Guidelines for Wind Farms, as applicable, and specifically as stated in the table below:

Wind Speed (m/s) at 10 m height	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Sound Level Limits, dBA	40.0	40.0	40.0	43.0	45.0	49.0	51.0

(2) the Equipment is constructed and installed at either of the following locations:

a) at the locations identified in SCHEDULE B of this Approval; or

b) at a location that does not vary by more than 10 metres from the locations identified in SCHEDULE B of this Approval and provided that,

i) the Equipment will comply with Condition C1 (1); and

ii) all setback prohibitions established under O. Reg. 359/09 are complied with.

(3) the Equipment complies with the noise specifications set out in SCHEDULE B of this Approval.

C2. If the Company determines that some or all of the Equipment cannot be constructed in accordance with Condition C1 (2), prior to the construction and installation of the Equipment in question, the Company shall apply to the Director for an amendment to the terms and conditions of the Approval.

C3. Within three (3) months of the completion of the construction of the Facility, the Company shall submit to the Director a written confirmation signed by an individual who has the authority to bind the Company that the UTM coordinates of the "as constructed" Equipment comply with the requirements of Condition C1 (2).

D – CONFIRMATION OF VACANT LOT NOISE RECEPTORS

D1. The locations identified in Table A5 of the Acoustic Assessment Report as "Point of Reception ID" numbers 52, 54, 57, 62, 64, 65, 148, 269, 508, 552, 553, 555, 556, 557, 560, 565, 567, 569, 571, 574, 578, 579, 583, 585, 587, 588, 591, 592, 595, 596, 598, 599, 604, 610, 612, 614, 615, 617, 619, 626, 628, 630, 631, 632, 633, 634, 639, 642, 646, 647, 650, 651, 652, 653, 654, 656, 657, 659, 660, 661, 664, 665, 666, 667, 668, 669, 670, 697, 699, 704, 705, 706, 707, 709, 717, 718, 728, 742, 743, 750, 751, 752, 753, 754, 755, PV_442, PV_443, PV_444, PV_461, V_272, V_276, V_331, V_341, V_349, V_350, V_351, V_355, V_356, V_357, V_359, V_360, V_361, V_382, V_385, V_387, V_388, V_389, V_390, V_400, V_403, V_420 and V_460 are specified as Noise Receptors for the purposes of subsection 54 (1.1) of O. Reg. 359/09.

E - ACOUSTIC AUDIT - IMMISSION

E1. The Company shall carry out an Acoustic Audit - Immission of the Sound Levels produced by the operation of the Equipment in accordance with the following:

(1) the acoustic audit measurements shall be undertaken in accordance with Part D of the Compliance Protocol for Wind Turbine Noise;

(2) the acoustic audit measurements shall be performed by an Independent Acoustical Consultant at three (3) different Points of Reception that have been selected using the following criteria:

a) the Points of Reception should represent the location of the greatest predicted noise impact, i.e., the highest predicted Sound Level; and

b) the Points of Reception should be located in the direction of prevailing winds from the Facility;

(3) The acoustic audit measurements shall be performed on two (2) separate occasions;

(4) The acoustic audit measurements should be performed within a period of twelve (12) months.

E2. The Company shall submit to the Director and the District Manager an Acoustic Audit Report - Immission, prepared by an Independent Acoustical Consultant, at the following points in time:

(1) no later than nine (9) months after the commencement of the operation of the Facility for the first of the two (2) acoustic audit measurements at three (3) Points of Reception; and

(2) no later than sixteen (16) months after the commencement of the operation of the Facility for the second of the two (2) acoustic audit measurements at three (3) Points of Reception.

E3. The Company shall carry out an Acoustic Audit - Transformer Substation and shall submit to the Director and the District Manager an Acoustic Audit Report – Transformer Substation prepared by an Independent Acoustical Consultant, in accordance with the IEEE Standard C57.12.90 and Ministry Publication NPC-233 and no later than six (6) months after the commencement of the operation of the Facility.

F - ACOUSTIC AUDIT- EMISSION

F1. The Company shall carry out an Acoustic Audit - Emission of the acoustic emissions produced by the operation of the wind turbine generators in accordance with the following:

(1) the acoustic emission measurements shall be undertaken in accordance with the IEC Standard 61400-11;

(2) the acoustic emission measurements shall be performed by an Independent Acoustical Consultant; and

(3) the acoustic emission measurements shall be performed on two (2) of the wind turbine generators used in the Facility.

F2. The Company shall submit to the Director and the District Manager an Acoustic Audit Report-Emission, prepared in accordance with Section 9 of the IEC Standard 61400-11 by an Independent Acoustical Consultant, no later than nine (9) months after the commencement of the operation of the Facility.

G - WATER TAKING ACTIVITIES

G1. The Company shall not take more than 50,000 litres of water on any day by any means during the construction, installation, use, operation, maintenance and retiring of the Facility.

H - SEWAGE WORKS OF THE TRANSFORMER SUBSTATION SPILL CONTAINMENT FACILITY

H1. The Company shall design and construct a transformer substation oil spill containment facility which meets the following requirements:

(1) the spill containment facility serving the transformer substation shall have a minimum volume equal to the volume of transformer oil and lubricants plus the volume equivalent to providing a minimum 24-hour duration, 50-year return storm capacity for the stormwater drainage area around the transformer under normal operating conditions. This containment area shall have:

(a) an impervious floor with walls usually of reinforced concrete or impervious plastic liners, sloped toward an outlet / oil control device, allowing for a freeboard of 0.25 metres terminating approximately 0.30 metres above grade to prevent external stormwater flows from entering the facility. The facility shall have a minimum of 300mm layer of crushed stoned (19mm to 38mm in diameter) within, all as needed in accordance to site specific conditions and final design parameters; or

(b) a permeable floor with impervious plastic walls and around the transformer pad; equipped with subsurface drainage with a minimum 50mm diameter drain installed on a sand layer sloped toward an outlet for sample collection purposes; designed with an oil absorbent material on floor and walls, and allowing for a freeboard of 0.25 metres terminating approximately 0.30 metres above grade to prevent external stormwater flows from entering the facility. The facility's berm shall be designed as needed in accordance to site specific conditions and the facility shall have a minimum 300mm layer of crushed stoned (19mm to 38mm in diameter) on top of the system, as needed in accordance to site specific conditions and final design parameters.

(2) the spill containment facility shall be equipped with an oil detection system; it also shall have a minimum of two (2) PVC pipes (or equivalent material) 50mm diameter to allow for visual inspection of water accumulation. One pipe has to be installed half way from the transformer pad to the vehicle access route;

(3) the spill containment facility shall have appropriate sewage appurtenances as necessary, such as but not limited to: sump, oil/grit separator, pumpout manhole, level controllers, floating oil sensors, etc., that allows for batch discharges or direct discharges and for proper implementation of the monitoring program described under Condition H4; and

(4) the Company shall have a qualified person on-site during construction to ensure that the system is installed in accordance with the approved design and specifications.

H2. The Company shall:

(1) within six (6) months after the completion of the construction of the transformer substation spill containment facility, provide to the District Manager an engineering report and as-built design drawings of the sewage works for the spill containment facility and any stormwater management works required for it, signed and stamped by an independent Professional Engineer licensed in Ontario and competent in electrical and environmental engineering. The engineering report shall include the following;

(a) as-built drawings of the sewage works for the spill containment facility and any stormwater management works required for it;

(b) a written report signed by a qualified person confirming the following:

(i) on-site supervision during construction

(ii) in case of a permeable floor systems: type of oil absorbent material used (for mineral-based transformer oil or vegetable-based transformer oil, make and material's specifications)
(ii) use of stormwater best management practices applied to prevent external surface water runoff from entering the spill containment facility, and
(iv) confirm adequacy of the installation in accordance with specifications.

(c) confirmation of the adequacy of the operating procedures and the emergency procedures manuals as it pertains to the installed sewage works.

(d) procedures to provide emergency response to the site in the form of pumping and clean-up equipment within 24 hours after an emergency has been identified. Such response shall be provided even under adverse weather conditions to prevent further danger of material loss to the environment.

(2) as a minimum, the Company shall check the oil detection systems on a monthly basis and create a written record of the inspections;

(3) ensure that the effluent is essentially free of floating and settle-able solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters;

(4) immediately identify and clean-up all losses of oil from the transformer;

(5) upon identification of oil in the spill containment facility, take immediate action to prevent the further occurrence of such loss;

(6) ensure that equipment and material for the containment, clean-up and disposal of oil and materials contaminated with oil are kept within easy access and in good repair for immediate use in the event of:

(a) loss of oil from the transformer,
(b) a spill within the meaning of Part X of the Act, or
(c) the identification of an abnormal amount of oil in the effluent.

(7) in the event of finding water accumulation in the PVC pipes (visual inspection) after 48 hrs of any storm event, the Company shall: (a) for impervious floors, inspect the sewage appurtenances that allow drainage of the concrete pit; or (b) for permeable systems, replace the oil absorbent material to ensure integrity of the system performance and design objectives.

(8) for permeable floor systems, the Company shall only use the type of oil specified in the design, i.e. mineral-based transformer oil or vegetable-based transformer oil. If a change is planned to modify the type of oil, the Company shall also change the type of the oil absorbent material and obtain approval from the Director to amend this Approval before any modification is implemented.

H3. The Company shall design, construct and operate the sewage works such that the concentration of the effluent parameter named in the table below does not exceed the maximum Concentration Objective shown for that parameter in the effluent, and shall comply with the following requirements:

Effluent Parameters	Maximum Concentration Objective
Oil and Grease	15mg/L

(1) notify the District Manager as soon as reasonably possible of any exceedance of the maximum concentration objective set out in the table above;

(2) take immediate action to identify the cause of the exceedance; and

(3) take immediate action to prevent further exceedances.

H4. Upon commencement of the operation of the Facility, the Company shall establish and carry out the following monitoring program for the sewage works:

(1) the Company shall collect and analyze the required set of samples at the sampling points listed in the table below in accordance with the measurement frequency and sample type specified for the effluent parameter, oil and grease, and create a written record of the monitoring:

Effluent Parameters	Measurement Frequency and Sample Points	Sample Type
Oil and Grease	Quarterly, i.e. four times over a year, relatively evenly spaced having a minimum two (2) of these samples taken within 48 hours after a 10mm rainfall event.	Grab

(2) in the event of an exceedance of the maximum concentration objective set out in the table in Condition H3, the Company shall:

(a) increase the frequency of sampling to once per month, for each month that effluent discharge occurs, and

(b) provide the District Manager, on a monthly basis, with copies of the written record created for the monitoring until the District Manager provides written direction that monthly sampling and reporting is no longer required; and

(3) if over a period of twenty-four (24) months of effluent monitoring under Condition H4, there are no exceedances of the maximum concentration set out in the table for Concentration Objective, the Company may reduce the measurement frequency of effluent monitoring to a frequency as the District Manager may specify in writing, provided that the new specified frequency is never less than annual.

(4) the Company shall, in the event of an exceedance of the maximum Concentration Objective set out in the table under Condition H3, increase the frequency of sampling to once per month and provide the District Manager, with copies of the written record created for the monitoring until the District Manager provides written direction that monthly sampling is no longer required.

H5. The Company shall comply with the following methods and protocols for any sampling, analysis and recording undertaken in accordance with Condition H4:

(1) Ministry of the Environment publication "Protocol for the Sampling and Analysis of Industrial/ Municipal Wastewater", January 1999, as amended from time to time by more recently published editions, and

(2) the publication "Standard Methods for the Examination of Water and Wastewater", 21st edition, 2005, as amended from time to time by more recently published editions.

I – NATURAL HERITAGE

General

I1. The Company shall implement the Environmental Effects Monitoring Plan for the Suncor Energy Adelaide Wind Power Project, titled Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat, dated July 2012, and the commitments made in the following reports and included in the Application, and in which the Company submitted to the Ministry of Natural Resources in order to comply with O. Reg. 359/09:

(1) *Suncor Energy Adelaide Wind Power Project Natural Heritage Assessment and Environmental Impact Study* dated July 2012 and prepared by Stantec Consulting Limited for Suncor Energy Products Inc.

(2) *Suncor Energy Adelaide Wind Project Addendum 1* letter report dated October 2012 prepared by Stantec Consulting Limited for Suncor Energy Products Inc.

(3) Memo titled *Suncor Energy Adelaide Minor Modifications* dated February 2013 and prepared by Stantec Consulting Limited for Suncor Energy Products Inc.

(4) Memo titled *Suncor Energy Adelaide Wind Power Project Modifications* dated November 5, 2013 and prepared by Stantec Consulting Limited for Suncor Energy Products Inc.

I2. If the Company determines that it must deviate from either the Environmental Effects Monitoring Plan or the Environmental Impact Study and Addendum or minor modifications thereto, described in Condition I1, the Company shall contact the Ministry of Natural Resources and the Director, prior to making any changes to the Environmental Effects Monitoring Plan or the Environmental Impact Study and Addendum or minor modifications thereto, and follow any directions provided.

Post Construction Monitoring - Significant Wildlife Habitat

I3. The Company shall implement the post-construction monitoring described in the Environmental Effects Monitoring Plan and the Environmental Impact Study, described in Condition I1, including the following:

(1) Disturbance monitoring of amphibian breeding habitat woodland for features 6 and 20,

(2) Disturbance monitoring of amphibian breeding habitat wetland for feature 16.

Post Construction Monitoring - Birds and Bats Mortality Monitoring

I4. The company shall implement the post-construction bird and bat mortality monitoring described in the Environmental Effects Monitoring Plan, described in Condition I1, at a minimum of 10 of 18 constructed turbines.

Thresholds and Mitigation

I5. The Company shall contact the Ministry of Natural Resources and the Director if any of the following bird and bat mortality thresholds, as stated in the Environmental Effects Monitoring Plan for the Suncor Energy Adelaide Wind Power Project described in Condition I1, are reached or exceeded:

(1) 10 bats per turbine per year;

(2) 14 birds per turbine per year at individual turbines or turbine groups;

(3) 0.2 raptors per turbine per year (all raptors) across a wind power project;

(4) 0.1 raptors per turbine per year (provincially tracked raptors) across the wind power project;

(5) 10 or more birds at any one turbine during a single monitoring survey; or

(6) 33 or more birds (including raptors) at multiple turbines during a single monitoring survey.

I6. If the bat mortality threshold described in Condition I5(1) is reached or exceeded, the Company shall:

(1) implement operational mitigation measures consistent with those described in the Ministry of Natural Resources publication entitled "Bats and Bat Habitats: Guidelines for Wind Power Projects" dated July 2011, or in an amended version of the publication including:

(a) increase cut-in speed to 5.5 m/s or feather wind turbine blades when wind speeds are below 5.5 m/s between sunset and sunrise, from July 15 to September 30 at all turbines, for the operating life of the Facility; and

(2) implement an additional three (3) years of effectiveness monitoring.

I7. If the bat mortality threshold described in Condition I5(1) is reached or exceeded after operational mitigation is implemented in accordance with Condition I6, the Company shall prepare and implement a contingency plan, in consultation with the Ministry of Natural Resources, to address mitigation actions which shall include additional mitigation and scoped monitoring requirements.

I8. If either of the bird mortality thresholds described in Conditions I5(2) or I5(3) or I5(4) is reached or exceeded, the Company shall conduct two (2) years of subsequent scoped mortality monitoring and cause and effects monitoring. Following the completion of scoped monitoring, the Company shall implement operational mitigation for the operating life of the Facility, and effectiveness monitoring at individual turbines, for the first three (3) years following the implementation of mitigation.

I9. If either of the bird mortality thresholds described in Conditions I5(5) or I5(6) is reached or exceeded, the Company shall prepare and implement a contingency plan to address immediate mitigation actions which shall include:

(1) periodic shut-down of select turbines;

(2) blade feathering at specific times of year; or

(3) an alternate plan agreed to between the Company and the Ministry of Natural Resources.

I10. If either of the bird mortality thresholds described in Conditions I5(2) or I5(3) or I5(4) is reached or exceeded while monitoring is being implemented in accordance with Condition I8, or if either of the bird mortality thresholds described in Conditions I5(5) or I5(6) is reached or exceeded after mitigation is implemented in accordance with Condition I9, the Company shall contact the Ministry of Natural Resources and prepare and implement an appropriate response plan that shall include some or all of the following mitigation measures:

(1) increased reporting frequency to identify potential threshold exceedance;

(2) additional behavioural studies to determine factors affecting mortality rates;

(3) periodic shut-down of select turbines;

(4) blade feathering at specific times of year; or

(5) an alternate plan agreed to between the Company and the Ministry of Natural Resources.

Reporting and Review of Results

I11. The Company shall report, in writing, the results of the post-construction disturbance monitoring described in Conditions I3, to the Ministry of Natural Resources for three (3) years on an annual basis and within three (3) months of the end of each calendar year in which the monitoring took place.

I12. The Company shall report, in writing, bird and bat mortality levels to the Ministry of Natural Resources for three (3) years on an annual basis and within three (3) months of the conclusion of the November mortality monitoring, with the exception of the following:

(1) if either of the bird mortality thresholds described in Conditions I5(5) or I5(6) is reached or exceeded, the Company shall report the mortality event to the Ministry of Natural Resources within 48 hours of observation;

(2) for any and all mortality of species at risk (including a species listed on the Species at Risk in Ontario list as Extirpated, Endangered or Threatened under the provincial Endangered Species Act, 2007) that occurs, the Company shall report the mortality to the Ministry of Natural Resources within 24 hours of observation or the next business day;

(3) if the bat mortality threshold described in Condition I5(1) is reached or exceeded, the Company shall report mortality levels to the Ministry of Natural Resources for the additional three (3) years of monitoring described in Condition I6, on an annual basis and within three (3) months of the conclusion of the October mortality monitoring for each year;

(4) if either of the bird mortality thresholds described in Conditions I5(2) or I5(3) or I5(4) is reached or exceeded in the project area, the Company shall report mortality levels to the Ministry of Natural Resources for the additional two (2) years of cause and effects monitoring described in Condition I8, on an annual basis and within three (3) months of the conclusion of the November mortality monitoring for each year; and

(5) if the Company implements operational mitigation in accordance with Condition I8, the Company shall report mortality levels to the Ministry of Natural Resources for the three (3) years of subsequent effectiveness monitoring described in Condition I8, on an annual basis and within three (3) months of the conclusion of the November mortality monitoring for each year.

J - STORMWATER MANAGEMENT

J1. The Company shall employ best management practices for stormwater management and sediment and erosion control during construction, installation, use, operation, maintenance and retiring of the Facility, as described in the Application.

K - SURFACE WATER

K1. Within one year of the completion of the construction of the Facility, the Company must provide the District Manager, in writing, a description of post-construction surface water quality conditions and a written description of any additional remediation works required. The written description shall include surface water conditions during the freshet period occurrence in the first Spring following the construction of the Facility.

L - TRAFFIC MANAGEMENT PLANNING

L1. Within three (3) months of receiving this Approval, the Company shall prepare a Traffic Management Plan and provide it to the Township of Adelaide-Metcalfe and the County of Middlesex.

L2. Within three (3) months of having provided the Traffic Management Plan to the Township of Adelaide-Metcalfe and the County of Middlesex, the Company shall make reasonable efforts to enter into a Road Users Agreement with the Township of Adelaide-Metcalfe and the County of Middlesex.

L3. If a Road Users Agreement has not been signed with the Township of Adelaide-Metcalfe and the County of Middlesex within three (3) months of having provided the Traffic Management Plan to the Township of Adelaide-Metcalfe and the County of Middlesex, the Company shall provide a written explanation to the Director as to why this has not occurred.

M - ARCHAEOLOGICAL RESOURCES

M1. The Company shall implement all of the recommendations, if any, for further archaeological fieldwork and for the protection of archaeological sites found in the consultant archaeologist's report included in the Application, and which the Company submitted to the Ministry of Tourism, Culture and Sport in order to comply with O. Reg. 359/09.

M2. Should any previously undocumented archaeological resources be discovered, the Company shall:

(1) cease all alteration of the area in which the resources were discovered immediately;

(2) engage a consultant archaeologist to carry out the archaeological fieldwork necessary to further assess the area and to either protect and avoid or excavate any sites in the area in accordance with the *Ontario Heritage Act* , the regulations under that act and the Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* ; and

(3) notify the Director as soon as reasonably possible.

N - COMMUNITY LIAISON COMMITTEE

N1. Within three (3) months of receiving this Approval, the Company shall make reasonable efforts to establish a Community Liaison Committee. The Community Liaison Committee shall be a forum to exchange ideas and share concerns with interested residents and members of the public. The Community Liaison Committee shall be established by:

(1) publishing a notice in a newspaper with general circulation in each local municipality in which the project location is situated; and

(2) posting a notice on the Company's publicly accessible website, if the Company has a website;

to notify members of the public about the proposal for a Community Liaison Committee and invite residents living within a one (1) kilometer radius of the Facility that may have an interest in the Facility to participate on the Community Liaison Committee.

N2. The Company may invite other members of stakeholders to participate in the Community Liaison Committee, including, but not limited to, local municipalities, local conservation authorities, Aboriginal communities, federal or provincial agencies, and local community groups.

N3. The Community Liaison Committee shall consist of at least one Company representative who shall attend all meetings.

N4. The purpose of the Community Liaison Committee shall be to:

(1) act as a liaison facilitating two way communications between the Company and members of the public with respect to issues relating to the construction, installation, use, operation, maintenance and retirement of the Facility;

(2) provide a forum for the Company to provide regular updates on, and to discuss issues or concerns relating to, the construction, installation, use, operation, maintenance and retirement of the Facility with members of the public; and

(3) ensure that any issues or concerns resulting from the construction, installation, use, operation, maintenance and retirement of the Facility are discussed and communicated to the Company.

N5. The Community Liaison Committee shall be deemed to be established on the day the Director is provided with written notice from the Company that representative Community Liaison Committee members have been chosen and a date for a first Community Liaison Committee meeting has been set.

N6. If a Community Liaison Committee has not been established within three (3) months of receiving this Approval, the Company shall provide a written explanation to the Director as to why this has not occurred.

N7. The Company shall ensure that the Community Liaison Committee operates for a minimum period of two (2) years from the day it is established. During this two (2) year period, the Company shall ensure that the Community Liaison Committee meets a minimum of two (2) times per year. At the end of this two (2) year period, the Company shall contact the Director to discuss the continued operation of the Community Liaison Committee.

N8. The Company shall ensure that all Community Liaison Committee meetings are open to the general public.

N9. The Company shall provide administrative support for the Community Liaison Committee including, at a minimum:

(1) providing a meeting space for Community Liaison Committee meetings;

(2) providing access to resources, such as a photocopier, stationery, and office supplies, so that the Community Liaison Committee can:

a) prepare and distribute meeting notices;

b) record and distribute minutes of each meeting; and

c) prepare reports about the Community Liaison Committee's activities.

N10. The Company shall submit any reports of the Community Liaison Committee to the Director and post it on the Company's publicly accessible website, if the Company has a website.

O - OPERATION AND MAINTENANCE

O1. Prior to the commencement of the operation of the Facility, the Company shall prepare a written manual for use by Company staff outlining the operating procedures and a maintenance program for the Equipment that includes as a minimum the following:

(1) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;

(2) emergency procedures;

(3) procedures for any record keeping activities relating to operation and maintenance of the Equipment; and

(4) all appropriate measures to minimize noise emissions from the Equipment.

O2. The Company shall;

(1) update, as required, the manual described in Condition O1; and

(2) make the manual described in Condition O1 available for review by the Ministry upon request.

O3. The Company shall ensure that the Facility is operated and maintained in accordance with the Approval and the manual described in Condition O1.

P - RECORD CREATION AND RETENTION

P1. The Company shall create written records consisting of the following:

(1) an operations log summarizing the operation and maintenance activities of the Facility;

(2) within the operations log, a summary of routine and Ministry inspections of the Facility; and

(3) a record of any complaint alleging an Adverse Effect caused by the construction, installation, use, operation, maintenance or retirement of the Facility.

P2. A record described under Condition P1 (3) shall include:

(1) a description of the complaint that includes as a minimum the following:

a) the date and time the complaint was made;

b) the name, address and contact information of the person who submitted the complaint;

(2) a description of each incident to which the complaint relates that includes as a minimum the following:

a) the date and time of each incident;

b) the duration of each incident;

c) the wind speed and wind direction at the time of each incident;

d) the ID of the Equipment involved in each incident and its output at the time of each incident;

e) the location of the person who submitted the complaint at the time of each incident; and

(3) a description of the measures taken to address the cause of each incident to which the complaint relates and to prevent a similar occurrence in the future.

P3. The Company shall retain, for a minimum of five (5) years from the date of their creation, all records described in Condition P1, and make these records available for review by the Ministry upon request.

Q - NOTIFICATION OF COMPLAINTS

Q1. The Company shall notify the District Manager of each complaint within two (2) business days of the receipt of the complaint.

Q2. The Company shall provide the District Manager with the written records created under Condition P2 within eight (8) business days of the receipt of the complaint.

Q3. If the Company receives a complaint related to groundwater, the Company shall contact the District Manager within one (1) business day of the receipt of the complaint to discuss appropriate measures to manage any potential groundwater issues.

R - CHANGE OF OWNERSHIP

R1. The Company shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any of the following changes:

(1) the ownership of the Facility;

(2) the operator of the Facility;

(3) the address of the Company;

(4) the partners, where the Company is or at any time becomes a partnership and a copy of the most recent declaration filed under the *Business Names Act* , R.S.O. 1990, c.B.17, as amended, shall be included in the notification; and

(5) the name of the corporation where the Company is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the *Corporations Information Act* , R.S.O. 1990, c. C.39, as amended, shall be included in the notification.

S – ABORIGINAL CONSULTATION

S1. During the construction, installation, operation, use and retiring of the Facility, the Company shall:

(1) create and maintain written records of any communications with Aboriginal communities; and

(2) make the written records available for review by the Ministry upon request.

S2. The Company shall provide the following to interested Aboriginal communities:

(1) updated project information, including the results of monitoring activities undertaken and copies of additional archaeological assessment reports that may be prepared; and;

(2) updates on key steps in the construction, installation, operation, use and retirement phases of the Facility, including notice of the commencement of construction activities at the project location.

S3. If an Aboriginal community requests a meeting to obtain information relating to the construction, installation, operation, use and retiring of the Facility, the Company shall make reasonable efforts to arrange and participate in such a meeting.

S4. If any archaeological resources of Aboriginal origin are found during the construction of the Facility, the Company shall:

(1) notify any Aboriginal community considered likely to be interested or which has expressed an interest in such finds; and,

(2) if a meeting is requested by an Aboriginal community to discuss the archaeological find(s), make reasonable efforts to arrange and participate in such a meeting.

T – ENDANGERED SPECIES ACT REQUIREMENTS

T1. No construction or installation activities shall be commenced in areas at the project location that support habitat for Bobolink and Eastern Meadowlark until the Company has met all requirements under the *Endangered Species Act, 2007.*

SCHEDULE A

Facility Description

The Facility shall consist of the construction, installation, operation, use and retiring of the following:

(a) a total of eighteen (18) out of twenty two (22) Siemens SWT-2.3-113 wind turbine generators each rated at a maximum of 2.221 megawatts (MW) generating output capacity with a maximum total name plate capacity of 40 megawatts (MW), each with a hub height of 99.5 metres above grade, and sited at the locations shown in SCHEDULE B, in accordance with Condition C1(2)(b); and

(b) associated ancillary equipment, systems and technologies including one (1) 62 megavolt-ampere (MVA) transformer substation, on-site access roads, underground cabling and overhead distribution lines,

all in accordance with the Application.

SCHEDULE B
Coordinates of the Equipment and Noise Specifications

Table B1: Coordinates and Maximum Sound Power Levels of Wind Turbine Generators and Transformer Substation
(Coordinates of the Equipment below in UTM, Z17-NAD83 projection)

Source ID	Maximum Sound Power Level (dBA)	Easting (metres)	Northing (metres)	Source Description
WTG05	104.0	451,199	4,762,373	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG06	104.0	451,980	4,762,609	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG07	104.0	449,661	4,762,144	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG08	104.0	451,156	4,763,377	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG09	104.0	449,734	4,763,094	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG11	104.0	449,148	4,763,621	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG12	104.0	447,877	4,763,360	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG13	104.0	447,187	4,762,975	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG14	104.0	447,170	4,764,853	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG15	104.0	446,096	4,765,010	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG16	104.0	445,133	4,765,332	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG17	104.0	444,507	4,765,066	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG18	104.0	443,799	4,765,061	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG19	104.0	442,948	4,764,967	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG20	104.0	440,256	4,765,227	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG21	104.0	439,160	4,763,535	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG22	104.0	438,309	4,763,209	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG23	104.0	438,309	4,763,703	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG24	104.0	436,172	4,763,648	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG26	104.0	436,111	4,764,848	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG27	104.0	435,962	4,765,466	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
WTG28	104.0	435,864	4,766,263	Wind Turbine (Siemens 2.3-113) 2.221MW, 99.5m hub height
TS1	100.8	439,770	4,763,131	Transformer Substation, 62 MVA, See Table B2

Table B2: Maximum Sound Power Spectrum of Transformer Substation

Transformer Substation	1/1 Octave Band Centre Frequency (Hz)							
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Sound Power Level (dB Lin)	103.4	105.4	100.4	100.4	94.4	89.4	84.4	77.4

Note: The Maximum Sound Power Level of Transformer Substation (Source ID "TS1") includes the applicable 5 dB tonal adjustment described in the Noise Guidelines for Wind Farms.

SCHEDULE C
Noise Control Measures

Acoustic Barrier

One (1) 15 metres long, 6 metres high, L-shaped acoustic barrier, positioned as per Figure 3 of the Acoustic Assessment Report. The acoustic barrier shall be continuous without holes, gaps and other penetrations, and having a surface mass density of at least 20 kilograms per square metres.

The reasons for the imposition of these terms and conditions are as follows:

1. Conditions A1, A2 and A9 are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in the manner in which it was described for review and upon which Approval was granted. These conditions are also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Conditions A3 and A4 are included to require the Company to provide information to the public and the local municipality.

3. Conditions A5 and A6 are included to ensure that final retirement of the Facility is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure long-term protection of the health and safety of the public and the environment.

4. Condition A7 is included to require the Company to inform the Ministry of the commencement of activities related to the construction, installation and operation of the Facility.

5. Condition B is intended to limit the time period of the Approval.

6. Condition C1 is included to provide the minimum performance requirement considered necessary to prevent an Adverse Effect resulting from the operation of the Equipment and to ensure that the noise emissions from the Equipment will be in compliance with applicable limits set in the Noise Guidelines for Wind Farms.

7. Conditions A8, C2, C3 and D are included to ensure that the Equipment is constructed, installed, used, operated, maintained and retired in a way that meets the regulatory setback prohibitions set out in O. Reg. 359/09.

8. Conditions E and F are included to require the Company to gather accurate information so that the environmental noise impact and subsequent compliance with the Act, O. Reg. 359/09, the Noise Guidelines for Wind Farms and this Approval can be verified.

9. Conditions G, H, I, J, K, L and T are included to ensure that the Facility is constructed, installed, used, operated, maintained and retired in a way that does not result in an Adverse Effect or hazard to the natural environment or any persons.

10. Condition M is included to protect archaeological resources that may be found at the project location.

11. Condition N is included to ensure continued communication between the Company and the local residents.

12. Condition O is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, O. Reg. 359/09 and this Approval.

13. Condition P is included to require the Company to keep records and provide information to the Ministry so that compliance with the Act, O. Reg. 359/09 and this Approval can be verified.

14. Condition Q is included to ensure that any complaints regarding the construction, installation, use, operation, maintenance or retirement of the Facility are responded to in a timely and efficient manner.

15. Condition R is included to ensure that the Facility is operated under the corporate name which appears on the application form submitted for this Approval and to ensure that the Director is informed of any changes.

16. Condition S is included to ensure continued communication between the Company and interested Aboriginal communities.

NOTICE REGARDING HEARINGS

In accordance with Section 139 of the Environmental Protection Act, within 15 days after the service of this notice, you may by further written notice served upon the Director, the Environmental Review Tribunal and the Environmental Commissioner, require a hearing by the Tribunal.

In accordance with Section 47 of the Environmental Bill of Rights, 1993, the Environmental Commissioner will place notice of your request for a hearing on the Environmental Registry.

Section 142 of the Environmental Protection Act provides that the notice requiring the hearing shall state:

1. The portions of the renewable energy approval or each term or condition in the renewable energy approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The signed and dated notice requiring the hearing should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The renewable energy approval number;
6. The date of the renewable energy approval;
7. The name of the Director;
8. The municipality or municipalities within which the project is to be engaged in;

This notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Environmental Commissioner
1075 Bay Street, 6th Floor
Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director
Section 47.5, *Environmental Protection Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

Under Section 142.1 of the Environmental Protection Act, residents of Ontario may require a hearing by the Environmental Review Tribunal within 15 days after the day on which notice of this decision is published in the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca , you can determine when this period ends.

Approval for the above noted renewable energy project is issued to you under Section 47.5 of the Environmental Protection Act subject to the terms and conditions outlined above.

DATED AT TORONTO this 11th day of December, 2013

Vic Schroter, P.Eng.
Director
Section 47.5, *Environmental Protection Act*

NC/
c: District Manager, MOE London - District
Mark Kozak, Stantec Consulting Inc.

APPENDIX C: ENVIRONMENTAL EFFECTS MONITORING PLAN

Stantec

Ministry of Natural Resources
Confirmation Letter
Dated: July 31, 2012

Ministry of Natural Resources **Ministère des Richesses naturelles**
Renewable Energy Operations Team
P.O. Box 7000
300 Water Street
4th Floor, South Tower
Peterborough, Ontario K9J 8M5

Ontario

July 31, 2012
Suncor Energy Products Inc.
150 6th Avenue SW
Calgary AB
T2P 3E3

RE: Natural Heritage Section of the EEMP for Suncor Energy Adelaide Wind Power Project

Dear Christopher Scott:

MNR has reviewed the Natural Heritage section of the Environmental Effects Monitoring Plan (EEMP) for the Suncor Energy Adelaide Wind Power Project located within the Municipality of Adelaide Metcalfe, County of Middlesex, Ontario submitted July 27, 2012.

This letter confirms that the EEMP was prepared in respect of birds and bats in accordance with the Ministry of Natural Resources:

- *Birds and Bird Habitats: Guidelines for Wind Power Projects(2011)*
- *Bats and Bat Habitats: Guidelines for Wind Power Projects (2011)*

Post-construction monitoring for the Suncor Energy Adelaide Wind Power Project will also include the following if the results of the pre-construction monitoring surveys deem the natural features significant:

- waterfowl nesting area (Features 6 and 20)
- amphibian breeding habitat woodland (Features 6 and 20)
- amphibian breeding habitat wetland (Feature 16)
- marsh bird breeding habitat (Features 6, 16 and 20)
- shrub/early successional bird breeding habitat (Feature 13)

MNR expects the information contained in the natural heritage section of the EEMP to be considered in MOE'S Renewable Energy Approval decision, and if approved, be implemented by the applicant.

If you have any questions please contact me at amy.cameron@ontario.ca or 705-875-7481.

Sincerely,

Amy Cameron
Coordinator
Renewable Energy Operations Team
Southern Region, MNR

cc. Heather Riddell, Renewable Energy Planning Ecologist

cc. Mitch Wilson, Aylmer District Manager, MNR
cc. Narren Santos, Environmental Assessment and Approvals Branch, MOE
cc. Zeljko Romic, Environmental Assessment and Approvals Branch, MOE
cc. Mark Kozak, Environmental Scientist, Stantec

Environmental Effects for Wildlife Monitoring Plan
July 2012

SUNCOR ENERGY
ADELAIDE WIND ENERGY PROJECT
ENVIRONMENTAL EFFECTS MONITORING PLAN FOR WILDLIFE

File No.: 160960710
July 2012

Prepared for:

Suncor Energy Products Inc.
150 6th Avenue SW
Calgary AB T2P 3E3

Prepared by:

Stantec Consulting Ltd.
Suite 1 - 70 Southgate Drive
Guelph ON N1G 4P5

Table of Contents

1.0 Introduction

1.1 PROJECT OVERVIEW

Suncor Energy Products Inc. ("Suncor") is proposing to develop the Suncor Energy Adelaide Wind Power Project (the Project) within the Municipality of Adelaide Metcalfe, County of Middlesex, Ontario. The proposed Project Location for this report includes all parts of the land in, on or over which the Project is proposed.

It is envisioned that the proposed Project may include up to 28 wind turbines with an estimated total nameplate capacity of up to 40 MW. The number of turbines will be dependent upon final selection of make and model of the wind turbine most appropriate for the proposed Project. The proposed Project would also include access roads, meteorological tower, electrical collector lines, and a substation which would connect the Project with the provincial high voltage transmission system via an existing transmission line that runs through the Project Boundary. Temporary components during construction may include storage and staging areas at the turbine locations, crane pads or mats, staging areas along access roads, delivery truck turnaround areas, and a central laydown area.

1.2 REPORT REQUIREMENTS

This Environmental Effects Monitoring Plan (EEMP), which includes the Post-Construction Monitoring Plan is one component of the REA application for the Project, and has been prepared in accordance with O. Reg. 359/09, the Ontario Ministry of Natural Resources' (MNR's) *Approval and Permitting Requirements Document for Renewable Energy Projects* (September 2009), the *MOE's Technical Guide to Renewable Energy Approvals*, MNR's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (July 2011) and MNR's *Birds and Bird Habitats: Guidelines for Wind Power Projects* (December 2011).

As discussed in the Project's **Natural Heritage Assessment and Environmental Impact Study** (**NHA/EIS**), primary data were collected through bird and wildlife baseline studies in the Project Boundary. These data were augmented with secondary data from published and unpublished sources to generate a dataset from which to assess the potential effects of the Project.

The potential environmental effects to wildlife and wildlife habitat and associated mitigation measures, based upon this dataset, ornithological advice, and professional opinion, among other factors, are provided **in Section 5** of the NHA/EIS and summarized in **Table 1.1, Appendix A** of this EEMP. Additionally, wildlife and wildlife habitat post-construction monitoring commitments are summarized in **Section 5.3** of the NHA/EIS. These commitments provide the first step of confirming the predictions of the EIS and provide the basis from which actions contained in the EEMP may stem.

The purpose of this EEMP is to outline post-construction monitoring survey requirements for a three year period to address potential negative environmental effects for birds and bats, to assess the effectiveness of the proposed mitigation measures and to verify compliance of the Project with applicable provincial and federal legislation and guidelines. This monitoring plan provides details on the post-construction wildlife monitoring program for mortality monitoring of birds and bats and habitat disturbance monitoring for woodland area-sensitive breeding birds. It also identifies potential habitat disturbance monitoring activities for waterfowl nesting areas, marsh bird breeding habitat, shrub/early successional bird breeding habitat and amphibian woodland and wetland breeding habitat should habitat use studies to be conducted by Suncor result in features identified within 120 m of turbines in the **NHA/EIS** being considered significant wildlife habitat. Post-construction mortality monitoring should begin on May 1st of the year that the wind power project is fully operational. If full project commissioning is delayed, post-construction monitoring of a partially completed project should not be delayed for longer than 1 year. If the project is constructed in phases mortality monitoring for each phase should coincide with the commencement of operation of that phase.

2.0 Post-Construction Monitoring Program

2.1 PURPOSE AND TIMING

The purpose of the wildlife post-construction monitoring program is to identify performance objectives, assess the effectiveness of the proposed mitigation measures and to identify contingency measures that will be implemented if performance objectives cannot be met. Furthermore, any unanticipated potentially significant adverse environmental effects discovered during the post-construction monitoring program will be mitigated as described in **Section 3.0**. Post-construction monitoring for wildlife and wildlife habitat recommended in the **NHA/EIS** includes the following:

- *Bird and Bat Mortality monitoring:* twice weekly (3-4 day intervals) mortality monitoring at a minimum of 10 turbines (or 30% of turbines) beginning May 1 to October 31. Weekly monitoring for raptors at the 10 turbines will continue until November 30. Monitoring of all 28 turbines for raptor fatalities will take place once monthly from May through November. Monitoring will be conducted for a period of three years. Searcher efficiency and carcass removal trials will be conducted each year according to current guidance documents.

2.2 PRIMARY DATA COLLECTION

To the extent possible, the same field personnel who carried out the pre-construction baseline studies will carry out the post-construction monitoring work to assist in standardizing the datasets. Wherever possible, a complete 50 m radius from each turbine base will be searched and data collection will be conducted by field personnel skilled at identifying birds and bats by sight. All carcasses found will be photographed and recorded/labelled with the following information; species, sex, date, time, location (UTM coordinates), carcass condition, searcher, injuries, ground cover, and distance and direction to nearest turbine.

Field data collection sheets will also include weather conditions such as wind speed and precipitation, ground cover visibility class, the estimated number of days since death, and condition of each carcass collected.

Although all reasonable effort will be made to conduct surveys as scheduled, surveys will not be conducted if weather (e.g. lightning, severe fog) presents safety concerns. Weather conditions will be noted when surveys were not conducted as scheduled, and every attempt will be made to complete the missed survey(s) as soon as possible.

The detailed monitoring methods, including duration, frequency and survey locations are discussed in the following sections.

The 10 turbines will be selected to provide representative coverage of the habitats and layout of the Project Boundary and will exclude any turbines where vegetation cover precludes searches (i.e. Visibility Classes 3 and 4 [MNR, 2011a]). MNR will be consulted to select the 10 turbines for post-construction monitoring. Where possible, the ground cover around turbines should be maintained at a low level in order to facilitate more accurate bird and bat mortality surveys. The search area of each turbine will be mapped into visibility classes according to the following table:

Table 1: Ground Cover Visibility Classes (Ministry of Natural Resources, 2011)

% Vegetation Cover	Vegetation Height	Visibility Class
≥90% bare ground	≤15%cm tall	Class 1 (Easy)
≥25% bare ground	≤15cm tall	Class 2 (Moderate)
≤25% bare ground	≤25% >30cm tall	Class 3 (Difficult)
Little or no bare ground	≥25% >30cm tall	Class 4 (Very Difficult)

Portion Area Searched

Most birds and bats will fall within 50 m of the turbine base (MNR 2011a) and therefore this distance represents the maximum recommended search area. This value will be used to determine the portion of area searched (P_s). When the entire 50 m radius search area is searched, P_s will equal 100%. If portions of the 50 m radius search area are impossible or futile to search due to site conditions, P_s will be adjusted accordingly based on the searchers' ongoing estimates of the proportion of the search area that was physically searched. If feasible, a GPS will be used to delineate the search area and calculate the P_s.

The area searched will be determined for each turbine by mapping searchable areas on a grid (by visibility class) and counting the number of searched grid cells within 50 m. A map of the actual search area for each turbine searched and a description of areas deemed to be unsearchable due to vegetation height, type, slope, active cultivation, etc., will be provided in the mortality report and maps of the varying search areas will be made available to review agencies. The aggregate area of those cells will be divided by the total area within a 50 m radius circle to determine the percent area searched for that turbine (Ps_x, where x is the turbine number).

$$Ps_x = \frac{\text{actual area searched}}{\pi r^2}$$

The overall Ps for the facility will be calculated as the average of Ps_1 through Ps_{28}.

Observed fatalities will be photographed, and the species, GPS coordinates, substrate, carcass conditions, possible injuries, sex (if possible) and distance and direction to the nearest turbine will be recorded along with the date, time and searcher. This approach to mortality monitoring will facilitate any potential correlation between mortality occurrences, turbine location, habitat/land use features, weather conditions and season.

Carcass Removal Trials

Levels of carcass scavenging must be determined through carcass removal trials. In these trials, carcasses are planted around the wind turbines and monitored until they disappear or have completely decomposed (generally 2 weeks). Carcass removal trials will be conducted once a month (May-Oct) and will involve a minimum of 10 bird and bat carcasses as fresh as possible, with bat carcasses making up at least one third of the carcass removal trials and birds comprising another third, if available, or dark-coloured poultry chicks. If available, at least one raptor carcass will be used for some trials.

Marked test carcasses will be placed out singly at turbines and distributed across the Project Boundary before dusk using gloves and boots to avoid imparting human smell. These trials involve the distribution of carcasses in different substrate/habitat types and visibility classes being searched, at known locations at each wind turbine generator, followed by monitoring every 3-4 days in conjunction with carcass searches, checking to determine the rate of removal. The average carcass removal time is a factor in determining the estimated bird and bat mortality. Carcass removal trials are designed to correct for carcasses that are removed by predators before the search period. Proportions of carcasses remaining after each search interval are pooled to calculate the overall scavenger correction factor:

$$Sc = \frac{n_{visit1} + n_{visit2} + n_{visit3} + n_{visit4}}{n_{visit0} + n_{visit1} + n_{visit2} + n_{visit3}} \quad \text{where}$$

Sc is the proportion of carcasses not removed by scavengers over the search period

$\mathbf{n_{visit0}}$ is the total number of carcasses placed

$\mathbf{n_{visit1} - n_{visit4}}$ are the numbers of carcasses remaining on visits 1 through 4

Corrected Mortality Estimates

In addition to total bird and bat mortalities observed, estimated mortality rates will also consider the results of searcher efficiency, carcass removal trials and portion area searched. There are numerous published and unpublished approaches to incorporating these corrective factors into an overall assessment of total bird and bat mortality. The minimum estimated mortality will be calculated as follows:

$\mathbf{C = c / (S_{e0} \times S_c \times P_s)}$, where

C is the corrected number of bird or bat fatalities

c is the number of carcasses found

$\mathbf{S_{e0}}$ is the weighted proportion of carcasses expected to be found by searchers (overall searcher efficiency)

$\mathbf{S_c}$ is the proportion of carcasses not removed by scavengers over the search period

$\mathbf{P_s}$ is the portion of the area searched.

Searcher Efficiency Trials

Searcher efficiency trials require a known number of discreetly marked carcasses to be placed around a wind turbine. Searchers examine the wind turbine area, and the number of carcasses that they find is compared to the number of carcasses placed. Searcher efficiency trials will typically be conducted once in each of spring, summer and fall, but will be repeated if searchers change during the year. Searcher efficiency trials are designed to correct for carcasses that may be overlooked by surveyors during the survey periods. Searcher efficiency trials involve a "tester" that places bird and bat carcasses under turbines prior to the standard carcass searches to test the searcher's detection rate. Each trial will consist of a minimum of 10 carcasses per searcher, per visibility class, per season and will coincide with the regular weekly carcass searches. No more than 3 trial carcasses would be placed at any one time. Trial carcasses will be placed randomly within the search area and the location will be recorded (UTM coordinates) to ensure easy retrieval by the "tester" at the end of the trial day. Trial carcasses will be marked with a unique identifying mark and should be as fresh as possible, with bat carcasses making up at least one third of the carcass removal trials and birds comprising another third, if available, or small brown mammals or dark-coloured poultry chicks.

Searcher efficiency (Se) is calculated for each searcher as follows:

$$Se = \frac{\text{number of test carcasses found}}{\text{number of test carcasses placed} - \text{number of test carcasses scavenged}}$$

A weighted average, or "overall Se", will be calculated to account for varying survey effort between searchers. The overall Se will be calculated as follows:

$$Se_o = Se_1(n_1/T) + Se_2(n_2/T) + Se_3(n_3/T) + Se_4(n_4/T)$$

where:	Se_o	is the overall searcher efficiency;
	$Se_1 – Se_4$	are individual searcher efficiency ratings;
	$n_1 – n_4$	are number of turbines searched by each searcher
	T	is the total number of turbines searched by all searchers.

2.2.1 Bird Mortality Monitoring

Background

Data from wind projects currently operating in Ontario and around the world indicates that very low numbers of bird fatalities occur as result of wind power projects (MNR 2011a). Data from Ontario and the United States indicates that approximately two birds per year are killed by individual turbines, which is very low compared to other existing sources of human caused avian mortality (MNR 2011a). Birds can be killed through collisions with turbine blades and towers, guy wires, meteorological towers and maintenance vehicles. Mortality rates and patterns are affected by density and behavior of birds found in the area, the presence of landscape features such as ridges, valleys, peninsulas and shorelines and weather conditions.

Monitoring

Post-construction bird mortality monitoring surveys may identify specific species, specific periods of high bird mortality or specific turbines/turbine groups linked to bird morality. This information can be used to established protocols for operational mitigation and inform adaptive management. Bird mortality monitoring will be conducted according to MNR's *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR, 2011a). **Table 1.2, Appendix A** of this EEMP summarizes the post-construction wildlife monitoring program for mortality monitoring of birds.

Mortality monitoring at 10 turbines (which is in excess of 30% of the total number of turbines contained within the Project) with minimally-vegetated ground cover (i.e., Visibility Classes 1 and 2 [MNR, 2011a]) within a 50 m radius using transects spaced 5.0 -6.0 m apart starting from the base of the wind turbine will be conducted twice-weekly (3-4 day intervals) beginning May 1 to October 31. Monitoring for raptors will continue at the 10 turbines until November 30. Monitoring of all 28 turbines for raptor fatalities will take place once monthly from May 1 through November 30. This will occur for a three year period.

Bird carcasses in good condition may be collected and stored in a freezer for future use in searcher efficiency and/or carcass removal trials. Searchers handling bird carcasses will take reasonable precautions (e.g. gloves, tools etc.) to protect their personal health. Bird carcasses will be placed in heavy-duty plastic bags and transported that day to a freezer, where they will be stored until required for the trials.

Authorization under the *Migratory Bird Convention Act, 1994* ("MBCA") will be required for handling carcasses of migratory birds. Likewise, carcasses of threatened or endangered species are covered under the *Endangered Species Act, 2007* ("ESA") or the federal *Species at Risk Act* ("SARA") and raptor carcasses are covered under the *Fish and Wildlife Conservation Act* ("FWCA"). Suncor and its agents will consult with the Ministry of Natural Resources ("MNR") and the Canadian Wildlife Service ("CWS") prior to commencing the field program to ensure

proper permits and/or procedure are in place to collect, possess and utilize wildlife carcasses for scientific purposes.

Other permits, approvals, authorizations, etc., are not likely to be required from the MNR or Environment Canada ("EC") to permit the monitoring activities contemplated in this Plan.

2.2.2 Bat Mortality Monitoring

Background

Bat mortality has been documented at wind power facilities in a variety of habitats across North America. Nearly every monitored wind power facility in the United States and Canada has reported bat mortality with minimum annual mortality varying from < 1 to 50 bat fatalities/turbine/year (MNR 2006). The majority of bat fatalities at wind power facilities occur in the late summer and fall, and the long-distance migratory bats (i.e., Hoary Bat, Eastern Red Bat, Silver-haired Bat) appear to be most vulnerable to collisions with moving turbine blades. Specific factors causing bat mortality and affecting species vulnerability to wind turbine mortality remain unclear, although recent evidence from Alberta suggests that air pressure differences in the blade vortices may contribute to bat mortality. Ontario specific data are relatively sparse at this time.

Monitoring

In Ontario, the post-construction monitoring season for bats is based on bat activity patterns, covering spring activity through fall swarming and migration and is consistent with the post-construction monitoring season for birds; thus occurring from May 1- October 31. Bat mortality monitoring will be conducted according to MNR's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (2011b). In general, the mortality monitoring requirements for bats will be captured in conjunction with bird mortality monitoring, as described in **Section 2.2.1**. **Table 1.2, Appendix A** of this EEMP summarizes the post-construction wildlife monitoring program for mortality monitoring of bats.

- Bat mortality monitoring will be conducted twice-weekly (3-4 day intervals) within minimally-vegetated portions (i.e., Visibility Classes 1 and 2 [MNR, 2011b]) of a 50 m search area radius from the base of 10 turbines beginning May 1 to October 31st for a three-year period in accordance with MNR guidelines. This time period includes the core season when resident and migratory bats are active. Bat mortality monitoring will be conducted in conjunction with other monitoring activities (birds) for efficiency.
- Searcher efficiency trials will be conducted seasonally and carcass removal trials will be conducted monthly between May 1 and October 31st. Searcher efficiency and carcass removal rates are known to be more variable for bats than for birds throughout the year and depending on habitat (in part due to the relative size of the species).

As with birds, trial carcasses will be discreetly marked so they can be identified as study carcasses. Each trial will consist of a minimum of 10 carcasses per searcher per visibility class (for searcher efficiency trials) or per trial (for scavenger removal trials). At least one-third of the trial carcasses should be bats.

Bat carcasses in good condition may be collected and stored in a freezer for future use in searcher efficiency and/or scavenger removal trials. Searchers handling bat carcasses will take reasonable precautions (e.g., gloves, tools etc.) to protect their personal health. All searchers will ensure they have updated rabies pre-exposure vaccinations. Biological material will be disposed of in a way to ensure that it does not pose a public or environmental health risk and in accordance with any applicable federal, provincial, and municipal laws.

2.2.3 Woodland Area-Sensitive Breeding Bird Surveys

Woodland habitat in Features 1, 8, 11 and 20, located within 120 m of the Project Location, were considered significant wildlife habitat for woodland area-sensitive breeding birds, as described in **Sections 4.2.3.3 and 5.2.3.5** of the **NHA/EIS**. As Features 8 and 20 are located within 120 m of Turbines 22 and 9, respectively, a post-construction point count-based study will be implemented to assess any actual disturbance effects to woodland area-sensitive breeding bird species in these features. **Table 1.2, Appendix A** of this EEMP summarizes the post-construction wildlife monitoring program for habitat disturbance monitoring of woodland area-sensitive breeding birds.

Four pre-construction point count stations in woodland habitat will be established and surveyed during the pre-construction surveys. Two stations will be located in each of Features 8 and 20, with one station located within 120 m of the turbine, and the other station located approximately 200 m from the turbine and used as 'control' sites. Each of the surveys will include a ten-minute point count at each location, conducted during the breeding season (May 1 to July 31), for a minimum of three years. Each station should be surveyed a minimum of 3 times: once early in the season; once in mid-season; and, once later in the season with at least 10 days between surveys at a particular station. Point counts must be performed in the early morning, between dawn (one half hour before sunrise) and about 4 hours after sunrise. Surveys in late June and early July should usually be completed within 3 hours of sunrise. Surveys should be performed when the wind speed is 3 or less on the Beaufort scale and when there is no precipitation unless it is a light drizzle. Breeding pair density is a standard measure that will be used to compare among years or between control (> 120 m) and impact sites (< 120 m).

The woodland species observed will be compared to pre-construction conditions. Particular attention should be paid to those species identified as woodland area-sensitive indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: Yellow-bellied Sapsucker, Red-breasted Nuthatch, Veery, Blue-headed Vireo, Northern Parula, Black-throated Green Warbler, Blackburnian Warbler, Black-throated Blue Warbler, Ovenbird, Scarlet Tanager, Winter Wren and Pileated Woodpecker; and, Special Concern species Cerulean Warbler and Canada Warbler.

MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect is occurring, and whether such an effect is attributable to the wind turbines and not external factors. These discussions will determine if and when contingency

measures will be undertaken. The best available science and information should be considered when determining appropriate mitigation.

2.2.4 Habitat Use Studies and Additional Habitat Disturbance Monitoring

2.2.4.1 Habitat Use Studies

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), habitat use studies must be undertaken to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat. In **Section 5.2** of the **NHA/EIS**, Suncor committed to undertake habitat use studies due to the location of proposed turbines within 120 m of candidate significant wildlife habitat for waterfowl nesting areas, marsh bird breeding habitat, shrub/early successional breeding bird habitat, amphibian woodland breeding habitat and amphibian wetland breeding habitat. Methodologies for undertaking the habitat use studies for candidate Significant Wildlife Habitat are described in the following sections.

Waterfowl nesting areas

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of proposed turbines within 120 m of Features 6 and 20, the proponent must commit to undertaking studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat.

Habitat use studies will be conducted according to *"Bird and Bird Habitats: Guidelines for Wind Power Projects"* (MNR, 2011c) and will include nesting studies to be completed during the breeding season (April-June). Specifically, nesting studies will consist of point counts at stations established in Features 6 and 20. Point counts will be performed in the early morning, between dawn (one half hour before sunrise) and about 4 hours after sunrise. Each station will be surveyed a minimum of 3 times, conducted early in the season, mid-season and later in the season, with at least 10 days between surveys at a particular station. Point counts should be performed when there is as little wind as possible (i.e., wind speeds should be 3 or less on the Beaufort scale) and should begin as early as possible in the morning (but not earlier than one half-hour before local sunrise), when the wind is generally calm so that windy conditions that may arise later in the morning can be avoided. Point counts should not be conducted if it is raining unless precipitation is not more than a light drizzle.

At each station, the surveyor will observe for ten minutes, recording all species seen or heard (including waterfowl), along with an estimate of the number of individuals of each species and the highest level of breeding evidence observed for each observation. Surveyors will estimate the distance to each bird using a scale of 0–50 m, 50–100 m and further than 100 m. Birds that move during the survey will be recorded in the closest distance category that they entered during the survey. Data that will be reported are the number of birds of each species detected in each distance band. Birds that fly over without stopping should be recorded separately as "fly-overs". Additional information that will be recorded on the appropriate data forms include:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).
- Date and time of day.
- GPS coordinates of the point location.
- Name of the observer doing field work.

Given the size and characteristics of the waterfowl nesting areas in Features 6 and 20, it is anticipated that the habitats could potentially support some of the indicator waterfowl species identified in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule, including: Black Duck, Wood Duck and Mallard.

Marsh bird breeding habitat

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of a proposed turbines within 120 m of Features 6, 16 and 20, the proponent must commit to undertaking studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat. Habitat use studies will be conducted according to *"Bird and Bird Habitats: Guidelines for Wind Power Projects"* (MNR, 2011c) and will include breeding surveys in May/June when marsh bird species are actively nesting in wetland habitats. Specifically, nesting studies will consist of point counts at stations established in Features 6, 16 and 20. Point counts will be performed in the early morning, between dawn (one half hour before sunrise) and about 4 hours after sunrise. Each station will be surveyed a minimum of 3 times, conducted early in the season, mid-season and later in the season, with at least 10 days between surveys at a particular station. Point counts should be performed when there is as little wind as possible (i.e., wind speeds should be 3 or less on the Beaufort scale) and should begin as early as possible in the morning (but not earlier than one half-hour before local sunrise), when the wind is generally calm so that windy conditions that may arise later in the morning can be avoided. Point counts should not be conducted if it is raining unless precipitation is not more than a light drizzle.

At each station, the surveyor will observe for ten minutes, recording all species seen or heard (including waterfowl), along with an estimate of the number of individuals of each species and the highest level of breeding evidence observed for each observation. Surveyors will estimate the distance to each bird using a scale of 0–50 m, 50–100 m and further than 100 m. Birds that move during the survey will be recorded in the closest distance category that they entered during the survey. Data that will be reported are the number of birds of each species detected in each distance band. Birds that fly over without stopping should be recorded separately as "fly-overs". Additional information that will be recorded on the appropriate data forms include:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).

- Date and time of day.
- GPS coordinates of the point location.
- Name of the observer doing field work.

Given the size and characteristics of Features 6, 16 and 20, it is anticipated that the habitats could potentially support some of the indicator marsh bird species identified in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule, including: Virginia Rail, Sora and Sedge Wren in Feature 16; and, Green Heron in Features 6 and 20.

Shrub/early successional bird breeding habitat

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of a proposed turbine within 120 m of Feature 13, the proponent must commit to undertaking studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat. Habitat use studies will be conducted according to *"Bird and Bird Habitats: Guidelines for Wind Power Projects"* (MNR, 2011c) and will include breeding surveys in spring and early summer (May-June) when birds are singing and defending their territories. Specifically, nesting studies will consist of point counts at stations established in Feature 13. Point counts will be performed in the early morning, between dawn (one half hour before sunrise) and about 4 hours after sunrise. Each station will be surveyed a minimum of 3 times, conducted early in the season, mid-season and later in the season, with at least 10 days between surveys at a particular station. Point counts should be performed when there is as little wind as possible (i.e., wind speeds should be 3 or less on the Beaufort scale) and should begin as early as possible in the morning (but not earlier than one half-hour before local sunrise), when the wind is generally calm so that windy conditions that may arise later in the morning can be avoided. Point counts should not be conducted if it is raining unless precipitation is not more than a light drizzle.

At each station, the surveyor will observe for ten minutes, recording all species seen or heard (including waterfowl), along with an estimate of the number of individuals of each species and the highest level of breeding evidence observed for each observation. Surveyors will estimate the distance to each bird using a scale of 0–50 m, 50–100 m and further than 100 m. Birds that move during the survey will be recorded in the closest distance category that they entered during the survey. Data that will be reported are the number of birds of each species detected in each distance band. Birds that fly over without stopping should be recorded separately as "fly-overs". Additional information that will be recorded on the appropriate data forms include:

- Weather conditions (temperature, wind speed (on a Beaufort scale), % cloud cover, and presence of any precipitation should be recorded).
- Date and time of day.
- GPS coordinates of the point location.

- Name of the observer doing field work.

Given the size and characteristics of the habitat in Feature 13, it is anticipated that the habitats could potentially support some of the indicator shrub/early successional breeding bird species identified in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule, including: Brown Thrasher, Black-billed Cuckoo, Eastern Towhee, Willow Flycatcher or Yellow-breasted Chat.

Amphibian woodland breeding habitat

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of proposed access roads within 120 m of Features 6 and 20, the proponent must commit to undertaking studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitats.

Habitat use surveys will be conducted according to the Marsh Monitoring Program, or "MMP" (BSC, 2003) protocol for breeding amphibians. According to the protocols set out in the MMP, three separate surveys will be completed for breeding amphibians. Based on the location of the Project Boundary (i.e., between the 43rd and 47th parallels), the first survey window is generally recognized as April 15 – 30, or when night-time air temperatures are consistently above 5ºC. The second survey window is generally recognized as May 15 – 30, or when night-time air temperatures are consistently above 10ºC. The third survey window is generally recognized as June 15 – 30, or when night-time air temperatures are consistently above 17ºC. Surveys are time sensitive (conducted half an hour after sunset) as well as weather dependent. Surveys during the second and third windows will be repeated at the stations established during the first survey. Data will be recorded on Amphibian Call Survey Observation Forms.

Given the size and characteristics of the ponds in Features 6 and 20 and the historic ranges of frog species in the Project Boundary, it is anticipated that the habitats could potentially support some of the indicator amphibian species identified in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule, including: Gray Treefrog; Spring Peeper; Western Chorus Frog; and, Wood Frog.

Amphibian wetland breeding habitat

As per the requirements of Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR, 2011a), due to the location of a proposed access road within 120 m of Feature 16, the proponent must commit to undertaking studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat.

Habitat use surveys will be conducted according to the Marsh Monitoring Program, or "MMP" (BSC, 2003) protocol for breeding amphibians. According to the protocols set out in the MMP, three separate surveys to be completed for breeding amphibians. Based on the location of the Project Boundary (i.e., between the 43rd and 47th parallels), the first survey window is generally

recognized as April 15 – 30, or when night-time air temperatures are consistently above 5ºC. The second survey window is generally recognized as May 15 – 30, or when night-time air temperatures are consistently above 10ºC. The third survey window is generally recognized as June 15 – 30, or when night-time air temperatures are consistently above 17ºC. Surveys are time sensitive (conducted half an hour after sunset) as well as weather dependent. Surveys during the second and third windows will be repeated at the stations established during the first survey. Data will be recorded on Amphibian Call Survey Observation Forms.

Given the size and characteristics of the ponds in Feature 16 and the historic ranges of frog species in the Project Boundary, it is anticipated that the habitats could potentially support some of the indicator amphibian species identified in the Draft Significant Wildlife Habitat Ecoregion 7E Criterion Schedule, including: American Toad, Western Chorus Frog and Northern Leopard Frog.

2.2.4.2 Additional Habitat Disturbance Monitoring

Should the results of the habitat use studies result in the determination that these habitats are considered significant (as determined by Suncor or their agents and confirmed by MNR), the monitoring plan will be expanded to include additional post-construction habitat disturbance monitoring. If a determination of significance is made, the results of the habitat use studies will constitute the baseline for habitat disturbance monitoring. Methodologies implemented in undertaking the habitat use studies will be replicated during habitat disturbance monitoring, and undertaken as per the schedule presented in **Table 1.2, Appendix A**. If required, post-construction habitat disturbance monitoring will take place for a minimum of three (3) years for: waterfowl nesting areas; marsh bird breeding habitat; and, shrub/early successional breeding bird habitat, and one (1) year for: amphibian woodland breeding habitat; and, amphibian wetland breeding habitat.

2.3 Reporting and Review of Results

Annual post-construction monitoring reports will summarize and analyze the results of all wildlife surveys. Reports will be submitted to the MOE and MNR within three months of the conclusion of the November mortality monitoring.

The monitoring program will be reassessed by MNR and Suncor at the end of each monitoring year. Pending the reassessment results, the program methods, frequencies, and duration may be reasonably modified to better reflect the findings.

3.0 Adaptive Management Program

The adaptive management program described in this section outlines performance objectives, and contingency measures that will be implemented should the performance objectives not be met.

Contingency plans address immediate mitigation actions necessary in case of a significant bird or bat mortality event, or if mitigation actions fail. Contingency measures may include an adaptive management approach. An adaptive management program allows mitigation measures to be implemented in the event that unanticipated potentially significant adverse environmental effects are observed. Potentially significant adverse effects will be assessed through review of the annual report.

The following sections describe the procedures for notifications, reporting, and adaptive management for mortality and disturbance effects monitoring.

3.1 MORTALITY MONITORING

All bird and bat mortality will be reported in the annual report submission. Mortality rate is expressed as the number of fatalities per turbine per year (e.g., from May 1 to November 30). Mortality of priority species in Bird Conservation Region ("BCR") 13 and mortality of all species of conservation concern, such as raptors, marsh breeding birds, woodland area-sensitive breeding birds and shrub/early successional breeding bird species will be highlighted in the annual post-construction monitoring reports. A threshold approach will be used to identify and mitigate significant bird and bat mortality (potential negative environmental effects) resulting from the operation of wind turbines.

3.1.1 Birds

Post-construction mitigation, including operational controls, will be considered if annual mortality of birds exceeds any of the following thresholds defined by the MNR (2011a):

- 14 birds/turbine/year at individual turbines or turbine groups;
- 0.2 raptors/turbine/year (all raptors) across a wind power project; or
- 0.1 raptors of provincial conservation concern/turbine/year across a wind power project.

Or if bird mortality during a single mortality monitoring survey exceeds:

- 10 or more birds at any one turbine; or
- 33 or more birds (including raptors) at multiple turbines.

Mortality levels maintained below these thresholds are considered unlikely to affect bird populations (MNR 2011a).

Any and all observed mortality of species at risk (i.e., a species listed as Endangered, Threatened or Special Concern under Schedule 1 of the federal SARA or a species listed on the Species at Risk in Ontario list as Extirpated, Endangered, Threatened, or Special Concern under the provincial ESA) that occurs will be reported within 48 hours to MNR.

If with due consideration of seasonal abundance and species composition, annual mortality levels at turbines located outside 120 m of bird significant wildlife habitat (SWH) exceed the thresholds noted above, two years of subsequent scoped mortality and cause and effects monitoring will be conducted. Following scoped monitoring, post-construction mitigation (e.g., operational mitigation) and effectiveness monitoring may be required at individual turbines where a mortality effect has been identified or significant annual mortality persists (MNR 2011a).

If significant annual mortality persists, or occurs at turbines located within 120 m of bird SWH, immediate post-construction mitigation (including operational mitigation), as identified in the Environmental Impact Study, and 3 years of effectiveness monitoring may be required. Avoidance-disturbance effects monitoring will also be required. MNR will be engaged to initiate an appropriate response plan as set out in the MNR's Bird Guidelines (2011a). The response plan would include an analysis of the species, timing and distribution of fatalities to determine potential risk factors leading to mortality. The analysis may include an evaluation of the mortality data and/or behavioral studies to better refine when and where species are most at risk of collision. The results of this analysis will be used to develop operational mitigation measures, which will include the following

- Periodic shut-down of select turbines at specific times of year, when mortality risks to the affected bird species is particularly high (i.e., migration)[1]
- Blade feathering at specific times of year, when mortality risks to the affected bird species is particularly high (i.e., migration)
- Or alternate plan agreed to between Suncor and MNR

3.1.2 Bats

Operational mitigation is required where annual post-construction mortality monitoring exceeds 10 bats/turbine/year (MNR, 2011).

This threshold of 10 bats/turbine/year has been determined based on bat mortality reported at wind power projects in Ontario and comparison with jurisdictions across North America.

[1] MNR 2011a

Operational mitigation to be implemented includes changing the wind turbine cut-in speed to 5.5 m/s (measured at hub height) or feathering of wind turbine blades when wind speeds are below 5.5 m/s.

The majority of bat mortalities from wind turbine operations occur during fall migration. Where post-construction monitoring indicates that annual bat mortality threshold of 10/bats/turbine/year has been exceeded, operational monitoring will be implemented across the wind power project from sunset to sunrise, from July 15-September 30 and will continue for the duration of the project. If site specific monitoring indicates a shifted peak mortality period (due to higher latitude projects), operational mitigation may be shifted to match the peak mortality, with mitigation maintained for a minimum of 10 weeks. Any shift in the operational mitigation period to match peak mortality will be determined in consultation with the MNR. Where post-construction mitigation is applied, an additional 3 years of effectiveness monitoring is required, as set out in the MNR's Bat Guidelines (2011).

3.1.3 Contingency Plan

3.1.3.1 Contingency Plan for Mass Mortality of Birds

To date, there have been no recorded events of mass mortality of birds at wind farms in Ontario. The various post-construction monitoring projects in Ontario typically record between 0 to 2 bird fatalities at individual turbines during any one survey, with only a single record of 3 birds fatalities observed at one turbine during a single visit (Friesen, 2011). As such, the risk of a mass mortality event for birds is anticipated to be very low.

In the event of a mass mortality event, defined as 10 or more bird fatalities at any one turbine, or 33 or more bird fatalities (including raptors) at multiple turbines on a single survey, the following steps will be implemented:

1. MNR will be notified of the event within 48 hours and will be provided with any available details (e.g. species, number and distribution of turbines involved).

2. An emergency search of all turbines in the Project will be conducted as soon as feasibly possible to determine the extent and the distribution of the mortality event.

3. An analysis of the results of the emergency search will be completed to identify potential risk factors (e.g., weather conditions, proximity to natural heritage features) leading to the mortality event.

4. Based on the risk factors identified, additional mitigation and scoped monitoring recommendations will be developed in conjunction with MNR with the goal of avoiding future mortality events.

3.1.3.2 Contingency Plan for Continued Significant Bat Mortality

Additional mitigation measures may be implemented in the event of continued significant bat mortality (i.e., more than 10 bats/turbine/year) after the mitigation measures outlined in Section 3.1.2 have been implemented. Should the cut-in speed mitigation be implemented and the bat mortality thresholds continue to be exceeded, Suncor will work with the MNR to determine additional mitigation and scoped monitoring requirements.

4.0 Best Management Practices

Suncor will include the following best management practices as part of the post-construction monitoring program (as outlined in MNR, 2011a and 2011b).

4.1 DATA MANAGEMENT

All pre- and post-construction data, collected in accordance with MNR guidance and reported to the MOE, will be submitted to the joint Canadian Wildlife Service – Canadian Wind Energy Association – Bird Studies Canada – Ontario Ministry of Natural Resources Wind Power and Birds Monitoring Database.

4.2 WHITE-NOSE SYNDROME

Carcasses of the following species found during bat mortality searches may be sent to the Canadian Cooperative Wildlife Health Centre for analysis of White-nose Syndrome and should not be used in carcass removal or searcher efficiency trials:

- Northern Long-eared Bat *(Myotis septentrionalis)*
- Little Brown Bat *(Myotis lucifugus)*
- Small-footed Bat *(Myotis leibii)*
- Tri-coloured Bat/Eastern Pipistrelle *(Perimyotis subflavus)*
- Big Brown Bat *(Eptesicus fuscus)*

4.3 BAT TISSUE SAMPLES

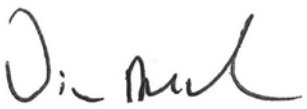
Tissue samples from bat carcasses may be used in a number of DNA analyses to provide insight into population size and structure, as well as the geographic origin migrants. Suncor will contact the local MNR office prior to disposing bat carcasses, to determine if this type of research is occurring in the area.

5.0 Closure

This Environmental Effects Monitoring Plan for the Suncor Energy Adelaide Wind Power Project has been prepared in accordance with O. Reg. 359/09, s. 23.1, the MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (September 2009), the *MOE's Technical Guide to Renewable Energy Approvals*, MNR's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (July 2011) and MNR's *Birds and Bird Habitats: Guidelines for Wind Power Projects* (December 2011).

Stantec Consulting Ltd. prepared this Environmental Effects Monitoring Plan for Suncor Energy Products Inc. for the Suncor Energy Adelaide Wind Power Project. Suncor is committed to implementing the appropriate protection and mitigation measures as they apply to the construction and operation of the proposed Project.

Respectfully submitted,
STANTEC CONSULTING LTD



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6.0 References

Bird Studies Canada. 1994. Marsh Monitoring Program Protocol.

Environment Canada. 1997. Amphibian Road Call-Counts Participants Manual.

Environment Canada. 2007. Wind Turbines and Birds - A Guidance Document for Environmental Assessment. 46 pp.

Friesen, L. 2011. No evidence of large-scale fatality events at Ontario wind projects in *Ontario Birds*, Volume 29, No. 3, December 2011: pages 149- 155.

Ontario Ministry of Natural Resources. 2006. Wind Turbines and Bats: Bat Ecology Background Information and Literature Review of Impacts. December 2006.

Ontario Ministry of Natural Resources. 2007. Guideline to Assist in the Review of Wind Power Proposals: Potential Impacts to Bats and Bat Habitats (Working Draft). 28 pp.

Ontario Ministry of Natural Resources. 2009. Approval and Permitting Requirements Document for Renewable Energy Projects. 64 pp.

Ontario Ministry of Natural Resources. 2010. Technical Bulletin Two: Guidance for preparing the Design and Operations Report (draft). 41 pp.

Ontario Ministry of Natural Resources. 2011a. Birds And Bird Habitats: Guidelines For Wind Power Projects. 32 pp.

Ontario Ministry of Natural Resources. 2011b. Bats And Bat Habitats: Guidelines For Wind Power Projects. 25 pp.

Ontario Ministry of Natural Resources. 2012. Draft Significant Wildlife Habitat Ecoregion 7E Criterion schedule (Online). Available: http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDgy&language=en

Penna, M., H. Pottstock and N. Velasquez. 2005. Effect of natural and synthetic noise on evoked vocal responses in a frog of the temperate austral forest. Animal Behaviour 70: 639-651.

Sun, W.C., and P.M. Narins. 2004. Anthropogenic sounds differentially affect amphibian call rate. Biological Conservation 121:419-427.

Table 1.2: Summary of Environmental Effects Monitoring Plan for Operation of the Suncor Adelaide Wind Energy Project

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
Mortality Monitoring for Birds and Bats								
Direct mortality to birds through turbine collisions	Post-construction mortality monitoring program	Maintain mortality below thresholds	Post-construction monitoring of mortality rates; carcass searches Methods are outlined in detail in this Environmental Effects Monitoring Plan	At 10 turbines (all birds) and 28 turbines (raptors) MNR will be consulted to determine location of turbines to be monitored.	Conducted twice-weekly (3-4 day intervals) at 10 turbines from May 1-October 31. Weekly monitoring for raptors will continue until November 30. Monitoring of all 28 turbines for raptor fatalities once a month from May 1-November 30. Monitoring to be conducted for three years.	Bird and Bird Habitats: Guidelines for Wind Power Projects, 2011	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Post-construction mitigation, including operational controls, will be considered if annual mortality of birds exceeds any of the following thresholds defined by the MNR (2011a): • 14 birds/turbine/year at individual turbines or turbine groups; • 0.2 raptors/turbine/year (all raptors) across a wind power project; or • 0.1 raptors of provincial conservation concern/turbine/year across a wind power project. Or if bird mortality during a single mortality monitoring survey exceeds: • 10 or more birds at any one turbine; or • 33 or more birds (including raptors) at multiple turbines. Mitigation may include operational controls, such as periodic shut-down on select turbines or blade feathering at specific times of the year, or alternate plan agreed to by Suncor/MNR. MNR will be consulted on contingency measures to be implemented.
Direct mortality to bats through turbine collisions	Post-construction mortality monitoring program	Maintain mortality below thresholds	Post-construction monitoring of mortality rates; carcass searches Methods are outlined in detail in this Environmental Effects Monitoring Plan	At 10 turbines MNR will be consulted to determine location of turbines to be monitored.	Conducted twice-weekly (3-4 day intervals) at 10 turbines from May 1-October 31. Monitoring to be conducted for three years.	Bats and Bat Habitats: Guidelines for Wind Power Projects, 2011	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Operational mitigation is required where annual post-construction mortality monitoring exceeds 10bats/turbine/year (MNR, 2011). Mitigation may include operational controls, such as periodic shut-down on select turbines or blade feathering at specific times of the year, or alternate plan agreed to by Suncor/MNR. MNR will be consulted on contingency measures to be implemented.
Disturbance Monitoring for Birds								
Disturbance to waterfowl nesting areas during operation	Post-construction Disturbance Monitoring Program	MNR, along with the proponent and other relevant agencies, will	Point count survey and area searches using pre-	In Features 6 or 20, if they are determined	Three times during the spring breeding season	Breeding pair density is a standard measure	Annual Report will be submitted	Should performance objectives not be met:

Table 1.2: Summary of Environmental Effects Monitoring Plan for Operation of the Suncor Adelaide Wind Energy Project

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
(Feature 6 and 20)	The breeding density of nesting waterfowl (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the waterfowl nesting observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as waterfowl nesting area indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Blue-winged Teal, Green-winged Teal, Wood Duck, Hooded Merganser and Mallard.	collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to nesting waterfowl is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	construction methods. Paired point counts extending from the base of wind turbine generators located within 120 m of waterfowl nesting areas with an equal number of paired point counts located more than 120 m from wind turbine generators in waterfowl nesting areas (i.e., control sites) Methods are outlined in detail in this Environmental Effects Monitoring Plan	to be significant as a result of habitat use studies.*	(April-June), with at least 10 days between surveys, annually for three years.	that can be compared among years or between control/impact sites.	to MNR with the following anticipated dates: February 2015 February 2016 February 2017	• Compare declines to population trends noted through province or continent-wide breeding bird surveys • develop additional studies to determine extent of disturbance effect • investigate habitat management means to increase breeding density Additional monitoring and/or mitigation may be required where post-construction monitoring identifies ecologically significant disturbance/avoidance effects associated with waterfowl nesting areas. Mitigation techniques may include (but are not limited to) operational controls, such as periodic shut-down and/or blade feathering. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation. MNR will be consulted on contingency measures to be implemented.
Disturbance to marsh breeding bird species during operation (Features 6, 16 and 20)	Post-construction Disturbance Monitoring Program The breeding density of marsh species (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the marsh breeding species observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as marsh breeding	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to marsh breeding birds is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	Point count survey and area searches using pre-construction methods. Paired point counts extending from the base of wind turbine generators located within 120 m of marsh habitat with an equal number of paired point counts located more than 120 m from wind turbine generators in marsh habitat (i.e., control sites). Methods are outlined in detail in this Environmental Effects Monitoring Plan	In Features 6, 16 or 20, if they are determined to be significant as a result of habitat use studies.*	Three times during the spring breeding season (May-June), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Should performance objectives not be met: • Compare declines to population trends noted through province or continent-wide breeding bird surveys • develop additional studies to determine extent of disturbance effect • investigate habitat management means to increase breeding density Additional monitoring and/or mitigation may be required where post-construction monitoring

Table 1.2: Summary of Environmental Effects Monitoring Plan for Operation of the Suncor Adelaide Wind Energy Project

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	habitat indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Green Heron, Trumpeter Swan; and, Special Concern species including Black Tern and Yellow Rail.							identifies ecologically significant disturbance/avoidance effects associated with marsh breeding bird habitat. Mitigation techniques may include (but are not limited to) operational controls, such as periodic shut-down and/or blade feathering. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation. MNR will be consulted on contingency measures to be implemented.
Disturbance to woodland area-sensitive breeding bird species during operation (Features 8 and 20)	Post-construction Disturbance Monitoring Program The breeding density of woodland area-sensitive species (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the woodland area-sensitive species observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as woodland area-sensitive indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: Yellow-bellied Sapsucker, Red-breasted Nuthatch, Veery, Blue-headed Vireo, Northern Parula, Black-throated Green Warbler, Blackburnian Warbler, Black-throated Blue Warbler, Ovenbird, Scarlet Tanager, Winter Wren and Pileated Woodpecker; and, Special Concern species Cerulean Warbler and	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to woodland area-sensitive breeding birds is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	Point count survey and area searches using pre-construction methods. Paired point counts extending from the base of wind turbine generators located within 120 m of woodland area-sensitive habitat with an equal number of paired point counts located more than 120 m from wind turbine generators in woodland area-sensitive habitat (i.e., control sites). Methods are outlined in detail in this Environmental Effects Monitoring Plan	In Features 8 and 20, as they are located within 120 m of Turbine 22 and 9, respectively.	Three times during the spring breeding season (May-June), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Should performance objectives not be met: • Compare declines to population trends noted through province or continent-wide breeding bird surveys • develop additional studies to determine extent of disturbance effect • investigate habitat management means to increase breeding density Additional monitoring and/or mitigation may be required where post-construction monitoring identifies ecologically significant disturbance/avoidance effects associated with woodland area-sensitive breeding bird habitat. Mitigation techniques may include (but are not limited to) operational controls, such as periodic shut-down and/or blade feathering. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information

Table 1.2: Summary of Environmental Effects Monitoring Plan for Operation of the Suncor Adelaide Wind Energy Project

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	Canada Warbler.							should be considered when determining appropriate mitigation. MNR will be consulted on contingency measures to be implemented.
Disturbance to shrub/early successional breeding bird species during operation (Feature 13)	Post-construction Disturbance Monitoring Program The breeding density of shrubland species (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the shrub/early successional species observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as shrub/early successional indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: Brown Thrasher, Clay-coloured Sparrow, Field Sparrow, Black-billed Cuckoo, Eastern Towhee and Willow Flycatcher; and, Special Concern species including Yellow-breasted Chat and Golden-winged Warbler.	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to shrub/early successional breeding birds is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	Point count survey and area searches using pre-construction methods. Paired point counts extending from the base of wind turbine generators located within 120 m of shrub/early successional habitat with an equal number of paired point counts located more than 120 m from wind turbine generators in shrub/early successional habitat (i.e., control sites). Methods are outlined in detail in this Environmental Effects Monitoring Plan.	In Feature 13, if it is determined to be significant as a result of habitat use studies.*	Three times during the spring breeding season (May-June), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Should performance objectives not be met: • Compare declines to population trends noted through province or continent-wide breeding bird surveys • develop additional studies to determine extent of disturbance effect • investigate habitat management means to increase breeding density Additional monitoring and/or mitigation may be required where post-construction monitoring identifies ecologically significant disturbance/avoidance effects associated with shrub/early successional breeding bird habitat. Mitigation techniques may include (but are not limited to) operational controls, such as periodic shut-down and/or blade feathering. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation. MNR will be consulted on contingency measures to be implemented.
Disturbance Monitoring for Amphibians								
Disturbance to amphibian woodland breeding habitat during operation (Features 6 and 20)	Post-construction Disturbance Monitoring Program The breeding density of woodland species (combined	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically	Call count surveys using pre-construction methods, based on Marsh Monitoring Program protocol.	2 count stations (one within 120m of project location and one more than 120m) in each of Features 6	Once in each of April 1-15, May 1-15 and June 1-15, for one year post-construction.	Presence of calling amphibians in significant wildlife habitat (with consideration for pre-	Report will be submitted to MNR with the following anticipated date:	Where post-construction monitoring identifies ecologically significant disturbance effects to amphibians the proponent, MNR and other relevant agencies will

Table 1.2: Summary of Environmental Effects Monitoring Plan for Operation of the Suncor Adelaide Wind Energy Project

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the species observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as amphibian breeding habitat (woodland) indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: Gray Treefrog; Spring Peeper; Western Chorus Frog; and, Wood Frog.	significant disturbance/avoidance effect to woodland breeding amphibians is occurring, and whether such effect is attributed to the access roads and not external factors. These discussions will determine whether contingency measures will be undertaken.	Methods are outlined in detail in this Environmental Effects Monitoring Plan.	and 20, if they are determined to be significant as a result of habitat use studies.*		construction species presence) – specialized habitat for wildlife within 120 m of project location.	February 2015	determine if and when additional monitoring and/or mitigation is required and work together to develop a contingency plan. The best available science and information should be considered when determining appropriate mitigation.
Disturbance to amphibian wetland breeding habitat during operation (Feature 16)	Post-construction Disturbance Monitoring Program The breeding density of wetland species (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions. In addition to density, the species observed should be monitored and compared to pre-construction conditions. Particular attention should be paid to those species identified as amphibian breeding habitat (wetland) indicator species as per the draft SWH Ecoregion 7E Criterion Schedule (MNR, 2012), including: American Toad; Gray Treefrog; Western Chorus Frog; Northern Leopard Frog; Pickerel Frog; Green Frog; Mink Frog; and, Bull Frog.	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to wetland breeding amphibians is occurring, and whether such effect is attributed to the access roads and not external factors. These discussions will determine whether contingency measures will be undertaken.	Call count surveys using pre-construction methods, based on Marsh Monitoring Program protocol. Methods are outlined in detail in this Environmental Effects Monitoring Plan.	2 count stations (one within 120m of project location and one more than 120m) in Feature 16, if it is determined to be significant as a result of habitat use studies.*	Once in each of April 1-15, May 1-15 and June 1-15, for one year post-construction.	Presence of calling amphibians in significant wildlife habitat (with consideration for pre-construction species presence) – specialized habitat for wildlife within 120 m of project location.	Report will be submitted to MNR with the following anticipated date: February 2015	Where post-construction monitoring identifies ecologically significant disturbance effects to amphibians the proponent, MNR and other relevant agencies will determine if and when additional monitoring and/or mitigation is required and work together to develop a contingency plan. The best available science and information should be considered when determining appropriate mitigation.

* 3 years of post-construction monitoring is required for the habitats that are determined to be significant through habitat use studies/pre-construction monitoring surveys, with the exception of significant amphibian woodland and wetland breeding habitats, which require 1 year post-construction monitoring.

APPENDIX D:
RAPTOR MONITORING PROTOCOL

From: Taylor, Andrew
To: Mark Kozak; Straus, Melissa
Subject: Fwd: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT
Date: Thursday, June 23, 2016 1:36:24 PM

Adelaide raptor protocol approved!

Sent from my iPhone

Begin forwarded message:

> **From:** "Valliant, Emma (MNRF)" <Emma.Valliant@ontario.ca>
> **Date:** June 23, 2016 at 1:34:00 PM EDT
> **To:** "Taylor, Andrew" <andrew.taylor@stantec.com>
> **Cc:** "Valliant, Emma (MNRF)" <Emma.Valliant@ontario.ca>, "Beal, Jim (MNRF)" <jim.beal@ontario.ca>
> **Subject: RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT**
>
> Hi Andrew,
> All that sounds good! Thanks.
> Emma
> Emma Valliant
> A/Regional Planning Ecologist
> 705-755-5393
>
> ---
>
> **From:** Taylor, Andrew [mailto:andrew.taylor@stantec.com]
> **Sent:** June 17, 2016 2:06 PM
> **To:** Valliant, Emma (MNRF)
> **Cc:** Beal, Jim (MNRF)
> **Subject:** RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT
> Hi Emma,
> Thank you very much for your review and comments on the Adelaide cause and effect Raptor Monitoring Plan. Please see below responses to your comments. We have also updated to Raptor Monitoring Protocol to address the changes (attached).
> Please let me know if you approve of these changes to the Plan, or if you have further comments.
> Thanks,
> Andrew
>
> ---
>
> **From:** Valliant, Emma (MNRF) [mailto:Emma.Valliant@ontario.ca]
> **Sent:** Wednesday, June 01, 2016 9:26 AM
> **To:** Taylor, Andrew
> **Cc:** Valliant, Emma (MNRF); Beal, Jim (MNRF)
> **Subject:** RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT
> Hi Andrew,
> As the file is too large to send back (and I haven't completed the review of the rest of the report), here are my comments on Appendix I: Raptor Monitoring Protocol.
> <!--[if !supportLists]-->1.0 <!--[endif]-->Introduction
> One additional raptor, an Osprey, was recovered during the supplemental monthly monitoring program.
> Comment: Field notes and email indicate that this was found during the monthly raptor monitoring in June. Please include this mortality in the corrected mortality estimate for raptors. The rest of the report will also need to be revised.

Stantec Response:
Carcasses found during the monthly raptor surveys at non-subset turbines are typically not included in the correction calculation. In part, because the non-subset turbines do not have associated correction factors (e.g. Ps). The correction calculation take non-subset turbine into account when determining annual mortality rates.

3.1 Scoped Mortality Monitoring

Monitoring at the non-subset turbines should be increased to weekly for May-July (instead of twice per month).

Stantec Response:
Stantec will increase the monitoring at non-subset turbines from once every two weeks to once weekly. The Raptor Monitoring Protocol has been revised accordingly.
For 2016, the increase frequency to once weekly started first week of June (i.e. week starting June 6).

3.2 Cause and Effect Monitoring

Scavenger removal trials should be conducted to determine if any raptors are being removed by scavengers.

Stantec Response:
Please note the cause and effect monitoring will not include a correction calculation. Although the annual mortality rates for raptors will continue to be calculated through the regular EEMP monitoring.
The purpose of the cause and effect monitoring is to provide a comprehensive spatial distribution of raptor fatality, which can be compared to the habitat mapping, to assess habitat based risk factors. Additionally, carcasses persistence of raptor is generally very high. As such, we would expect any scavenging over the one week search interval to be very minimal.
Regardless, Stantec can include raptor carcasses in the EEMP scavenger trials to confirm if raptor scavenging is occurring. We will aim to use up to three raptor carcasses each year. However, given raptor carcasses in suitable conditions are limited, the number of raptors in the scavenger trials may be less than three.
The Raptor Monitoring Protocol has been revised accordingly.

Please include behavioural monitoring. Visual monitoring of the raptors should be done to try to determine what their behaviour is and how the turbines can be mitigated appropriately.

Behavioural surveys have been added to the protocol, with weekly surveys in May, June and July. The surveys will monitoring active nests, with notes being made on activity of the nest and observations of raptor movements and behaviour. Each behaviour observed (and duration of time spent per behaviour) and flight heights will be recorded. Each flight path observed and any perches used will be identified and mapped in relation to turbine locations.
The results of the surveys will be used to identify raptor behavior in proximity to wind turbines including flight patterns, flight heights and identify perching and foraging habitat.
The Raptor Monitoring Protocol has been revised accordingly.
For 2016, the behavioral surveys started the first week of June (i.e. week starting June 6).

3.2.1 Background Review

To clarify, are you essentially doing a records review for the time period since construction started until now?

Correct. The NHA (including the Record Review) was authored in 2012. The intent of the background review is to complete a more current review of records. The background review will focus on sources that may include information regarding raptor nests, such as ebirds, which was not part of the original NHA Records Review. Note that ebirds maps species occurrences, that do not necessarily reflect nesting locations. However, a review of occurrence date and location can provide potential nest site that can be confirmed through the field surveys.

Please let me know if you have any comments.

Cheers,

Emma

Emma Valliant
A/Regional Planning Ecologist

705-755-5393

From: Taylor, Andrew [mailto:andrew.taylor@stantec.com]
Sent: May 18, 2016 9:10 AM
To: Valliant, Emma (MNRF)
Subject: RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

Thanks Emma!

From: Valliant, Emma (MNRF) [mailto:Emma.Valliant@ontario.ca]
Sent: Wednesday, May 18, 2016 8:55 AM
To: Taylor, Andrew
Subject: RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

'Morning Andrew,
I clicked on the link this morning, and the pdfs have been removed and the report is there. I'll take a look at it. Thanks!
Emma

From: Taylor, Andrew [mailto:andrew.taylor@stantec.com]
Sent: May 16, 2016 4:21 PM
To: Valliant, Emma (MNRF)
Subject: RE: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

Hi Emma,
Through those emails, you should have all components of the report, except for Appendix G, a scan of all field forms. This appendix was much too large to provide over email. But I will work on sorting out the issue on our ftp site.
Please let me know if you got everything, or if you are still missing any components.
Thanks,
Andrew

From: Valliant, Emma (MNRF) [mailto:Emma.Valliant@ontario.ca]
Sent: Monday, May 16, 2016 4:03 PM
To: Taylor, Andrew
Subject: FW: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

Hi Anderw,
I still don't see the report on the site. There are just 5 jpegs from April.
Emma
Emma Valliant
A/Regional Planning Ecologist
705-755-5393

From: Beal, Jim (MNRF)
Sent: May 16, 2016 9:07 AM
To: Valliant, Emma (MNRF)
Subject: FW: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

From: Taylor, Andrew [mailto:andrew.taylor@stantec.com]
Sent: May-16-16 9:05 AM
To: Beal, Jim (MNRF)
Subject: FW: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

Hi Jim,
I've uploaded the Adelaide Report to the ftp site below. Please let me know if you are able to access it this time.
If this does not work, I could send the report piecemeal in a few emails.
Thanks,
Andrew

From: CORPFTP@temp.stantec.com [mailto:CORPFTP@temp.stantec.com]
Sent: Monday, May 16, 2016 9:03 AM
To: Taylor, Andrew
Subject: Stantec FTP Confirmation - ADELAIDE 2015 ANNUAL POST-CON REPORT

Your request has been successfully created.

Please use the automatic login link below to access your site. You have also been provided a manual link, username and password in case your computer disables the automatic login link.

NOTE: FTP Sites are not included in Stantec daily backups and are only intended to be used as a means of transferring large files between offices, clients, etc.

Automatic Login

FTP site link: ftp://s0530070247:7579679@ftptmp.stantec.com
By clicking on the link above (or pasting the link into Windows Explorer) you will be automatically logged into your FTP site.

Manual Login

FTP link: ftp://ftptmp.stantec.com
Login name: s0530070247
Password: 7579679
Disk Quota: 2GB
Expiry Date: 5/30/2016

If your site has not expired and you require a onetime 2 week extension, please contact the IT Service Center.

If you require more than 2 weeks, please request an FTP Project Directory. Information on the FTP Project Directory request procedure is posted in the StanNet Help Center.

Adelaide Wind Power Project: Raptor Monitoring Plan

Prepared for:
Suncor Adelaide Wind Limited Partnership
150 6th Avenue SW
Calgary, AB T2P 3E3

Prepared by:
Stantec Consulting Ltd.
70 Southgate Drive, Suite 1
Guelph ON N1E 7B8

File No. 160961067
February 9, 2017

Sign-off Sheet

This document entitled Adelaide Wind Power Project: Raptor Monitoring Plan was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Suncor Energy Products Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Melissa Straus
(signature)

Melissa Straus, M.Sc.
Terrestrial Ecologist

Reviewed by Andrew Taylor
(signature)

Andrew Taylor, B.Sc.
Senior Ecologist

Reviewed by
(signature)

Nicole Kopysh, B.E.S
Project Manager

Stantec

Table of Contents

Abbreviations

EEMP	Environmental Effects Monitoring Plan
KV	Kilovolt
MNR(F)	Ministry of Natural Resources (and Forestry)
MW	Megawatt
NHA/EIS	Natural Heritage Assessment
REA	Renewable Energy Approval

1.0 INTRODUCTION

Suncor Adelaide Wind Limited Partnership (Suncor) is operating the 18 turbine Adelaide Wind Power Project (Adelaide) north of Strathroy, Ontario, in Middlesex County, Municipality of Adelaide Metcalfe The Project is located north of Strathroy, Ontario, bound by Sexton Road to the west, Townsend Line and Wardell Road to the North, Hansford Road to the east, and Highway 402 to the south (**Figure 1, Appendix A**).

The Renewable Energy Approval (REA) for Adelaide was issued on December 11, 2013 under the *Environmental Protection Act* section 47.3(1) (REA No. 8279-9AUP2B). Section I of the REA details the wildlife post-construction monitoring program for the facility, including reporting requirements and applicable performance measures (i.e. mortality thresholds) based on the results and recommendations presented in the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS), associated addenda (Stantec 2012a, 2012b, 2013a, 2013b) and Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat (EEMP; Stantec 2012c).

The Adelaide Wind Power Project began operation in 2015, which included the first year of post-construction monitoring for both mortality and disturbance studies.

Post-construction mortality monitoring was conducted for bats, birds and raptors (i.e., members of the family Pandionidae [Osprey, *Pandion haliaetus*], Accipitridae [hawks and eagles], Falconidae [falcons], and Cathartidae [vultures]) using standard methodologies for mortality surveys, in accordance with *Birds and Bird Habitats: Guidelines for Wind Power Projects* (MNR 2011) and detailed in the EEMP.

During the first year of monitoring, two Turkey Vultures (*Cathartes aura*), two Red-tailed Hawk (*Buteo jamaicensis*) fatalities were recovered. Correcting for percent area searched, as searcher efficiency and scavenger rates are assumed to be 1.0 for large-bodied birds, these 4 fatalities resulted in a mortality rate of 0.46 raptors/turbine/year. One additional raptor, an Osprey, was recovered during the supplemental monthly monitoring program.

The raptor mortality rate recorded in 2015 of 0.46 raptors/turbine/year was above the provincial threshold of 0.2 raptors/turbine/year (MNR 2011). As such, in accordance with the EEMP and the REA, the following steps are required;

- Two years of subsequent scoped mortality and cause and effect monitoring for raptors (starting in 2016).
- Following the scoped monitoring, implementation of operational mitigation for the life of the facility.
- Effectiveness monitoring at individual turbines for three years, following implementation of mitigation.

Introduction
February 9, 2017

Based on the data collected to date, the Adelaide Wind Power Project does not appear to have any unique risk factors that would explain the elevated mortality rates observed in 2015. Furthermore, there were a number of unusual circumstances surrounded the raptor fatalities recovered (discussed in **Section 2.1**). The reason for these unusual findings at the Adelaide Wind Power Project is not clear. However, the monitoring program provided within this Raptor Monitoring Plan is designed to provide additional information to further assess impacts to raptors and inform protocols for operational mitigation.

This Raptor Monitoring Plan provides the methods and reporting protocols for the scoped mortality and cause and effect monitoring that is required by the EEMP and REA. The implementation of this Plan will fulfill the requirements for the additional scoped monitoring as a result of the raptor threshold exceedance in 2015.

2.0 RAPTOR BACKGROUND

Results of the 2015 mortality monitoring program are discussed below, as are behavioral habits of the three species recovered in 2015, Turkey Vulture, Red-tailed Hawk, and Osprey, both used to inform the creation of this monitoring plan.

2.1 ADELAIDE 2015

A total of five raptor mortalities were reported during the first year of mortality monitoring at Adelaide in 2015. This included two Red-tailed Hawks and two Turkey Vultures recovered during the regular monitoring program as well as one additional fatality, an Osprey, recovered during the monthly supplemental monitoring. All species are common in Ontario, ranked S5 (Common, widespread, and abundant in the province).

Red-tailed Hawks and Turkey Vultures are the two more commonly encountered raptor fatalities at Ontario wind facilities (3.99 % and 2.29 %, respectively; BSC et al. 2014). Osprey is rarely recovered, ranked 109th of recovered species in Ontario, comprising 0.19 % of all turbine fatalities in the province (BSC et al. 2014).

Seasonal variability in mortality rates is typically attributed to periods where large numbers of migrating birds (including raptors) move through the province while travelling between their breeding and wintering grounds. Increases have been recorded most strongly during the fall migration period (August to October) which exhibits the majority of all bird fatalities (Environment Canada et al. 2011, Erickson et al. 2014, BSC et al., 2014). In this regard, the recorded raptor fatalities at the Adelaide project were very unusual. The timing of all five raptor fatalities corresponds with the nesting season (Turkey Vulture and Osprey, Cadman et al. 2007; Red-tailed Hawk, Preston and Beane 2009), with no fatalities recorded during spring of fall migration; a time when raptor fatalities are mostly likely to occur. Furthermore, all five fatalities occurred during a very short, eleven day period (June 11 to June 21), with both Turkey Vultures fatalities occurring on the same day at the same turbine. Finding two bird fatalities at a single turbine during a single monitoring event is rare, being reported only a handful of times in Ontario (Friesen 2011), and finding two raptors at the same turbine during the same monitoring event is even rarer (Stantec, unpublished data). It is particularly unusual this would occur during the breeding season when raptor mortality is typically very low. The reason for these unusual findings at the Adelaide Wind Power Project is not clear.

Red-tailed Hawks were not recorded nesting within the zone of investigation (i.e. 120 m from the Project Location) during the pre-construction surveys conducted in 2010 (Golder) and 2011 and 2012 (Stantec); however, this is a common breeding species in agricultural settings and may have been nesting in the local landscape in 2015. The species typically nests in woodland habitat; potential nesting habitat is present in the scattered woodlots in the local landscape. Likewise, the Turkey Vulture is a common species in agricultural settings. It naturally nests in sites such as caves, rocky cliffs or hollow trees, but in agricultural settings regularly nests in buildings,

such as abandoned barns. Nesting sites in buildings may also occur within the local landscape. Both species were likely present in the local landscape during the breeding season, as both are documented as nesting within the 10 x 10 km Breeding Bird Atlas square that overlaps with the Project Boundary (Cadman et al. 2007); however, the same would be true for most wind farms in southern Ontario and not unique to the Adelaide Wind Power Project. Although the presence of suitable breeding habitat does not appear to explain the unusual mortality during the nesting season at this project in 2015, the association between nesting location and risk is currently unknown.

Unlike the other two species, Osprey is unlikely to be nesting in the local landscape. This species feeds almost exclusively on fish (Poole et al. 2002) and are therefore associated with aquatic habitats for both foraging and nesting. Osprey build nests in trees, utility poles or other structures near or over open water including lakes and rivers (Cadman et al. 2007). No Osprey nests are known to occur in the vicinity of the Project (Stantec 2012b). Osprey were also not recorded as nesting within the 10 x 10 km Breeding Bird Atlas squares that overlaps with the Adelaide Project Boundary (Cadman et al. 2007). Suitable aquatic habitat (i.e. lakes or rivers) do not occur in the local landscape (**Figure 1, Appendix A**). The closest potential Osprey habitat for nesting and foraging exists along the large watercourses to the south in Strathroy (impoundments of the Sydenham River approximately 5 kilometers from closest turbine) and north of the facility (Ausable River approximately 3 kilometers from closest turbine).

The timing (i.e., breeding season, 11 day period), species (Osprey), and pattern of recovery (2 at one turbine) of the mortalities recovered in 2015 at the Adelaide facility are highly unusual.

2.2 RAPTOR BEHAVIOR

In considering the unusual raptor fatality results recovered at the Adelaide facility in 2015, this raptor monitoring plan was devised to better understand any potential links between habitat use and risk of turbine strike. Despite the two Turkey Vultures recovered at the same turbine (turbine 27) in 2015, there was no apparent spatial pattern to the recovered fatalities. For this reason, in developing the monitoring plan, we included all turbines in the program and not only those where raptors were recovered in 2015. This is also appropriate as raptor fatality rates exhibit high inter-annual variation (Smallwood, 2013).

The average home range size for Red-tailed Hawks is 1.16 km^2 (Preston and Beane 2008). Home range size for Turkey Vultures and Osprey are very large, with Turkey Vultures typically spending their days within 10 km of communal roosts (Kirk and Mossman 1998) and Ospreys conducting 14 km hunting forays from the nest (Poole et al 2002). Considering this variability, 1 km was determined to be an appropriate study area from each turbine, noting that an excessively large area may not provide useful information.

Although it is uncertain which (if any) of the recovered fatalities were breeding, breeding individuals caring for nestlings exhibit foraging habits different from non-breeding individuals. Foraging behavior has been associated with higher risk of mortality at wind facilities, particularly for Turkey Vultures and Red-tailed Hawks (Garvin et al. 2011). In consideration of the timing of the 2015 recovered fatalities, the identification of nest and nest habitat in 2016 may assist in determining if nest proximity to turbines is a risk factor for these species.

In consideration of the 2015 results and the known behavior of the three recovered species, the scoped mortality and cause and effects monitoring methods detailed below have been developed to further assess the risk to breeding Red-tailed Hawks, Turkey Vultures and Osprey ("the Species").

3.0 METHODS

The scoped mortality and cause and effect monitoring program will be conducted in 2016 and 2017 to provide additional information on raptor habitat use and mortality of raptors associated with the Adelaide facility. This will be used to better inform and assist in establishing any proposed mitigation measures.

The results of the 2015 mortality monitoring program (e.g., species and timing of mortalities) were used to guide the development of the scoped mortality and cause and effect monitoring programs. Survey methods are described below.

3.1 SCOPED MORTALITY MONITORING

In accordance with the requirements of the REA for the Project, mortality monitoring is being undertaken at the Adelaide Wind Project as detailed in the EEMP. The EEMP monitoring consists of bi-weekly searches at a subset of 10 turbines (May-October; **Figure 1**, **Appendix A**) with monthly surveys at the 8 non-subset turbines (May-November) and weekly monitoring during the month of November at the turbine subset. This program will be conducted in 2016 and 2017.

In addition to the EEMP monitoring, additional scoped monitoring will be undertaken to further assess impacts to the Species during the nesting season. Scoped mortality monitoring will consist of searches within 50 m of all non-subset turbines by walking in concentric circles. The frequency of the monthly non-subset surveys monitoring will be increased to once per week during the nesting season for the Species (May, June and July).

Because the scoped mortality monitoring is not intended to provide an estimate of mortality, but rather to help identify risk factors and inform mitigation measures, the results will not be included in the calculation of thresholds. However, scavenger trials for raptors will be undertaken to determine what level, if any, of removal of raptor carcasses is occurring. Depending on availability of raptor carcasses in suitable condition, up to three will be used each year in the scavenger trials. The total number, species, and timing of all raptor mortalities recorded during the EEMP and the supplemental scoped monitoring programs will be analyzed and used to assess impacts to raptors and inform protocols for operational mitigation.

3.2 CAUSE AND EFFECT MONITORING

The cause and effect monitoring will consist of two components:

- background review
- mapping foraging and nesting habitat within 1 km of turbines

The objective of the cause and effects monitoring will be to determine if there are nesting or foraging habitat features present that may be increasing the risk of mortality for the Species. This information can be helpful in further assessing risk and informing mitigation. Identifying potential concentration areas and preferred habitat around operational turbines will assist in assessing any existing cause and effect relationships. Habitats will be mapped to the level of detail possible.

3.2.1 Background Review

A review of available background information will be undertaken in spring 2016 in order to identify any previously unknown or new nesting occurrences that have been documented within the Project Boundary (**Figure 1**, **Appendix A**) for the Species since the preconstruction surveys were completed. Review sources may include, but not be limited to: eBird, NatureServe, the local Field Naturalists Club, and Land Information Ontario data.

All records of nesting habitat obtained during the records review will be mapped in relation to the Adelaide facility. All locations of Osprey nests and any Red-tailed Hawk or Turkey Vulture nests that occur within 1 km of a turbine location will be visited as part of the habitat mapping below.

The background review will be completed in spring, 2016, prior to the initiation of the habitat mapping surveys.

3.2.2 Habitat Mapping

Habitat mapping conducted in 2016 and 2017 will target areas within a 1 km radius of each turbine as shown in **Figure 2** (**Appendix A**). This distance is based on the average home range size for Red-tailed Hawks, as discussed in **Section 1.0.** Two visits per year, once in April and once in May or June, will be conducted by driving all municipal and access roads within the 1 km Study Area and mapping suitable habitat. Two types of habitats, as well as any species observed, will be identified during the surveys. This will include:

1. Nesting habitat identified (and include methods as per 3.2.2.1)
2. Foraging habitat will be identified (as per 3.2.2.2)
3. Any observations of the Species will be recorded (as per 3.2.2.3)

Habitat types will be mapped according to nesting and foraging requirements for the three species of raptors recovered in 2015 (**Table 1**).

Table 1: Species-specific Habitat Mapping at the Adelaide Wind Power Project

Species	Habitat Component	Habitat Component to Map	Documented Habitat Use
Turkey Vulture	Nesting	Accessible barns and abandoned buildings	Entry/exit to building
	Foraging	Carrion	Congregation of vultures, evidence of direct feeding
Red-tailed Hawk	Nesting	Potential nest sites (bulky stick nests)	Flying to/from nest, pair observed in vicinity of nest
	Foraging	Grasslands, meadows	Observation of flying overhead or perched
Osprey	Nesting	Potential nest sites (bulky stick nest on platform)	Flying to/from nest, pair observed in vicinity of nest
	Foraging	Large streams or rivers	Observation of flying or perched over suitable aquatic habitat
Other raptor species	Nesting	Potential nest sites	Flying to/from nest, pair observed in vicinity of nest

3.2.2.1 Nesting Habitat

The timing of the April survey date is expected to coincide with optimal forest visibility conditions prior to leaf-out, conducive to Red-tailed Hawk nest searches. The early survey date in 2016 will also be used identify the location of any raptor nests that occurred within the Study Area in 2015, as both Red-tailed Hawk and Osprey nests (discussed above) persist throughout the winter. The later survey is timed to coincide with the nesting period of the Species when activity levels at the nest are highest and nestlings may be visible.

Each 1 km zone will be visited by a qualified ecologist. The occurrence of any nesting features as identified in Table 1 will be mapped. Nests will be assessed on each visit for activity using binoculars or a spotting scope. The location of all raptor nests will be mapped, regardless of activity level. The presence of adults and/or nestlings at the nest will be recorded (if applicable).

The Study Area (i.e., 1 km area surrounding all turbines) will be surveyed again to record any new nests during the second survey. Methods will replicate those used in the first survey (municipal and access roads, binoculars, and scopes).

Nesting habitat surveys will be conducted in each of 2016 and 2017.

3.2.2.2 Foraging Habitat

Foraging habitat features (as described in Table 1) will be mapped during both the April and May or June survey dates on an air photo, including any incidental observations of use (as described below).

3.2.2.3 Incidental Observations

On each survey, all observations of Turkey Vultures, Osprey, and Red-tailed Hawks will be recorded. The location of each observation will be mapped on an air photo. Species, number of individuals, behavior (e.g., soaring, direct passage, perched) and flight heights (at turbine height, above, or below) will be recorded.

3.2.3 Behavioural Surveys

Behaviour surveys will be conducted weekly in May, June and July. During each survey active nests will be monitored for 2 hours from a stationary survey location, using a spotting scope. Weather conditions, survey date, time (and duration) and field personnel will be recorded on each visit. Notes will be made on the activity of the nest and observations of raptor movements and behaviour. Each behaviour observed (and duration of time spent per behaviour) and flight heights will be recorded. Each flight path observed and any perches used will be identified and mapped in relation to turbine locations.

The results of the surveys will be used to identify raptor behavior in proximity to wind turbines including flight patterns, flight heights and identify perching and foraging habitat.

3.3 RESPONSE TO A MORTALITY

In the event that a Species mortality is identified at a turbine in either 2016 or 2017 during the breeding season (e.g., April-August), and the results of the habitat mapping conducted in **Section 3.2.2.1** identifies a nest of that species within 1 km, a follow-up nest check will be conducted. The purpose of this follow-up visit is to determine if the observed mortality is an individual from the nearby nest or an unrelated individual.

4.0 REPORTING AND ANALYSIS

Reporting for the scoped raptor mortality and cause and effect monitoring programs will occur annually in conjunction with the EEMP post-construction monitoring report.

Analysis of the cause and effect monitoring in 2016 will examine spatial patterns of 2015 and 2016 raptor fatalities relative to identified nest locations (active, as well as inactive in 2016), and foraging habitat.

The 2017 report will synthesize the two years' of data and compare inter-annual variation in habitat availability, nest locations, and mortality patterns. The analysis in this report will be used to inform recommendations on measures to mitigate any documented risk to raptors within the Adelaide Wind Power Project.

5.0 SUMMARY

2015 was the first year of operation and post-construction monitoring at the Adelaide Wind Power Project. The recovery of two Turkey Vultures and two Red-tailed Hawk fatalities during the month of June resulted in a calculated raptor mortality rate of 0.46, which exceeded the 0.20 raptors/turbine/year threshold. One additional raptor fatality, an Osprey, was recovered during the supplemental monthly mortality monitoring in 2015.

In accordance with the EEMP and REA Section l8, two years of subsequent scoped mortality and cause and effect monitoring for raptors will commence in 2016. This Raptor Monitoring Plan provides the methods and reporting protocols for the scoped mortality and cause and effect monitoring that is required by the EEMP and REA. The implementation of this Plan will fulfill the requirements for the additional scoped monitoring as a result of the raptor threshold exceedance in 2015.

6.0 REFERENCES

Cadman, M. D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 318pp.

Environment Canada, the Canadian Wind Energy Association and the Ontario Ministry of Natural Resources. 2011. Wind Energy Bird and Bat Monitoring Database Summary of the Findings from Post-construction Monitoring Reports. November 2011. 17pp.

Erickson, W., K. Kronner and B. Gritski. 2003. Nine Canyon Wind Power Project Avian And Bat Monitoring Report: September 2002 – August 2003. Prepared For: Nine Canyon Technical Advisory Committee. October 2003.

Kikuchi, R. 2008. Adverse impacts of wind power generation on collision behaviour of birds and anti-predator behaviour of squirrels. Journal for Nature Conservation (Jena), 16, 44–55.

Ontario Ministry of Natural Resources (MNR). 2011. Birds and Bird Habitats. Guidelines for Wind Power Projects. 32 pp. December 2011.

Poole, A., R. Bierregaard, M. Martell. 2002. Osprey (Pandion haliaetus). A Poole, F Gill, eds. The Birds of North America, Vol. 683. Philadelphia, PA: The Birds of North America, Inc.

Preston, C. R. and R. D. Beane. 2009. Red-tailed Hawk (Buteo jamaicensis), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/052

Stantec Consulting Ltd. 2012a. Suncor Energy Adelaide Wind Energy Project Natural Heritage Assessment & Environmental Impact Study. July 2012.

Stantec Consulting Ltd. 2012b. Suncor Energy Adelaide Wind Energy Project Environmental Effects Monitoring Plan For Wildlife (EEMP). July 2012.

Stantec Consulting Ltd. 2012c. Suncor Energy Adelaide Wind Project Addendum I. October 2012.

Stantec Consulting Ltd. 2013a. Suncor Energy Adelaide Minor Modifications. February 2013.

Stantec Consulting Ltd. 2013b. Suncor Energy Adelaide Project Modifications. November 2013.

Stantec Consulting Ltd. 2016. Adelaide Wind Power Project: Post-Construction Wildlife Monitoring Report (2015).

APPENDIX A: FIGURES

435000 440000 445000 450000

4770000 4765000 4760000

Lamon Drive
Sylvan Road
Roddick Road
River Drive
Fossil Road
Kenwood Road
Hodgins Road
Haskett Road
Bornish Drive
Elm Tree Drive
Centre Road
Cameron Road
Fort Rose Road
Ross Road
Coldstream Road
Petty Street
Poplar Hill Road
Fletcher Road
Ausable Road
Townsend Line
Island Road
Glasgow Street
Springbank Road
Wyatt Road
Mccubbin Road
Argyle Street
Birnam Line
Langan Drive
Pedden Road
Fernhill Drive
Wardell Drive
Brick Yard Line
Cuddy Drive
Crathie Drive
Mcewen Drive
Wood Road
Wilson Road
Sexton Road
Morse Road
School Road
Robotham Road
Newell Road
Hansford Road
Egremont Road
Egremont Drive
Highway 402
Zion Line
Sullivan Road
Brown Road
Mullifarry Drive
Seed Road
Pike Road
Wright Street
Head Street North
Agnes Drive
Ireland Drive
Adair Boulevard
2Nd Street
Dolphin Road
Hickory Drive
Pannell Lane
Drury Lane
Hull Road
Metcalf Street East
York Avenue
Glengyle Drive
Mcevoy Road

27 26 20 19 18 17 15 14 22 21 12 13 11 9 8 7 6 5

N

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1:60,000

Legend

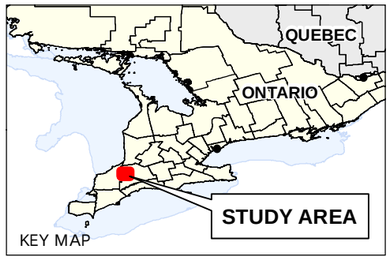
- Project Boundary
- Turbine Subset

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

April 2015
160960710

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

1

Title

Post-construction Monitoring
EEMP Turbine Subset

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Revised: 2015-04-17 By: dharvey

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4770000 4765000 4760000

Lamon Drive
Sylvan Road
River Drive
Roddick Road
Fossil Road
Kenwood Road
Hodgins Road
Haskett Road
Ausable Road
Centre Road
Island Road
Elm Tree Drive
Bornish Drive
Fort Rose Road
Cameron Road
Springbank Road
Wyatt Road
Glasgow Street
Mccubbin Road
Ross Road
Coldstream Road
Petty Street
Poplar Hill Road
Fletcher Road
Argyle Street
Pedden Road
Fernhill Drive
Mcewen Drive
Wood Road
Townsend Line
Birnam Line
Langan Drive
Wilson Road
Brick Yard Line
Cuddy Drive
Crathie Drive
Wardell Drive
Sexton Road
Robotham Road
Newell Road
School Road
Morse Road
Egremont Road
Egremont Drive
Hansford Road
Highway 402
Zion Line
Sullivan Road
Mullifarry Drive
Seed Road
Brown Road
Pike Road
Wright Street
Head Street North
Riverview Drive
Agnes Drive
Adair Boulevard
2Nd Street
Hickory Drive
Pannell Lane
Hull Road
Drury Lane
Metcalfe Street East
Glengyle Drive
Mcevoy Road

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1:60,000

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Revised: 2016-02-10 By: mkraus

Stantec

Legend

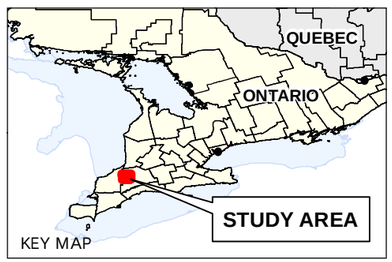
- Project Boundary
- Raptor Study Area

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

February 2016
160960710

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2

Title

Supplemental Raptor Study Area (2016-2017)

Adelaide Wind Power Project:

Addendum to the Raptor Monitoring Plan

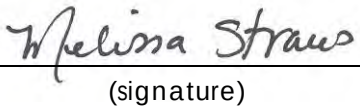
Prepared for:
Suncor Adelaide Wind Limited Partnership
150 6th Avenue SW
Calgary, AB T2P 3E3

Prepared by:
Stantec Consulting Ltd.
70 Southgate Drive, Suite 1
Guelph ON N1E 7B8

File No. 160961067
February 17, 2017

Sign-off Sheet

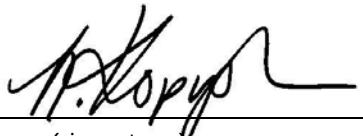
This document entitled Adelaide Wind Power Project: Addendum to the Raptor Monitoring Plan was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Suncor Energy Products Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 
(signature)

Melissa Straus, M.Sc.
Terrestrial Ecologist

Reviewed by 
(signature)

Andrew Taylor, B.Sc.
Senior Ecologist

Reviewed by 
(signature)

Nicole Kopysh, B.E.S.
Project Manager

Stantec

Table of Contents

Abbreviations

EEMP	Environmental Effects Monitoring Plan
MNRF	Ministry of Natural Resources and Forestry
MW	Megawatt
RMP	Raptor Monitoring Plan

ADELAIDE WIND POWER PROJECT:

ADDENDUM TO THE RAPTOR MONITORING PLAN

Introduction
February 17, 2017

1.0 INTRODUCTION

Suncor Adelaide Wind Limited Partnership (Suncor) is operating the 18 turbine Adelaide Wind Power Project (Adelaide) north of Strathroy, Ontario, in Middlesex County, Municipality of Adelaide Metcalfe. The Project is located north of Strathroy, Ontario. 2015 was the first year of operation and post-construction monitoring at the Adelaide facility.

A Raptor Management Plan (RMP) was created in response to the exceedance (0.46 raptors/turbine/year) of the provincial threshold for raptors (0.2 raptors/turbine/year) in 2015. The purpose of the RMP is to provide additional information on raptor mortality and habitat use at the Adelaide facility to inform and assist in establishing proposed mitigation measures. The results of the 2015 mortality monitoring program (e.g., species and survey timing) were used to guide the development of the RMP. The RMP focused on the breeding season (May, June and July), as all five raptor fatalities in 2015 occurred in June. The RMP program was approved by the Ministry of Natural Resources and Forestry (MNRF) in June 2016.

The first year of the RMP was implemented in 2016 and included the following monitoring components:

- scoped mortality monitoring during the breeding season (bi-monthly in May, weekly in June and July)
- cause and effect monitoring, comprised of:
    - background records review
    - habitat mapping
    - behaviour surveys at active nests (weekly, May-July)
    - adaptive monitoring

During the second year of monitoring in 2016 as part of the Environmental Effects Monitoring Plan (EEMP), two Turkey Vultures and two Red-tailed Hawk fatalities were recovered. Correcting for percent area searched, these 4 fatalities resulted in a mortality rate of 0.80 raptors/turbine/year. Unlike the 2015 raptor mortality which was concentrated in June, most raptor mortality in 2016 occurred in the fall with three raptors in September and one in October, as well as a single raptor in May.

ADELAIDE WIND POWER PROJECT:

ADDENDUM TO THE RAPTOR MONITORING PLAN

Introduction
February 17, 2017

The raptor mortality rate recorded in 2016 of 0.80 raptors/turbine/year was above the provincial threshold of 0.2 raptors/turbine/year (MNR 2011). As such, in accordance with the EEMP and the REA (Section I10), an appropriate response plan must be prepared and implemented that includes some or all of the following measures:

- Increased reporting frequency to identify potential threshold exceedance.
- Additional behavioural studies to determine factors affecting mortality rates.
- Periodic shut-down of select turbines.
- Blade feathering at specific times of year.
- An alternative plan agreed to between the Company and MNRF.

This Addendum is intended to be implemented concurrently with the RMP and therefore provides the supplementary methods and reporting protocols for additional monitoring and reporting beyond those detailed in the RMP.

The implementation of this Plan in conjunction with the RMP is intended to fulfill the REA requirements of mitigation implementation due to raptor threshold exceedance in 2015 and 2016.

2.0 METHODS

This plan proposes additional behavior studies, an extended scoped mortality program and increased reporting frequency in response to the second year of raptor threshold exceedance observed at the Adelaide Wind Power Project.

Based on the results of the 2016 habitat mapping and mortality surveys, Osprey is considered at low risk of turbine collision at the Adelaide facility, and as such no additional monitoring for this species is proposed. Turkey Vulture and Red-tailed Hawk ("the Species") will comprise those targeted in the 2017 program. Survey methods are described below.

2.1 SCOPED MORTALITY MONITORING

In addition to the EEMP and RMP monitoring, scoped mortality monitoring for raptors will be extended to weekly surveys at all non-subset turbines during both the breeding and fall migration seasons (May-October). Monitoring will consist of searches within 50 m of all non-subset turbines by walking in concentric circles weekly from May to October, encompassing the timing of raptor mortalities over the past two years.

2.2 CAUSE AND EFFECT MONITORING

The 2016 RMP cause and effect monitoring will be replicated in 2017, except for the background records review which has already been completed. Habitat mapping will be completed to locate active nests within one kilometer of turbines in the project, following the protocols outlined in Section 3.2.2 of the RMP. These field surveys will assess the activity of known nests in 2017, as well as re-assess the remainder of the study area to look for new nests.

Behavioral surveys will then be undertaken at each nest location, following the protocols outlined in 3.2.3 of the RMP. However, whereas the 2016 RMP focused on the breeding season, this addendum proposes to extend the weekly monitoring through the fall migration season, in August, September and October.

2.3 NOTIFICATION PROTOCOL

In response to the exceedance of the raptor threshold in 2016, increased reporting frequency will be implemented in 2017. The purpose of the frequent reporting is to identify potential threshold exceedances as they occur.

MNRF, Renewable Energy Branch, will be notified via email within 48 hours of the discovery of any raptor mortality. Furthermore, within 5 business days of the end of each month (i.e. May through October), MNRF will be provided with the corrected raptor mortality rate for that month. This increased level of reporting will provide immediate feedback, highlight potential risk factors and provide earlier notification of threshold exceedance and allow for quicker contingency actions if required.

3.0 REPORTING AND ANALYSIS

Reporting for the scoped raptor mortality and cause and effect monitoring programs will occur annually in conjunction with the EEMP post-construction monitoring report.

The 2017 report will synthesize the two years' of data and compare inter-annual variation in habitat availability, nest locations, and mortality patterns. The analysis in this report will be used to inform recommendations on measures to mitigate any documented risk to raptors within the Adelaide Wind Power Project.

4.0 SUMMARY

In response to the raptor threshold exceedance in 2015, two years of subsequent scoped mortality and cause and effect monitoring for raptors is required (2016-2017), which is outlined in the RMP. In response to the raptor threshold exceedance in 2016, additional monitoring and reporting will be implemented in 2017, in addition to the commitments in the RMP. Additional measures are:

- Increasing scoped mortality monitoring, extending the weekly monitoring at all non-subset turbine to include both the breeding and fall migration seasons (weekly, May through October).
- Increased behavioural monitoring, extended with twice weekly monitoring in August, September, and October.
- Development of a response protocol to provide MNRF with frequent reports of raptor mortality.

In accordance with REA Section I8, further mitigation measures will be developed following the second year (2017) of cause and effect monitoring.

The implementation of both supplemental raptor monitoring plans (RMP and this Addendum to the RMP) in 2017 is intended to fulfill the requirements of the REA in response to raptor threshold exceedances in 2015 and 2016.

5.0 REFERENCES

Cadman, M. D., D.A. Sutherland, G.G. Beck, D. Lepage, A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. (eds) Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of natural resources, and Ontario Nature, Toronto, xxii + 318pp.

Ontario Ministry of Natural Resources (MNR). 2011. Birds and Bird Habitats. Guidelines for Wind Power Projects. 32 pp. December 2011.

Preston, C. R. and R. D. Beane. 2009. Red-tailed Hawk (Buteo jamaicensis), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/052

Stantec Consulting Ltd. 2016. Adelaide Wind Power Project: Post-Construction Wildlife Monitoring Report (2015).

From: Valliant, Emma (MNRF) [mailto:Emma.Valliant@ontario.ca]
Sent: Friday, July 07, 2017 10:03 AM
To: Kozak, Mark
Cc: Valliant, Emma (MNRF); Cameron, Amy (MNRF); Poskin, Mike (MNRF)
Subject: RE: Suncor Adelaide Wind Project - Post Construction Monitoring Report

Hi Mark,

Thanks for the Adelaide Wind Power Project: Year 2 Post-Construction Wildlife Monitoring Reports (2016) dated Feb. 17, 2017. We are accepting the report as final.

We look forward to seeing the results of the third year of mortality monitoring and the results and discussion on the second year of cause and effect monitoring for raptors.

Cheers,
Emma

Emma Valliant
A/Regional Planner
705-755-5194

From: Kozak, Mark [mailto:makozak@suncor.com]
Sent: Friday, February 24, 2017 2:41 PM
To: Valliant, Emma (MNRF); Poskin, Mike (MNRF); Colella, Nick (MOECC); Wrigley, Rob (MOECC)
Subject: Suncor Adelaide Wind Project - Post Construction Monitoring Report
Importance: High

Mr. Poskin,

In accordance with REA#8279-9AUP2B, I am pleased to submit our 2016 Annual Post-Construction Monitoring Report for our Suncor Adelaide Wind Project. This report provides the results of the 2016 monitoring program which was the second year of post-construction monitoring completed at the facility. Further, in accordance with Condition I10 of our REA, we are to contact the MNRF and prepare and implement an appropriate response plan as a result of our exceedance of condition I5(3) while we were conducting scoped mortality monitoring /cause and effect monitoring as per condition I8. The response plan has been incorporated into the 2016 Annual Report. We would appreciate your feedback on this plan prior to its implementation starting on May 1, 2017.

In addition to the 2016 Annual Report, a response package has been prepared to address MNRF comments on our 2015 Annual Report. Any recommendations from the 2015 Annual Report have been incorporated into the 2016 Annual Report.

Below is the login information to access the reports. Please note that the files will need to be downloaded prior to March 3rd. Please let me know if you require any assistance with accessing the information.

I look forward to working with you through your review of the materials and specifically our response plan for the 2017 monitoring campaign.

Login Information

Browser link: https://tmpsftp.stantec.com
FTP Client Hostname: tmpsftp.stantec.com **Port:** 22 (can be used within an FTP client to view and transfer files and folders; e.g., FileZilla)
Login name: s0303074934
Password: 2273282
Disk Quota: 2GB
Expiry Date: 3/3/2017

If you require a one-time two-week extension, please click here.

Regards,

Mark Kozak
Project Manager, Renewable Energy | Suncor Energy Products Inc.
647-467-8461 | makozak@suncor.com

APPENDIX E: TABLES

Table 2.1: Categories of Carcass Condition

Code	Category	Description
I	Injured	Individual still alive.
F	Fresh	Freshly dead with little or no decay or scavenging by insects; estimated 1 to 2 days.
E	Early decomposition	Recently dead but with early signs of decay or scavenging by insects; estimated 3 to 5 days.
M	Moderate decomposition	Noticeable signs of decay or scavenging by insects; estimated 6 to 7 days.
A	Advanced decomposition	Decomposed carcass, barely recognizable or not recognizable to species; estimated more than 7 days.
C	Complete decomposition	Residual remains, such as feathers, bones, other scraps of tissue.
S	Scavenged	Carcass is not intact.

Table 2.2: Categories of Visibility Class

Class	% Vegetation Cover	Vegetation Height
Class 1 (Easy)	≥ 90% bare ground	≤ 15cm tall
Class 2 (Moderate)	≥ 25% bare ground	≤ 15 cm tall
Class 3 (Difficult)	≤ 25% bare ground	≤ 25% > 30cm tall
Class 4 (Very difficult)	Little to no bare ground	≥ 25% > 30cm tall

Table 2.3: Adelaide Wind Energy Cause and Effect Monitoring Field Survey Record, 2017

Survey Date	Survey Type	Personnel	Time	Weather Conditions*
April 24, 2017	Habitat Assessment and Raptor Behaviour Monitoring	M. Straus	11:00-18:00	8^{0}C, 3-4 wind, 0% cloud cover, no precipitation, no precipitation in the last 24hrs
May 2, 2017	Raptor Behavioural Monitoring	N. Burnett	10:15-12:15	9^{0}C, 4 wind, 0% cloud cover, light precipitation, precipitation in the last 24hrs
May 9, 2017	Raptor Behavioural Monitoring	M. Ellah	9:15-11:15	6^{0}C, 1 wind, 0% cloud cover, no precipitation, no precipitation in the last 24hrs
May 19, 2017	Raptor Behavioural Monitoring	M. Ellah	9:15-11:15	9^{0}C, 3 wind, 100% cloud cover, no precipitation, heavy rain in the last 24hrs
May 24, 2017	Raptor Behavioural and Habitat Monitoring – T15	N. Burnett	8:15-11:00	16^{0}C, 2 wind, 100% cloud cover, precipitation, precipitation in the last 24hrs
May 30, 2017	Raptor Behavioural Monitoring	N. Burnett	8:15-10:15	15^{0}C, 1wind, 10% cloud cover, no precipitation, precipitation in the last 24hrs
June 6, 2017	Raptor Behavioural Monitoring	N. Burnett	10:07-12:07	13^{0}C, 4 wind, 100% cloud cover, light precipitation, precipitation in the last 24hrs
June 14, 2017	Habitat Assessment and Raptor Behavioural Monitoring	B. Obermayer	9:45-11:45	22^{0}C, 4 wind, 15% cloud cover, no precipitation, no precipitation in the last 24hrs
June 20, 2017	Raptor Behavioural Monitoring	B. Obermayer	8:15-10:15	17^{0}C, 3 wind, 80% cloud cover, no precipitation, precipitation in the last 24hrs
June 27, 2017	Raptor Behavioural Monitoring	N. Burnett	8:43-10:45	12^{0}C, 3 wind, 85% cloud cover, light precipitation, precipitation in the last 24hrs
July 7, 2017	Raptor Behavioural Monitoring	D. Cameron	9:20-11:20	20^{0}C, 2 wind, 100% cloud cover, precipitation, no precipitation in the last 24hrs
July 14, 2017	Raptor Behavioural Monitoring	D. Cameron	8:45-10:45	21^{0}C, 2 wind, 100% cloud cover, light precipitation, no precipitation in the last 24hrs

Table 2.3: Adelaide Wind Energy Cause and Effect Monitoring Field Survey Record, 2017

Survey Date	Survey Type	Personnel	Time	Weather Conditions*
July 21, 2017	Raptor Behavioural Monitoring	N. Burnett	8:02-10:02	21^{0}C, 1 wind, 10% cloud cover, no precipitation, no precipitation in the last 24hrs
July 25, 2017	Raptor Behavioural Monitoring	M. Straus	9:00-11:10	15^{0}C, 2-3 wind, 5% cloud cover, no precipitation, precipitation in the last 24hrs
August 1, 2017	Raptor Behavioural Monitoring	N. Burnett	8:00-10:00	16^{0}C, 1 wind, 0% cloud cover, no precipitation, no precipitation in the last 24hrs
August 9, 2017	Raptor Behavioural and Habitat Monitoring – T12	N. Burnett	7:00-9:00	14^{0}C, 1 wind, 10% cloud cover, no precipitation, no precipitation in the last 24hrs
August 18, 2017	Raptor Behavioural Monitoring	M. Straus	9:15-11:15	23^{0}C, 3-4 wind, 75% cloud cover, no precipitation, precipitation in the last 24hrs
August 25, 2017	Raptor Behavioural Monitoring	L. Uskov	6:30-8:30	10^{0}C, 2 wind, 0% cloud cover, no precipitation, no precipitation in the last 24hrs
August 30, 2017	Raptor Behavioural Monitoring	M. Straus	11:43-13:43	22^{0}C, 1 wind, 90% cloud cover, no precipitation, no precipitation in the last 24hrs
September 6, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:50-10:50	10^{0}C, 1 wind, 0-50% cloud cover, no precipitation, no precipitation in the last 24hrs
September 15, 2017	Raptor Behavioural Monitoring	M. Straus	9:50-11:0	15^{0}C, 1 wind, 60% cloud cover, no precipitation, no precipitation in the last 24hrs
September 18, 2017	Raptor Behavioural Monitoring	K. Zupfer	13:36-15:36	21^{0}C, 2 wind, 100% cloud cover, light precipitation, no precipitation in the last 24hrs
September 29, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:11-10:11	12^{0}C, 2 wind, 100% cloud cover, precipitation, no precipitation in the last 24hrs
October 3, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:33-10:33	8-14^{0}C, 2 wind, 5% cloud cover, no precipitation, no precipitation in the last 24hrs
October 13, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:13-10:13	15^{0}C, 2 wind, 80% cloud cover, light precipitation, precipitation in the last 24hrs

Table 2.3: Adelaide Wind Energy Cause and Effect Monitoring Field Survey Record, 2017

Survey Date	Survey Type	Personnel	Time	Weather Conditions*
October 17, 2017	Raptor Behavioural Monitoring	K. Zupfer	9:37-11:37	9^0C, 3 wind, 0% cloud cover, no precipitation, no precipitation in the last 24hrs
October 24, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:07-10:07	9^0C, 3 wind, 30% cloud cover, no precipitation, precipitation in the last 24hrs
October 31, 2017	Raptor Behavioural Monitoring	K. Zupfer	8:05-10:05	5^0C, 4 wind, 90% cloud cover, precipitation, precipitation in the last 24hrs

* Wind conditions expressed using Beaufort Scale:
0 – calm, <2km/hr 2 – light, 7-12 km/hr 4 – moderate, 20-30 km/hr 6 – strong, 41-51 km/hr
1 – light, 2-6 km/hr 3 – moderate, 13-19 km/hr 5 – fresh, 31-40 km/hr

Table 3.1: Searcher Efficiency Trials at the Adelaide Wind Energy Project, 2017

Month	Searcher	Placed	Scavenged	Found	Individual SE (Se_x)
Spring	SC	21	1	17	0.85
Summer	SC	21	1	14	0.70
Fall	SC	21	1	18	0.90

SC- Sean Cole

Table 3.2: Scavenger Trials at the Adelaide Wind Energy Project, 2017

	Placed	Visit 1	Visit 2	Visit 3	Visit 4	Sc as a proportion
Spring						
# of Carcasses	20	20	14	8	7	0.79
Summer						
# of Carcasses	20	17	11	6	3	0.69
Fall						
# of Carcasses	25	23	17	11	7	0.76

Table 3.3: Average Monthly Percent Area Searched (Ps) at the Adelaide Wind Energy Project, 2017

Month	Turbine	Vegetation/Crop	Ps (%)	Average Ps (%)
May	6	Corn	1.00	0.85
	7	Soy	0.62	
	11	Corn	1.00	
	12	Corn	1.00	
	14	Soy	0.67	
	17	Corn	0.99	
	19	Soy	0.99	
	20	Rye	0.30	
	22	Corn	1.00	
	27	Corn	1.00	
June	6	Corn	1.00	0.82
	7	Soy	0.56	
	11	Corn	0.89	
	12	Corn	1.00	
	14	Soy	0.62	
	17	Corn	1.00	
	19	Soy	1.00	
	20	Rye	0.10	
	22	Corn	1.00	
	27	Corn	1.00	
July	6	Corn	0.89	0.82
	7	Soy	0.61	
	11	Corn	0.91	
	12	Corn	0.62	
	14	Soy	0.72	
	17	Corn	0.90	
	19	Soy	1.00	
	20	Rye	0.80	
	22	Corn	0.89	
	27	Corn	0.90	

Table 3.3: Average Monthly Percent Area Searched (Ps) at the Adelaide Wind Energy Project, 2017

Month	Turbine	Vegetation/Crop	Ps (%)	Average Ps (%)
August	6	Corn	0.14	0.42
	7	Soy	0.72	
	11	Corn	0.23	
	12	Corn	0.20	
	14	Soy	0.72	
	17	Corn	0.19	
	19	Soy	0.69	
	20	Rye	0.91	
	22	Corn	0.15	
	27	Corn	0.21	
September	6	Corn	0.13	0.35
	7	Soy	0.58	
	11	Corn	0.24	
	12	Corn	0.15	
	14	Soy	0.65	
	17	Corn	0.18	
	19	Soy	0.30	
	20	Rye	0.91	
	22	Corn	0.14	
	27	Corn	0.17	
October	6	Corn	0.13	0.38
	7	Soy	0.72	
	11	Corn	0.23	
	12	Corn	0.15	
	14	Soy	0.97	
	17	Corn	0.18	
	19	Soy	0.52	
	20	Rye	0.58	
	22	Corn	0.13	
	27	Corn	0.15	
Average % Searched				**0.61**

Table 3.4: Uncorrected Monthly Raptor Fatalities, at the Adelaide Wind Energy Project, 2017

Month	Species	Number of individuals	Turbine	Total per month
May	Red-tailed Hawk	1	12	2
	Osprey	1	27	
June	-	-	-	0
July	-	-	-	0
August	-	-	-	0
September	-	-	-	0
October	-	-	-	0
Total				**2**

Table 3.5: Corrected Monthly Raptor Mortality Estimates at the Adelaide Wind Energy Project, 2017

Month	c	SE	SC	PS	C	C per MW	C per Turbine
May	2	1.00	1.00	0.85	2.35	0.11	0.24
June	0	1.00	1.00	0.82	0.00	0.00	0.00
July	0	1.00	1.00	0.82	0.00	0.00	0.00
August	0	1.00	1.00	0.42	0.00	0.00	0.00
September	0	1.00	1.00	0.35	0.00	0.00	0.00
October	0	1.00	1.00	0.38	0.00	0.00	0.00
TOTAL	**2**				**2.35**	**0.11**	**0.24**

c	Number of small bird carcasses located (uncorrected)
Se	Searcher Efficiency Trial Results
Sc	Scavenger Trial Results
Ps	Percent Area Surveyed
C	Corrected Mortality Estimate
Per Turbine	C Divided by Total Number of Turbines
Per MW	C Divided by Total Number of MegaWatts

Table 3.6: Supplemental Monitoring and Incidental Fatalities at the Adelaide Wind Energy Project, 2017

Date	Species	Turbine	Recovery/Survey Type
5/2/2017	Turkey Vulture	15	Incidental – Found by staff
5/19/2017	Bobolink	15	Supplemental Raptor Monitoring
5/31/2017	Black-billed Cuckoo	13	Supplemental Raptor Monitoring
7/5/2017	Silver-haired Bat	9	Supplemental Raptor Monitoring
8/1/2017	Eastern Red Bat	5	Supplemental Raptor Monitoring
8/10/2017	Turkey Vulture	5	Incidental – Found by staff
8/18/2017	Hoary Bat	18	Supplemental Raptor Monitoring
8/30/2017	Eastern Red Bat	13	Supplemental Raptor Monitoring
9/27/2017	Turkey Vulture	14	Incidental – Outside 50m search radius
10/27/2017	Turkey Vulture	21	Supplemental Raptor Monitoring

Table 3.7: Uncorrected Monthly Small Bird Fatalities at the Adelaide Wind Energy Project, 2017

Month	Species	Number of individuals	Turbine	Total per month
May	Northern Flicker	1	6	4
	Yellow-rumped Warbler	1	19	
	Mallard	1	11	
	American Redstart	1	12	
June	Black-billed Cuckoo	1	22	2
	Horned Lark	1	27	
July	Cedar Waxwing	1	14	1
August	-	0	-	0
September	Red-eyed Vireo	1	27	2
	Warbler Species	1	19	
October	Kinglet Species	1	6	1
Total				**10**

Table 3.8: Small Bird Fatalities per Turbine at the Adelaide Wind Energy Project, 2017

Turbine	May		June		July		August		September		October		Total	
	c	C	c	C	c	C	c	C	c	C	c	C	c	C
6	1.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	11.20	2.00	12.69
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.49
12	1.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.49
14	0.00	0.00	0.00	0.00	1.00	2.90	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.90
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	1.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.85	0.00	0.00	2.00	6.36
20	0.00	0.00	0.00	0.00	0.00	1.93	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
22	0.00	0.00	1.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49
27	0.00	0.00	1.00	1.49	0.00	0.00	0.00	0.00	1.00	8.56	0.00	0.00	2.00	10.05

c Number of small bird carcasses located (uncorrected)
C Corrected Mortality Estimate

Table 3.9: Corrected Monthly Small Bird Mortality Estimates at the Adelaide Wind Energy Project, 2017

Month	c	SE	SC	PS	C	C per MW	C per Turbine
May	4	0.85	0.79	0.85	7.01	0.32	0.70
June	2	0.85	0.79	0.82	3.63	0.16	0.36
July	1	0.70	0.69	0.82	2.54	0.11	0.25
August	0	0.70	0.69	0.42	0.00	0.00	0.00
September	2	0.90	0.76	0.35	8.44	0.38	0.84
October	1	0.90	0.76	0.38	3.87	0.17	0.39
TOTAL	**10**				**25.49**	**1.15**	**2.55**

c Number of small bird carcasses located (uncorrected)
Se Searcher Efficiency Trial Results
Sc Scavenger Trial Results
Ps Percent Area Surveyed
C Corrected Mortality Estimate
Per Turbine C Divided by Total Number of Turbines
Per MW C Divided by Total Number of MegaWatts

Table 3.10: Uncorrected Monthly Bat Fatalities at the Adelaide Wind Energy Project, 2017

Month	Species	Number of Individuals	Turbine	Total per month
May	-	0	-	0
June	Silver-haired Bat	1	11	1
July	Eastern Red Bat	1	6	1
August	Little Brown Myotis	1	12	2
	Hoary Bat	1	22	
September	Big Brown Bat	1	6	2
	Hoary Bat	1	6	
October	Silver-haired Bat	1	6	1
TOTAL		**7**		**7**

Table 3.11: Uncorrected Bat Fatalities by Turbine at the Adelaide Wind Energy Project, 2017

Turbine	Number of Individuals
6	4
7	0
11	1
12	1
14	0
17	0
19	0
20	0
22	1
27	0

Table 3.12: Corrected Bat Mortality Estimates at the Adelaide Wind Energy Project, 2017

Month	c	SE	SC	PS	C	$C_{per\ MW}$	$C_{per\ Turbine}$
May	0	0.85	0.79	0.85	0.00	0.00	0.00
June	1	0.85	0.79	0.82	1.82	0.08	0.18
July	1	0.70	0.69	0.82	2.54	0.11	0.25
August	2	0.70	0.69	0.42	9.93	0.45	0.99
September	2	0.90	0.76	0.35	8.44	0.38	0.84

Table 3.12: Corrected Bat Mortality Estimates at the Adelaide Wind Energy Project, 2017

Month	c	SE	SC	PS	C	C per MW	C per Turbine
October	1	0.90	0.76	0.38	3.87	0.17	0.39
TOTAL	**7**				**26.60**	**1.20**	**2.66**

c	Number of bat carcasses located (uncorrected)
Se	Searcher Efficiency Trial Results
Sc	Scavenger Impact Trial Results
Ps	Percent Area Surveyed
C	Corrected Mortality Estimate
Per Turbine	C Divided by Total Number of Turbines
Per MW	C Divided by Total Number of MegaWatts

Table 3.13: Adelaide Wind Energy Incidental Raptor Observations, 2017

Survey Date	Species	Number Observed	Behaviour
April 24, 2017	Red-tailed Hawk	4	• thermal soaring (hunting/scavenging) • perching
	Turkey Vulture	27	• thermal soaring (hunting/scavenging) • perching
June 14, 2017	Red-tailed Hawk	0	
	Turkey Vulture	23	• thermal soaring (hunting/scavenging) • perching

Table 3.14: Adelaide Wind Energy Behavioural Survey Results, 2017

Date (2017)	Total Observed #	Species[1]	Behaviour	Flight Height (m)
April 24	1	RTHA	Adult on the nest, flushed to the south.	15
May 2	1	RTHA	Adult on the nest, flushed to the south upon arrival, returned to nest within 20 minutes. Hunkered down on nest during bouts of rain, stretching.	25
May 9	1	RTHA	Adult on the nest, flushed to the south half an hour later. Did not return to nest during survey.	25

[1] RTHA: Red-tailed Hawk
TUVU: Turkey Vulture

Table 3.14: Adelaide Wind Energy Behavioural Survey Results, 2017

Date (2017)	Total Observed #	Species[1]	Behaviour	Flight Height (m)
May 19	1	RTHA	No birds visible on nest. Adult glided in from the south and landed approximately 100 m from the nest. Harassed by crows then flew out of site.	500
May 24	1	RTHA	Adult glided over woodlot south of the nest, flying by from east to west. 1.75 hours later returned to nest from the south.	15-35
	2	TUVU	TUVU flew over field near turbine but away from nest. Second Vulture observed 25 minutes later west of turbine.	15-25
May 30	1	RTHA	Adult returned to nest from the south. 20 minutes later flew west along woodlot edge.	20
	1	TUVU	Vulture flying over agricultural field west to east between turbine and woodlot.	50
June 6	1	RTHA	Adult returned to nest and left approximately 5 minutes afterwards towards the south.	25
	5	TUVU	TUVU observed south of nest flying east to west. 20 minutes later a kettle of 4 TUVU were observed soaring north to south well above nest height.	40-80
June 14	0		No birds observed.	
June 20	0		No birds observed.	
June 27	2	TUVU	2 TUVUs flying over woodlot west to east.	40
July 7	1	RTHA	Juvenile hawk briefly circled turbine 13 and then flew north.	80
July 14	3	RTHA	Adult hawk observed west of nest soaring, followed by 2 adults observed circling north of nest 13 minutes later.	100
July 21	0		No birds observed.	-
July 25	1	RTHA	Adult came into view from the woodlot (not at the nest site) and began circling over woodlot higher and higher eventually (15 minutes later) gliding east out of view.	25-300
	4	TUVU	4 TUVUs observed soaring over woodlot over a 45-minute period, the first soaring west then coming back and heading east, others disappearing to the south out of view behind the woodlot. 4 TUVUs were observed 15-30 minutes later over the woodlot, presumed to be the same 4 previously recorded.	30-80
August 1	0		No birds observed.	

Table 3.14: Adelaide Wind Energy Behavioural Survey Results, 2017

Date (2017)	Total Observed #	Species[1]	Behaviour	Flight Height (m)
August 9	1	RTHA	Bird flew east to west along northern edge of woodlot.	20
August 18	12	TUVU	Maximum kettle size of 12 observed, generally flying over the woodlot circling up (or down) depending on height. Generally, all TUVUs drifted west before disappearing to the south of the woodlot. 2 TUVUs were headed to the north, one on the east side of turbine and one on the west side of the turbine.	10-80
August 25	0		No birds observed.	
August 30	1	RTHA	Perched at western edge of woodlot facing agricultural field. Observed preening. American crows flew in and began harassing adult, which chased the hawk into the corn field then circled back towards the woodlot. Thermal soared over woodlot gradually moving east.	15-200+
	5	TUVU	TUVUs observed throughout the observation period, with maximum kettle size of 5 observed. TUVUs generally thermal soared over the woodlot.	20-200+
September 6	1	RTHA	RTHA was observed chasing a TUVU in the air, diving into the woodlot after the TUVU.	80-20
	11	TUVU	Maximum kettle size of 3 TUVUs observed. Various TUVUs glided or circled over woodlot for approximately 45 minutes.	20-200+
September 15	5	TUVU	Two TUVUs observed soaring over woodlot, with one of them gliding off to the north. The remainder of the TUVUs were observed soaring over agricultural fields to the south at a distance.	80-100
September 18	8	TUVU	TUVUs soaring and gliding over the woodlot or adjacent agricultural field. First two observed were east of the turbine, the second east of the woodlot, third gliding west, the fourth circled over the woodlot, and the remaining 3 together circling southeast of the turbine.	20-200+
September 29	10	TUVU	Maximum kettle size observed was 8 soaring over the woodlot.	80-200+

Table 3.14: Adelaide Wind Energy Behavioural Survey Results, 2017

Date (2017)	Total Observed #	Species[1]	Behaviour	Flight Height (m)
October 3	5	TUVU	15-minute period of 5 individual TUVUs gliding or soaring over the woodlot or east/southeast of the turbine.	20-80
October 13	1	RTHA	RTHA perched on fence of access road, flushed upon observer arrival. Flew below blade height towards T13 then perched in a tree for 30 minutes then flew south behind woodlot out of site. An hour later a RTHA flew from woodlot towards access road then disappeared below the corn. 30 minutes later as the observer was leaving the site, the RTHA was observed near the barn along Cuddy Drive on the same property flying towards the west over the cut wheat field.	20
October 17	1	RTHA	Perched in same tree by T13 as during previous visit, flushed to south behind woodlot. Later observed gliding over woodlot and disappeared south into woodlot.	10-80
	7	TUVU	TUVUs soaring and gliding over woodlot then flying off over adjacent agricultural fields. Maximum kettle size observed was 2, observed around 11:30 flying high over the woodlot.	80-200+
October 24	0		No birds observed.	
October 31	0		No birds observed.	

Table 3.15: Adelaide Wind Energy Red-tailed Hawk Flight Patterns, 2017

Flight Pattern No.	Date(s) flight pattern was used					Total days used
1	April 24	May 2	May 9	June 6	Oct. 17	**3**
2	May 2	May 19	May 24	May 30	-	**1**
3	May 24	Aug. 9	Sept. 6	-	-	**1**
4	May 30	-	-	-	-	**4**
5	July 7	-	-	-	-	**2**
6	July 14	-	-	-	-	**7**
7	July 14	-	-	-	-	**1**

Table 3.15: Adelaide Wind Energy Red-tailed Hawk Flight Patterns, 2017

Flight Pattern No.	Date(s) flight pattern was used					Total days used
8	July 25	-	-	-	-	**2**
9	Aug. 30	-	-	-	-	**3**
10	Oct. 13	-	-	-	-	**2**
11	Oct. 13	-	-	-	-	**3**
12	Oct. 13	-	-	-	-	**3**
13	Oct. 13	Oct. 17	-	-	-	**2**
Total						**34**

Table 3.16: Adelaide Wind Energy Red-tailed Hawk Perch Locations, 2017

Perch Location No.	Date(s) perch location was used						Total days used
1	April 24	May 2	May 9	May 24	May 30	June 6	**6**
2	May 19	-	-	-	-	-	**1**
3	Aug. 30	Oct. 13	Oct. 17	-	-	-	**3**
4	Oct. 13	-	-	-	-	-	**1**
Total							**11**

Table 3.17: Adelaide Wind Energy Turkey Vulture Flight Patterns, 2017

Flight Pattern No.	Date(s) flight pattern was used							Total days used
1	May 24	Aug. 18	Aug. 30	-	-	-	-	**3**
2	May 24	-	-	-	-	-	-	**1**
3	May 30	-	-	-	-	-	-	**1**
4	June 6	July 25	Aug. 18	Sept. 18	-	-	-	**4**
5	June 6	July 25	-	-	-	-	-	**2**
6	June 27	July 25	Aug. 18	Aug. 30	Sept. 6	Oct. 3	Oct. 17	**7**
7	Aug. 18	-	-	-	-	-	-	**1**
8	Aug. 18	Oct. 17	-	-	-	-	-	**2**
9	Sept. 6	Sept. 18	Oct. 17	-	-	-	-	**3**
10	Sept. 15	Oct. 17	-	-	-	-	-	**2**

Table 3.17: Adelaide Wind Energy Turkey Vulture Flight Patterns, 2017

Flight Pattern No.	Date(s) flight pattern was used							Total days used
11	Aug. 30	Sept. 29	Oct. 3	-	-	-	-	**3**
12	Sept. 6	Sept. 29	Oct. 3	-	-	-	-	**3**
13	Sept. 15	Sept. 18	-	-	-	-	-	**2**
14	Sept. 18	Oct. 3	Oct. 17	-	-	-	-	**3**
15	Sept. 29	Oct. 3	-	-	-	-	-	**2**
16	Sept. 6	Oct. 3	-	-	-	-	-	**2**
17	Sept. 6	Sept. 15	Sept. 29	Oct. 17	-	-	-	**4**
18	Sept. 18	-	-	-	-	-	-	**1**
Total								**46**

Table 4.1: Corrected Bird, Raptor and Bat Fatalities at the Adelaide Wind Power Project, 2015 – 2017

Guild	Raw Fatalities per year1			Mortality per turbine per year		
	2015	**2016**	**2017**	**2015**	**2016**	**2017**
Raptors	4	4	2	0.46	0.80	0.24
Birds	10	1	10	2.32	0.18	2.55
Bats	36	11	7	8.57	4.08	2.66

1- Does not include incidental fatalities recovered outside the regular mortality search program

APPENDIX F:
RAW MORTALITY DATA

Stantec

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	7	Subset	2	5	2017	05/02/17	10:10	10:51	41	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	6	Subset	2	5	2017	05/02/17	11:05	11:44	39	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	11	Subset	2	5	2017	05/02/17	12:30	13:00	30	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	12	Subset	2	5	2017	05/02/17	13:05	13:38	33	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	14	Subset	2	5	2017	05/02/17	13:43	14:15	32	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	17	Subset	2	5	2017	05/02/17	14:30	15:03	33	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	19	Subset	2	5	2017	05/02/17	16:38	17:10	32	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	9	13	SE	Rain	90	Recent heavy rains	
Adelaide Wind Farm	27	Subset	3	5	2017	05/03/17	9:54	10:26	32	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	8	2	S	0	0		
Adelaide Wind Farm	22	Subset	3	5	2017	05/03/17	10:54	11:32	38	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	8	2	S	0	0		
Adelaide Wind Farm	20	Subset	3	5	2017	05/03/17	12:06	12:37	31	1	Sean Cole	First search of the year	7854	no	circular	50m radius, 100m by 100m	5-6m	8	2	S	0	0		
Adelaide Wind Farm	7	Subset	5	5	2017	05/05/17	9:24	10:00	36	1	Sean Cole	3	5019	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	6	Subset	5	5	2017	05/05/17	10:22	10:53	31	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	11	Subset	5	5	2017	05/05/17	11:08	11:43	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	12	Subset	5	5	2017	05/05/17	12:10	12:44	39	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	14	Subset	5	5	2017	05/05/17	13:15	13:42	27	1	Sean Cole	3	5388	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	17	Subset	5	5	2017	05/05/17	13:54	14:23	29	1	Sean Cole	3	7035	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	19	Subset	5	5	2017	05/05/17	14:40	15:10	30	1	Sean Cole	3	7242	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	20	Subset	5	5	2017	05/05/17	15:22	15:49	27	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	27	Subset	5	5	2017	05/05/17	16:04	16:34	30	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	6	8	n	Rain	100	Recent heavy rains	
Adelaide Wind Farm	7	Subset	9	5	2017	05/09/17	9:18	9:38	20	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	6	Subset	9	5	2017	05/09/17	10:04	10:31	27	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	11	Subset	9	5	2017	05/09/17	11:17	11:47	30	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	12	Subset	9	5	2017	05/09/17	11:57	12:25	28	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	14	Subset	9	5	2017	05/09/17	12:40	13:09	29	1	Sean Cole	4	4896	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	17	Subset	9	5	2017	05/09/17	13:30	13:56	26	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	19	Subset	9	5	2017	05/09/17	14:06	14:36	30	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	20	Subset	9	5	2017	05/09/17	14:46	15:01	15	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	22	Subset	9	5	2017	05/09/17	15:12	15:31	29	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	27	Subset	9	5	2017	05/09/17	15:40	14:07	27	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	9	3	w	0	0		
Adelaide Wind Farm	7	Subset	12	5	2017	05/12/17	8:54	9:25	31	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	6	Subset	12	5	2017	05/12/17	9:36	10:10	34	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	11	Subset	12	5	2017	05/12/17	10:25	11:02	37	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	12	Subset	12	5	2017	05/12/17	11:11	11:45	34	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	14	Subset	12	5	2017	05/12/17	12:10	12:38	28	1	Sean Cole	7	4896	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	17	Subset	12	5	2017	05/12/17	1:01	1:37	36	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	20	Subset	12	5	2017	05/12/17	2:03	2:20	17	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	22	Subset	12	5	2017	05/12/17	2:45	3:15	30	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	27	Subset	12	5	2017	05/12/17	3:24	3:53	29	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	14	8	ne	0	5		
Adelaide Wind Farm	7	Subset	16	5	2017	05/16/17	9:05	9:32	27	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	6	Subset	16	5	2017	05/16/17	9:54	10:26	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	11	Subset	16	5	2017	05/16/17	11:02	11:32	30	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	12	Subset	16	5	2017	05/16/17	11:45	12:17	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	14	Subset	16	5	2017	05/16/17	12:40	13:04	24	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	17	Subset	16	5	2017	05/16/17	13:12	13:42	30	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	19	Subset	16	5	2017	05/16/17	13:49	14:20	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	20	Subset	16	5	2017	05/16/17	14:28	14:42	14	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	22	Subset	16	5	2017	05/16/17	14:52	15:22	30	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	27	Subset	16	5	2017	05/16/17	15:34	16:05	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	se	Rain	100		
Adelaide Wind Farm	7	Subset	19	5	2017	05/19/17	9:05	9:33	28	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	6	Subset	19	5	2017	05/19/17	9:42	10:20	38	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	11	Subset	19	5	2017	05/19/17	10:27	10:59	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	12	Subset	19	5	2017	05/19/17	11:10	11:45	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	14	Subset	19	5	2017	05/19/17	12:10	12:36	26	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	17	Subset	19	5	2017	05/19/17	13:14	13:44	30	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	19	Subset	19	5	2017	05/19/17	14:04	14:34	30	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	20	Subset	19	5	2017	05/19/17	14:40	14:55	15	1	Sean Cole	3	785	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	22	Subset	19	5	2017	05/19/17	15:15	15:56	31	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	27	Subset	19	5	2017	05/19/17	15:54	16:25	31	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	8	18	nw	0	100		
Adelaide Wind Farm	7	Subset	24	5	2017	05/24/17	8:58	9:19	21	1	Sean Cole	5	4378	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	6	Subset	24	5	2017	05/24/17	9:39	10:10	31	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	11	Subset	24	5	2017	05/24/17	10:57	11:27	30	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	12	Subset	24	5	2017	05/24/17	11:34	12:05	31	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	14	Subset	24	5	2017	05/24/17	12:11	12:35	24	1	Sean Cole	5	4902	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	17	Subset	24	5	2017	05/24/17	13:00	13:32	32	1	Sean Cole	5	7844	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	19	Subset	24	5	2017	05/24/17	13:37	14:08	31	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	20	Subset	24	5	2017	05/24/17	14:16	14:32	16	1	Sean Cole	5	785	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	22	Subset	24	5	2017	05/24/17	14:42	15:14	32	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	27	Subset	24	5	2017	05/24/17	15:31	16:04	33	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	19	16	ese	0	80		
Adelaide Wind Farm	7	Subset	26	5	2017	05/26/17	9:10	9:31	21	1	Sean Cole	2	4378	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	6	Subset	26	5	2017	05/26/17	9:39	10:12	33	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	11	Subset	26	5	2017	05/26/17	10:22	10:54	32	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	12	Subset	26	5	2017	05/26/17	11:02	11:34	32	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	14	Subset	26	5	2017	05/26/17	11:41	12:05	24	1	Sean Cole	2	4902	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	17	Subset	26	5	2017	05/26/17	12:31	13:02	31	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	19	Subset	26	5	2017	05/26/17	13:26	14:00	34	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	20	Subset	26	5	2017	05/26/17	14:09	14:23	14	1	Sean Cole	2	785	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	22	Subset	26	5	2017	05/26/17	14:52	15:27	35	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	27	Subset	26	5	2017	05/26/17	15:51	16:24	33	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	wnw	0	100		
Adelaide Wind Farm	7	Subset	30	5	2017	05/30/17	9:05	9:30	25	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	6	Subset	30	5	2017	05/30/17	9:38	10:09	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	11	Subset	30	5	2017	05/30/17	10:17	10:48	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	12	Subset	30	5	2017	05/30/17	10:55	11:39	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	14	Subset	30	5	2017	05/30/17	11:50	12:14	24	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	17	Subset	30	5	2017	05/30/17	12:21	12:54	33	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	19	Subset	30	5	2017	05/30/17	13:00	13:33	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	20	Subset	30	5	2017	05/30/17	13:40	13:54	14	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	22	Subset	30	5	2017	05/30/17	14:02	14:34	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	27	Subset	30	5	2017	05/30/17	14:45	15:19	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	9	s	0	10		
Adelaide Wind Farm	7	Subset	2	6	2017	06/02/17	9:07	9:30	23	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	6	Subset	2	6	2017	06/02/17	9:39	10:11	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	12	Subset	2	6	2017	06/02/17	10:25	10:59	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	14	Subset	2	6	2017	06/02/17	11:08	11:32	24	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	17	Subset	2	6	2017	06/02/17	11:46	12:19	33	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	11	Subset	2	6	2017	06/02/17	12:40	13:12	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	19	Subset	2	6	2017	06/02/17	13:24	13:58	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	20	Subset	2	6	2017	06/02/17	14:07	14:21	14	1	Sean Cole	3	785	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	22	Subset	2	6	2017	06/02/17	14:31	15:04	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	27	Subset	2	6	2017	06/02/17	15:12	15:45	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	4	nw	0	5		
Adelaide Wind Farm	7	Subset	6	6	2017	06/06/17	9:07	9:29	22	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	6	Subset	6	6	2017	06/06/17	9:52	10:24	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	11	Subset	6	6	2017	06/06/17	11:06	11:38	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	12	Subset	6	6	2017	06/06/17	11:44	12:17	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	14	Subset	6	6	2017	06/06/17	12:24	12:47	23	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	17	Subset	6	6	2017	06/06/17	13:11	13:43	32	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	19	Subset	6	6	2017	06/06/17	13:50	14:24	24	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	20	Subset	6	6	2017	06/06/17	14:32	14:45	13	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	22	Subset	6	6	2017	06/06/17	14:55	15:27	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	27	Subset	6	6	2017	06/06/17	15:36	16:09	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	14	n	0	100		
Adelaide Wind Farm	7	Subset	9	6	2017	06/09/17	9:06	9:29	23	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	6	Subset	9	6	2017	06/09/17	9:38	10:10	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	11	Subset	9	6	2017	06/09/17	10:20	10:53	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	12	Subset	9	6	2017	06/09/17	11:00	11:32	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	14	Subset	9	6	2017	06/09/17	11:42	12:06	24	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	17	Subset	9	6	2017	06/09/17	12:33	13:05	32	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	19	Subset	9	6	2017	06/09/17	13:31	14:05	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	20	Subset	9	6	2017	06/09/17	14:14	14:27	13	1	Sean Cole	3	785	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	22	Subset	9	6	2017	06/09/17	14:52	15:25	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	27	Subset	9	6	2017	06/09/17	15:45	16:17	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	23	7	w	0	60		
Adelaide Wind Farm	7	Subset	13	6	2017	06/13/17	9:05	9:27	22	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	6	Subset	13	6	2017	06/13/17	9:53	10:24	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	11	Subset	13	6	2017	06/13/17	11:04	11:36	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	12	Subset	13	6	2017	06/13/17	11:46	12:19	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	14	Subset	13	6	2017	06/13/17	12:27	12:51	24	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	17	Subset	13	6	2017	06/13/17	13:18	13:50	32	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	19	Subset	13	6	2017	06/13/17	13:59	14:33	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	20	Subset	13	6	2017	06/13/17	14:41	14:53	12	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	22	Subset	13	6	2017	06/13/17	15:01	15:33	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	27	Subset	13	6	2017	06/13/17	15:44	16:17	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	7	se	0	75		
Adelaide Wind Farm	7	Subset	16	6	2017	06/16/17	9:08	9:30	22	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	6	Subset	16	6	2017	06/16/17	9:39	10:09	30	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	12	Subset	16	6	2017	06/16/17	10:25	10:58	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	14	Subset	16	6	2017	06/16/17	11:06	11:31	25	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	17	Subset	16	6	2017	06/16/17	11:57	12:29	32	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	19	Subset	16	6	2017	06/16/17	12:56	13:31	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	20	Subset	16	6	2017	06/16/17	13:41	13:54	13	1	Sean Cole	3	785	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	22	Subset	16	6	2017	06/16/17	14:21	14:54	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	27	Subset	16	6	2017	06/16/17	15:17	15:49	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	8	w	0	5		
Adelaide Wind Farm	7	Subset	20	6	2017	06/20/17	9:22	9:45	23	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	6	Subset	20	6	2017	06/20/17	10:14	10:45	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	11	Subset	20	6	2017	06/20/17	11:27	11:59	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	12	Subset	20	6	2017	06/20/17	12:16	12:49	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	14	Subset	20	6	2017	06/20/17	12:58	13:22	24	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	17	Subset	20	6	2017	06/20/17	13:48	14:20	32	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	19	Subset	20	6	2017	06/20/17	14:29	15:02	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	20	Subset	20	6	2017	06/20/17	15:10	15:22	12	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	22	Subset	20	6	2017	06/20/17	15:33	16:06	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	27	Subset	20	6	2017	06/20/17	16:16	16:48	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	10	w	0	80		
Adelaide Wind Farm	7	Subset	23	6	2017	06/23/17	9:06	9:26	20	1	Sean Cole	7	4378	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	6	Subset	23	6	2017	06/23/17	9:33	10:04	31	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	11	Subset	23	6	2017	06/23/17	10:13	10:46	33	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	12	Subset	23	6	2017	06/23/17	11:08	11:42	34	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	14	Subset	23	6	2017	06/23/17	11:50	12:13	23	1	Sean Cole	7	4902	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	17	Subset	23	6	2017	06/23/17	12:38	13:09	31	1	Sean Cole	7	7844	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	19	Subset	23	6	2017	06/23/17	13:35	14:08	33	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	20	Subset	23	6	2017	06/23/17	14:18	14:29	11	1	Sean Cole	7	785	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	27	Subset	23	6	2017	06/23/17	15:20	3:53	32	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	s	12	100		
Adelaide Wind Farm	6	Subset	27	6	2017	06/27/17	9:08	9:40	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	11	Subset	27	6	2017	06/27/17	9:52	10:28	30	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	12	Subset	27	6	2017	06/27/17	10:38	11:11	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	14	Subset	27	6	2017	06/27/17	11:19	11:42	23	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	17	Subset	27	6	2017	06/27/17	11:50	12:23	33	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	19	Subset	27	6	2017	06/27/17	12:31	13:02	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	20	Subset	27	6	2017	06/27/17	13:11	13:22	11	1	Sean Cole	4	785	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	22	Subset	27	6	2017	06/27/17	13:32	14:05	33	1	Sean Cole	7	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	27	Subset	27	6	2017	06/27/17	14:15	14:47	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	7	Subset	27	6	2017	06/27/17	15:07	15:29	22	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	13	20	nw	0	75		
Adelaide Wind Farm	7	Subset	30	6	2017	06/30/17	8:06	8:28	22	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	6	Subset	30	6	2017	06/30/17	8:37	9:10	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	11	Subset	30	6	2017	06/30/17	9:21	9:53	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	12	Subset	30	6	2017	06/30/17	10:02	10:35	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	14	Subset	30	6	2017	06/30/17	10:43	11:08	25	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	17	Subset	30	6	2017	06/30/17	11:17	11:48	31	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	19	Subset	30	6	2017	06/30/17	11:57	12:31	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	20	Subset	30	6	2017	06/30/17	12:51	13:03	12	1	Sean Cole	3	785	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	22	Subset	30	6	2017	06/30/17	13:14	13:47	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	27	Subset	30	6	2017	06/30/17	13:55	14:29	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	7	sw	0	100		
Adelaide Wind Farm	7	Subset	5	7	2017	07/05/17	9:07	9:28	21	1	Sean Cole	6	4378	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	6	Subset	5	7	2017	07/05/17	9:56	10:28	32	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	11	Subset	5	7	2017	07/05/17	11:20	11:53	33	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	12	Subset	5	7	2017	07/05/17	12:01	12:34	33	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	14	Subset	5	7	2017	07/05/17	12:43	13:08	25	1	Sean Cole	6	4902	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	17	Subset	5	7	2017	07/05/17	13:37	14:08	31	1	Sean Cole	6	7844	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	19	Subset	5	7	2017	07/05/17	14:17	14:50	33	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	20	Subset	5	7	2017	07/05/17	14:59	15:11	12	1	Sean Cole	6	785	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	22	Subset	5	7	2017	07/05/17	15:20	15:54	34	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	27	Subset	5	7	2017	07/05/17	16:03	16:35	32	1	Sean Cole	6	7854	no	circular	50m radius, 100m by 100m	5-6m	22	5	e	0	0		
Adelaide Wind Farm	7	Subset	7	7	2017	07/07/17	9:22	9:42	20	1	Sean Cole	2	4378	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	6	Subset	7	7	2017	07/07/17	9:51	10:25	34	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	11	Subset	7	7	2017	07/07/17	10:36	11:09	33	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	12	Subset	7	7	2017	07/07/17	11:16	11:49	33	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	14	Subset	7	7	2017	07/07/17	11:57	12:21	24	1	Sean Cole	2	4902	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	17	Subset	7	7	2017	07/07/17	12:49	13:21	32	1	Sean Cole	2	7844	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	19	Subset	7	7	2017	07/07/17	13:50	14:23	33	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	20	Subset	7	7	2017	07/07/17	14:35	15:00	25	1	Sean Cole	2	5040	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	22	Subset	7	7	2017	07/07/17	15:28	16:00	32	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	27	Subset	7	7	2017	07/07/17	16:23	16:55	32	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	20	8	w	1	80		
Adelaide Wind Farm	7	Subset	11	7	2017	07/11/17	9:04	9:24	20	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	6	Subset	11	7	2017	07/11/17	9:51	10:24	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	11	Subset	11	7	2017	07/11/17	11:07	11:40	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	12	Subset	11	7	2017	07/11/17	11:48	12:22	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	14	Subset	11	7	2017	07/11/17	12:30	12:53	23	1	Sean Cole	4	4902	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	17	Subset	11	7	2017	07/11/17	13:18	13:50	32	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	19	Subset	11	7	2017	07/11/17	13:59	14:30	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	20	Subset	11	7	2017	07/11/17	14:40	15:04	24	1	Sean Cole	4	5040	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	22	Subset	11	7	2017	07/11/17	15:15	15:48	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	27	Subset	11	7	2017	07/11/17	15:56	16:28	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	22	10	s	0	100		
Adelaide Wind Farm	7	Subset	14	7	2017	07/14/17	9:20	9:41	21	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	6	Subset	14	7	2017	07/14/17	9:50	10:24	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	11	Subset	14	7	2017	07/14/17	10:34	11:08	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	12	Subset	14	7	2017	07/14/17	11:15	11:47	32	1	Sean Cole	3	7819	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	14	Subset	14	7	2017	07/14/17	11:54	12:18	24	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	17	Subset	14	7	2017	07/14/17	12:49	13:22	33	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	19	Subset	14	7	2017	07/14/17	13:50	14:22	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	20	Subset	14	7	2017	07/14/17	14:32	15:05	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	22	Subset	14	7	2017	07/14/17	15:29	16:02	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	27	Subset	14	7	2017	07/14/17	16:27	16:59	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	17	14	wnw	0	100		
Adelaide Wind Farm	7	Subset	18	7	2017	07/18/17	10:33	10:54	21	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	6	Subset	18	7	2017	07/18/17	11:22	11:55	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	11	Subset	18	7	2017	07/18/17	12:41	13:15	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	12	Subset	18	7	2017	07/18/17	13:23	13:38	15	1	Sean Cole	4	2115	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	14	Subset	18	7	2017	07/18/17	13:47	14:10	23	1	Sean Cole	4	4920	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	17	Subset	18	7	2017	07/18/17	14:41	15:14	33	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	19	Subset	18	7	2017	07/18/17	15:24	15:58	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	20	Subset	18	7	2017	07/18/17	16:09	16:40	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	22	Subset	18	7	2017	07/18/17	16:48	17:21	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	27	Subset	18	7	2017	07/18/17	17:30	18:02	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	26	10	ssw	0	10		
Adelaide Wind Farm	7	Subset	21	7	2017	07/21/17	9:07	9:28	21	1	Sean Cole	3	4378	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	6	Subset	21	7	2017	07/21/17	9:37	10:10	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	12	Subset	21	7	2017	07/21/17	10:20	10:37	17	1	Sean Cole	3	2115	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	14	Subset	21	7	2017	07/21/17	10:45	11:09	24	1	Sean Cole	3	4902	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	17	Subset	21	7	2017	07/21/17	11:40	12:12	32	1	Sean Cole	3	7844	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	19	Subset	21	7	2017	07/21/17	12:41	13:12	31	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	20	Subset	21	7	2017	07/21/17	13:22	13:53	31	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	22	Subset	21	7	2017	07/21/17	14:25	14:58	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	27	Subset	21	7	2017	07/21/17	15:24	15:56	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	11	Subset	21	7	2017	07/21/17	16:12	16:46	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	25	11	nnw	0	5		
Adelaide Wind Farm	7	Subset	25	7	2017	07/25/17	9:18	9:48	22	1	Sean Cole	4	4378	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	6	Subset	25	7	2017	07/25/17	9:49	10:22	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	11	Subset	25	7	2017	07/25/17	10:32	11:05	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	12	Subset	25	7	2017	07/25/17	11:13	11:26	13	1	Sean Cole	4	2115	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	14	Subset	25	7	2017	07/25/17	11:40	12:24	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	17	Subset	25	7	2017	07/25/17	12:24	12:58	34	1	Sean Cole	4	7844	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	19	Subset	25	7	2017	07/25/17	13:07	13:39	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	20	Subset	25	7	2017	07/25/17	13:50	14:21	31	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	22	Subset	25	7	2017	07/25/17	14:29	15:03	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	27	Subset	25	7	2017	07/25/17	15:11	15:43	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	19	12	ne	0	0		
Adelaide Wind Farm	7	Subset	28	7	2017	07/28/17	9:07	9:40	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	6	Subset	28	7	2017	07/28/17	9:49	10:04	15	1	Sean Cole	3	1074	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	11	Subset	28	7	2017	07/28/17	10:14	10:33	19	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	12	Subset	28	7	2017	07/28/17	10:44	11:01	17	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	14	Subset	28	7	2017	07/28/17	11:09	11:44	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	17	Subset	28	7	2017	07/28/17	12:02	12:21	19	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	19	Subset	28	7	2017	07/28/17	12:31	13:05	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	20	Subset	28	7	2017	07/28/17	13:16	13:49	33	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	22	Subset	28	7	2017	07/28/17	14:00	14:15	15	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	27	Subset	28	7	2017	07/28/17	14:57	15:17	20	1	Sean Cole	3	1675	no	circular	50m radius, 100m by 100m	5-6m	19	17	ne	0	75		
Adelaide Wind Farm	7	Subset	1	8	2017	08/01/17	9:22	9:57	35	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	6	Subset	1	8	2017	08/01/17	10:27	10:38	11	1	Sean Cole	4	1074	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	11	Subset	1	8	2017	08/01/17	11:25	11:41	16	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	12	Subset	1	8	2017	08/01/17	11:50	12:02	12	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	14	Subset	1	8	2017	08/01/17	12:09	12:43	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	17	Subset	1	8	2017	08/01/17	13:19	13:32	13	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	19	Subset	1	8	2017	08/01/17	13:41	14:15	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	20	Subset	1	8	2017	08/01/17	14:26	14:59	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	22	Subset	1	8	2017	08/01/17	15:09	15:21	12	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	27	Subset	1	8	2017	08/01/17	15:29	15:44	15	1	Sean Cole	4	1675	no	circular	50m radius, 100m by 100m	5-6m	24	5	wsw	0	0		
Adelaide Wind Farm	7	Subset	4	8	2017	08/04/17	9:20	9:55	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	6	Subset	4	8	2017	08/04/17	10:05	10:16	11	1	Sean Cole	3	1074	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	11	Subset	4	8	2017	08/04/17	10:26	10:43	17	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	12	Subset	4	8	2017	08/04/17	10:52	11:05	13	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	14	Subset	4	8	2017	08/04/17	11:13	11:47	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	17	Subset	4	8	2017	08/04/17	12:19	12:33	14	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	19	Subset	4	8	2017	08/04/17	13:03	13:37	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	20	Subset	4	8	2017	08/04/17	13:47	14:19	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	22	Subset	4	8	2017	08/04/17	14:47	14:59	12	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	27	Subset	4	8	2017	08/04/17	15:25	15:41	16	1	Sean Cole	3	1675	no	circular	50m radius, 100m by 100m	5-6m	22	18	s	3	100		
Adelaide Wind Farm	7	Subset	9	8	2017	08/09/17	10:05	10:33	28	1	Sean Cole	4	4551	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	6	Subset	9	8	2017	08/09/17	11:00	11:11	11	1	Sean Cole	4	1074	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	14	Subset	9	8	2017	08/09/17	12:13	12:47	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	17	Subset	9	8	2017	08/09/17	13:22	13:37	15	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	19	Subset	9	8	2017	08/09/17	13:47	14:21	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	20	Subset	9	8	2017	08/09/17	14:32	15:04	32	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	22	Subset	9	8	2017	08/09/17	15:13	15:24	11	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	27	Subset	9	8	2017	08/09/17	15:34	15:50	16	1	Sean Cole	4	1675	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	12	Subset	9	8	2017	08/09/17	16:11	16:23	12	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	11	Subset	9	8	2017	08/09/17	16:32	16:50	18	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	23	13	sw	0	0		
Adelaide Wind Farm	7	Subset	11	8	2017	08/11/17	9:15	9:50	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	6	Subset	11	8	2017	08/11/17	10:01	10:11	10	1	Sean Cole	3	1074	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	11	Subset	11	8	2017	08/11/17	10:21	10:37	16	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	12	Subset	11	8	2017	08/11/17	10:45	10:58	13	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	14	Subset	11	8	2017	08/11/17	11:06	11:40	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	17	Subset	11	8	2017	08/11/17	12:13	12:28	15	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	19	Subset	11	8	2017	08/11/17	13:00	13:35	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	20	Subset	11	8	2017	08/11/17	13:45	14:17	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	22	Subset	11	8	2017	08/11/17	14:49	15:01	12	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	27	Subset	11	8	2017	08/11/17	15:26	15:43	17	1	Sean Cole	3	1675	no	circular	50m radius, 100m by 100m	5-6m	20	17	s	2	100		
Adelaide Wind Farm	7	Subset	15	8	2017	08/15/17	9:04	9:31	27	1	Sean Cole	4	4551	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	6	Subset	15	8	2017	08/15/17	9:59	10:10	11	1	Sean Cole	4	1074	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	11	Subset	15	8	2017	08/15/17	11:04	11:22	18	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	12	Subset	15	8	2017	08/15/17	11:31	11:44	13	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	14	Subset	15	8	2017	08/15/17	11:51	12:18	27	1	Sean Cole	4	4427	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	17	Subset	15	8	2017	08/15/17	12:54	13:09	15	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	19	Subset	15	8	2017	08/15/17	13:17	13:37	20	1	Sean Cole	4	2379	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	20	Subset	15	8	2017	08/15/17	13:48	14:21	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	22	Subset	15	8	2017	08/15/17	14:31	14:43	12	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	27	Subset	15	8	2017	08/15/17	14:53	15:10	17	1	Sean Cole	4	1675	no	circular	50m radius, 100m by 100m	5-6m	18	9	nw	2	100		
Adelaide Wind Farm	7	Subset	18	8	2017	08/18/17	9:13	9:34	21	1	Sean Cole	3	4551	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	6	Subset	18	8	2017	08/18/17	9:45	9:54	9	1	Sean Cole	3	1074	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	11	Subset	18	8	2017	08/18/17	10:05	10:22	17	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	12	Subset	18	8	2017	08/18/17	10:36	10:57	21	1	Sean Cole	3	4427	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	14	Subset	18	8	2017	08/18/17	11:29	11:43	14	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	17	Subset	18	8	2017	08/18/17	12:21	12:39	18	1	Sean Cole	3	2379	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	19	Subset	18	8	2017	08/18/17	12:51	13:26	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	20	Subset	18	8	2017	08/18/17	13:56	14:06	10	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	22	Subset	18	8	2017	08/18/17	14:32	14:48	16	1	Sean Cole	3	1675	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	27	Subset	18	8	2017	08/18/17	15:08	15:20	12	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	22	16	sw	0	75		
Adelaide Wind Farm	7	Subset	22	8	2017	08/22/17	9:18	9:39	21	1	Sean Cole	4	4451	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	6	Subset	22	8	2017	08/22/17	10:10	10:19	9	1	Sean Cole	4	1074	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	11	Subset	22	8	2017	08/22/17	11:15	11:32	17	1	Sean Cole	4	1132	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	12	Subset	22	8	2017	08/22/17	11:41	11:52	11	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	14	Subset	22	8	2017	08/22/17	12:13	12:35	22	1	Sean Cole	4	4427	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	17	Subset	22	8	2017	08/22/17	13:09	13:23	14	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	19	Subset	22	8	2017	08/22/17	13:32	13:50	18	1	Sean Cole	4	2379	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	20	Subset	22	8	2017	08/22/17	14:00	14:33	33	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	22	Subset	22	8	2017	08/22/17	14:43	14:54	11	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	27	Subset	22	8	2017	08/22/17	15:04	15:20	16	1	Sean Cole	4	1675	no	circular	50m radius, 100m by 100m	5-6m	23	16	sw	3	100		
Adelaide Wind Farm	7	Subset	25	8	2017	08/25/17	9:19	9:39	20	1	Sean Cole	3	4551	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	6	Subset	25	8	2017	08/25/17	9:49	9:58	9	1	Sean Cole	3	1059	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	11	Subset	25	8	2017	08/25/17	10:14	10:31	17	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	12	Subset	25	8	2017	08/25/17	10:42	10:57	15	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	14	Subset	25	8	2017	08/25/17	11:08	11:30	22	1	Sean Cole	3	4427	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	17	Subset	25	8	2017	08/25/17	11:59	12:16	17	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	19	Subset	25	8	2017	08/25/17	12:45	13:04	19	1	Sean Cole	3	2379	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	20	Subset	25	8	2017	08/25/17	13:13	13:47	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	22	Subset	25	8	2017	08/25/17	14:17	14:28	11	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	27	Subset	25	8	2017	08/25/17	14:55	15:13	18	1	Sean Cole	3	1660	no	circular	50m radius, 100m by 100m	5-6m	14	5	nw	0	90		
Adelaide Wind Farm	7	Subset	29	8	2017	08/29/17	9:21	9:43	22	1	Sean Cole	4	4551	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	6	Subset	29	8	2017	08/29/17	9:54	10:04	10	1	Sean Cole	4	1059	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	11	Subset	29	8	2017	08/29/17	10:16	10:32	16	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	12	Subset	29	8	2017	08/29/17	10:42	10:54	12	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	14	Subset	29	8	2017	08/29/17	11:05	11:28	23	1	Sean Cole	4	4427	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	17	Subset	29	8	2017	08/29/17	11:43	11:58	15	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	19	Subset	29	8	2017	08/29/17	12:20	12:39	19	1	Sean Cole	4	2379	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	20	Subset	29	8	2017	08/29/17	12:49	13:25	36	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	22	Subset	29	8	2017	08/29/17	13:36	13:47	11	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	27	Subset	29	8	2017	08/29/17	13:59	14:15	16	1	Sean Cole	4	1660	no	circular	50m radius, 100m by 100m	5-6m	17	9	se	0	100		
Adelaide Wind Farm	7	Subset	1	9	2017	09/01/17	9:14	9:37	23	1	Sean Cole	3	4551	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	6	Subset	1	9	2017	09/01/17	9:47	9:58	11	1	Sean Cole	3	1059	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	11	Subset	1	9	2017	09/01/17	10:16	10:32	16	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	12	Subset	1	9	2017	09/01/17	10:42	10:53	11	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	14	Subset	1	9	2017	09/01/17	11:05	11:27	22	1	Sean Cole	3	4427	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	17	Subset	1	9	2017	09/01/17	11:38	11:57	19	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	19	Subset	1	9	2017	09/01/17	12:07	12:27	20	1	Sean Cole	3	2379	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	20	Subset	1	9	2017	09/01/17	12:39	13:14	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	22	Subset	1	9	2017	09/01/17	13:26	13:38	12	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	27	Subset	1	9	2017	09/01/17	13:49	14:05	16	1	Sean Cole	3	1660	no	circular	50m radius, 100m by 100m	5-6m	11	11	ene	0	90		
Adelaide Wind Farm	7	Subset	6	9	2017	09/06/17	9:38	10:00	22	1	Sean Cole	5	4551	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	6	Subset	6	9	2017	09/06/17	10:28	10:37	9	1	Sean Cole	5	1059	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	11	Subset	6	9	2017	09/06/17	11:35	11:51	16	1	Sean Cole	5	1932	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	12	Subset	6	9	2017	09/06/17	12:00	12:11	11	1	Sean Cole	5	1198	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	14	Subset	6	9	2017	09/06/17	12:19	12:41	22	1	Sean Cole	5	4427	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	17	Subset	6	9	2017	09/06/17	13:13	13:28	15	1	Sean Cole	5	1421	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	19	Subset	6	9	2017	09/06/17	13:37	13:55	18	1	Sean Cole	5	2379	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	20	Subset	6	9	2017	09/06/17	14:05	14:39	34	1	Sean Cole	5	7854	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	22	Subset	6	9	2017	09/06/17	14:50	15:03	13	1	Sean Cole	5	1140	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	27	Subset	6	9	2017	09/06/17	15:15	15:30	15	1	Sean Cole	5	1160	no	circular	50m radius, 100m by 100m	5-6m	14	5	wnw	0	10		
Adelaide Wind Farm	7	Subset	8	9	2017	09/08/17	9:10	9:33	23	1	Sean Cole	2	4551	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	6	Subset	8	9	2017	09/08/17	9:43	9:52	9	1	Sean Cole	2	1059	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	11	Subset	8	9	2017	09/08/17	10:03	10:20	17	1	Sean Cole	2	1932	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	12	Subset	8	9	2017	09/08/17	10:31	10:42	11	1	Sean Cole	2	1198	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	17	Subset	8	9	2017	09/08/17	11:17	11:32	15	1	Sean Cole	2	1421	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	19	Subset	8	9	2017	09/08/17	12:03	12:23	20	1	Sean Cole	2	2379	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	20	Subset	8	9	2017	09/08/17	12:34	13:09	35	1	Sean Cole	2	7854	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	22	Subset	8	9	2017	09/08/17	13:39	13:49	10	1	Sean Cole	2	1140	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	27	Subset	8	9	2017	09/08/17	14:10	14:26	16	1	Sean Cole	2	1660	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	14	Subset	8	9	2017	09/08/17	14:41	15:02	21	1	Sean Cole	2	4427	no	circular	50m radius, 100m by 100m	5-6m	13	11	wnw	2	90		
Adelaide Wind Farm	7	Subset	12	9	2017	09/12/17	9:10	9:32	22	1	Sean Cole	4	4551	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	6	Subset	12	9	2017	09/12/17	10:00	10:09	9	1	Sean Cole	4	1059	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	11	Subset	12	9	2017	09/12/17	11:05	11:23	18	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	12	Subset	12	9	2017	09/12/17	11:32	11:42	10	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	14	Subset	12	9	2017	09/12/17	11:56	12:17	21	1	Sean Cole	4	4427	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	17	Subset	12	9	2017	09/12/17	12:52	13:06	14	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	19	Subset	12	9	2017	09/12/17	13:13	13:32	19	1	Sean Cole	4	2379	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	20	Subset	12	9	2017	09/12/17	13:43	14:18	35	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	22	Subset	12	9	2017	09/12/17	14:28	14:39	11	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	27	Subset	12	9	2017	09/12/17	14:48	15:05	15	1	Sean Cole	4	1160	no	circular	50m radius, 100m by 100m	5-6m	14	3	ene	0	0		
Adelaide Wind Farm	7	Subset	15	9	2017	09/15/17	9:32	9:57	25	1	Sean Cole	3	4551	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	6	Subset	15	9	2017	09/15/17	10:09	10:18	9	1	Sean Cole	3	1059	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	11	Subset	15	9	2017	09/15/17	10:29	10:48	19	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	12	Subset	15	9	2017	09/15/17	11:29	11:39	10	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	14	Subset	15	9	2017	09/15/17	11:48	12:10	22	1	Sean Cole	3	4427	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	17	Subset	15	9	2017	09/15/17	12:39	12:53	14	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	19	Subset	15	9	2017	09/15/17	13:20	13:39	19	1	Sean Cole	3	2379	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	20	Subset	15	9	2017	09/15/17	13:49	14:21	32	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	22	Subset	15	9	2017	09/15/17	14:49	14:59	10	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	27	Subset	15	9	2017	09/15/17	15:21	15:36	15	1	Sean Cole	3	1160	no	circular	50m radius, 100m by 100m	5-6m	18	5	se	0	100		
Adelaide Wind Farm	27	Subset	19	9	2017	09/19/17	9:23	9:39	16	1	Sean Cole	4	1160	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	22	Subset	19	9	2017	09/19/17	10:04	10:16	12	1	Sean Cole	4	1140	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	20	Subset	19	9	2017	09/19/17	10:47	11:23	36	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	19	Subset	19	9	2017	09/19/17	11:31	11:51	20	1	Sean Cole	4	2379	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	17	Subset	19	9	2017	09/19/17	12:20	12:35	15	1	Sean Cole	4	1421	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	14	Subset	19	9	2017	09/19/17	13:07	13:30	23	1	Sean Cole	4	4427	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	12	Subset	19	9	2017	09/19/17	13:39	13:52	13	1	Sean Cole	4	1198	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	11	Subset	19	9	2017	09/19/17	14:01	14:19	18	1	Sean Cole	4	1932	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	6	Subset	19	9	2017	09/19/17	14:29	14:38	9	1	Sean Cole	4	1059	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	7	Subset	19	9	2017	09/19/17	14:47	15:11	24	1	Sean Cole	4	4551	no	circular	50m radius, 100m by 100m	5-6m	20	6	e	2	100		
Adelaide Wind Farm	7	Subset	22	9	2017	09/22/17	9:17	9:41	24	1	Sean Cole	3	4551	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	6	Subset	22	9	2017	09/22/17	10:11	10:20	9	1	Sean Cole	3	1059	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	11	Subset	22	9	2017	09/22/17	11:17	11:36	19	1	Sean Cole	3	1932	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	12	Subset	22	9	2017	09/22/17	11:46	11:57	11	1	Sean Cole	3	1198	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	14	Subset	22	9	2017	09/22/17	12:05	12:38	23	1	Sean Cole	3	4427	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	17	Subset	22	9	2017	09/22/17	13:02	13:16	14	1	Sean Cole	3	1421	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	19	Subset	22	9	2017	09/22/17	13:24	13:43	19	1	Sean Cole	3	2379	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	20	Subset	22	9	2017	09/22/17	13:52	14:27	35	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	22	Subset	22	9	2017	09/22/17	14:38	14:48	10	1	Sean Cole	3	1140	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	27	Subset	22	9	2017	09/22/17	14:58	15:15	17	1	Sean Cole	3	1660	no	circular	50m radius, 100m by 100m	5-6m	21	7	se	0	0		
Adelaide Wind Farm	27	Subset	26	9	2017	09/26/17	9:28	9:43	15	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	22	Subset	26	9	2017	09/26/17	10:00	10:10	10	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	20	Subset	26	9	2017	09/26/17	10:28	11:02	34	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	19	Subset	26	9	2017	09/26/17	11:19	11:40	21	1	Sean Cole	4	2266	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	17	Subset	26	9	2017	09/26/17	11:52	12:05	13	1	Sean Cole	4	1395	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	14	Subset	26	9	2017	09/26/17	12:28	13:08	40	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	7	Subset	26	9	2017	09/26/17	13:26	13:54	28	1	Sean Cole	4	4526	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	6	Subset	26	9	2017	09/26/17	14:03	14:13	10	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	11	Subset	26	9	2017	09/26/17	14:22	14:41	19	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	12	Subset	26	9	2017	09/26/17	14:51	15:03	12	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	22	7	se	0	0		
Adelaide Wind Farm	7	Subset	29	9	2017	09/29/17	9:11	9:33	22	1	Sean Cole	3	4526	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	6	Subset	29	9	2017	09/29/17	9:45	9:54	9	1	Sean Cole	3	1050	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	11	Subset	29	9	2017	09/29/17	10:05	10:22	17	1	Sean Cole	3	1812	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	12	Subset	29	9	2017	09/29/17	10:32	10:44	12	1	Sean Cole	3	1148	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	14	Subset	29	9	2017	09/29/17	10:52	11:23	31	1	Sean Cole	3	7654	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	17	Subset	29	9	2017	09/29/17	11:33	11:47	14	1	Sean Cole	3	1395	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	19	Subset	29	9	2017	09/29/17	11:56	12:16	20	1	Sean Cole	3	2266	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	20	Subset	29	9	2017	09/29/17	12:51	13:18	27	1	Sean Cole	3	4550	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	22	Subset	29	9	2017	09/29/17	13:29	13:39	10	1	Sean Cole	3	1009	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	27	Subset	29	9	2017	09/29/17	13:49	14:01	12	1	Sean Cole	3	1187	no	circular	50m radius, 100m by 100m	5-6m	11	8	nw	1	75		
Adelaide Wind Farm	7	Subset	3	10	2017	10/03/17	9:26	9:50	27	1	Sean Cole	4	4526	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	6	Subset	3	10	2017	10/03/17	10:21	10:31	10	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	11	Subset	3	10	2017	10/03/17	11:26	11:43	17	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	12	Subset	3	10	2017	10/03/17	11:52	12:03	11	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	14	Subset	3	10	2017	10/03/17	12:11	12:45	34	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	17	Subset	3	10	2017	10/03/17	13:20	13:34	14	1	Sean Cole	4	1394	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	19	Subset	3	10	2017	10/03/17	13:45	14:07	24	1	Sean Cole	4	2266	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	20	Subset	3	10	2017	10/03/17	14:15	14:41	26	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	22	Subset	3	10	2017	10/03/17	14:52	15:02	10	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	27	Subset	3	10	2017	10/03/17	15:11	15:23	12	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	17	9	sse	0	0		
Adelaide Wind Farm	27	Subset	6	10	2017	10/06/17	9:28	9:40	12	1	Sean Cole	3	1187	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	22	Subset	6	10	2017	10/06/17	10:06	10:17	11	1	Sean Cole	3	1009	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	20	Subset	6	10	2017	10/06/17	10:49	11:14	25	1	Sean Cole	3	4550	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	19	Subset	6	10	2017	10/06/17	11:23	11:42	19	1	Sean Cole	3	2266	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	17	Subset	6	10	2017	10/06/17	12:12	12:26	14	1	Sean Cole	3	1395	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	14	Subset	6	10	2017	10/06/17	12:56	13:29	33	1	Sean Cole	3	7654	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	12	Subset	6	10	2017	10/06/17	13:37	13:49	12	1	Sean Cole	3	1148	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	11	Subset	6	10	2017	10/06/17	13:58	14:15	17	1	Sean Cole	3	1812	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	6	Subset	6	10	2017	10/06/17	14:26	14:37	11	1	Sean Cole	3	1050	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	7	Subset	6	10	2017	10/06/17	14:47	15:10	23	1	Sean Cole	3	4526	no	circular	50m radius, 100m by 100m	5-6m	14	3	sw	0	100		
Adelaide Wind Farm	27	Subset	11	10	2017	10/11/17	9:51	10:02	11	1	Sean Cole	5	1187	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	22	Subset	11	10	2017	10/11/17	10:29	10:39	10	1	Sean Cole	5	1009	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	20	Subset	11	10	2017	10/11/17	11:12	11:37	25	1	Sean Cole	5	4550	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	19	Subset	11	10	2017	10/11/17	11:48	12:07	19	1	Sean Cole	5	2266	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	17	Subset	11	10	2017	10/11/17	12:39	12:52	13	1	Sean Cole	5	1395	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	14	Subset	11	10	2017	10/11/17	13:24	13:58	34	1	Sean Cole	5	7654	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	12	Subset	11	10	2017	10/11/17	14:08	14:20	12	1	Sean Cole	5	1148	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	11	Subset	11	10	2017	10/11/17	14:29	14:46	17	1	Sean Cole	5	1812	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	6	Subset	11	10	2017	10/11/17	14:53	15:02	9	1	Sean Cole	5	1050	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	7	Subset	11	10	2017	10/11/17	15:12	15:36	24	1	Sean Cole	5	4526	no	circular	50m radius, 100m by 100m	5-6m	10	20	ene	6	100		
Adelaide Wind Farm	7	Subset	13	10	2017	10/13/17	9:17	9:40	23	1	Sean Cole	2	4526	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	6	Subset	13	10	2017	10/13/17	10:10	10:20	10	1	Sean Cole	2	1050	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	11	Subset	13	10	2017	10/13/17	11:17	11:34	17	1	Sean Cole	2	1812	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	12	Subset	13	10	2017	10/13/17	11:53	12:05	12	1	Sean Cole	2	1148	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	14	Subset	13	10	2017	10/13/17	12:14	12:46	32	1	Sean Cole	2	7654	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	17	Subset	13	10	2017	10/13/17	13:19	13:33	14	1	Sean Cole	2	1394	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	19	Subset	13	10	2017	10/13/17	13:42	14:02	20	1	Sean Cole	2	2266	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	20	Subset	13	10	2017	10/13/17	14:13	14:37	24	1	Sean Cole	2	4550	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	22	Subset	13	10	2017	10/13/17	14:46	14:56	10	1	Sean Cole	2	1009	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	27	Subset	13	10	2017	10/13/17	15:06	15:19	13	1	Sean Cole	2	1187	no	circular	50m radius, 100m by 100m	5-6m	15	6	s	0	100		
Adelaide Wind Farm	7	Subset	17	10	2017	10/17/17	9:26	9:49	23	1	Sean Cole	4	4526	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	6	Subset	17	10	2017	10/17/17	10:21	10:30	9	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	11	Subset	17	10	2017	10/17/17	11:35	11:52	17	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	12	Subset	17	10	2017	10/17/17	12:03	12:14	11	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	14	Subset	17	10	2017	10/17/17	12:23	12:55	32	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	17	Subset	17	10	2017	10/17/17	13:31	13:45	14	1	Sean Cole	4	1394	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	19	Subset	17	10	2017	10/17/17	13:54	14:15	21	1	Sean Cole	4	2266	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	20	Subset	17	10	2017	10/17/17	14:24	14:48	24	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	22	Subset	17	10	2017	10/17/17	14:59	15:08	9	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	27	Subset	17	10	2017	10/17/17	15:18	15:29	11	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	9	15	ssw	0	0		
Adelaide Wind Farm	27	Subset	20	10	2017	10/20/17	9:16	9:28	12	1	Sean Cole	3	1187	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	22	Subset	20	10	2017	10/20/17	9:51	10:00	9	1	Sean Cole	3	1009	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	20	Subset	20	10	2017	10/20/17	10:32	10:57	25	1	Sean Cole	3	4550	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	19	Subset	20	10	2017	10/20/17	11:08	11:27	19	1	Sean Cole	3	2266	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	17	Subset	20	10	2017	10/20/17	12:01	12:14	13	1	Sean Cole	3	1395	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	14	Subset	20	10	2017	10/20/17	12:46	13:20	34	1	Sean Cole	3	7654	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	12	Subset	20	10	2017	10/20/17	13:28	13:39	11	1	Sean Cole	3	1148	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	11	Subset	20	10	2017	10/20/17	13:49	14:06	17	1	Sean Cole	3	1812	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	6	Subset	20	10	2017	10/20/17	14:16	14:26	10	1	Sean Cole	3	1050	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	7	Subset	20	10	2017	10/20/17	14:37	15:03	26	1	Sean Cole	3	4526	no	circular	50m radius, 100m by 100m	5-6m	6	3	ese	0	0		
Adelaide Wind Farm	7	Subset	24	10	2017	10/24/17	9:09	9:43	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	6	Subset	24	10	2017	10/24/17	10:12	10:21	9	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	11	Subset	24	10	2017	10/24/17	11:14	11:30	16	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	12	Subset	24	10	2017	10/24/17	11:36	11:49	11	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	14	Subset	24	10	2017	10/24/17	11:57	12:28	31	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	17	Subset	24	10	2017	10/24/17	13:02	13:15	13	1	Sean Cole	4	1394	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	19	Subset	24	10	2017	10/24/17	13:24	13:56	32	1	Sean Cole	4	7674	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	20	Subset	24	10	2017	10/24/17	14:05	14:28	23	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	22	Subset	24	10	2017	10/24/17	14:39	14:48	9	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	27	Subset	24	10	2017	10/24/17	14:58	15:01	12	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	10	12	ssw	5	100		
Adelaide Wind Farm	27	Subset	27	10	2017	10/27/17	9:17	9:27	10	1	Sean Cole	3	1187	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	22	Subset	27	10	2017	10/27/17	9:49	9:58	9	1	Sean Cole	3	1009	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	20	Subset	27	10	2017	10/27/17	10:34	10:56	22	1	Sean Cole	3	4550	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	19	Subset	27	10	2017	10/27/17	11:05	11:36	31	1	Sean Cole	3	7674	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	17	Subset	27	10	2017	10/27/17	12:05	12:18	13	1	Sean Cole	3	1395	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	14	Subset	27	10	2017	10/27/17	12:47	13:19	32	1	Sean Cole	3	7654	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	12	Subset	27	10	2017	10/27/17	13:26	13:37	11	1	Sean Cole	3	1148	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	11	Subset	27	10	2017	10/27/17	13:46	14:03	17	1	Sean Cole	3	1812	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	6	Subset	27	10	2017	10/27/17	14:14	14:23	9	1	Sean Cole	3	1050	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		
Adelaide Wind Farm	7	Subset	27	10	2017	10/27/17	14:33	15:07	34	1	Sean Cole	3	7854	no	circular	50m radius, 100m by 100m	5-6m	9	8	s	0	80		

Appendix F1: Mortality Monitoring Record 2017

project_name	turbine	treatment_group	day	month	year	Date	start_time	end_time	duration_min	number_of_searchers	searchers_names	days_since_last_search	actual_area_searched_m2	dog_used	search_area_shape	search_area_dimension	transect_separation_m	temp_celsius	wind_speed	wind_direction	precipitation	cloud_cover_percent	signif_weather	comments
Adelaide Wind Farm	7	Subset	31	10	2017	10/31/17	9:21	9:55	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	6	Subset	31	10	2017	10/31/17	10:20	10:28	8	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	11	Subset	31	10	2017	10/31/17	11:14	11:30	16	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	12	Subset	31	10	2017	10/31/17	11:38	11:47	9	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	14	Subset	31	10	2017	10/31/17	11:55	12:27	32	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	17	Subset	31	10	2017	10/31/17	12:57	13:16	13	1	Sean Cole	4	1394	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	19	Subset	31	10	2017	10/31/17	13:28	13:59	31	1	Sean Cole	4	7674	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	20	Subset	31	10	2017	10/31/17	14:08	14:29	21	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	22	Subset	31	10	2017	10/31/17	14:40	14:48	8	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	27	Subset	31	10	2017	10/31/17	14:58	15:10	12	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	3	16	sw	0	100		
Adelaide Wind Farm	27	Subset	3	11	2017	11/03/17	9:31	9:42	11	1	Sean Cole	4	1187	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	22	Subset	3	11	2017	11/03/17	10:06	10:14	8	1	Sean Cole	4	1009	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	20	Subset	3	11	2017	11/03/17	10:40	11:01	21	1	Sean Cole	4	4550	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	19	Subset	3	11	2017	11/03/17	11:10	11:42	32	1	Sean Cole	4	7674	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	17	Subset	3	11	2017	11/03/17	12:07	12:19	12	1	Sean Cole	4	1395	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	14	Subset	3	11	2017	11/03/17	12:48	13:18	30	1	Sean Cole	4	7654	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	12	Subset	3	11	2017	11/03/17	13:25	13:36	11	1	Sean Cole	4	1148	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	11	Subset	3	11	2017	11/03/17	13:44	14:00	16	1	Sean Cole	4	1812	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	6	Subset	3	11	2017	11/03/17	14:04	14:18	9	1	Sean Cole	4	1050	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		
Adelaide Wind Farm	7	Subset	3	11	2017	11/03/17	14:29	15:03	34	1	Sean Cole	4	7854	no	circular	50m radius, 100m by 100m	5-6m	7	14	nw	0	20		

Appendix F2: Raptor Monitoring 2017

project_name	turbine_nu	treatment_group	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_cels	wind_spee	wind_dire	precipitati	cloud_cover_percent	signif_weathe	comments
Adelaide Wind Projec	5	SAR Survey - EEMP	24	4	2017	04/24/17	11:09	11:59	50	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	8	SAR Survey - EEMP	24	4	2017	04/24/17	12:21	13:13	52	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	9	SAR Survey - EEMP	24	4	2017	04/24/17	13:26	14:04	38	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	13	SAR Survey - EEMP	24	4	2017	04/24/17	14:17	14:55	38	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	15	SAR Survey - EEMP	24	4	2017	04/24/17	15:12	15:48	36	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	18	SAR Survey - EEMP	24	4	2017	04/24/17	15:51	16:29	38	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	21	SAR Survey - EEMP	24	4	2017	04/24/17	16:37	17:17	40	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Projec	26	SAR Survey - EEMP	24	4	2017	04/24/17	17:25	18:01	36	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	16	18	e	0	0		
Adelaide Wind Farm	26	Raptor Management Plan	3	5	2017	5/3/2017	10:31	10:40	9	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	21	Raptor Management Plan	3	5	2017	5/3/2017	11:41	11:51	10	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	18	Raptor Management Plan	3	5	2017	5/3/2017	12:45	12:53	8	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	15	Raptor Management Plan	3	5	2017	5/3/2017	12:38	13:06	8	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	13	Raptor Management Plan	3	5	2017	5/3/2017	13:11	13:19	8	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	9	Raptor Management Plan	3	5	2017	5/3/2017	13:28	13:35	7	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	8	Raptor Management Plan	3	5	2017	5/3/2017	13:42	13:50	8	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	5	Raptor Management Plan	3	5	2017	5/3/2017	14:04	14:13	9	1	Sean Cole	First search	7854	No	Circular	50 m radiu	5-6 m	8	2	s	0	0	heavy rain	
Adelaide Wind Farm	5	Raptor Management Plan	9	5	2017	5/9/2017	9:46	9:55	9	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	9	3	w	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	9	5	2017	5/9/2017	10:39	10:50	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	9	3	w	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	9	5	2017	5/9/2017	11:00	11:10	10	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	9	3	w	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	9	5	2017	5/9/2017	13:15	13:24	9	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	9	3	w	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	12	5	2017	5/12/2017	12:44	12:53	9	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	8	ne	0	5		
Adelaide Wind Farm	18	Raptor Management Plan	12	5	2017	5/12/2017	1:45	1:55	10	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	8	ne	0	5		
Adelaide Wind Farm	21	Raptor Management Plan	12	5	2017	5/12/2017	2:30	2:39	9	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	8	ne	0	5		
Adelaide Wind Farm	26	Raptor Management Plan	12	5	2017	5/12/2017	3:55	4:03	8	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	8	ne	0	5		
Adelaide Wind Farm	5	Raptor Management Plan	16	5	2017	5/16/2017	9:38	9:47	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	se	Rain	100		
Adelaide Wind Farm	8	Raptor Management Plan	16	5	2017	5/16/2017	10:33	10:41	8	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	se	Rain	100		
Adelaide Wind Farm	9	Raptor Management Plan	16	5	2017	5/16/2017	10:48	10:57	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	se	Rain	100		
Adelaide Wind Farm	13	Raptor Management Plan	16	5	2017	5/16/2017	12:25	12:33	8	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	se	Rain	100		
Adelaide Wind Farm	15	Raptor Management Plan	19	5	2017	5/19/2017	12:42	12:52	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	18	nw	0	100		
Adelaide Wind Farm	18	Raptor Management Plan	19	5	2017	5/19/2017	13:49	13:57	8	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	18	nw	0	100		
Adelaide Wind Farm	21	Raptor Management Plan	19	5	2017	5/19/2017	15:03	15:11	8	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	18	nw	0	100		
Adelaide Wind Farm	26	Raptor Management Plan	19	5	2017	5/19/2017	16:27	16:36	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	18	nw	0	100		
Adelaide Wind Farm	5	Raptor Management Plan	24	5	2017	5/24/2017	9:24	9:33	9	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	19	16	ese	0	80		
Adelaide Wind Farm	8	Raptor Management Plan	24	5	2017	5/24/2017	10:15	10:23	8	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	19	16	ese	0	80		
Adelaide Wind Farm	9	Raptor Management Plan	24	5	2017	5/24/2017	10:41	10:51	10	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	19	16	ese	0	80		
Adelaide Wind Farm	13	Raptor Management Plan	24	5	2017	5/24/2017	12:42	12:51	9	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	19	16	ese	0	80		
Adelaide Wind Farm	15	Raptor Management Plan	26	5	2017	5/26/2017	12:12	12:22	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	wnw	0	100		
Adelaide Wind Farm	18	Raptor Management Plan	26	5	2017	5/26/2017	13:09	13:20	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	wnw	0	100		
Adelaide Wind Farm	21	Raptor Management Plan	26	5	2017	5/26/2017	14:32	14:43	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	wnw	0	100		
Adelaide Wind Farm	26	Raptor Management Plan	26	5	2017	5/26/2017	15:35	15:47	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	13	14	wnw	0	100		
Adelaide Wind Projec	5	SAR Survey - EEMP	31	5	2017	05/31/17	8:45	9:37	52	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	8	SAR Survey - EEMP	31	5	2017	05/31/17	9:46	10:26	40	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	9	SAR Survey - EEMP	31	5	2017	05/31/17	10:33	11:06	33	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	13	SAR Survey - EEMP	31	5	2017	05/31/17	11:16	11:48	32	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	15	SAR Survey - EEMP	31	5	2017	05/31/17	11:56	12:29	33	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	18	SAR Survey - EEMP	31	5	2017	05/31/17	12:38	13:17	39	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	21	SAR Survey - EEMP	31	5	2017	05/31/17	13:27	14:21	54	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Projec	26	SAR Survey - EEMP	31	5	2017	05/31/17	14:28	15:21	53	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	21	14	sw	0	5		
Adelaide Wind Farm	5	Raptor Management Plan	6	6	2017	6/6/2017	9:35	9:45	10	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	13	14	n	0	100		
Adelaide Wind Farm	8	Raptor Management Plan	6	6	2017	6/6/2017	10:34	10:43	9	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	13	14	n	0	100		
Adelaide Wind Farm	9	Raptor Management Plan	6	6	2017	6/6/2017	10:51	11:00	9	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	13	14	n	0	100		
Adelaide Wind Farm	13	Raptor Management Plan	6	6	2017	6/6/2017	12:55	13:05	10	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	13	14	n	0	100		
Adelaide Wind Farm	15	Raptor Management Plan	9	6	2017	6/9/2017	12:15	12:24	9	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	23	7	w	0	60		
Adelaide Wind Farm	18	Raptor Management Plan	9	6	2017	6/9/2017	13:13	13:23	10	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	23	7	w	0	60		
Adelaide Wind Farm	21	Raptor Management Plan	9	6	2017	6/9/2017	14:35	12:45	10	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	23	7	w	0	60		
Adelaide Wind Farm	26	Raptor Management Plan	9	6	2017	6/9/2017	15:31	15:42	11	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	23	7	w	0	60		
Adelaide Wind Farm	5	Raptor Management Plan	13	6	2017	6/13/2017	9:33	9:45	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	26	7	se	0	75		
Adelaide Wind Farm	8	Raptor Management Plan	13	6	2017	6/13/2017	10:32	10:42	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	26	7	se	0	75		
Adelaide Wind Farm	9	Raptor Management Plan	13	6	2017	6/13/2017	10:49	10:58	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	26	7	se	0	75		
Adelaide Wind Farm	13	Raptor Management Plan	13	6	2017	6/13/2017	12:59	13:08	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	26	7	se	0	75		
Adelaide Wind Farm	15	Raptor Management Plan	16	6	2017	6/16/2017	11:49	11:49	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	25	8	w	0	5		
Adelaide Wind Farm	18	Raptor Management Plan	16	6	2017	6/16/2017	12:49	12:49	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	25	8	w	0	5		
Adelaide Wind Farm	21	Raptor Management Plan	16	6	2017	6/16/2017	14:02	14:13	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	25	8	w	0	5		
Adelaide Wind Farm	26	Raptor Management Plan	16	6	2017	6/16/2017	15:01	15:14	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	25	8	w	0	5		
Adelaide Wind Farm	5	Raptor Management Plan	20	6	2017	6/20/2017	9:54	10:06	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	18	10	w	0	80		
Adelaide Wind Farm	8	Raptor Management Plan	20	6	2017	6/20/2017	10:52	11:03	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	18	10	w	0	80		
Adelaide Wind Farm	9	Raptor Management Plan	20	6	2017	6/20/2017	11:10	11:19	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	18	10	w	0	80		

project_name	turbine_nu	treatment_group	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_cels	wind_spee	wind_dire	precipitati	cloud_cover_percent	signif_weathe	comments
Adelaide Wind Farm	13	Raptor Management Plan	20	6	2017	6/20/2017	13:29	13:38	9	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	18	10	w	0	80		
Adelaide Wind Farm	15	Raptor Management Plan	23	6	2017	6/23/2017	12:20	12:30	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	20	5	s	12	100		
Adelaide Wind Farm	18	Raptor Management Plan	23	6	2017	6/23/2017	13:16	13:28	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	20	5	s	12	100		
Adelaide Wind Farm	21	Raptor Management Plan	23	6	2017	6/23/2017	14:36	14:47	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	20	5	s	12	100		
Adelaide Wind Farm	26	Raptor Management Plan	23	6	2017	6/23/2017	15:05	15:16	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	20	5	s	12	100		
Adelaide Wind Projec	5	SAR Survey - EEMP	28	6	2017	06/28/17	8:39	9:24	55	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	8	SAR Survey - EEMP	28	6	2017	06/28/17	9:33	10:12	39	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	9	SAR Survey - EEMP	28	6	2017	06/28/17	10:20	10:51	31	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	13	SAR Survey - EEMP	28	6	2017	06/28/17	11:00	11:33	33	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	15	SAR Survey - EEMP	28	6	2017	06/28/17	11:41	12:12	31	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	18	SAR Survey - EEMP	28	6	2017	06/28/17	12:22	13:02	40	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	21	SAR Survey - EEMP	28	6	2017	06/28/17	13:15	14:05	50	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Projec	26	SAR Survey - EEMP	28	6	2017	06/28/17	14:13	15:05	52	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	18	5	sw	0	5		
Adelaide Wind Farm	5	Raptor Management Plan	5	7	2017	7/5/2017	9:35	9:47	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	5	e	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	5	7	2017	7/5/2017	10:38	10:48	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	5	e	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	5	7	2017	7/5/2017	10:54	11:05	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	5	e	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	5	7	2017	7/5/2017	13:18	13:28	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	5	e	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	7	7	2017	7/7/2017	12:29	12:39	10	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	20	8	w	1	80		
Adelaide Wind Farm	18	Raptor Management Plan	7	7	2017	7/7/2017	13:30	13:41	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	20	8	w	1	80		
Adelaide Wind Farm	21	Raptor Management Plan	7	7	2017	7/7/2017	15:10	15:21	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	20	8	w	1	80		
Adelaide Wind Farm	26	Raptor Management Plan	7	7	2017	7/7/2017	16:07	16:19	12	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	20	8	w	1	80		
Adelaide Wind Farm	5	Raptor Management Plan	11	7	2017	7/11/2017	9:30	9:43	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	22	10	s	0	100		
Adelaide Wind Farm	8	Raptor Management Plan	11	7	2017	7/11/2017	10:33	10:44	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	22	10	s	0	100		
Adelaide Wind Farm	9	Raptor Management Plan	11	7	2017	7/11/2017	10:51	11:01	10	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	22	10	s	0	100		
Adelaide Wind Farm	13	Raptor Management Plan	11	7	2017	7/11/2017	13:01	13:11	10	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	22	10	s	0	100		
Adelaide Wind Farm	15	Raptor Management Plan	14	7	2017	7/14/2017	12:26	12:39	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	14	wnw	0	100		
Adelaide Wind Farm	18	Raptor Management Plan	14	7	2017	7/14/2017	13:31	13:42	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	14	wnw	0	100		
Adelaide Wind Farm	21	Raptor Management Plan	14	7	2017	7/14/2017	15:11	15:22	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	14	wnw	0	100		
Adelaide Wind Farm	26	Raptor Management Plan	14	7	2017	7/14/2017	16:10	16:22	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	14	wnw	0	100		
Adelaide Wind Farm	5	Raptor Management Plan	17	7	2017	7/17/2017	11:01	11:14	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	10	ssw	0	10		
Adelaide Wind Farm	8	Raptor Management Plan	17	7	2017	7/17/2017	12:04	12:15	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	10	ssw	0	10		
Adelaide Wind Farm	9	Raptor Management Plan	17	7	2017	7/17/2017	12:23	12:33	10	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	10	ssw	0	10		
Adelaide Wind Farm	13	Raptor Management Plan	17	7	2017	7/17/2017	14:20	14:30	10	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	10	ssw	0	10		
Adelaide Wind Farm	15	Raptor Management Plan	21	7	2017	7/21/2017	11:17	11:30	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	28	11	nnw	0	5		
Adelaide Wind Farm	18	Raptor Management Plan	21	7	2017	7/21/2017	12:21	12:32	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	28	11	nnw	0	5		
Adelaide Wind Farm	21	Raptor Management Plan	21	7	2017	7/21/2017	14:04	14:16	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	28	11	nnw	0	5		
Adelaide Wind Farm	26	Raptor Management Plan	21	7	2017	7/21/2017	15:06	15:20	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	28	11	nnw	0	5		
Adelaide Wind Projec	5	SAR Survey - EEMP	26	7	2017	07/26/17	8:52	9:27	35	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	8	SAR Survey - EEMP	26	7	2017	07/26/17	9:38	10:18	40	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	9	SAR Survey - EEMP	26	7	2017	07/26/17	10:27	11:06	39	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	13	SAR Survey - EEMP	26	7	2017	07/26/17	11:17	12:08	51	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	15	SAR Survey - EEMP	26	7	2017	07/26/17	12:19	13:09	50	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	18	SAR Survey - EEMP	26	7	2017	07/26/17	13:17	13:53	36	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	21	SAR Survey - EEMP	26	7	2017	07/26/17	14:05	14:39	34	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Projec	26	SAR Survey - EEMP	26	7	2017	07/26/17	14:21	14:53	32	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	14	15	sw	0	90		
Adelaide Wind Farm	5	Raptor Management Plan	1	8	2017	8/1/2017	10:06	10:20	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	5	wsw	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	1	8	2017	8/1/2017	10:46	10:57	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	5	wsw	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	1	8	2017	8/1/2017	11:05	11:18	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	5	wsw	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	1	8	2017	8/1/2017	12:53	1:07	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	27	5	wsw	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	4	8	2017	8/4/2017	11:55	12:10	15	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	22	18	S	3	100		
Adelaide Wind Farm	18	Raptor Management Plan	4	8	2017	8/4/2017	12:42	12:54	12	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	22	18	S	3	100		
Adelaide Wind Farm	21	Raptor Management Plan	4	8	2017	8/4/2017	14:27	14:38	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	22	18	S	3	100		
Adelaide Wind Farm	26	Raptor Management Plan	4	8	2017	8/4/2017	15:08	15:19	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	22	18	S	3	100		
Adelaide Wind Farm	5	Raptor Management Plan	9	8	2017	8/9/2017	10:41	10:51	10	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	24	13	sw	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	9	8	2017	8/9/2017	11:21	11:32	11	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	24	13	sw	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	9	8	2017	8/9/2017	11:41	11:54	13	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	24	13	sw	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	9	8	2017	8/9/2017	12:58	13:12	14	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	24	13	sw	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	11	8	2017	8/11/2017	11:49	12:04	15	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	16	s	2	100		
Adelaide Wind Farm	18	Raptor Management Plan	11	8	2017	8/11/2017	12:37	12:50	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	16	s	2	100		
Adelaide Wind Farm	21	Raptor Management Plan	11	8	2017	8/11/2017	14:26	14:39	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	16	s	2	100		
Adelaide Wind Farm	26	Raptor Management Plan	11	8	2017	8/11/2017	15:10	15:21	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	16	s	2	100		
Adelaide Wind Farm	5	Raptor Management Plan	15	8	2017	8/15/2017	9:40	9:50	10	1	Sean Cole	6	7254	No	Circular	50 m radiu	5-6 m	18	9	nw	2	100		
Adelaide Wind Farm	8	Raptor Management Plan	15	8	2017	8/15/2017	10:20	10:31	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	18	9	nw	2	100		
Adelaide Wind Farm	9	Raptor Management Plan	15	8	2017	8/15/2017	10:40	10:55	15	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	18	9	nw	2	100		
Adelaide Wind Farm	13	Raptor Management Plan	15	8	2017	8/15/2017	12:30	12:44	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	18	9	nw	2	100		
Adelaide Wind Farm	15	Raptor Management Plan	18	8	2017	8/17/2017	11:06	11:20	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	16	sw	0	80		
Adelaide Wind Farm	18	Raptor Management Plan	18	8	2017	8/18/2017	11:52	12:05	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	16	sw	0	80		

project_name	turbine_nu	treatment_group	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_cels	wind_spee	wind_dire	precipitati	cloud_cover_percent	signif_weathe	comments
Adelaide Wind Farm	21	Raptor Management Plan	18	8	2017	8/18/2017	1:35	13:47	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	16	sw	0	80		
Adelaide Wind Farm	26	Raptor Management Plan	18	8	2017	8/18/2017	14:16	14:28	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	22	16	sw	0	80		
Adelaide Wind Farm	5	Raptor Management Plan	22	8	2017	8/22/2017	9:48	10:00	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	23	16	sw	3	100		
Adelaide Wind Farm	8	Raptor Management Plan	22	8	2017	8/22/2017	10:29	10:43	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	23	16	sw	3	100		
Adelaide Wind Farm	9	Raptor Management Plan	22	8	2017	8/22/2017	10:54	11:07	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	23	16	sw	3	100		
Adelaide Wind Farm	13	Raptor Management Plan	22	8	2017	8/22/2017	12:45	12:59	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	23	16	sw	3	100		
Adelaide Wind Farm	15	Raptor Management Plan	25	8	2017	8/25/2017	11:38	11:52	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	5	nw	0	50		
Adelaide Wind Farm	18	Raptor Management Plan	25	8	2017	8/25/2017	12:25	12:36	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	5	nw	0	50		
Adelaide Wind Farm	21	Raptor Management Plan	25	8	2017	8/25/2017	13:56	14:08	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	5	nw	0	50		
Adelaide Wind Farm	26	Raptor Management Plan	25	8	2017	8/25/2017	14:37	14:50	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	5	nw	0	50		
Adelaide Wind Projec	5	SAR Survey - EEMP	30	8	2017	08/30/17	9:16	9:48	32	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	8	SAR Survey - EEMP	30	8	2017	08/30/17	9:59	10:41	42	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	9	SAR Survey - EEMP	30	8	2017	08/30/17	10:51	11:42	51	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	13	SAR Survey - EEMP	30	8	2017	08/30/17	11:53	12:47	54	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	15	SAR Survey - EEMP	30	8	2017	08/30/17	12:57	1:52	55	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	18	SAR Survey - EEMP	30	8	2017	08/30/17	2:01	2:36	35	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	21	SAR Survey - EEMP	30	8	2017	08/30/17	2:48	3:27	39	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Projec	26	SAR Survey - EEMP	30	8	2017	08/30/17	3:35	4:06	31	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	20	4	sw	0	10		
Adelaide Wind Farm	5	Raptor Management Plan	6	9	2017	9/6/2017	10:08	10:19	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	5	wnw	0	10		
Adelaide Wind Farm	8	Raptor Management Plan	6	9	2017	9/6/2017	10:48	11:01	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	5	wnw	0	10		
Adelaide Wind Farm	9	Raptor Management Plan	6	9	2017	9/6/2017	11:11	11:25	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	5	wnw	0	10		
Adelaide Wind Farm	13	Raptor Management Plan	6	9	2017	9/6/2017	12:50	13:04	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	5	wnw	0	10		
Adelaide Wind Farm	15	Raptor Management Plan	8	9	2017	9/8/2017	10:53	11:07	14	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	12	11	wnw	2	90		
Adelaide Wind Farm	18	Raptor Management Plan	8	9	2017	9/8/2017	11:41	11:53	12	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	12	11	wnw	2	90		
Adelaide Wind Farm	22	Raptor Management Plan	8	9	2017	9/8/2017	13:18	13:30	12	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	12	11	wnw	2	90		
Adelaide Wind Farm	26	Raptor Management Plan	8	9	2017	9/8/2017	13:57	14:07	10	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	12	11	wnw	2	90		
Adelaide Wind Farm	5	Raptor Management Plan	12	9	2017	9/12/2017	9:40	9:51	11	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	3	ene	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	12	9	2017	9/12/2017	10:20	10:33	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	3	ene	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	12	9	2017	9/12/2017	10:42	10:55	13	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	3	ene	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	12	9	2017	9/12/2017	12:27	12:41	14	1	Sean Cole	6	7854	No	Circular	50 m radiu	5-6 m	14	3	ene	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	15	9	2017	9/15/2017	12:17	12:31	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	5	s	0	5		
Adelaide Wind Farm	18	Raptor Management Plan	15	9	2017	9/15/2017	13:01	13:13	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	5	s	0	5		
Adelaide Wind Farm	21	Raptor Management Plan	15	9	2017	9/15/2017	14:29	14:41	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	5	s	0	5		
Adelaide Wind Farm	26	Raptor Management Plan	15	9	2017	9/15/2017	15:08	15:18	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	21	5	s	0	5		
Adelaide Wind Farm	26	Raptor Management Plan	19	9	2017	9/19/2017	9:43	9:53	10	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	20	6	e	2	100		
Adelaide Wind Farm	21	Raptor Management Plan	19	9	2017	9/19/2017	10:26	10:38	12	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	20	6	e	2	100		
Adelaide Wind Farm	18	Raptor Management Plan	19	9	2017	9/19/2017	11:59	12:12	13	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	20	6	e	2	100		
Adelaide Wind Farm	15	Raptor Management Plan	19	9	2017	9/19/2017	12:43	12:58	15	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	20	6	e	2	100		
Adelaide Wind Farm	5	Raptor Management Plan	22	9	2017	9/22/2017	9:50	10:01	11	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	22	7	se	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	22	9	2017	9/22/2017	10:30	10:42	12	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	22	7	se	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	22	9	2017	9/22/2017	10:53	11:07	14	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	22	7	se	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	22	9	2017	9/22/2017	12:37	12:51	14	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	22	7	se	0	0		
Adelaide Wind Projec	5	SAR Survey - EEMP	27	9	2017	09/27/17	9:06	9:38	32	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	8	SAR Survey - EEMP	27	9	2017	09/27/17	9:50	10:27	37	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	9	SAR Survey - EEMP	27	9	2017	09/27/17	10:36	11:17	41	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	13	SAR Survey - EEMP	27	9	2017	09/27/17	11:29	12:20	51	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	15	SAR Survey - EEMP	27	9	2017	09/27/17	12:30	13:25	55	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	18	SAR Survey - EEMP	27	9	2017	09/27/17	13:30	14:10	36	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	21	SAR Survey - EEMP	27	9	2017	09/27/17	14:21	15:00	39	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Projec	26	SAR Survey - EEMP	27	9	2017	09/27/17	15:11	15:42	31	1	Sean Cole	8	7854	No	Circular	50 m radiu	5-6 m	22	12	nw	0	0		
Adelaide Wind Farm	5	Raptor Management Plan	3	10	2017	10/3/2017	9:59	10:11	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	9	sse	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	3	10	2017	10/3/2017	10:39	10:51	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	9	sse	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	3	10	2017	10/3/2017	11:02	11:16	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	9	sse	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	3	10	2017	10/3/2017	12:56	13:09	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	17	9	sse	0	0		
Adelaide Wind Farm	26	Raptor Management Plan	6	10	2017	10/6/2017	9:44	9:55	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	3	sw	0	100		
Adelaide Wind Farm	21	Raptor Management Plan	6	10	2017	10/6/2017	10:26	10:39	13	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	3	sw	0	100		
Adelaide Wind Farm	18	Raptor Management Plan	6	10	2017	10/6/2017	11:50	12:03	13	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	3	sw	0	100		
Adelaide Wind Farm	15	Raptor Management Plan	6	10	2017	10/6/2017	12:35	12:49	14	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	14	3	sw	0	100		
Adelaide Wind Farm	26	Raptor Management Plan	11	10	2017	10/11/2017	10:06	10:17	11	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	10	20	ene	6	100		
Adelaide Wind Farm	21	Raptor Management Plan	11	10	2017	10/11/2017	10:49	11:02	13	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	10	20	ene	6	100		
Adelaide Wind Farm	18	Raptor Management Plan	11	10	2017	10/11/2017	12:17	12:30	13	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	10	20	ene	6	100		
Adelaide Wind Farm	15	Raptor Management Plan	11	10	2017	10/11/2017	13:01	13:15	14	1	Sean Cole	5	7854	No	Circular	50 m radiu	5-6 m	10	20	ene	6	100		
Adelaide Wind Farm	5	Raptor Management Plan	13	10	2017	10/13/2017	9:50	10:01	11	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	15	6	s	0	0		
Adelaide Wind Farm	8	Raptor Management Plan	13	10	2017	10/13/2017	10:33	10:45	12	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	15	6	s	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	13	10	2017	10/13/2017	10:57	11:09	12	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	15	6	s	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	13	10	2017	10/13/2017	12:57	13:11	14	1	Sean Cole	10	7854	No	Circular	50 m radiu	5-6 m	15	6	s	0	0		
Adelaide Wind Farm	5	Raptor Management Plan	17	10	2017	10/17/2017	9:57	10:10	13	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	10	15	ssw	0	0		

Appendix F2: Raptor Monitoring 2017

project_name	turbine_nu	treatment_group	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_cels	wind_spee	wind_dire	precipitati	cloud_cover_percent	signif_weathe	comments
Adelaide Wind Farm	8	Raptor Management Plan	17	10	2017	10/17/2017	10:41	10:53	12	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	10	15	ssw	0	0		
Adelaide Wind Farm	9	Raptor Management Plan	17	10	2017	10/17/2017	11:03	11:16	13	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	10	15	ssw	0	0		
Adelaide Wind Farm	13	Raptor Management Plan	17	10	2017	10/17/2017	13:06	13:20	14	1	Sean Cole	4	7854	No	Circular	50 m radiu	5-6 m	10	15	ssw	0	0		
Adelaide Wind Farm	26	Raptor Management Plan	20	10	2017	10/20/2017	9:32	9:42	10	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	6	3	ese	0	0		
Adelaide Wind Farm	21	Raptor Management Plan	20	10	2017	10/20/2017	10:09	10:22	13	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	6	3	ese	0	0		
Adelaide Wind Farm	18	Raptor Management Plan	20	10	2017	10/20/2017	11:39	11:50	11	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	6	3	ese	0	0		
Adelaide Wind Farm	15	Raptor Management Plan	20	10	2017	10/20/2017	12:24	12:38	14	1	Sean Cole	9	7854	No	Circular	50 m radiu	5-6 m	6	3	ese	0	0		
Adelaide Wind Farm	5	Raptor Management Plan	24	10	2017	10/24/2017	9:53	10:04	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	10	12	ssw	5	100		
Adelaide Wind Farm	8	Raptor Management Plan	24	10	2017	10/24/2017	10:30	10:43	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	10	12	ssw	5	100		
Adelaide Wind Farm	9	Raptor Management Plan	24	10	2017	10/24/2017	10:54	11:05	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	10	12	ssw	5	100		
Adelaide Wind Farm	13	Raptor Management Plan	24	10	2017	10/24/2017	12:37	12:51	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	10	12	ssw	5	100		
Adelaide Wind Farm	26	Raptor Management Plan	27	10	2017	10/27/2017	9:30	9:40	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	9	8	s	0	80		
Adelaide Wind Farm	21	Raptor Management Plan	27	10	2017	10/27/2017	10:07	10:19	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	9	8	s	0	80		
Adelaide Wind Farm	18	Raptor Management Plan	27	10	2017	10/27/2017	11:45	11:57	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	9	8	s	0	80		
Adelaide Wind Farm	15	Raptor Management Plan	27	10	2017	10/27/2017	12:26	12:40	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	9	8	s	0	80		
Adelaide Wind Farm	5	Raptor Management Plan	31	10	2017	10/31/2017	10:02	10:13	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	2	16	sw	0	100		
Adelaide Wind Farm	8	Raptor Management Plan	31	10	2017	10/31/2017	10:37	10:49	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	2	16	sw	0	100		
Adelaide Wind Farm	9	Raptor Management Plan	31	10	2017	10/31/2017	10:57	11:07	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	2	16	sw	0	100		
Adelaide Wind Farm	13	Raptor Management Plan	31	10	2017	10/31/2017	12:34	12:48	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	2	16	sw	0	100		
Adelaide Wind Farm	26	Raptor Management Plan	3	11	2017	11/3/2017	9:45	9:56	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	14	nw	0	20		
Adelaide Wind Farm	21	Raptor Management Plan	3	11	2017	11/3/2017	10:21	10:33	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	14	nw	0	20		
Adelaide Wind Farm	18	Raptor Management Plan	3	11	2017	11/3/2017	11:49	12:00	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	14	nw	0	20		
Adelaide Wind Farm	15	Raptor Management Plan	3	11	2017	11/3/2017	12:26	12:40	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	8	14	nw	0	20		
Adelaide Wind Farm	7	EEMP - November	9	11	2017	11/9/2017	9:09	9:19	10	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	6	EEMP - November	9	11	2017	11/9/2017	9:27	9:41	14	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	11	EEMP - November	9	11	2017	11/9/2017	9:51	10:04	13	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	12	EEMP - November	9	11	2017	11/9/2017	10:16	10:29	13	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	14	EEMP - November	9	11	2017	11/9/2017	10:37	10:48	11	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	17	EEMP - November	9	11	2017	11/9/2017	10:56	11:10	14	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	19	EEMP - November	9	11	2017	11/9/2017	11:19	11:29	10	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	20	EEMP - November	9	11	2017	11/9/2017	11:38	11:50	12	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	22	EEMP - November	9	11	2017	11/9/2017	12:00	12:12	12	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	27	EEMP - November	9	11	2017	11/9/2017	12:21	12:34	13	1	Sean Cole	0	7854	No	Circular	50 m radiu	5-6 m	2	12	s	0	90		
Adelaide Wind Farm	7	EEMP - November	16	11	2017	11/16/2017	9:12	9:23	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	6	EEMP - November	16	11	2017	11/16/2017	9:31	9:45	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	11	EEMP - November	16	11	2017	11/16/2017	9:54	10:06	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	12	EEMP - November	16	11	2017	11/16/2017	10:14	10:26	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	14	EEMP - November	16	11	2017	11/16/2017	10:33	10:44	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	17	EEMP - November	16	11	2017	11/16/2017	10:53	11:07	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	19	EEMP - November	16	11	2017	11/16/2017	11:16	11:26	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	20	EEMP - November	16	11	2017	11/16/2017	11:36	11:49	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	22	EEMP - November	16	11	2017	11/16/2017	11:59	12:11	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	27	EEMP - November	16	11	2017	11/16/2017	12:20	12:32	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	3	16	w	2	100		
Adelaide Wind Farm	7	EEMP - November	23	11	2017	11/23/2017	9:21	9:32	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	6	EEMP - November	23	11	2017	11/23/2017	9:41	9:55	14	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	11	EEMP - November	23	11	2017	11/23/2017	10:05	10:17	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	12	EEMP - November	23	11	2017	11/23/2017	10:24	10:36	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	14	EEMP - November	23	11	2017	11/23/2017	10:43	10:53	10	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	17	EEMP - November	23	11	2017	11/23/2017	11:01	11:14	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	19	EEMP - November	23	11	2017	11/23/2017	11:22	11:33	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	20	EEMP - November	23	11	2017	11/23/2017	11:42	11:55	13	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	22	EEMP - November	23	11	2017	11/23/2017	12:05	12:16	11	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		
Adelaide Wind Farm	27	EEMP - November	23	11	2017	11/23/2017	12:25	12:37	12	1	Sean Cole	7	7854	No	Circular	50 m radiu	5-6 m	0	15	sw	0	100		

Appendix F3: Mortality Monitoring Searches 2017

project_name	turbine_nu	treatment_	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_cels	wind_spee	wind_dire	precipitation	cloud_cov	signif_weather	comments
Adelaide Wind Farm	22	Subset	5	5	2017	05/05/17	N/A	N/A	0	1	Sean Cole	First search	0	no	circular	50m radius	5-6m	6	8	n	Heavy rain	100	Heavy rain	Access road flooded
Adelaide Wind Farm	19	Subset	12	5	2017	05/12/17	N/A	N/A	0	1	Sean Cole	3	0	no	circular	50m radius	5-6m	14	8	ne	None	5	None	Maintenance on turbine
Adelaide Wind Farm	11	Subset	16	6	2017	06/16/17	N/A	N/A	0	1	Sean Cole	3	0	no	circular	50m radius	5-6m	25	8	w	None	5		
Adelaide Wind Farm	22	Subset	23	6	2017	06/23/17	N/A	N/A	0	1	Sean Cole	7	0	no	circular	50m radius	5-6m	18	5	s	12 mm	100		

Appendix F4: Raptor Monitoring Missed Searches 2017

project_name	turbine_nu	treatment	day	month	year	Date	start_time	end_time	duration_r	number_o	searchers_	days_since	actual_are	dog_used	search_are	search_are	transect_s	temp_celsi	wind_spee	wind_direc	precipitation	cloud_cove	signif_weather	comments
Adelaide Wind Farm	n/a																							All turbines searched

Appendix F5: Search Efficiency Data 2017

project_name	year	turbine	treatment_group	searcher_name	dog_used	day_placed	month_placed	Date	Season	placed_by	time	time_collected	species_name_common	*species_name_scientific*	species_code	condition	carcass_utm_zone	carcass_easting_nad83	carcass_northing_nad83	distance_from_turbine_m	direction_from_turbine	marking	temp	wind_speed	cloud	precip	scavenged	found	placed	substrate	visibility_class	Guild	Bird	Bat	Notes
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	2	5	5/5/2017	Spring	Nathan Burnett	7:48	14:20	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	444525	4765080	18	NE	thread	9	25	100	1	0	1	1	gravel	1	bird	1	0	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	2	5	5/5/2017	Spring	Nathan Burnett	8:20	17:30	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	442974	4764980	33	ENE	thread	9	25	100	1	0	0	1	gravel	1	bat	0	1	
Adelaide Wind Farm	2017	6	n/a	Sean Cole	No	2	5	5/5/2017	Spring	Nathan Burnett	8:40	15:15	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	451964	4762593	24	SW	thread	9	25	100	1	0	1	1	gravel	1	bird	1	0	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	9	5	5/9/2017	Spring	Mitch Ellah	7:50	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	449658	4762155	6	NW	thread	10	6	10	0	0	0	1	gravel	2	bat	0	1	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	9	5	5/9/2017	Spring	Mitch Ellah	8:18	-	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	447175	4764853	2	SE	thread	10	6	10	0	0	0	1	soil	2	bat	0	1	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	9	5	5/9/2017	Spring	Mitch Ellah	8:30	-	Gray Catbird	*Dumetella carolinensis*	GRCA	thawed	17T	444507	4765060	3	S	thread	10	6	10	0	0	0	1	soil	2	bird	1	0	
Adelaide Wind Farm	2017	27	n/a	Sean Cole	No	19	5	5/19/2017	Spring	Mitch Ellah	8:14	14:13	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	435962	4765473	3	N	thread	8	16	100	0	0	1	1	moss	2	bird	1	0	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	19	5	5/19/2017	Spring	Mitch Ellah	8:30	16:24	American Woodcock	*Scolopax minor*	AMWO	thawed	17T	438317	4763225	15	NE	thread	8	16	100	0	0	1	1	gravel	1	bird	1	0	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	19	5	5/19/2017	Spring	Mitch Ellah	8:47	16:39	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	442950	4764955	9	S	thread	8	16	100	0	0	1	1	veg/gravel	2	bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	24	5	5/24/2017	Spring	Nathan Burnett	7:40	13:00	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	449146	4763613	9	SW	thread	15	6	90	0	0	1	1	grass	2	bat	0	1	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	24	5	5/24/2017	Spring	Nathan Burnett	7:56	14:30	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	447175	4764836	18	S	thread	15	6	90	0	0	1	1	clover patch	2	bat	0	1	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	24	5	5/24/2017	Spring	Nathan Burnett	8:10	-	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	444528	4765052	24	SE	thread	15	6	90	0	1	0	1	grass	2	bird	1	0	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	30	5	5/30/2017	Spring	Nathan Burnett	7:35	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	449657	4762143	3	W	thread	15	6	10	0	0	1	1	gravel	1	bat	0	1	
Adelaide Wind Farm	2017	6	n/a	Sean Cole	No	30	5	5/30/2017	Spring	Nathan Burnett	7:51	16:47	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	451975	4762607	4	N	thread	15	6	10	0	0	0	1	gravel	1	bat	0	1	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	30	5	5/30/2017	Spring	Nathan Burnett	8:10	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	447872	4763358	4	NW	thread	15	6	10	0	0	1	1	gravel	1	bat	0	1	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	20	6	6/20/2017	Spring	Brennan Obermayer	7:30	18:00	Yellow-rumped Warbler	*Setophaga coronata*	YRWA	thawed	17T	449651	4762180	36	W	thread	23	Unknown	15	0	0	0	1	soil	1	bird	1	0	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	20	6	6/20/2017	Spring	Brennan Obermayer	7:55	-	Horned Lark	*Eremophila alpestris*	HOLA	thawed	17T	438307	4763229	18	W	thread	23	Unknown	15	0	0	1	1	soil/crop	2	bird	1	0	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	20	6	6/20/2017	Spring	Brennan Obermayer	8:12	-	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	447839	4763373	33	W	thread	23	Unknown	15	0	0	1	1	soil	1	bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	27	6	6/27/2017	Spring	Nathan Burnett	8:25	-	Dark-eyed Junco	*Junco hyemalis*	DEJU	thawed	17T	449154	4763614	12	SE	thread	12	13	85	0	0	1	1	grasses	2	bird	1	0	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	27	6	6/27/2017	Spring	Nathan Burnett	8:35	-	Dark-eyed Junco	*Junco hyemalis*	DEJU	thawed	17T	444517	4765054	14	SE	thread	12	13	85	0	0	1	1	gravel	1	bird	1	0	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	27	6	6/27/2017	Spring	Nathan Burnett	8:42	-	Dark-eyed Junco	*Junco hyemalis*	DEJU	thawed	17T	447857	4763365	16	W	thread	12	13	85	0	0	1	1	grasses	2	bird	1	0	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	7	7	7/7/2017	Summer	Dane Cameron	9:16	-	Bird sp.	-	-	thawed	17T	449170	4763603	26	WSW	thread	20	8	100	1	0	1	1	gravel	1	bird	1	0	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	7	7	7/7/2017	Summer	Dane Cameron	8:48	16:16	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	551001	4840990	3	N	thread	20	8	100	1	1	0	1	soil	1	bat	0	1	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	7	7	7/7/2017	Summer	Dane Cameron	9:01	-	Bird sp.	-	-	thawed	17T	447172	4764861	8	NNE	thread	20	8	100	1	0	1	1	grass	2	bird	1	0	
Adelaide Wind Farm	2017	27	n/a	Sean Cole	No	14	7	7/14/2017	Summer	Dane Cameron	7:55	-	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	435964	4765473	4	N	thread	21	10	100	1	0	1	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	14	7	7/14/2017	Summer	Dane Cameron	8:13	-	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	438329	4763219	19	NE	thread	21	10	100	1	0	1	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	20	n/a	Sean Cole	No	14	7	7/14/2017	Summer	Dane Cameron	8:29	-	American Robin	*Turdus migratorius*	AMRO	thawed	17T	440238	4765238	19	NW	Paper tag	21	10	100	1	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	21	7	7/21/2017	Summer	Nathan Burnett	7:35	-	Red-breasted Nuthatch	*Sitta canadensis*	RBNU	thawed	17T	449157	4763631	8	NNE	thread	21	4	10	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	21	7	7/21/2017	Summer	Nathan Burnett	7:45	-	Red-breasted Nuthatch	*Sitta canadensis*	RBNU	thawed	17T	447165	4764841	14	S	thread	21	4	10	0	0	1	1	grasses	2	Bird	1	0	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	21	7	7/21/2017	Summer	Nathan Burnett	7:55	-	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	447872	4763374	15	N	thread	21	4	10	0	0	1	1	gravel	1	Bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	25	7	7/25/2017	Summer	Melissa Straus	7:50	16:41	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	449148	4763629	11	NNW	thread	15	10-15	35	0	0	0	1	soil	2	Bat	0	1	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	25	7	7/25/2017	Summer	Melissa Straus	8:10	-	American Robin	*Turdus migratorius*	AMRO	thawed	17T	447155	4764853	14	WSW	thread	15	10-15	35	0	0	1	1	wheat	2	Bird	1	0	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	25	7	7/25/2017	Summer	Melissa Straus	8:34	16:16	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	438346	4763202	37	ENE	thread	15	10-15	35	0	0	0	1	soil	1	Bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	1	8	8/1/2017	Summer	Nathan Burnett	7:40	-	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	449150	4763638	13	N	thread	16	3	0	0	0	1	1	grass	2	Bird	1	0	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	1	8	8/1/2017	Summer	Nathan Burnett	7:50	-	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	444510	4765080	12	N	thread	16	3	0	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	1	8	8/1/2017	Summer	Nathan Burnett	7:58	-	Bat sp.	-	-	thawed	17T	447860	4763374	19	W	thread	16	3	0	0	0	1	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	6	n/a	Sean Cole	No	9	8	8/9/2017	Summer	Nathan Burnett	6:42	-	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	451974	4762603	5	NW	thread	14	4	10	0	0	1	1	grasses	2	Bird	1	0	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	9	8	8/9/2017	Summer	Nathan Burnett	6:48	-	Bat sp.	-	-	thawed	17T	449150	4763616	6	ENE	thread	14	4	10	0	0	1	1	gravel	1	Bat	0	1	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	9	8	8/9/2017	Summer	Nathan Burnett	6:59	-	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	447862	4763351	14	W	thread	14	4	10	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	27	n/a	Sean Cole	No	25	8	8/25/2017	Summer	Lisa Uskov	5:44	-	American Woodcock	*Scolopax minor*	AMWO	thawed	17T	435973	4765472	12	ENE	thread	10	7	0	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	20	n/a	Sean Cole	No	25	8	8/25/2017	Summer	Lisa Uskov	5:58	-	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	440240	4765237	14	NW	thread	10	7	0	0	0	1	1	gravel	2	Bat	0	1	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	25	8	8/25/2017	Summer	Lisa Uskov	6:12	-	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	447877	4763362	1	S	thread	10	7	0	0	0	1	1	gravel	1	Bat	0	1	
Adelaide Wind Farm	2017	6	n/a	Sean Cole	No	6	9	9/6/2017	Fall	Kimberly Zupfer	7:54	-	White-breasted Nuthatch	*Sitta carolinensis*	WBNU	thawed	17T	451970	4762607	15	SW	thread	9	2	0	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	6	9	9/6/2017	Fall	Kimberly Zupfer	8:10	-	Black-capped Chickadee	*Poecile atricapillus*	BCCH	thawed	17T	449149	4763631	8	N	thread	9	2	0	0	0	1	1	grass	2	Bird	1	0	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	6	9	9/6/2017	Fall	Kimberly Zupfer	8:27	-	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	442989	4764976	40	E	thread	9	2	0	0	0	1	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	15	9	9/15/2017	Fall	Melissa Straus	8:00	-	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	449629	4762159	36	WNW	thread	15	3	100	0	0	1	1	soil	1	Bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	15	9	9/15/2017	Fall	Melissa Straus	8:20	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	449144	4763610	8	S	thread	15	3	100	0	0	1	1	veg	2	Bat	0	1	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	15	9	9/15/2017	Fall	Melissa Straus	8:50	-	Dark-eyed Junco	*Junco hyemalis*	DEJU	thawed	17T	444501	4765069	3	NW	thread	15	3	100	0	0	1	1	veg	2	Bird	1	0	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	29	9	9/29/2017	Fall	Kimberly Zupfer	7:27	16:18	Black-capped Chickadee	*Poecile atricapillus*	BCCH	thawed	17T	449656	4762150	5	NWN	thread	11	6	100	4	0	0	1	grass	2	Bird	1	0	
Adelaide Wind Farm	2017	6	n/a	Sean Cole	No	29	9	9/29/2017	Fall	Kimberly Zupfer	7:40	-	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	451975	4762576	36	SWS	thread	11	6	100	4	0	1	1	soil	1	Bird	1	0	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	29	9	9/29/2017	Fall	Kimberly Zupfer	7:58	16:27	Eastern Red Bat	*Lasiurus borealis*	LABO	thawed	17T	442961	4764954	19	SW	thread	11	6	100	4	0	0	1	gravel	1	Bat	0	1	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	3	10	10/3/2017	Fall	Kimberly Zupfer	7:54	16:07	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	447157	4764854	13	W	thread	8	7	5	0	0	1	0	grass	1	Bird	1	0	
Adelaide Wind Farm	2017	17	n/a	Sean Cole	No	3	10	10/3/2017	Fall	Kimberly Zupfer	8:04	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	444516	4765083	17	NEN	thread	8	7	5	0	0	0	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	3	10	10/3/2017	Fall	Kimberly Zupfer	8:21	-	Silver-haired Bat	*Lasionycteris noctivagans*	LANO	thawed	17T	442947	4764966	1	S	thread	8	7	5	0	0	0	1	gravel	1	Bat	0	1	
Adelaide Wind Farm	2017	11	n/a	Sean Cole	No	13	10	10/13/2017	Fall	Kimberly Zupfer	7:28	-	Black-capped Chickadee	*Poecile atricapillus*	BCCH	thawed	17T	449187	4763617	41	E	thread	15	8	80	1	0	0	1	grass	2	Bird	1	0	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	13	10	10/13/2017	Fall	Kimberly Zupfer	7:46	-	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	438329	4763218	21	ENE	thread	15	8	80	1	0	1	1	soil	1	Bird	1	0	
Adelaide Wind Farm	2017	27	n/a	Sean Cole	No	13	10	10/13/2017	Fall	Kimberly Zupfer	7:58	-	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	435968	4765455	14	SES	thread	15	8	80	1	0	1	1	soil	1	Bat	0	1	
Adelaide Wind Farm	2017	7	n/a	Sean Cole	No	24	10	10/24/2017	Fall	Kimberly Zupfer	7:32	16:49	Red-breasted Nuthatch	*Sitta canadensis*	RBNU	thawed	17T	449651	4762159	10	NNW	thread	9	14	30	0	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	14	n/a	Sean Cole	No	24	10	10/24/2017	Fall	Kimberly Zupfer	7:55	-	Big Brown Bat	*Eptesicus fuscus*	EPFU	thawed	17T	447190	4764844	24	E	thread	9	14	30	0	0	0	1	grass	2	Bat	0	1	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	24	10	10/24/2017	Fall	Kimberly Zupfer	8:06	-	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	447872	4763353	6	S	thread	9	14	30	0	0	1	1	weeds	2	Bat	0	1	
Adelaide Wind Farm	2017	22	n/a	Sean Cole	No	31	10	10/31/2017	Fall	Kimberly Zupfer	7:41	-	White-throated Sparrow	*Zonotrichia albicollis*	WTSP	thawed	17T	438322	4763202	15	ESE	thread	4	20	100	1	0	1	1	gravel	1	Bird	1	0	
Adelaide Wind Farm	2017	19	n/a	Sean Cole	No	31	10	10/31/2017	Fall	Kimberly Zupfer	7:55	-	Black-capped Chickadee	*Poecile atricapillus*	BCCH	thawed	17T	442972	4764981	29	NE	thread	4	20	100	1	0	1	1	weeds	2	Bird	1	0	
Adelaide Wind Farm	2017	12	n/a	Sean Cole	No	31	10	10/31/2017	Fall	Kimberly Zupfer	8:04	-	Hoary Bat	*Lasiurus cinereus*	LACI	thawed	17T	447871	4763361	1	W	thread	4	20	100	1	0	1	1	gravel	1	Bat	0	1	

Appendix F6: Search Efficiency Summary 2017

project_name	year	season/month	size_category	month_start	month_end	searcher_name	num_of_carcasses_placed	num_carcasses_scaven	num_carcasses_found	proportion_found	proportion_turbines_searched	weighted_searcher_efficiency
Adelaide Wind Farm	2017	Spring	Small-Large	5	6	Sean Cole	21	1	17	0.85	100%	0.85
Adelaide Wind Farm	2017	Summer	Small-Large	7	8	Sean Cole	21	1	14	0.70	100%	0.70
Adelaide Wind Farm	2017	Fall	Small-Large	9	10	Sean Cole	21	1	18	0.90	100%	0.9

Appendix F7: Scavenger Trial Data 2017

month_placed	Date	species_name_common	species_name_scientif	species_cod	condition	carcass_utm_zone	carcass_easting_nad83	carcass_northing_nad83	distance_from_turbine_	direction_fron	visibility_c	day_visit1	month_visit1	weather_visit1	scavenged_visit1	day_visit2	month_visit2	weather_visit2	scavenged_visit2	day_visit3	month_visit3	weather_visit3	scavenged	day_visit4	month_visit4	weather_visit4	scavenged_	Notes
May	5/8/2017	Bat sp.	-	-	Thawed	17	449695	4762140	27	E	2	9	May	Sun, 9°C	no	12	May	Sun, 12°C	no	16	May	Rain, 10°C	no	19	May	Overcast, 7°C	no	
May	5/8/2017	Bird sp.	-	-	Thawed	17	447880	4763373	10	N	1	9	May	Sun, 9°C	no	12	May	Sun, 12°C	no	16	May	Rain, 10°C	no	19	May	Overcast, 7°C	no	
May	5/8/2017	Bird sp.	-	-	Thawed	17	444453	4765190	46	WNW	1	9	May	Sun, 9°C	no	12	May	Sun, 12°C	yes	16	May	Rain, 10°C	yes	19	May	Overcast, 7°C	yes	
May	5/8/2017	Bat sp.	-	-	Thawed	17	440262	4765221	6	SE	1	9	May	Sun, 9°C	no	12	May	Sun, 12°C	no	16	May	Rain, 10°C	no	19	May	Overcast, 7°C	no	
May	5/8/2017	Bird sp.	-	-	Thawed	17	435973	4765447	21	S	1	9	May	Sun, 9°C	no	12	May	Sun, 12°C	no	16	May	Rain, 10°C	yes	19	May	Overcast, 7°C	yes	
May	5/23/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	451969	4762626	6	NNW	1	24	May	Rain, 16°C	no	26	May	Overcast, 11°C	no	30	May	Sun, 20°C	yes	2	June	Sun, 14°C	yes	
May	5/23/2017	Grey Catbird	Dumetella carolinensis	GRCA	Thawed	17	441145	4763607	8	S	2	24	May	Rain, 16°C	no	26	May	Overcast, 11°C	no	30	May	Sun, 20°C	yes	2	June	Sun, 14°C	yes	
May	5/23/2017	Silver-haired Bat	Lasionycteris noctivaga	LANO	Thawed	17	444526	4765065	22	E	2	24	May	Rain, 16°C	no	26	May	Overcast, 11°C	no	30	May	Sun, 20°C	no	2	June	Sun, 14°C	no	
May	5/23/2017	White Throated Sparrow	Zonotrichia albicollis	WTSP	Thawed	17	442957	4764940	25	SE	2	24	May	Rain, 16°C	no	26	May	Overcast, 11°C	no	30	May	Sun, 20°C	yes	2	June	Sun, 14°C	yes	
May	5/23/2017	Silver-haired Bat	Lasionycteris noctivaga	LANO	Thawed	17	438309	4763222	6	NNE	2	24	May	Rain, 16°C	no	26	May	Overcast, 11°C	no	30	May	Sun, 20°C	no	2	June	Sun, 14°C	no	
June	6/5/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	449655	4762158	19	NW	2	6	June	Overcast, 13°C	no	9	June	Sun, 20°C	no	13	June	Cloudy, 26°C	no	16	June	Sun, 23°C	no	
June	6/5/2017	White Breasted Nuthatch	Sitta carolinensis	WBNU	Thawed	17	447876	4763350	13	SSW	2	6	June	Overcast, 13°C	no	9	June	Sun, 20°C	yes	13	June	Cloudy, 26°C	yes	16	June	Sun, 23°C	yes	
June	6/5/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	447167	4764854	3	W	1	6	June	Overcast, 13°C	no	9	June	Sun, 20°C	no	13	June	Cloudy, 26°C	no	16	June	Sun, 23°C	no	
June	6/5/2017	Bird sp.	-	-	Thawed	17	440268	4765233	6	E	2	6	June	Overcast, 13°C	no	9	June	Sun, 20°C	yes	13	June	Cloudy, 26°C	yes	16	June	Sun, 23°C	yes	
June	6/5/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	436005	4765469	41	ENE	1	6	June	Overcast, 13°C	no	9	June	Sun, 20°C	yes	13	June	Cloudy, 26°C	yes	16	June	Sun, 23°C	yes	
June	6/19/2017	American Woodcock	Scolopax minor	AMWO	Thawed	17	451971	4762608	10	WSW	1	20	June	Cloudy, 18°C	no	23	June	Rain, 19°C	no	27	June	Cloudy, 13°C	yes	30	June	Cloudy, 19°C	yes	
June	6/19/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	449163	4763635	19	NE	1	20	June	Cloudy, 18°C	no	23	June	Rain, 19°C	no	27	June	Cloudy, 15°C	no	30	June	Cloudy, 19°C	yes	
June	6/19/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	444495	4765064	17	W	2	20	June	Cloudy, 21°C	no	23	June	Cloudy, 20°C	yes	27	June	Cloudy, 16°C	yes	30	June	Cloudy, 21°C	yes	
June	6/19/2017	Bird sp.	-	-	Thawed	17	442949	4764959	6	S	2	20	June	Cloudy, 21°C	no	23	June	Cloudy, 21°C	yes	27	June	Cloudy, 16°C	yes	30	June	Cloudy, 21°C	yes	
June	6/19/2017	Horned Lark	Eremophila alpestris	HOLA	Thawed	17	438340	4763210	30	ENE	1	20	June	Cloudy, 21°C	no	23	June	Cloudy, 22°C	no	27	June	Cloudy, 18°C	yes	30	June	Cloudy, 23°C	yes	
July	7/4/2017	Dark-eyed Junco	Junco hyemalis	DEJU	Thawed	17	449670	4762141	10	E	2	5	July	Sunny, 22°C	yes	7	July	Cloudy, 20°C	yes	11	July	Fog, 19°C	yes	14	July	Overcast, 17°C	yes	
July	7/4/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	447873	4763375	16	NW	1	5	July	Sunny, 25°C	no	7	July	Cloudy, 22°C	no	11	July	Sunny, 22°C	yes	14	July	Cloudy, 18°C	yes	
July	7/4/2017	Dark-eyed Junco	Junco hyemalis	DEJU	Thawed	17	447183	4764833	21	SE	1	5	July	Sunny, 26°C	no	7	July	Cloudy, 23°C	no	11	July	Sunny, 22°C	yes	14	July	Cloudy, 19°C	yes	
July	7/4/2017	Yellow-rumped Warbler	Dendroica coronata	YRWA	Thawed	17	442983	4764976	38	NE	1	5	July	Sunny, 27°C	yes	7	July	Cloudy, 25°C	yes	11	July	Sunny, 24°C	yes	14	July	Windy,194°C	yes	
July	7/4/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	435962	4765454	6	SSW	2	5	July	Sunny, 28°C	no	7	July	Cloudy, 27°C	no	11	July	Sunny, 25°C	no	14	July	Cloudy, 20°C	yes	
July	7/17/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	451983	4762588	21	SSE	2	18	July	Sunny, 28°C	no	21	July	Sunny, 28°C	no	25	July	Sunny, 20°C	no	28	July	Cloudy, 20°C	no	
July	7/17/2017	Turkey Vulture	Cathartes aura	TUVU	Thawed	17	449150	4763633	7	N	1	18	July	Sunny, 28°C	no	21	July	Sunny, 28°C	no	25	July	Sunny, 20°C	yes	28	July	Cloudy, 20°C	yes	
July	7/17/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	444497	4765059	5	WSW	1	18	July	Sunny, 28°C	yes	21	July	Sunny, 28°C	yes	25	July	Sunny, 21°C	yes	28	July	Cloudy, 20°C	yes	
July	7/17/2017	Dark-eyed Junco	Junco hyemalis	DEJU	Thawed	17	440265	4765245	21	NE	2	18	July	Sunny, 28°C	no	21	July	Sunny, 28°C	no	25	July	Sunny, 23°C	no	28	July	Cloudy, 20°C	yes	
July	7/17/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	438328	4763216	19	ENE	1	18	July	Sunny, 28°C	no	21	July	Sunny, 28°C	yes	25	July	Sunny, 25°C	yes	28	July	Cloudy, 20°C	yes	
July	7/31/2017	Turkey Vulture	Cathartes aura	TUVU	Thawed	17	449637	4762159	24	WNW	1	1	August	Sunny, 24°C	no	4	August	Rain, 22°C	no	9	August	Sunny, 24°C	no	11	August	Rain, 20°C	yes	
July	7/31/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	447857	4763360	20	WSW	2	1	August	Sunny, 24°C	no	4	August	Rain, 22°C	no	9	August	Sunny, 25°C	no	11	August	Rain, 20°C	no	
July	7/31/2017	Red-breasted Nuthatch	Sitta canadensis	RBNU	Thawed	17	447181	4764852	11	SE	2	1	August	Sunny, 24°C	no	4	August	Rain, 22°C	yes	9	August	Sunny, 25°C	yes	11	August	Cloudy, 21°C	yes	
July	7/31/2017	Red-breasted Nuthatch	Sitta canadensis	RBNU	Thawed	17	442979	4764979	31	NE	1	1	August	Sunny, 29°C	no	4	August	Sunny, 22°C	no	9	August	Sunny, 28°C	yes	11	August	Cloudy, 21°C	yes	
July	7/31/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	435980	4765465	18	E	1	1	August	Sunny, 29°C	no	4	August	Cloudy, 22°C	yes	9	August	Sunny, 28°C	yes	11	August	Cloudy, 21°C	yes	
August	8/14/2017	Dark-eyed Junco	Junco hyemalis	DEJU	Thawed	17	451990	4762577	18	S	2	15	August	Rain, 18°C	no	18	August	Sunny, 22°C	no	22	August	Rain, 23°C	no	25	August	Cloudy, 14°C	no	
August	8/14/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	449146	4763613	13	SSW	2	15	August	Cloudy, 20°C	no	18	August	Cloudy, 22°C	yes	22	August	Cloudy, 23°C	yes	25	August	Sunny, 16°C	yes	
August	8/14/2017	White Breasted Nuthatch	Sitta carolinensis	WBNU	Thawed	17	444524	4765083	21	NE	1	15	August	Cloudy, 24°C	no	18	August	Cloudy, 23°C	yes	22	August	Cloudy, 23°C	yes	25	August	Sunny, 17°C	yes	
August	8/14/2017	Big Brown Bat	Eptesicus fuscus	EPFU	Thawed	17	440255	4765286	4	N	1	15	August	Cloudy, 24°C	no	18	August	Cloudy, 23°C	no	22	August	Cloudy, 24°C	yes	25	August	Sunny, 19°C	yes	
August	8/14/2017	White Breasted Nuthatch	Sitta carolinensis	WBNU	Thawed	17	438347	4763205	33	ESE	2	15	August	Cloudy, 24°C	no	18	August	Cloudy, 23°C	yes	22	August	Cloudy, 24°C	yes	25	August	Sunny, 19°C	yes	
August	8/28/2017	American Robin	Turdus migratorius	AMRO	Thawed	17	449639	4762144	21	WNW	1	29	August	Cloudy, 20°C	no	1	September	Cloudy, 13°C	no	6	September	Sunny, 17°C	yes	8	September	Cloudy, 12°C	yes	
August	8/28/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	447878	4763369	6	N	2	29	August	Cloudy, 20°C	no	1	September	Cloudy, 13°C	yes	6	September	Sunny, 17°C	yes	8	September	Cloudy, 12°C	yes	
August	8/28/2017	Song Sparrow	Melospiza melodia	SOSP	Thawed	17	447182	4764851	19	SE	2	29	August	Cloudy, 20°C	no	1	September	Cloudy, 13°C	no	6	September	Sunny, 17°C	yes	8	September	Cloudy, 12°C	yes	
August	8/28/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	442990	4764954	41	ESE	1	29	August	Cloudy, 20°C	no	1	September	Cloudy, 13°C	no	6	September	Sunny, 17°C	no	8	September	Cloudy, 12°C	no	
August	8/28/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	435968	4765481	15	NE	1	29	August	Cloudy, 20°C	no	1	September	Cloudy, 13°C	no	6	September	Sunny, 17°C	no	8	September	Cloudy, 12°C	no	
September	9/11/2017	Red-tailed Hawk	Buteo jamaicensis	RTHA	Thawed	17	451969	4762622	11	NW	1	12	September	Sunny, 24°C	no	15	September	Sunny, 22°C	no	19	September	Cloudy, 20°C	no	22	September	Sunny, 28°C	no	
September	9/11/2017	White Breasted Nuthatch	Sitta carolinensis	WBNU	Thawed	17	449156	4763628	10	NE	2	12	September	Sunny, 24°C	no	15	September	Sunny, 22°C	yes	19	September	Cloudy, 20°C	yes	22	September	Sunny, 28°C	yes	
September	9/11/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	444525	4765055	21	ESE	2	12	September	Sunny, 24°C	no	15	September	Sunny, 22°C	yes	19	September	Cloudy, 20°C	yes	22	September	Sunny, 28°C	yes	
September	9/11/2017	Black-capped Chickadee	Poecile atricapillus	BCCH	Thawed	17	440240	4765215	18	SW	1	12	September	Sunny, 24°C	no	15	September	Sunny, 22°C	no	19	September	Cloudy, 20°C	yes	22	September	Sunny, 28°C	yes	
September	9/11/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	438330	4763217	22	ENE	2	12	September	Sunny, 24°C	no	15	September	Sunny, 22°C	no	19	September	Cloudy, 20°C	no	22	September	Sunny, 28°C	no	
September	9/25/2017	White Breasted Nuthatch	Sitta carolinensis	WBNU	Thawed	17	449669	4762150	7	NE	1	26	September	Sunny, 31°C	yes	29	September	Cloudy, 13°C	yes	3	October	Sunny, 24°C	yes	6	October	Cloudy, 16°C	yes	
September	9/25/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	447865	4763348	20	SW	2	26	September	Sunny, 31°C	no	29	September	Cloudy, 13°C	no	3	October	Sunny, 24°C	no	6	October	Cloudy, 16°C	no	
September	9/25/2017	Song Sparrow	Melospiza melodia	SOSP	Thawed	17	447170	4764872	21	N	2	26	September	Sunny, 31°C	no	29	September	Cloudy, 13°C	no	3	October	Sunny, 24°C	no	6	October	Cloudy, 16°C	yes	
September	9/25/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	442985	4764977	36	NE	2	26	September	Sunny, 31°C	no	29	September	Cloudy, 13°C	no	3	October	Sunny, 24°C	no	6	October	Cloudy, 16°C	yes	
September	9/25/2017	Eastern Red Bat	Lasiurus borealis	LABO	Thawed	17	435950	4765490	29	E	1	26	September	Sunny, 31°C	no	29	September	Cloudy, 13°C	no	3	October	Sunny, 24°C	yes	6	October	Cloudy, 16°C	yes	
October	10/10/2017	Silver-haired Bat	Lasionycteris noctivaga	LANO	Thawed	17	451985	4762591	19	SE	1	11	October	Rain, 9°C	no	13	October	Cloudy, 15°C	no	17	October	Sunny, 16°C	no	20	October	Sunny, 16°C	no	
October	10/10/2017	American Woodcock	Scolopax minor	AMWO	Thawed	17	449181	4763636	35	NE	2	11	October	Rain, 9°C	no	13	October	Cloudy, 15°C	yes	17	October	Sunny, 16°C	yes	20	October	Sunny, 16°C	yes	
October	10/10/2017	Silver-haired Bat	Lasionycteris noctivaga	LANO	Thawed	17	444501	4765063	6	WSW	2	11	October	Rain, 9°C	no	13	October	Cloudy, 15°C	no	17	October	Sunny, 16°C	no	20	October	Sunny, 16°C	no	
October	10/10/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	440248	4765238	19	NW	2	11	October	Rain, 9°C	no	13	October	Cloudy, 15°C	no	17	October	Sunny, 16°C	no	20	October	Sunny, 16°C	yes	
October	10/10/2017	Song Sparrow	Melospiza melodia	SOSP	Thawed	17	438345	4763214	36	ESE	1	11	October	Rain, 9°C	no	13	October	Cloudy, 15°C	no	17	October	Sunny, 16°C	yes	20	October	Sunny, 16°C	yes	
October	10/23/2017	Hoary Bat	Lasiurus cinereus	LACI	Thawed	17	449647	4762134	21	SW	1	24	October	Rain, 10°C	no	27	October	Sunny, 15°C	no	31	October	Cloudy, 4°C	yes	3	November	Cloudy, 9°C	yes	
October	10/23/2017	Song Sparrow	Melospiza melodia	SOSP	Thawed	17	447876	4763346	16	S	1	24	October	Rain, 10°C	yes	27	October	Sunny, 15°C	yes	31	October	Cloudy, 4°C	yes	3	November	Cloudy, 9°C	yes	
October	10/23/2017	Black-capped Chickadee	Poecile atricapillus	BCCH	Thawed	17	447164	4764871	12	NW	2	24	October	Rain, 10°C	no	27	October	Sunny, 15°C	yes	31	October	Cloudy, 4°C	yes	3	November	Cloudy, 9°C	yes	
October	10/23/2017	Song Sparrow	Melospiza melodia	SOSP	Thawed	17	442989	4764951	42	ESE	1	24	October	Rain, 10°C	no	27	October	Sunny, 15°C	yes	31	October	Cloudy, 4°C	yes	3	November	Cloudy, 9°C	yes	
October	10/23/2017	Silver-haired Bat	Lasionycteris noctivaga	LANO	Thawed	17	435981	4765478	21	NE	2	24	October	Rain, 10°C	no	27	October	Sunny, 15°C	no	31	October	Cloudy, 4°C	no	3	November	Cloudy, 9°C	no	

Appendix F8: Scavenger Trial Summary 2017

project_name	year	season/month	size_category	month_start	month_end	turbine_number	month	num_carcasses_placed_n0	num_carcasses_left_n1	num_carcasses_left_n2	num_carcasses_left_n3	num_carcasses_left_n4	scavenger_correction_Sc
Adelaide Wind Farm	2017	Spring	small-medium	5	5	7	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	5	5	12	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	5	5	17	5	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	5	5	20	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	5	5	27	5	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Spring	small-medium	5	6	6	5	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Spring	small-medium	5	6	11	5	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Spring	small-medium	5	6	17	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	5	6	19	5	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Spring	small-medium	5	6	22	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	6	6	7	5	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	6	6	12	6	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	6	6	14	6	1	1	1	1	1	1
Adelaide Wind Farm	2017	Spring	small-medium	6	6	20	6	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	6	6	27	6	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	6	6	6	6	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Spring	small-medium	6	6	11	6	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Spring	small-medium	6	6	17	6	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	6	6	19	6	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Spring	small-medium	6	6	22	6	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	7	7	7	7	1	0	0	0	0	0
Adelaide Wind Farm	2017	Summer	small-medium	7	7	12	7	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	7	7	14	7	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	7	7	19	7	1	0	0	0	0	0
Adelaide Wind Farm	2017	Summer	small-medium	7	7	27	7	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Summer	small-medium	7	7	6	7	1	1	1	1	1	1
Adelaide Wind Farm	2017	Summer	small-medium	7	7	11	7	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	7	7	17	7	1	0	0	0	0	0
Adelaide Wind Farm	2017	Summer	small-medium	7	7	20	7	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Summer	small-medium	7	7	22	7	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Summer	small-medium	7	8	7	8	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Summer	small-medium	7	8	12	8	1	1	1	1	1	1
Adelaide Wind Farm	2017	Summer	small-medium	7	8	14	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Summer	small-medium	7	8	19	8	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	7	8	27	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Summer	small-medium	8	8	6	8	1	1	1	1	1	1
Adelaide Wind Farm	2017	Summer	small-medium	8	8	11	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Summer	small-medium	8	8	17	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Summer	small-medium	8	8	20	8	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Summer	small-medium	8	8	22	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	8	9	7	8	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	8	9	12	8	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	8	9	14	8	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	8	9	19	8	1	1	1	1	1	1
Adelaide Wind Farm	2017	Fall	small-medium	8	9	27	8	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Fall	small-medium	9	9	6	9	1	1	1	1	1	1
Adelaide Wind Farm	2017	Fall	small-medium	9	9	11	9	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	9	9	17	9	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	9	9	20	9	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	9	9	22	9	1	1	1	1	1	1
Adelaide Wind Farm	2017	Fall	small-medium	9	10	7	9	1	0	0	0	0	0
Adelaide Wind Farm	2017	Fall	small-medium	9	10	12	9	1	1	1	1	1	1
Adelaide Wind Farm	2017	Fall	small-medium	9	10	14	9	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Fall	small-medium	9	10	19	9	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Fall	small-medium	9	10	27	9	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	10	10	6	10	1	1	1	1	1	1
Adelaide Wind Farm	2017	Fall	small-medium	10	10	11	10	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	10	10	17	10	1	1	1	1	1	1

Appendix F8: Scavenger Trial Summary 2017

project_name	year	season/month	size_category	month_start	month_end	turbine_number	month	num_carcasses_placed_n0	num_carcasses_left_n1	num_carcasses_left_n2	num_carcasses_left_n3	num_carcasses_left_n4	scavenger_correction_Sc
Adelaide Wind Farm	2017	Fall	small-medium	10	10	20	10	1	1	1	1	0	0.75
Adelaide Wind Farm	2017	Fall	small-medium	10	10	22	10	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	10	10	7	10	1	1	1	0	0	0.666666667
Adelaide Wind Farm	2017	Fall	small-medium	10	10	12	10	1	0	0	0	0	0
Adelaide Wind Farm	2017	Fall	small-medium	10	10	14	10	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	10	10	19	10	1	1	0	0	0	0.5
Adelaide Wind Farm	2017	Fall	small-medium	10	10	27	10	1	1	1	1	1	1

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	7	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	6	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	11	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	12	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	14	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	17	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	19	2	5	2017	05/02/17	7854	7854
Adelaide Wind Farm	27	3	5	2017	05/03/17	7854	7854
Adelaide Wind Farm	22	3	5	2017	05/03/17	7854	7854
Adelaide Wind Farm	20	3	5	2017	05/03/17	7854	7854
Adelaide Wind Farm	7	5	5	2017	05/05/17	5019	7854
Adelaide Wind Farm	6	5	5	2017	05/05/17	7854	7854
Adelaide Wind Farm	11	5	5	2017	05/05/17	7854	7854
Adelaide Wind Farm	12	5	5	2017	05/05/17	7854	7854
Adelaide Wind Farm	14	5	5	2017	05/05/17	5388	7854
Adelaide Wind Farm	17	5	5	2017	05/05/17	7035	7854
Adelaide Wind Farm	19	5	5	2017	05/05/17	7242	7854
Adelaide Wind Farm	20	5	5	2017	05/05/17	7854	7854
Adelaide Wind Farm	27	5	5	2017	05/05/17	7854	7854
Adelaide Wind Farm	7	9	5	2017	05/09/17	4378	7854
Adelaide Wind Farm	6	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	11	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	12	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	14	9	5	2017	05/09/17	4896	7854
Adelaide Wind Farm	17	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	19	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	20	9	5	2017	05/09/17	785	7854
Adelaide Wind Farm	22	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	27	9	5	2017	05/09/17	7854	7854
Adelaide Wind Farm	7	12	5	2017	05/12/17	4378	7854
Adelaide Wind Farm	6	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	11	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	12	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	14	12	5	2017	05/12/17	4896	7854
Adelaide Wind Farm	17	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	20	12	5	2017	05/12/17	785	7854
Adelaide Wind Farm	22	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	27	12	5	2017	05/12/17	7854	7854
Adelaide Wind Farm	7	16	5	2017	05/16/17	4378	7854
Adelaide Wind Farm	6	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	11	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	12	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	14	16	5	2017	05/16/17	4902	7854
Adelaide Wind Farm	17	16	5	2017	05/16/17	7844	7854
Adelaide Wind Farm	19	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	20	16	5	2017	05/16/17	785	7854
Adelaide Wind Farm	22	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	27	16	5	2017	05/16/17	7854	7854
Adelaide Wind Farm	7	19	5	2017	05/19/17	4378	7854
Adelaide Wind Farm	6	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	11	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	12	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	14	19	5	2017	05/19/17	4902	7854
Adelaide Wind Farm	17	19	5	2017	05/19/17	7844	7854
Adelaide Wind Farm	19	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	20	19	5	2017	05/19/17	785	7854
Adelaide Wind Farm	22	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	27	19	5	2017	05/19/17	7854	7854
Adelaide Wind Farm	7	24	5	2017	05/24/17	4378	7854
Adelaide Wind Farm	6	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	11	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	12	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	14	24	5	2017	05/24/17	4902	7854
Adelaide Wind Farm	17	24	5	2017	05/24/17	7844	7854
Adelaide Wind Farm	19	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	20	24	5	2017	05/24/17	785	7854
Adelaide Wind Farm	22	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	27	24	5	2017	05/24/17	7854	7854
Adelaide Wind Farm	7	26	5	2017	05/26/17	4378	7854
Adelaide Wind Farm	6	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	11	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	12	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	14	26	5	2017	05/26/17	4902	7854
Adelaide Wind Farm	17	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	19	26	5	2017	05/26/17	7854	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	20	26	5	2017	05/26/17	785	7854
Adelaide Wind Farm	22	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	27	26	5	2017	05/26/17	7854	7854
Adelaide Wind Farm	7	30	5	2017	05/30/17	4378	7854
Adelaide Wind Farm	6	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	11	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	12	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	14	30	5	2017	05/30/17	4902	7854
Adelaide Wind Farm	17	30	5	2017	05/30/17	7844	7854
Adelaide Wind Farm	19	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	20	30	5	2017	05/30/17	785	7854
Adelaide Wind Farm	22	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	27	30	5	2017	05/30/17	7854	7854
Adelaide Wind Farm	7	2	6	2017	06/02/17	4378	7854
Adelaide Wind Farm	6	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	12	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	14	2	6	2017	06/02/17	4902	7854
Adelaide Wind Farm	17	2	6	2017	06/02/17	7844	7854
Adelaide Wind Farm	11	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	19	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	20	2	6	2017	06/02/17	785	7854
Adelaide Wind Farm	22	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	27	2	6	2017	06/02/17	7854	7854
Adelaide Wind Farm	7	6	6	2017	06/06/17	4378	7854
Adelaide Wind Farm	6	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	11	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	12	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	14	6	6	2017	06/06/17	4902	7854
Adelaide Wind Farm	17	6	6	2017	06/06/17	7844	7854
Adelaide Wind Farm	19	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	20	6	6	2017	06/06/17	785	7854
Adelaide Wind Farm	22	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	27	6	6	2017	06/06/17	7854	7854
Adelaide Wind Farm	7	9	6	2017	06/09/17	4378	7854
Adelaide Wind Farm	6	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	11	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	12	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	14	9	6	2017	06/09/17	4902	7854
Adelaide Wind Farm	17	9	6	2017	06/09/17	7844	7854
Adelaide Wind Farm	19	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	20	9	6	2017	06/09/17	785	7854
Adelaide Wind Farm	22	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	27	9	6	2017	06/09/17	7854	7854
Adelaide Wind Farm	7	13	6	2017	06/13/17	4378	7854
Adelaide Wind Farm	6	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	11	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	12	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	14	13	6	2017	06/13/17	4902	7854
Adelaide Wind Farm	17	13	6	2017	06/13/17	7844	7854
Adelaide Wind Farm	19	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	20	13	6	2017	06/13/17	785	7854
Adelaide Wind Farm	22	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	27	13	6	2017	06/13/17	7854	7854
Adelaide Wind Farm	7	16	6	2017	06/16/17	4378	7854
Adelaide Wind Farm	6	16	6	2017	06/16/17	7854	7854
Adelaide Wind Farm	12	16	6	2017	06/16/17	7854	7854
Adelaide Wind Farm	14	16	6	2017	06/16/17	4902	7854
Adelaide Wind Farm	17	16	6	2017	06/16/17	7844	7854
Adelaide Wind Farm	19	16	6	2017	06/16/17	7854	7854
Adelaide Wind Farm	20	16	6	2017	06/16/17	785	7854
Adelaide Wind Farm	22	16	6	2017	06/16/17	7854	7854
Adelaide Wind Farm	27	16	6	2017	06/16/17	7854	7854
Adelaide Wind Farm	7	20	6	2017	06/20/17	4378	7854
Adelaide Wind Farm	6	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	11	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	12	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	14	20	6	2017	06/20/17	4902	7854
Adelaide Wind Farm	17	20	6	2017	06/20/17	7844	7854
Adelaide Wind Farm	19	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	20	20	6	2017	06/20/17	785	7854
Adelaide Wind Farm	22	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	27	20	6	2017	06/20/17	7854	7854
Adelaide Wind Farm	7	23	6	2017	06/23/17	4378	7854
Adelaide Wind Farm	6	23	6	2017	06/23/17	7854	7854
Adelaide Wind Farm	11	23	6	2017	06/23/17	7854	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	12	23	6	2017	06/23/17	7854	7854
Adelaide Wind Farm	14	23	6	2017	06/23/17	4902	7854
Adelaide Wind Farm	17	23	6	2017	06/23/17	7844	7854
Adelaide Wind Farm	19	23	6	2017	06/23/17	7854	7854
Adelaide Wind Farm	20	23	6	2017	06/23/17	785	7854
Adelaide Wind Farm	22	23	6	2017	06/23/17	7854	7854
Adelaide Wind Farm	27	23	6	2017	06/23/17	7854	7854
Adelaide Wind Farm	6	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	11	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	12	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	14	27	6	2017	06/27/17	4902	7854
Adelaide Wind Farm	17	27	6	2017	06/27/17	7844	7854
Adelaide Wind Farm	19	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	20	27	6	2017	06/27/17	785	7854
Adelaide Wind Farm	22	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	27	27	6	2017	06/27/17	7854	7854
Adelaide Wind Farm	7	27	6	2017	06/27/17	4378	7854
Adelaide Wind Farm	7	30	6	2017	06/30/17	4378	7854
Adelaide Wind Farm	6	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	11	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	12	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	14	30	6	2017	06/30/17	4902	7854
Adelaide Wind Farm	17	30	6	2017	06/30/17	7844	7854
Adelaide Wind Farm	19	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	20	30	6	2017	06/30/17	785	7854
Adelaide Wind Farm	22	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	27	30	6	2017	06/30/17	7854	7854
Adelaide Wind Farm	7	5	7	2017	07/05/17	4378	7854
Adelaide Wind Farm	6	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	11	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	12	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	14	5	7	2017	07/05/17	4902	7854
Adelaide Wind Farm	17	5	7	2017	07/05/17	7844	7854
Adelaide Wind Farm	19	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	20	5	7	2017	07/05/17	785	7854
Adelaide Wind Farm	22	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	27	5	7	2017	07/05/17	7854	7854
Adelaide Wind Farm	7	7	7	2017	07/07/17	4378	7854
Adelaide Wind Farm	6	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	11	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	12	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	14	7	7	2017	07/07/17	4902	7854
Adelaide Wind Farm	17	7	7	2017	07/07/17	7844	7854
Adelaide Wind Farm	19	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	20	7	7	2017	07/07/17	5040	7854
Adelaide Wind Farm	22	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	27	7	7	2017	07/07/17	7854	7854
Adelaide Wind Farm	7	11	7	2017	07/11/17	4378	7854
Adelaide Wind Farm	6	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	11	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	12	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	14	11	7	2017	07/11/17	4902	7854
Adelaide Wind Farm	17	11	7	2017	07/11/17	7844	7854
Adelaide Wind Farm	19	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	20	11	7	2017	07/11/17	5040	7854
Adelaide Wind Farm	22	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	27	11	7	2017	07/11/17	7854	7854
Adelaide Wind Farm	7	14	7	2017	07/14/17	4378	7854
Adelaide Wind Farm	6	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	11	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	12	14	7	2017	07/14/17	7819	7854
Adelaide Wind Farm	14	14	7	2017	07/14/17	4902	7854
Adelaide Wind Farm	17	14	7	2017	07/14/17	7844	7854
Adelaide Wind Farm	19	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	20	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	22	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	27	14	7	2017	07/14/17	7854	7854
Adelaide Wind Farm	7	18	7	2017	07/18/17	4378	7854
Adelaide Wind Farm	6	18	7	2017	07/18/17	7854	7854
Adelaide Wind Farm	11	18	7	2017	07/18/17	7854	7854
Adelaide Wind Farm	12	18	7	2017	07/18/17	2115	7854
Adelaide Wind Farm	14	18	7	2017	07/18/17	4920	7854
Adelaide Wind Farm	17	18	7	2017	07/18/17	7844	7854
Adelaide Wind Farm	19	18	7	2017	07/18/17	7854	7854
Adelaide Wind Farm	20	18	7	2017	07/18/17	7854	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	22	18	7	2017	07/18/17	7854	7854
Adelaide Wind Farm	27	18	7	2017	07/18/17	7854	7854
Adelaide Wind Farm	7	21	7	2017	07/21/17	4378	7854
Adelaide Wind Farm	6	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	12	21	7	2017	07/21/17	2115	7854
Adelaide Wind Farm	14	21	7	2017	07/21/17	4902	7854
Adelaide Wind Farm	17	21	7	2017	07/21/17	7844	7854
Adelaide Wind Farm	19	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	20	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	22	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	27	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	11	21	7	2017	07/21/17	7854	7854
Adelaide Wind Farm	7	25	7	2017	07/25/17	4378	7854
Adelaide Wind Farm	6	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	11	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	12	25	7	2017	07/25/17	2115	7854
Adelaide Wind Farm	14	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	17	25	7	2017	07/25/17	7844	7854
Adelaide Wind Farm	19	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	20	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	22	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	27	25	7	2017	07/25/17	7854	7854
Adelaide Wind Farm	7	28	7	2017	07/28/17	7854	7854
Adelaide Wind Farm	6	28	7	2017	07/28/17	1074	7854
Adelaide Wind Farm	11	28	7	2017	07/28/17	1932	7854
Adelaide Wind Farm	12	28	7	2017	07/28/17	1198	7854
Adelaide Wind Farm	14	28	7	2017	07/28/17	7854	7854
Adelaide Wind Farm	17	28	7	2017	07/28/17	1421	7854
Adelaide Wind Farm	19	28	7	2017	07/28/17	7854	7854
Adelaide Wind Farm	20	28	7	2017	07/28/17	7854	7854
Adelaide Wind Farm	22	28	7	2017	07/28/17	1140	7854
Adelaide Wind Farm	27	28	7	2017	07/28/17	1675	7854
Adelaide Wind Farm	7	1	8	2017	08/01/17	7854	7854
Adelaide Wind Farm	6	1	8	2017	08/01/17	1074	7854
Adelaide Wind Farm	11	1	8	2017	08/01/17	1932	7854
Adelaide Wind Farm	12	1	8	2017	08/01/17	1198	7854
Adelaide Wind Farm	14	1	8	2017	08/01/17	7854	7854
Adelaide Wind Farm	17	1	8	2017	08/01/17	1421	7854
Adelaide Wind Farm	19	1	8	2017	08/01/17	7854	7854
Adelaide Wind Farm	20	1	8	2017	08/01/17	7854	7854
Adelaide Wind Farm	22	1	8	2017	08/01/17	1140	7854
Adelaide Wind Farm	27	1	8	2017	08/01/17	1675	7854
Adelaide Wind Farm	7	4	8	2017	08/04/17	7854	7854
Adelaide Wind Farm	6	4	8	2017	08/04/17	1074	7854
Adelaide Wind Farm	11	4	8	2017	08/04/17	1932	7854
Adelaide Wind Farm	12	4	8	2017	08/04/17	1198	7854
Adelaide Wind Farm	14	4	8	2017	08/04/17	7854	7854
Adelaide Wind Farm	17	4	8	2017	08/04/17	1421	7854
Adelaide Wind Farm	19	4	8	2017	08/04/17	7854	7854
Adelaide Wind Farm	20	4	8	2017	08/04/17	7854	7854
Adelaide Wind Farm	22	4	8	2017	08/04/17	1140	7854
Adelaide Wind Farm	27	4	8	2017	08/04/17	1675	7854
Adelaide Wind Farm	7	9	8	2017	08/09/17	4551	7854
Adelaide Wind Farm	6	9	8	2017	08/09/17	1074	7854
Adelaide Wind Farm	14	9	8	2017	08/09/17	7854	7854
Adelaide Wind Farm	17	9	8	2017	08/09/17	1421	7854
Adelaide Wind Farm	19	9	8	2017	08/09/17	7854	7854
Adelaide Wind Farm	20	9	8	2017	08/09/17	7854	7854
Adelaide Wind Farm	22	9	8	2017	08/09/17	1140	7854
Adelaide Wind Farm	27	9	8	2017	08/09/17	1675	7854
Adelaide Wind Farm	12	9	8	2017	08/09/17	1198	7854
Adelaide Wind Farm	11	9	8	2017	08/09/17	1932	7854
Adelaide Wind Farm	7	11	8	2017	08/11/17	7854	7854
Adelaide Wind Farm	6	11	8	2017	08/11/17	1074	7854
Adelaide Wind Farm	11	11	8	2017	08/11/17	1932	7854
Adelaide Wind Farm	12	11	8	2017	08/11/17	1198	7854
Adelaide Wind Farm	14	11	8	2017	08/11/17	7854	7854
Adelaide Wind Farm	17	11	8	2017	08/11/17	1421	7854
Adelaide Wind Farm	19	11	8	2017	08/11/17	7854	7854
Adelaide Wind Farm	20	11	8	2017	08/11/17	7854	7854
Adelaide Wind Farm	22	11	8	2017	08/11/17	1140	7854
Adelaide Wind Farm	27	11	8	2017	08/11/17	1675	7854
Adelaide Wind Farm	7	15	8	2017	08/15/17	4551	7854
Adelaide Wind Farm	6	15	8	2017	08/15/17	1074	7854
Adelaide Wind Farm	11	15	8	2017	08/15/17	1932	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	12	15	8	2017	08/15/17	1198	7854
Adelaide Wind Farm	14	15	8	2017	08/15/17	4427	7854
Adelaide Wind Farm	17	15	8	2017	08/15/17	1421	7854
Adelaide Wind Farm	19	15	8	2017	08/15/17	2379	7854
Adelaide Wind Farm	20	15	8	2017	08/15/17	7854	7854
Adelaide Wind Farm	22	15	8	2017	08/15/17	1140	7854
Adelaide Wind Farm	27	15	8	2017	08/15/17	1675	7854
Adelaide Wind Farm	7	18	8	2017	08/18/17	4551	7854
Adelaide Wind Farm	6	18	8	2017	08/18/17	1074	7854
Adelaide Wind Farm	11	18	8	2017	08/18/17	1932	7854
Adelaide Wind Farm	12	18	8	2017	08/18/17	4427	7854
Adelaide Wind Farm	14	18	8	2017	08/18/17	1421	7854
Adelaide Wind Farm	17	18	8	2017	08/18/17	2379	7854
Adelaide Wind Farm	19	18	8	2017	08/18/17	7854	7854
Adelaide Wind Farm	20	18	8	2017	08/18/17	1140	7854
Adelaide Wind Farm	22	18	8	2017	08/18/17	1675	7854
Adelaide Wind Farm	27	18	8	2017	08/18/17	1198	7854
Adelaide Wind Farm	7	22	8	2017	08/22/17	4551	7854
Adelaide Wind Farm	6	22	8	2017	08/22/17	1074	7854
Adelaide Wind Farm	11	22	8	2017	08/22/17	1132	7854
Adelaide Wind Farm	12	22	8	2017	08/22/17	1198	7854
Adelaide Wind Farm	14	22	8	2017	08/22/17	4427	7854
Adelaide Wind Farm	17	22	8	2017	08/22/17	1421	7854
Adelaide Wind Farm	19	22	8	2017	08/22/17	2379	7854
Adelaide Wind Farm	20	22	8	2017	08/22/17	7854	7854
Adelaide Wind Farm	22	22	8	2017	08/22/17	1140	7854
Adelaide Wind Farm	27	22	8	2017	08/22/17	1675	7854
Adelaide Wind Farm	7	25	8	2017	08/25/17	4551	7854
Adelaide Wind Farm	6	25	8	2017	08/25/17	1059	7854
Adelaide Wind Farm	11	25	8	2017	08/25/17	1932	7854
Adelaide Wind Farm	12	25	8	2017	08/25/17	1198	7854
Adelaide Wind Farm	14	25	8	2017	08/25/17	4427	7854
Adelaide Wind Farm	17	25	8	2017	08/25/17	1421	7854
Adelaide Wind Farm	19	25	8	2017	08/25/17	2379	7854
Adelaide Wind Farm	20	25	8	2017	08/25/17	7854	7854
Adelaide Wind Farm	22	25	8	2017	08/25/17	1140	7854
Adelaide Wind Farm	27	25	8	2017	08/25/17	1660	7854
Adelaide Wind Farm	7	29	8	2017	08/29/17	4551	7854
Adelaide Wind Farm	6	29	8	2017	08/29/17	1059	7854
Adelaide Wind Farm	11	29	8	2017	08/29/17	1932	7854
Adelaide Wind Farm	12	29	8	2017	08/29/17	1198	7854
Adelaide Wind Farm	14	29	8	2017	08/29/17	4427	7854
Adelaide Wind Farm	17	29	8	2017	08/29/17	1421	7854
Adelaide Wind Farm	19	29	8	2017	08/29/17	2379	7854
Adelaide Wind Farm	20	29	8	2017	08/29/17	7854	7854
Adelaide Wind Farm	22	29	8	2017	08/29/17	1140	7854
Adelaide Wind Farm	27	29	8	2017	08/29/17	1660	7854
Adelaide Wind Farm	7	1	9	2017	09/01/17	4551	7854
Adelaide Wind Farm	6	1	9	2017	09/01/17	1059	7854
Adelaide Wind Farm	11	1	9	2017	09/01/17	1932	7854
Adelaide Wind Farm	12	1	9	2017	09/01/17	1198	7854
Adelaide Wind Farm	14	1	9	2017	09/01/17	4427	7854
Adelaide Wind Farm	17	1	9	2017	09/01/17	1421	7854
Adelaide Wind Farm	19	1	9	2017	09/01/17	2379	7854
Adelaide Wind Farm	20	1	9	2017	09/01/17	7854	7854
Adelaide Wind Farm	22	1	9	2017	09/01/17	1140	7854
Adelaide Wind Farm	27	1	9	2017	09/01/17	1660	7854
Adelaide Wind Farm	7	6	9	2017	09/06/17	4551	7854
Adelaide Wind Farm	6	6	9	2017	09/06/17	1059	7854
Adelaide Wind Farm	11	6	9	2017	09/06/17	1932	7854
Adelaide Wind Farm	12	6	9	2017	09/06/17	1198	7854
Adelaide Wind Farm	14	6	9	2017	09/06/17	4427	7854
Adelaide Wind Farm	17	6	9	2017	09/06/17	1421	7854
Adelaide Wind Farm	19	6	9	2017	09/06/17	2379	7854
Adelaide Wind Farm	20	6	9	2017	09/06/17	7854	7854
Adelaide Wind Farm	22	6	9	2017	09/06/17	1140	7854
Adelaide Wind Farm	27	6	9	2017	09/06/17	1160	7854
Adelaide Wind Farm	7	8	9	2017	09/08/17	4551	7854
Adelaide Wind Farm	6	8	9	2017	09/08/17	1059	7854
Adelaide Wind Farm	11	8	9	2017	09/08/17	1932	7854
Adelaide Wind Farm	12	8	9	2017	09/08/17	1198	7854
Adelaide Wind Farm	17	8	9	2017	09/08/17	1421	7854
Adelaide Wind Farm	19	8	9	2017	09/08/17	2379	7854
Adelaide Wind Farm	20	8	9	2017	09/08/17	7854	7854
Adelaide Wind Farm	22	8	9	2017	09/08/17	1140	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	27	8	9	2017	09/08/17	1660	7854
Adelaide Wind Farm	14	8	9	2017	09/08/17	4427	7854
Adelaide Wind Farm	7	12	9	2017	09/12/17	4551	7854
Adelaide Wind Farm	6	12	9	2017	09/12/17	1059	7854
Adelaide Wind Farm	11	12	9	2017	09/12/17	1932	7854
Adelaide Wind Farm	12	12	9	2017	09/12/17	1198	7854
Adelaide Wind Farm	14	12	9	2017	09/12/17	4427	7854
Adelaide Wind Farm	17	12	9	2017	09/12/17	1421	7854
Adelaide Wind Farm	19	12	9	2017	09/12/17	2379	7854
Adelaide Wind Farm	20	12	9	2017	09/12/17	7854	7854
Adelaide Wind Farm	22	12	9	2017	09/12/17	1140	7854
Adelaide Wind Farm	27	12	9	2017	09/12/17	1160	7854
Adelaide Wind Farm	7	15	9	2017	09/15/17	4551	7854
Adelaide Wind Farm	6	15	9	2017	09/15/17	1059	7854
Adelaide Wind Farm	11	15	9	2017	09/15/17	1932	7854
Adelaide Wind Farm	12	15	9	2017	09/15/17	1198	7854
Adelaide Wind Farm	14	15	9	2017	09/15/17	4427	7854
Adelaide Wind Farm	17	15	9	2017	09/15/17	1421	7854
Adelaide Wind Farm	19	15	9	2017	09/15/17	2379	7854
Adelaide Wind Farm	20	15	9	2017	09/15/17	7854	7854
Adelaide Wind Farm	22	15	9	2017	09/15/17	1140	7854
Adelaide Wind Farm	27	15	9	2017	09/15/17	1160	7854
Adelaide Wind Farm	27	19	9	2017	09/19/17	1160	7854
Adelaide Wind Farm	22	19	9	2017	09/19/17	1140	7854
Adelaide Wind Farm	20	19	9	2017	09/19/17	7854	7854
Adelaide Wind Farm	19	19	9	2017	09/19/17	2379	7854
Adelaide Wind Farm	17	19	9	2017	09/19/17	1421	7854
Adelaide Wind Farm	14	19	9	2017	09/19/17	4427	7854
Adelaide Wind Farm	12	19	9	2017	09/19/17	1198	7854
Adelaide Wind Farm	11	19	9	2017	09/19/17	1932	7854
Adelaide Wind Farm	6	19	9	2017	09/19/17	1059	7854
Adelaide Wind Farm	7	19	9	2017	09/19/17	4551	7854
Adelaide Wind Farm	7	22	9	2017	09/22/17	4551	7854
Adelaide Wind Farm	6	22	9	2017	09/22/17	1059	7854
Adelaide Wind Farm	11	22	9	2017	09/22/17	1932	7854
Adelaide Wind Farm	12	22	9	2017	09/22/17	1198	7854
Adelaide Wind Farm	14	22	9	2017	09/22/17	4427	7854
Adelaide Wind Farm	17	22	9	2017	09/22/17	1421	7854
Adelaide Wind Farm	19	22	9	2017	09/22/17	2379	7854
Adelaide Wind Farm	20	22	9	2017	09/22/17	7854	7854
Adelaide Wind Farm	22	22	9	2017	09/22/17	1140	7854
Adelaide Wind Farm	27	22	9	2017	09/22/17	1660	7854
Adelaide Wind Farm	27	26	9	2017	09/26/17	1187	7854
Adelaide Wind Farm	22	26	9	2017	09/26/17	1009	7854
Adelaide Wind Farm	20	26	9	2017	09/26/17	4550	7854
Adelaide Wind Farm	19	26	9	2017	09/26/17	2266	7854
Adelaide Wind Farm	17	26	9	2017	09/26/17	1395	7854
Adelaide Wind Farm	14	26	9	2017	09/26/17	7654	7854
Adelaide Wind Farm	7	26	9	2017	09/26/17	4526	7854
Adelaide Wind Farm	6	26	9	2017	09/26/17	1050	7854
Adelaide Wind Farm	11	26	9	2017	09/26/17	1812	7854
Adelaide Wind Farm	12	26	9	2017	09/26/17	1148	7854
Adelaide Wind Farm	7	29	9	2017	09/29/17	4526	7854
Adelaide Wind Farm	6	29	9	2017	09/29/17	1050	7854
Adelaide Wind Farm	11	29	9	2017	09/29/17	1812	7854
Adelaide Wind Farm	12	29	9	2017	09/29/17	1148	7854
Adelaide Wind Farm	14	29	9	2017	09/29/17	7654	7854
Adelaide Wind Farm	17	29	9	2017	09/29/17	1395	7854
Adelaide Wind Farm	19	29	9	2017	09/29/17	2266	7854
Adelaide Wind Farm	20	29	9	2017	09/29/17	4550	7854
Adelaide Wind Farm	22	29	9	2017	09/29/17	1009	7854
Adelaide Wind Farm	27	29	9	2017	09/29/17	1187	7854
Adelaide Wind Farm	7	3	10	2017	10/03/17	4526	7854
Adelaide Wind Farm	6	3	10	2017	10/03/17	1050	7854
Adelaide Wind Farm	11	3	10	2017	10/03/17	1812	7854
Adelaide Wind Farm	12	3	10	2017	10/03/17	1148	7854
Adelaide Wind Farm	14	3	10	2017	10/03/17	7654	7854
Adelaide Wind Farm	17	3	10	2017	10/03/17	1394	7854
Adelaide Wind Farm	19	3	10	2017	10/03/17	2266	7854
Adelaide Wind Farm	20	3	10	2017	10/03/17	4550	7854
Adelaide Wind Farm	22	3	10	2017	10/03/17	1009	7854
Adelaide Wind Farm	27	3	10	2017	10/03/17	1187	7854
Adelaide Wind Farm	27	6	10	2017	10/06/17	1187	7854
Adelaide Wind Farm	22	6	10	2017	10/06/17	1009	7854
Adelaide Wind Farm	20	6	10	2017	10/06/17	4550	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	19	6	10	2017	10/06/17	2266	7854
Adelaide Wind Farm	17	6	10	2017	10/06/17	1395	7854
Adelaide Wind Farm	14	6	10	2017	10/06/17	7654	7854
Adelaide Wind Farm	12	6	10	2017	10/06/17	1148	7854
Adelaide Wind Farm	11	6	10	2017	10/06/17	1812	7854
Adelaide Wind Farm	6	6	10	2017	10/06/17	1050	7854
Adelaide Wind Farm	7	6	10	2017	10/06/17	4526	7854
Adelaide Wind Farm	27	11	10	2017	10/11/17	1187	7854
Adelaide Wind Farm	22	11	10	2017	10/11/17	1009	7854
Adelaide Wind Farm	20	11	10	2017	10/11/17	4550	7854
Adelaide Wind Farm	19	11	10	2017	10/11/17	2266	7854
Adelaide Wind Farm	17	11	10	2017	10/11/17	1395	7854
Adelaide Wind Farm	14	11	10	2017	10/11/17	7654	7854
Adelaide Wind Farm	12	11	10	2017	10/11/17	1148	7854
Adelaide Wind Farm	11	11	10	2017	10/11/17	1812	7854
Adelaide Wind Farm	6	11	10	2017	10/11/17	1050	7854
Adelaide Wind Farm	7	11	10	2017	10/11/17	4526	7854
Adelaide Wind Farm	7	13	10	2017	10/13/17	4526	7854
Adelaide Wind Farm	6	13	10	2017	10/13/17	1050	7854
Adelaide Wind Farm	11	13	10	2017	10/13/17	1812	7854
Adelaide Wind Farm	12	13	10	2017	10/13/17	1148	7854
Adelaide Wind Farm	14	13	10	2017	10/13/17	7654	7854
Adelaide Wind Farm	17	13	10	2017	10/13/17	1394	7854
Adelaide Wind Farm	19	13	10	2017	10/13/17	2266	7854
Adelaide Wind Farm	20	13	10	2017	10/13/17	4550	7854
Adelaide Wind Farm	22	13	10	2017	10/13/17	1009	7854
Adelaide Wind Farm	27	13	10	2017	10/13/17	1187	7854
Adelaide Wind Farm	7	17	10	2017	10/17/17	4526	7854
Adelaide Wind Farm	6	17	10	2017	10/17/17	1050	7854
Adelaide Wind Farm	11	17	10	2017	10/17/17	1812	7854
Adelaide Wind Farm	12	17	10	2017	10/17/17	1148	7854
Adelaide Wind Farm	14	17	10	2017	10/17/17	7654	7854
Adelaide Wind Farm	17	17	10	2017	10/17/17	1394	7854
Adelaide Wind Farm	19	17	10	2017	10/17/17	2266	7854
Adelaide Wind Farm	20	17	10	2017	10/17/17	4550	7854
Adelaide Wind Farm	22	17	10	2017	10/17/17	1009	7854
Adelaide Wind Farm	27	17	10	2017	10/17/17	1187	7854
Adelaide Wind Farm	27	20	10	2017	10/20/17	1187	7854
Adelaide Wind Farm	22	20	10	2017	10/20/17	1009	7854
Adelaide Wind Farm	20	20	10	2017	10/20/17	4550	7854
Adelaide Wind Farm	19	20	10	2017	10/20/17	2266	7854
Adelaide Wind Farm	17	20	10	2017	10/20/17	1395	7854
Adelaide Wind Farm	14	20	10	2017	10/20/17	7654	7854
Adelaide Wind Farm	12	20	10	2017	10/20/17	1148	7854
Adelaide Wind Farm	11	20	10	2017	10/20/17	1812	7854
Adelaide Wind Farm	6	20	10	2017	10/20/17	1050	7854
Adelaide Wind Farm	7	20	10	2017	10/20/17	4526	7854
Adelaide Wind Farm	7	24	10	2017	10/24/17	7854	7854
Adelaide Wind Farm	6	24	10	2017	10/24/17	1050	7854
Adelaide Wind Farm	11	24	10	2017	10/24/17	1812	7854
Adelaide Wind Farm	12	24	10	2017	10/24/17	1148	7854
Adelaide Wind Farm	14	24	10	2017	10/24/17	7654	7854
Adelaide Wind Farm	17	24	10	2017	10/24/17	1394	7854
Adelaide Wind Farm	19	24	10	2017	10/24/17	7674	7854
Adelaide Wind Farm	20	24	10	2017	10/24/17	4550	7854
Adelaide Wind Farm	22	24	10	2017	10/24/17	1009	7854
Adelaide Wind Farm	27	24	10	2017	10/24/17	1187	7854
Adelaide Wind Farm	27	27	10	2017	10/27/17	1187	7854
Adelaide Wind Farm	22	27	10	2017	10/27/17	1009	7854
Adelaide Wind Farm	20	27	10	2017	10/27/17	4550	7854
Adelaide Wind Farm	19	27	10	2017	10/27/17	7674	7854
Adelaide Wind Farm	17	27	10	2017	10/27/17	1395	7854
Adelaide Wind Farm	14	27	10	2017	10/27/17	7654	7854
Adelaide Wind Farm	12	27	10	2017	10/27/17	1148	7854
Adelaide Wind Farm	11	27	10	2017	10/27/17	1812	7854
Adelaide Wind Farm	6	27	10	2017	10/27/17	1050	7854
Adelaide Wind Farm	7	27	10	2017	10/27/17	7854	7854
Adelaide Wind Farm	7	31	10	2017	10/31/17	7854	7854
Adelaide Wind Farm	6	31	10	2017	10/31/17	1050	7854
Adelaide Wind Farm	11	31	10	2017	10/31/17	1812	7854
Adelaide Wind Farm	12	31	10	2017	10/31/17	1148	7854
Adelaide Wind Farm	14	31	10	2017	10/31/17	7654	7854
Adelaide Wind Farm	17	31	10	2017	10/31/17	1394	7854
Adelaide Wind Farm	19	31	10	2017	10/31/17	7674	7854
Adelaide Wind Farm	20	31	10	2017	10/31/17	4550	7854

Appendix F9: Percen Area Surveyed Data 2017

project_name	turbine_number	day	month	year	Date	actual_area_searched_m2	total_area_for_survey
Adelaide Wind Farm	22	31	10	2017	10/31/17	1009	7854
Adelaide Wind Farm	27	31	10	2017	10/31/17	1187	7854
Adelaide Wind Farm	27	3	11	2017	11/03/17	1187	7854
Adelaide Wind Farm	22	3	11	2017	11/03/17	1009	7854
Adelaide Wind Farm	20	3	11	2017	11/03/17	4550	7854
Adelaide Wind Farm	19	3	11	2017	11/03/17	7674	7854
Adelaide Wind Farm	17	3	11	2017	11/03/17	1395	7854
Adelaide Wind Farm	14	3	11	2017	11/03/17	7654	7854
Adelaide Wind Farm	12	3	11	2017	11/03/17	1148	7854
Adelaide Wind Farm	11	3	11	2017	11/03/17	1812	7854
Adelaide Wind Farm	6	3	11	2017	11/03/17	1050	7854
Adelaide Wind Farm	7	3	11	2017	11/03/17	7854	7854

Appendix F10: Percent Area Surveyed Summary 2017

project_name	year	season	month	month_start	month_end	search_area_shape	search_area_dimension	total_required_survey_area_m2	total_actual_area_searched_m2	percent_area_surveyed_Ps	Ps Rounded
Adelaide Wind Farm	2017	Spring	May	5	5	circular	50m radius, 100m by 100m	691152	589889	0.853486643	0.85
Adelaide Wind Farm	2017	Spring	June	6	6	circular	50m radius, 100m by 100m	706860	577443	0.816912826	0.82
Adelaide Wind Farm	2017	Summer	July	7	7	circular	50m radius, 100m by 100m	628320	517591	0.823769735	0.82
Adelaide Wind Farm	2017	Summer	August	8	8	circular	50m radius, 100m by 100m	706860	293516	0.415239227	0.42
Adelaide Wind Farm	2017	Fall	September	9	9	circular	50m radius, 100m by 100m	706860	244541	0.345953937	0.35
Adelaide Wind Farm	2017	Fall	October	10	10	circular	50m radius, 100m by 100m	706860	265576	0.375712305	0.38

Appendix F11: Mortality Monitoring Record 2017

project_name	turbine_number	day	month	year	Date	start_time	Precip	Wind-speed	Temp	Bird	Bat	Raptor	species_name_common	species_name_scientific	ID_approver	Mode_of_approval	species_code	sex	carcass_utm_zone	carcass_easting_nad83	carcass_northing_nad83	dist_from_turbine_m	direction_from_turbine	carcass_condition	injuries	time_since_death_hours	substrate	visibility_class
Adelaide Wind Farm	6	2	5	2017	5/2/2017	11:05	Light rain	13	9	1	0	0	Northern Flicker	*Colaptes auratus*	MAS	Photo	NOFL	u	17	451968	4762616	2	se	Advanced	Unknown	>48	gravel	1
Adelaide Wind Farm	19	2	5	2017	5/2/2017	16:38	Light rain	13	9	1	0	0	Yellow-rumped Warbler	*Dendroica coronata*	MAS	Photo	YRWA	u	17	442914	4764956	46	w	Fresh	Unknown	<2	soil	1
Adelaide Wind Farm	12	5	5	2017	5/5/2017	12:10	Heavy rain	8	6	0	0	1	Red-tailed Hawk	*Buteo jamaicensis*	MAS, AT	Photo	RTHA	u	17	447935	4763354	45	e	scavenged	Unknown	unkown	soil	1
Adelaide Wind Farm	11	19	5	2017	5/19/2017	10:27	0	18	8	1	0	0	Mallard	*Anas platyrhynchos*	MAS	Photo	MALL	f	17	449177	4763622	29	ene	Fresh	Unknown	2	gravel	1
Adelaide Wind Farm	27	24	5	2017	5/24/2017	15:31	0	16	19	0	0	1	Osprey	*Pandion haliaetus*	MAS	Photo	OSPR	u	17	435993	4765993	40	ese	scavenged	Unknown	unkown	soil	1
Adelaide Wind Farm	12	30	5	2017	5/30/2017	10:55	0	9	20	1	0	0	American Redstart	*Setophaga ruticilla*	MAS	Photo	AMRE	f	17	447912	4763334	43	se	early	broken neck	6	soil	1
Adelaide Wind Farm	22	2	6	2017	6/2/2017	14:31	0	4	17	1	0	0	Black-billed Cuckoo	*Coccyzus erythropthalmus*	MAS	Photo	BBCU	u	17	438329	4763187	25	se	early	broken neck	8	soil	1
Adelaide Wind Farm	27	6	6	2017	6/6/2017	15:36	0	14	13	1	0	0	Horned Lark	*Eremophila alpestris*	MAS	Photo	HOLA	u	17	485948	4765486	25	nw	early	broken neck	24	soil	1
Adelaide Wind Farm	11	13	6	2017	6/13/2017	11:04	0	7	26	0	1	0	Silver-haired Bat	*Lasionycteris noctivagans*	MAS	Photo	LANO	u	17	449129	4763572	48	sw	scavenged	none visible	48	soil	1
Adelaide Wind Farm	6	21	7	2017	7/21/2017	10:10	0	11	25	0	1	0	Eastern Red Bat	*Lasiurus borealis*	MAS	Photo	LABO	u	17	451985	4762618	11	ne	Moderate	Unknown	24	soil	2
Adelaide Wind Farm	14	28	7	2017	7/28/2017	11:09	0	17	19	1	0	0	Cedar Waxwing	*Bombycilla cedrorum*	MAS	Photo	CEDW	u	17	447153	4764870	27	nw	Advanced	Unknown	72	rye field	2
Adelaide Wind Farm	12	1	8	2017	8/1/2017	11:50	0	5	24	0	1	0	Little Brown Myotis	*Myotis lucifugus*	All	In hand	MYLU	m	17	447872	4763360	4	sw	Moderate	none visible	48	gravel	1
Adelaide Wind Farm	22	29	8	2017	8/29/2017	11:40	0	9	17	0	1	0	Hoary Bat	*Lasiurus cinereus*	MAS	Photo	LACI	f	17	438307	4763206	5	sse	early	Head Injury	12	gravel	1
Adelaide Wind Farm	6	1	9	2017	9/1/2017	9:47	0	11	11	0	1	0	Big Brown Bat	*Eptesicus fuscus*	MAS	Photo	EPFU	f	17	451973	4762593	14	sw	early	wound to abdom	12	gravel	1
Adelaide Wind Farm	6	12	9	2017	9/12/2017	10:00	0	3	14	0	1	0	Silver-haired Bat	*Lasionycteris noctivagans*	MAS	Photo	LANO	f	17	451978	4762616	3	se	Moderate	wound to abdom	48	gravel	1
Adelaide Wind Farm	27	19	9	2017	9/20/2017	9:23	2	6	20	1	0	0	Red-eyed Vireo	*Vireo olivaceus*	MAS	Photo	REVI	m	17	435949	4765444	8	sse	early	none visible	12	soil/veg	2
Adelaide Wind Farm	19	29	9	2017	9/29/2017	11:56	1	8	11	1	0	0	Warbler Sp.	-	All	In hand	-	u	17	442966	4764976	18	ne	early	wound to abdom	12	gravel	1
Adelaide Wind Farm	6	3	10	2017	10/3/2017	10:21	0	9	17	0	1	0	Silver-haired Bat	*Lasionycteris noctivagans*	MAS	Photo	LANO	f	17	451861	4762311	4	ne	Fresh	Head Injury	8	soil/veg	2
Adelaide Wind Farm	6	17	10	2017	10/17/2017	10:21	0	15	9	1	0	0	Kinglet Sp.	-	All	In hand	-	u	17	451974	4762600	16	sw	Moderate	none visible	48	gravel	1

Appendix F12: Raptor and Incidental 2017

project_name	Survey Type	turbine_number	day	month	year	Date	start_time	Precip	Wind-speed	Temp	Bird	Bat	Raptor	species_name_common	species_name_scientific	ID_approver	Mode_of_approval	species_code	sex	carcass_utm_zone	carcass_easting_nad83	carcass_northing_nad83	dist_from_turbine_m	direction_from_turbine	carcass_condition	injuries	time_since_death_hours	substrate	visibility_class	Notes
Adelaide Wind Farm	-	15	2	5	2017	5/2/2017	4:10	0.5	13	9	0	0	1	Turkey Vulture	*Cathartes aura*	MS	Photo	TUVU	U	17	446100	4765016	20	E	Fresh	Broken Wing/W	<2	soil	1	Found by maintenance staff
Adelaide Wind Farm	Raptor Management Plan	15	19	5	2017	5/19/2017	12:42	0	18	8	1	0	0	Bobolink	*Dolichonyx oryzivorus*	MS	Photo	BOBO	M	17	446094	4765026	19	NW	Advanced	Wound to abdon	72	Soil	1	
Adelaide Wind Farm	EEMP	13	31	5	2017	5/31/2017	11:16	0	14	21	1	0	0	Black-billed Cuckoo	*Coccyzus erythropthalmus*	MS	Photo	BBCU	U	17	447237	4762963	49	ESE	Early	None visible	24	Soil	1	
Adelaide Wind Farm	Raptor Management Plan	9	5	7	2017	7/5/2017	10:54	0	5	22	0	1	0	Silver-haired Bat	*Lasionycteris noctivagans*	MS	Photo	LANO	M	17	449709	4763093	24	SW	Early	None visible	8	Soil	1	
Adelaide Wind Farm	Raptor Management Plan	5	1	8	2017	8/1/2017	10:06	0	5	27	0	1	0	Eastern Red Bat	*Lasiurus borealis*	MS	Photo	LABO	F	17	550872	4861692	28	ESE	Advanced	None visible	72	Gravel	1	
Adelaide Wind Farm	-	5	11	8	2017	8/11/2017	-	2	17	20	0	0	1	Turkey Vulture	*Cathartes aura*	MS	Photo	TUVU	U	17	451240	4762368	45	SE	Scavenged	None Visible	>24	Rye Field	1	Found by client
Adelaide Wind Farm	Raptor Management Plan	18	18	8	2017	8/18/2017	11:52	0	16	22	0	1	0	Hoary Bat	*Lasiurus cinereus*	MS	Photo	LACI	F	17	443757	4765033	41	W	Moderate	None visible	24	Gravel	1	
Adelaide Wind Farm	EEMP	13	30	8	2017	8/30/2017	12:47	0	4	20	0	1	0	Eastern Red Bat	*Lasiurus borealis*	MS	Photo	LABO	U	17	447203	4762934	36	SE	Moderate	None visible	48	Gravel	1	
Adelaide Wind Farm	-	14	26	9	2017	9/26/2017	12:28	0	7	22	0	0	1	Turkey Vulture	*Cathartes aura*	MS	Photo	TUVU	U	17	447135	4764808	56	SW	Early	Head/Abdomen	8	Grass	1	Outside of the 50m radius search zone
Adelaide Wind Farm	Raptor Management Plan	21	27	10	2017	10/27/2017	10:07	0	8	9	0	0	1	Turkey Vulture	*Cathartes aura*	MS	Photo	TUVU	U	17	439171	4763520	21	SE	Advanced	None visible	120	Weeds	2	

APPENDIX G: FIELD FORMS

APPENDIX G1 FIELD FORMS (EEMP MORTALITY MONITORING)

Stantec

Stantec

Mortality Survey Observation Form

SAR

Project No: 160961067 Project Name: Adelaide Wind Project

Date: April 24 17 Personnel: Sean Cole

Start/End Time: 11:00 / 6:00

Weather Conditions: 16 (TEMP (°C)) 5 mis / E (WIND speed/direction) none (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	11:09	11:59	50m	—				E	N								
8	7854	12:21	1:13	52m	—				E	N								
9	7854	1:26	2:04	38m	—				E	N								
13	7854	2:17	2:55	38m	—				E	N								
15	7854	3:12	3:48	36m	—				E	N								
18	7854	3:51	4:29	38m	—				E	N								
21	7854	4:37	5:17	40m	—				E	N								
26	7854	5:25	6:01	36m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* Species @ Risk *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 31 / 17 Personnel: Sean Cole

Start/End Time: 8:45 / 3:21

Weather Conditions: 21 (TEMP (°C)) 14 kph / SW (WIND speed/direction) 5% (CLOUD) – (PPT) – (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	8:45	9:37	52m	–	* ~	6000 m²		E of Visibility 4	N	from rye field @ waist height							
8	7854	9:46	10:26	40m	–	* ~	3000 m²		E of Visibility 4	N	from tall grass/weeds @ knee height							
9	7854	10:33	11:06	33m	–				E	N								
13	7854	11:16	11:48	32m	Black Billed Cuckoo	–	–	17T	E 447237	N 4762963	Early	24	none visible	49	ESE	Soil	1	–
15	7854	11:56	12:29	33m	–				E	N								
18	7854	12:38	1:17	39m	–	* ~	2000 m²		E of Visibility 4	N	from rye field @ waist height							
21	7854	1:27	2:21	54m	–	* ~	5000 m²		E of Visibility 4	N	from rye & ~1000 m² of Visibility 3 from weeds							
26	7854	2:28	3:21	53m	–	* ~	6000 m²		E of Visibility 4	N	from rye field @ waist height							
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ SPECIES AT RISK ★

Project No: 160961067
Project Name: Adelaide Wind Project
Date: June 28 / 17
Personnel: Sean Cole
Start/End Time: 8:39 / 13:05

Weather Conditions: 18 (TEMP (°C)) 5 km/h / SW (WIND speed/direction) 5% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	8:39	9:24	55m	—				E	N								
8	7854	9:33	10:12	39m	—				E	N								
9	7854	10:20	10:51	31m	—				E	N								
13	7854	11:00	11:33	33m	—				E	N								
15	7854	11:41	12:12	31m	—				E	N								
18	7854	12:22	1:02	40m	—				E	N								
21	7854	1:15	2:05	50m	—				E	N								
26	7854	2:13	3:05	52m	—				E	N								
									E	N								
									E	N								
* - Turbines ≈ +75% of search area = visibility 4 due to crops									E	N								
** - Turbines ≈ 40 - 75% of search area = visibility 4 due to crops									E	N								

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dave Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* SPECIES @ RISK *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 26 / 17 Personnel: Sean Cole

Start/End Time: 8:52 / 2:39

Weather Conditions: 14 TEMP (°C) | 15 km/h / SW WIND speed/direction | 90% CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	8:52	9:27	35m	—				E	N								
8	7854	9:38	10:18	40m	—				E	N								
9	7854	10:27	11:06	39m	—				E	N								
* 13	7854	11:17	12:08	51m	—				E	N								
* 15	7854	12:19	1:09	50m	—				E	N								
18	7854	1:17	1:53	36m	—				E	N								
21	7854	2:05	2:39	34m	—				E	N								
26	7854	2:21	2:53	32m					E	N								
↳ Turbine 26 completed on Fri. July 28 due to S.A. being combined on July 26th									E	N								
									E	N								
* Indicates turbines w >75% of search area visibility class 3/4									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer. KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* SPECIES @ RISK *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 30 | 17 Personnel: Sean Cole

Start/End Time: 9:16 / 4:06

Weather Conditions: 20 (TEMP (°C)) | 4 km/h / SW (WIND speed/direction) | 10% (CLOUD) | 0 mm (PPT) | 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:16	9:48	32m	—				E	N								
8	7854	9:59	10:41	42m	—	* approx. 40% of search area = Vis			E	N		213 from crops (cover crops)						
9	7854	10:51	11:42	51m	—	* approx. 90% of search area = Vis			E	N		213 from crops (soybean)						
* 13	7854	11:53	12:47	54m	Eastern Red Bat	—	39.9	17T	E 0447203	N 4762934	Moderate	48	none visible	36	SE	Gravel	1	—
15	7854	12:57	1:52	55m	—	* approx. 90% of search area = Vis			E	N		3/4 from crop (corn field)						
18	7854	2:01	2:36	35m	—	* approx. 40% of search area = Vis			E	N		2/3 from crop (soybean)						
21	7854	2:48	3:27	39m	—				E	N								
26	7854	3:35	4:06	31m	—				E	N								
* Turbine 13 had ~80% search area = Vis									E	N		3/4 from crops (corn field)						
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

SPECIES
© RISK

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project
Date: Sept 27 / 17 Personnel: Sean Cole
Start/End Time: 9:06 / 3:42

Weather Conditions: 22 TEMP (°C) | 12 km/h / NW WIND speed/direction | 0% CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:06	9:38	32m	—				E	N								
8	7654	9:50	10:27	37m	—				E	N								
9	7854	10:36	11:17	41m	—				E	N								
13	7654	11:29	12:20	51m	—				E	N								
16	7854	12:30	1:25	55m	—				E	N								
18	7854	1:34	2:10	36m	—				E	N								
21	7854	2:21	3:00	39m	—				E	N								
26	7854	3:11	3:42	31m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								

* Approx. 80% of search area is tall corn field = poor Vis (3/4) *
* Approx. 90% of search area is tall corn field = poor Vis (3/4) *

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC
(field notes author)

Quality Control: This form is complete ☐ / legible ☑
Print Name & Initial: Kimberly Zupfer KZ
(field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 2 / 17 Personnel: Sean Cole

Start/End Time: 10:10 / 5:10

Weather Conditions: 9 TEMP (°C) | 13 km/h / SE WIND speed/direction | 90% CLOUD | periodic rain PPT | rain PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	10:10	10:51	41m	—				E	N								
6	" "	11:05	11:44	39m	Wh. Breasted Nuthatch	—		17T	E 451965	N 4762593	* Tester Carcass *			23	SW	Soil	1	
6	" "	" "	" "	" "	North. Flicker	f	—	17T	E 451968	N 4762616	Advanced	> 48	none visible	2	SE	Gravel	1	
11	" "	12:30	1:00	30m	—				E	N								
12	" "	1:05	1:38	33m	—				E	N								
14	" "	1:43	2:15	32m	—				E	N								
17	" "	2:30	3:03	33m	Wh. Breasted Nuthatch	—		17T	E 444529	N 4765078	* Tester Carcass *			19	NE	Gravel	1	
19	" "	4:38	5:10	32m	Yellow Rumped Warbler	m	—	17T	E 442914	N 4764956	Fresh	< 2	none visible	46	W	Soil	1	
									E	N								
									E	N								
									E	N								
* 15	—	4:10	4:15	5m	Turkey Vulture	—		17T	E 446100	N 4765016	Fresh	< 2	Wing / Abdomen	20	E	Soil	1	

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

→ Non-Subset turbine, Spotted by maintenance Staff

Print Name & Initial: Sean Cole SC
(field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zipfer KZ
(field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* Continued report from May 2nd, 3 turbines left to do *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 3 '17 Personnel: Sean Cole

Start/End Time: 9:54 / 12:37

Weather Conditions: 8 TEMP (°C) | 2 km/h S WIND speed/direction | 0% CLOUD | none PPT | heavy rain PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	7854	9:54	10:26	32m	—				E	N								
	7854								E	N								
22	7854	10:54	11:32	38m	←				E	N								
20	7854	12:06	12:37	31m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC
(field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ
(field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* Note: Smaller search areas due to large areas of flooded fields w no visibility in water *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 5 / 17 Personnel: Sean Cole

Start/End Time: 9:24 /

Weather Conditions: 6 (TEMP °C) 40km/h / N (WIND speed/direction) 100% (CLOUD) heavy rain (PPT) heavy rain (PPT last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	~~7854~~ 5019	9:24	10:00	36m	—				E	N								
6	7854	10:22	10:53	31m	—				E	N								
11	7854	11:08	11:43	35m	—				E	N								
12	7854	12:10	12:49	39m	bird species	?	199.8	17T	E 447935	N 4763354	Scavenged	—	—	45	E	Soil	1	
14	5388	1:15	1:42	27m	—				E	N								
17	~~7854~~ 7035	1:54	2:23	29m	—				E	N								
19	7242	2:40	3:10	30m	—				E	N								
20	7854	3:22	3:49	27m	—				E	N								
22	* Unable to access due to flooded road *								E	N								
27	7854	4:04	4:34	30m	—				E	N								
									E	N								
									E	N								

red tailed hawk

feather length

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 9 | 17 Personnel: Sean Cole

Start/End Time: 9:18 / 4:07

Weather Conditions: 9 (TEMP (°C)) 3km/h / W (WIND speed/direction) 0% (CLOUD) none (PPT) none (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:18	9:38	20m	—				E	N								
6	7854	10:04	10:31	27m	—				E	N								
11	7854	11:17	11:47	30m	—				E	N								
12	7854	11:57	12:25	28m	—				E	N								
14	4896	12:40	1:09	29m	—				E	N								
17	7854	1:30	1:56	26m	—				E	N								
19	7854	2:06	2:36	30m	—				E	N								
20	785	2:46	3:01	15m	—				E	N								
22	7854	3:12	3:31	29m	—				E	N								
27	7854	3:40	4:07	27m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 12 17 Personnel: Sean Cole

Start/End Time: 8:54 / 4:15

Weather Conditions: 14 TEMP (°C) | 8km/h / NE WIND speed/direction | 5% CLOUD | — PPT | — PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4878	8:54	9:25	31m	—				E	N								
6	7854	9:36	10:10	34m	—				E	N								
11	7854	10:25	11:02	37m	—				E	N								
12	7854	11:11	11:45	34m	—				E	N								
14	4896	12:10	12:38	28m	—				E	N								
17	7854	1:01	1:37	36m	—				E	N								
20	785	2:03	2:20	17m	—				E	N								
22	7854	2:46	3:15	30m	—				E	N								
27	7854	3:24	3:33	29m					E	N								
19	—	4:15	—	* Maintenance staff working @ turbine *					E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

* Note: red-tailed hawk observed flying near turbine 12 (no raptor in nest) *

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 16 | 17 Personnel: Sean Cole

Start/End Time: 9:05 / 4:05

Weather Conditions: 13 (TEMP (°C)) | 14 kmh / SE (WIND speed/direction) | 100% (CLOUD) | rain (PPT) | — (PPT (last 24-hrs))

↳ stopped in afternoon

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	~~7854~~ 7598	9:05	9:32	27m	—				E	N								
6	~~7854~~	9:54	10:26	32m	—				E	N								
11	~~7854~~	11:02	11:32	30m	—				E	N								
12	~~7854~~	11:45	12:17	32m	—				E	N								
14	~~4902~~	12:40	1:04	24m	—				E	N								
17	~~7854~~	1:12	1:42	30m	—				E	N								
	↓ 7844								E	N								
19	~~7854~~	1:49	2:20	31m	—				E	N								
20	~~7854~~ 705	2:28	2:42	14m	—				E	N								
22	~~7854~~	2:52	3:22	30m	bird species	—	—	17	E 488313	N 4763213	Scavenged	N/A	none visible	20	NE	Gravel	1	
27	~~7854~~	3:34	4:06	31m	—				E	N								
↳ bird species potentially killdeer: local killdeer w/ nest in previous weeks no longer there ##									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☒ & legible ☒

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 19 / 17 Personnel: Sean Cole

Start/End Time: 9:05 / 4:25

Weather Conditions: 8 (TEMP (°C)) 18kph / NW (WIND speed/direction) 100% (CLOUD) – (PPT) – (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:05	9:33	28m	—				E	N								
6	7854	9:42	10:20	38m	—				E	N								
11	7854	10:27	10:59	32m	Mallard	f	–	17	E 449177	N 4763622	Fresh	2	None Visible	29	ENE	Gravel	1	
12	7854	11:10	11:45	35m	—				E	N								
14	4902	12:10	12:36	26m	—				E	N								
17	7844	1:14	1:44	30m	—	* North Side of Turbine recently tilled (Tractor still visibly working / tillage) *			E	N								
19	7854	2:04	2:34	30m	Sawer Hatred Bat	–	–	17	E 442952	N 4764952	* TESTER CARCASS *	14			SSE	Gravel	1	
20	785	2:40	2:55	15m	—				E	N								
22	7854	3:15	3:56	31m	Am. Woodcock	–	–	17	E 438320	N 4763221	* TESTER CARCASS *	16			NE	Gravel	1	
27	7854	3:54	4:25	31m	Wh. Throated Sparrow	–	–	17	E 435961	N 4765473	* TESTER CARCASS *	3			NNE	Gravel / Moss	2	
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 24 / 17 Personnel: Sean Cole

Start/End Time: 8:58 / 4:04

Weather Conditions: 19 TEMP (°C) / 16 Kph / ESE WIND speed/direction / 80% CLOUD / — PPT / — PPT (last 24-hrs)

rain in afternoon

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	8:58	9:19	21m	—				E	N								
6	7854	9:39	10:10	31m	—				E	N								
11	7854	10:57	11:27	30m	Big Brown Bat	—	—	17	E 449145	N 4763614	*TESTER CARCASS*	8		S	grass	2	—	
12	7854	11:34	12:05	31m	—				E	N								
14	4902	12:11	12:35	24m	Big Brown Bat	—	—	17	E 447174	N 4764836	*TESTER CARCASS*	20		SSE	grass/ gravel	2	—	
17	7844	1:00	1:32	32m	—				E	N								
19	7854	1:37	2:08	31m	—				E	N								
20	765	216	2:32	16m	—				E	N								
22	7854	2:42	3:14	32m	—				E	N								
27	7854	3:31	4:04	33m	Osprey	—	—	17	E 435993	N 4765446	Scavenged	N/A	N/A	40	ESE	So:1	1	
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 26 / 17 Personnel: Sean Cole

Start/End Time: 9:10 / 4:24

Weather Conditions: 13 (TEMP (°C)) 14kph / WNW (WIND speed/direction) 100% (CLOUD) — (PPT) heavy rain (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4376	9:10	9:31	21m	—				E	N								
6	7854	9:39	10:12	33m	—				E	N								
11	7854	10:22	10:54	32m	—				E	N								
12	7854	11:02	11:34	32m	—				E	N								
14	4902	11:41	12:05	24m	—				E	N								
17	7854	12:31	1:02	31m	—				E	N								
19	7854	1:26	2:00	34m	—				E	N								
20	785	2:09	2:23	14m	—				E	N								
22	7854	2:52	3:27	35m	—				E	N								
27	7854	3:51	4:24	33m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 30 / 17 Personnel: Sean Cole

Start/End Time: 9:05 / 3:19

Weather Conditions: 20 TEMP (°C) | 9Kph / S WIND speed/direction | 10% CLOUD | – PPT | – PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:05	9:30	25m	Bat Species	–	–	17T	E 449656	N 4762140	*TESTER	CARCASS*		3	SW	Gravel	1	–
6	7854	9:38	10:09	31m	–				E	N								
11	7854	10:17	10:48	31m	–				E	N								
12	7854	10:55	11:39	34m	Bat Species	–	–	17T	E 447870	N 4763353	*TESTER	CARCASS*		4	NW	Gravel	1	–
12	" "	" "	" "	" "	American Redstart	f	-	17T	E 447912	N 4763334	Early	6	neck	43	SE	Soil	1	–
14	4902	11:50	12:14	24m	–				E	N								
17	7844	12:21	12:54	33m	–				E	N								
19	7854	1:00	1:33	33m	–				E	N								
20	785	1:40	1:54	14m	–				E	N								
22	7854	2:02	2:34	32m	–				E	N								
27	7854	2:45	3:19	34m	–				E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 2 / 17 Personnel: Sean Cole

Start/End Time: 9:07 / 3:45

Weather Conditions: 17 TEMP (°C) | 4Kph / NW WIND speed/direction | 5% CLOUD | — PPT | — PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:07	9:30	23m	—				E	N								
6	7854	9:39	10:11	32m	—				E	N								
12	7854	10:25	10:59	34m	—				E	N								
14	4902	11:08	11:32	24m	—				E	N								
* 17	~~7844~~ ~~3854~~	11:46	12:19	33m	—				E	N								
* 11	~~7854~~	12:40	1:12	32m	—				E	N								
19	7854	1:24	1:58	34m	—				E	N								
20	785	2:07	2:21	14m	—				E	N								
22	7854	2:31	3:04	33m	Black-Billed Cuckoo	—	—	17T	E 438329	N 4763187	Early	8	broken neck	25	SE	Soil	1	—
27	7854	3:12	3:45	35m	—				E	N								
									E	N								
									E	N								

* Indicates turbines w search areas that have been recently tilled/worked within last 48 hrs

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zwofer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 6 / 17 Personnel: Sean Cole

Start/End Time: 9:07 / 4:09

Weather Conditions: 13 (TEMP (°C)) | 14 km/h / N (WIND speed/direction) | 100% (CLOUD) | — (PPT) | light rain (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	~~7854~~ 4378	9:07	9:29	22m	—				E	N								
6	7854	9:52	10:24	32m	—	* Search area has been trkd since previous visit on Fri June 2			E	N								
11	7854	11:06	11:38	32m	—				E	N								
12	7854	11:44	12:17	33m	—				E	N								
14	4902	12:24	12:47	23m	—				E	N								
17	7844	1:11	1:43	32m	—				E	N								
19	7854	1:50	2:24	34m	—				E	N								
20	785	2:32	2:45	13m	—				E	N								
22	7854	2:55	3:27	32m	—				E	N								
27	7854	3:36	4:09	33m	Horned Lark	—	—	17T	E 485948	N 4765486	Early	24	neck	25	NW	Soil	1	—
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 9 / 17 Personnel: Sean Cole

Start/End Time: 9:06 / 4:17

Weather Conditions: 23 (TEMP (°C)) 7 km/h / W (WIND speed/direction) 60% (CLOUD) – (PPT) – (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:06	9:29	23m	—				E	N								
6	7854	9:38	10:10	32m	—				E	N								
11	7854	10:20	10:53	33m	—				E	N								
12	7854	11:00	11:32	32m	—				E	N								
14	4902	11:42	12:06	24m	—				E	N								
17	~~7844~~ 7854	12:33	1:05	32m	—				E	N								
19	7854	1:31	2:05	34m	—				E	N								
20	7855	2:14	2:27	13m	—				E	N								
22	7854	2:52	3:25	33m	—				E	N								
27	7854	3:45	4:17	32m	—	* Field adjacent to turbine has been worked/Hilled since last visit (June 6)			E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 13 / 17 Personnel: Sean Cole

Start/End Time: 9:05 / 4:17

Weather Conditions: 26 TEMP (°C) | 7 km/h / SE WIND speed/direction | 75% CLOUD | — PPT | — PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:05	9:27	22m	—	* Field on N-side of			E	N turbine	has been	worked	since	last	visit – June	9		
6	7854	9:53	10:24	31m	—				E	N								
11	7854	11:04	11:36	32m	Silver Haired Bat	N/A	40.2	17T	E 449129	N 4763572	Scavenged	48	none visible	48	SW	Soil	1	–
12	7854	11:46	12:19	33m	—				E	N								
14	4902	12:27	12:51	24m	—				E	N								
17	7844	1:18	1:50	32m	—				E	N								
19	7854	1:59	2:33	34m	—				E	N								
20	785	2:41	2:53	12m	—				E	N								
22	7854	3:01	3:33	32m	—	* Observed		2	E hawks	N flying	close to	turbine	blades	while	@	turbine		
27	7454	3:44	4:17	33m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 14 / 17 Personnel: Sean Cole

Start/End Time: 9:20 / 4:59

Weather Conditions: 17 TEMP (°C) | 14 km/h / WNW WIND speed/direction | 100% CLOUD | 0 mm PPT | 8 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:20	9:41	21m	—				E	N								
6	7854	9:50	10:24	34m	—				E	N								
11	7854	10:34	11:09	34m					E	N								
12	7819 7854	11:15	11:47	32m	—				E	N								
14	4902	11:54	12:18	24m	—				E	N								
17	7844	12:49	1:22	33m	—				E	N								
19	7854	1:50	2:22	32m	—				E	N								
20	7854	2:32	3:02	30m	Robin	—	—	17T	E 0440241	N 4765236	*TESTER CARCASS*	18	NW	Gravel	1	—		
22	7854	3:29	4:02	33m	Eastern Red Bat	—	—	17T	E 0438334	N 4763216	*TESTER CARCASS*	20	NE	Grass	2	-		
27	7854	4:27	4:59	32m	Big Brown Bat	—	-	17T	E 0435966	N 4765485	*TESTER CARCASS*	4	NW	Grass	2	—		
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: MORAUS MM (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 16 / 17 Personnel: Sean Cole

Start/End Time: 9:08 / 3:49

Weather Conditions: 25 (TEMP (°C)) 8 km/h / W (WIND speed/direction) 5% (CLOUD) — (PPT) — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:08	9:30	22m	—				E	N								
6	7854	9:39	10:09	30m	—				E	N								
11	~~7854~~	~~10:58~~	* Did not conduct search due to pesticides being spray on field / search area around turbine during visi						E	N								
12	7854	10:25	10:58	33m	—				E	N								
14	4402	11:06	11:31	25m	—				E	N								
17	7844	11:57	12:27	32m	—				E	N								
19	7854	12:56	1:31	36m	—				E	N								
20	765	1:41	1:54	13m	—				E	N								
22	7854	2:21	2:54	33m	—				E	N								
27	7854	3:17	3:49	32m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zipfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067
Project Name: Adelaide Wind Project
Date: June 20 / 17
Personnel: Sean Cole
Start/End Time: 9:22 / 4:48

Weather Conditions: 18 (TEMP (°C)) 10 km/h / W (WIND speed/direction) 80% (CLOUD) — (PPT) — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:22	9:45	23m	—				E	N								
6	7854	10:14	10:45	31m	—				E	N								
11	7854	11:27	11:59	32m	—				E	N								
12	7854	12:16	12:49	33m	Hoary Bat	f	54.5	17T	E 0447838	N 4763376	Fresh	6	none visible	36	NW	Soil	1	-
14	4902	12:58	1:22	24m	—				E	N								
17	7844	1:48	2:20	32m	—				E	N								
19	7854	2:29	3:02	33m	—				E	N								
20	7854	3:10	3:22	12m	—				E	N								
22	7854	3:33	4:06	33m	Horned Lark	—	—	17T	E 0436308	N 4763230	*TESTER CARCASS*			21	N	Soil	2	-
27	7854	4:16	4:48	32m	—				E	N								
									E	N								

*TESTER CARCASS

Note: Carcass @ turbine 12 had lost thread but later confirmed to be tester by Stantec Staff

[1] See bat forearm diagram on reverse of page.
[3] INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dave Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067
Project Name: Adelaide Wind Project
Date: June 27 / 17
Personnel: Sean Cole
Start/End Time: 9:08 / 3:29

Weather Conditions: 13 (TEMP (°C)) 20 km/h / NW (WIND speed/direction) 75% (CLOUD) 0 mm (PPT) 5mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
6	7854	9:08	9:40	32m	—				E	N								
11	7854	9:52	10:28	30m	Dark-Eyed Junco	—	—	17T	E 0449177	N 4763611	*TESTER CARCASS*			21	SE	weeds	2	—
12	7854	10:36	11:11	33m	Dark-Eyed Junco	—	—	17T	E 0447859	N 4763366	*TESTER CARCASS*			19	NW	weeds	2	—
14	4902	11:19	11:42	23m	—				E	N	*4							
17	7644	11:50	12:23	33m	Dark-Eyed Junco	—	—	17T	E 0444516	N 4765053	*TESTER CARCASS*			16	SE	gravel	1	—
19	7854	12:31	1:02	31m	—				E	N								
20	785	1:11	1:22	11m	—				E	N								
22	7854	1:32	2:06	33m	—				E	N								
27	7854	2:15	2:47	32m	—				E	N								
7	4376	3:07	3:29	22m	—				E	N								
									E	N								
									E	N								

[1] See bat forearm diagram on reverse of page.
[3] INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067
Project Name: Adelaide Wind Project
Date: June 30 / 17
Personnel: Sean Cole
Start/End Time: 8:06 / 2:29

Weather Conditions: 20 (TEMP (°C)) 7 km/h / SW (WIND speed/direction) 100% (CLOUD) 0mm (PPT) 1.5mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	8:06	8:28	22m	—				E	N								
6	7854	8:37	9:10	33m	—				E	N								
11	7854	9:21	9:53	32m	—				E	N								
12	7854	10:02	10:35	33m	—				E	N								
14	4902	10:43	11:06	25m	—				E	N								
17	7844	11:17	11:48	31m	—				E	N								
19	7854	11:57	12:31	34m	—				E	N								
20	785	12:51	1:03	12m	—				E	N								
22	7854	1:14	1:47	33m	—				E	N								
27	7854	1:55	2:29	34m	—				E	N								
									E	N								
									E	N								

[1] See bat forearm diagram on reverse of page.
[3] INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dana Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067
Project Name: Adelaide Wind Project
Date: July 5 17
Personnel: Sean Cole
Start/End Time: 9:07 / 4:35

Weather Conditions: 22 (TEMP (°C)) 5 km/h / E (WIND speed/direction) 0% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:07	9:28	21m	—				E	N								
6	7854	9:56	10:28	32m	—				E	N								
11	7854	11:20	11:53	33m	Hoary Bat	f	51.5	17T	E 0449156	N 4763666	Early	6	none visible	46	N	Soil	1	—
12	7854	12:01	12:34	33m	—				E	N								
14	4402	12:48	1:08	25m	—				E	N								
17	7844	1:37	2:06	31m	—				E	N								
19	7854	2:17	2:50	33m	—				E	N								
20	785	2:59	3:11	12m	—				E	N								
22	7854	3:20	3:54	34m	—				E	N								
27	7854	4:03	4:35	32m	—				E	N								
									E	N								
									E	N								

See bat forearm diagram on reverse of page.
INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 7 '17 Personnel: Sean Cole

Start/End Time: 9:22 / 4:55

Weather Conditions: 20 (TEMP (°C)) 8 km/h / W (WIND speed/direction) 80% (CLOUD) 1 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:22	9:42	20m	—				E	N								
6	7854	9:51	10:25	34m	—				E	N								
11	7854	10:36	11:09	33m	Song Sparrow	—	—	17T	E 0449174	N 4763454	*TESTER CARCASS			25	SE	Gravel	1	—
12	7854	11:10	11:49	33m	—				E	N								
14	4902	11:57	12:21	24m	American Woodcock	—	—	17T	E 0447186	N 4764863	*TESTER CARCASS			7	N	Grass	2	—
17	7844	12:49	1:21	32m	—				E	N								
19	7854	1:50	2:23	33m	—				E	N								
20	5040	2:35	3:00	25m	—				E	N								
22	7854	3:28	4:00	32m	—				E	N								
27	7854	4:23	4:55	32m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067
Project Name: Adelaide Wind Project
Date: July 11 17
Personnel: Sean Cole
Start/End Time: 9:04 / 4:28

Weather Conditions: 22 (TEMP (°C)) | 10 km/h / S (WIND speed/direction) | 100% (CLOUD) | 0 mm (PPT) | 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:
Fresh | Moderate | Complete
Early | Advanced | Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:04	9:24	20m	Hoary Bat	f	56.1	17T	E 644962	N 4762186	Moderate	24	none visible	38	NNW	Soil	1	–
6	7854	9:51	10:24	33m	–				E	N								
11	7854	11:07	11:40	33m	–				E	N								
12	7854	11:48	12:22	34m	–				E	N								
14	4902	12:30	12:53	23m	–				E	N								
17	7644	1:18	1:50	32m	–				E	N								
19	7854	1:59	2:30	31m	–				E	N								
20	5040	2:40	3:04	24m	–				E	N								
22	7854	3:15	3:48	33m	–				E	N								
27	7854	3:56	4:28	32m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 18 | 17 Personnel: Sean Cole

Start/End Time: 10:33 / 6:02

Weather Conditions: 26 (TEMP (°C)) 10 km/h / SSW (WIND speed/direction) 10% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	10:33	10:54	21m	—				E	N								
6	7854	11:22	11:55	33m	—				E	N								
11	7854	12:41	1:15	34m	—				E	N								
12	2115	1:23	1:38	15m	—				E	N								
14	4902	1:47	2:10	23m	—				E	N								
17	7844	2:41	3:14	33m	—				E	N								
19	7854	3:24	3:58	34m	—				E	N								
20	7854	4:09	4:40	31m	—				E	N								
22	7854	4:48	5:21	33m	—				E	N								
27	7854	5:30	6:02	32m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MSTRAUS MAS (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 21 17 Personnel: Sean Cole

Start/End Time: 9:07 / 4:46

Weather Conditions: 25 (TEMP (°C)) 11 km/h / NNW (WIND speed/direction) 5% (CLOUD) 0 mm (PPT) 6 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4378	9:07	9:28	21m	—				E	N 4762618								
6	7854	9:37	10:10	33m	Eastern Red Bat	-	39.1	17T	E 0451985	N [illegible]	Moderate	24	none visible	11	NE	Soil / Corn Fred	2	—
12	2115	10:20	10:37	17m	Hoary Bat	-	-	17T	E 0447870	N 4763380	*TESTER CARCASS	17			NNW	Soil	1	—
14	4982	10:45	11:09	24m	Red Breasted Nuthatch	-	-	17T	E 0447166	N 4764836	*TESTER CARCASS*	19			SSW	Gravel	1	—
17	7844	11:40	12:12	32m	—				E	N								
19	7654	12:41	1:12	31m	—				E	N								
20	7854	1:22	1:53	31m	—				E	N								
22	7854	2:25	2:58	33m	—				E	N								
27	7854	3:24	3:56	32m	—				E	N								
11	7854	4:12	4:46	32m	Red Breasted Nuthatch	-	-	17T	E 0449157	N 4763626	*TESTER CARCASS*				NE	Gravel	1	—
* Returned to Turbine 11 due to farm equipment operation @ first visit *									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: M STRAUS MAS (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 25 / 17 Personnel: Sean Cole

Start/End Time: 9:18 / 3:43

Weather Conditions: 19 (TEMP (°C)) 12 km/h / NE (WIND speed/direction) 0% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4878	9:18	9:46	22m	—				E	N								
6	7854	9:49	10:22	33m	—				E	N								
11	7854	10:32	11:05	33m	—				E	N								
12	2115	11:13	11:26	13m	—				E	N								
14	7854	11:46	12:20	34m	Robin	—	—	17T	E 0447162	N 4764850	*TESTER CARCASS*	13	WSW	Bye field	2	—		
17	7854	12:24	12:58	34m	—				E	N								
19	7854	1:07	1:39	32m	—				E	N								
20	7854	1:50	2:21	31m	—				E	N								
22	7854	2:29	3:03	34m	—				E	N								
27	7854	3:11	3:43	32m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zipfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 28 | 17 Personnel: Sean Cole

Start/End Time: 9:07 / 3:17

Weather Conditions: 19 (TEMP (°C)) 17 km/h NE (WIND speed/direction) 75% (CLOUD) 0mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:07	9:40	33m	—				E	N								
6	1074	9:49	10:04	15m	—				E	N								
11	1932	10:14	10:33	19m	—				E	N								
12	1198	10:44	11:01	17m	—				E	N								
14	7854	11:09	11:44	35m	Cedar Waxwing	—	—	17T	E 0447153	N 4764670	Advanced	~72	none visible	27	NW	rye field	2	—
17	1421	12:02	12:21	19m	—				E	N								
19	7854	12:31	1:05	34m	—				E	N								
20	7854	1:16	1:49	33m	—				E	N								
22	1140	2:00	2:15	15m	—				E	N								
24	1675	2:57	3:17	20m	—				E	N								
Note: Cedar Waxing found @ Turbine 14 was located in recently combined rye field & was fairly decomposed									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 1 17 Personnel: Sean Cole

Start/End Time: 9:22 / 3:44

Weather Conditions: 24 (TEMP (°C)) 5 km/h / WSW (WIND speed/direction) 0% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:22	9:57	35m	—				E	N								
6	1074	10:23	10:38	11m	—				E	N								
11	1932	11:25	11:41	16m	Wh. Breasted Nuthatch	—	—	17T	E 0449155	N 4763634	* TESTER CARCASS *			12	N	Grass	2	—
12	1198	11:50	12:02	12m	Hoary Bat	—	—	17T	E 0447861	N 4763368	* TESTER CARCASS *			20	NW	Grass	2	—
12*	12	" "	" "	" "	" "	" "	" "											
	12	" "	" "	" "	Little Brown Bat	M	37.9	17T	E 0447872	N ~~4663360~~ 4763360	Moderate	48	none visible	4	SW	Gravel	1	— * SAR
14	7854	12:09	12:43	34m	—				E	N 4763360								
17	1421	1:19	1:32	13m	Wh. Breasted Nuthatch	—	—	17T	E 0444516	N 4765082	* TESTER CARCASS *			14	NNE	Gravel	1	—
19	7854	1:41	2:15	34m	—				E	N								
20	7854	2:26	2:59	33m	—				E	N								
22	1140	3:09	3:21	12m	—				E	N								
23	1675	3:29	3:44	15m	—				E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 4 / 17 Personnel: Sean Cole

Start/End Time: 9:20 / 3:41

Weather Conditions: 22 (TEMP (°C)) 18 km/h / S (WIND speed/direction) 100% (CLOUD) 3mm (PPT) 1.5mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:20	9:55	35m	—				E	N								
6	1074	10:05	10:16	11m	—				E	N								
11	1932	10:26	10:43	17m	—				E	N								
12	1198	10:52	11:05	13m	—				E	N								
14	7854	11:13	11:47	34m	—				E	N								
17	1421	12:19	12:33	14m	—				E	N								
19	7854	1:03	1:37	34m	—				E	N								
20	7854	1:47	2:19	32m	—				E	N								
22	1140	2:47	2:59	12m	—				E	N								
27	1675	3:25	3:41	16m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 9 17 Personnel: Sean Cole

Start/End Time: 10:03 / 4:50

Weather Conditions: 23 (TEMP (°C)) 13 km/hr SW (WIND speed/direction) 0% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	10:05	10:33	28m	—				E	N								
6	1074	11:00	11:11	11m	Wh. Breasted Nuthatch	—	—	17T	E 0451970	N 4762601	# TESTER CARCASS #			7	SW	Weeds	2	—
14	7854	12:13	12:47	34m	—				E	N								
17	1421	1:22	1:37	15m	—				E	N								
19	7854	1:47	2:21	34m	—				E	N								
20	7854	2:32	3:04	32m	—				E	N								
22	1140	3:13	3:24	11m	—				E	N								
27	1675	3:34	3:50	16m	—				E	N								
12	1198	4:11	4:23	12m	Wh. Breasted Nuthatch	—	—	17T	E 0447858	N 4763351	# TESTER CARCASS #			17	SW	Gravel	1	—
11	1932	4:32	4:50	18m	Eastern Red Bat	-	—	17T	E 0449149	N 4763622	# TESTER CARCASS #			7	SE	Gravel	1	—
Note: had to return to turbines 11 & 12 @ end of day due to maintenance staff working @ turbines in morning									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zepfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 11 / 17 Personnel: Sean Cole

Start/End Time: 9:15 / 3:43

Weather Conditions: 20 TEMP (°C) | 17 km/h / S WIND speed/direction | 100% CLOUD | 2 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #	
7	7854	9:15	9:50	35m	—				E	N									
6	1074	10:01	10:11	10m	—				E	N									
11	1932	10:21	10:37	16m	—				E	N									
12	1194	10:45	10:58	13m	—				E	N									
14	7654	11:06	11:40	34m	—				E	N									
17	1421	12:13	12:28	15m	—				E	N									
19	7854	1:00	1:35	35m	—				E	N									
20	7854	1:45	2:17	32m	—	*Northern Harrier observed flying low in field adjacent to turbine			E	N									*
22	1140	2:49	3:01	12m	—				E	N									
27	1675	3:26	3:43	17m	—				E	N									
* 5	—	—	—	—	Turkey Vulture	—	—	17T	0461240	4762366	Scavenged	724	none visible	45	SE	rye field	1	—	**
→ Incidental find observed yesterday (Aug. 10) by client while @ turbine location									E	N									

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: AUG 15 17 Personnel: Sean Cole

Start/End Time: 9:04 / 3:10

Weather Conditions: 18 TEMP (°C) | 9 km/h / NW WIND speed/direction | 100% CLOUD | ~~2~~ mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:04	9:31	27m	—				E	N								
6	1074	9:59	10:10	11m	—				E	N								
11	1932	11:04	11:22	18m	—				E	N								
12	1198	11:31	11:44	13m	—				E	N								
14	4427	11:51	12:18	27m	—				E	N								
17	1421	12:54	1:09	15m	—				E	N								
19	2379	1:17	1:37	20m	—				E	N								
20	7854	1:48	2:21	33m	—				E	N								
22	1140	2:31	2:43	12m	—				E	N								
27	1675	2:53	3:10	17m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 18 17 Personnel: Sean Cove

Start/End Time: 9:13 / 3:20

Weather Conditions: 22 (TEMP (°C)) | 16 km/h SW (WIND speed/direction) | 75% (CLOUD) | 0 mm (PPT) | 4 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:13	9:34	21m	—				E	N								
6	1074	9:45	9:54	9m	—				E	N								
11	1932	10:05	10:22	17m	—				E	N								
14	4427	10:36	10:57	21m	—				E	N								
17	1421	11:29	11:43	14m	—				E	N								
19	2379	12:21	12:39	18m	—				E	N								
20	7854	12:51	1:26	35m	—				E	N								
22	1140	1:56	2:06	10m	—				E	N								
27	1675	2:32	2:48	16m	—				E	N								
12	1198	3:08	3:20	12m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cove SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 22 17 Personnel: Sean Cove

Start/End Time: 9:18 / 3:20

Weather Conditions: 23 (TEMP (°C)) 16 km/h / SW (WIND speed/direction) 100% (CLOUD) 3mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:18	9:39	21m	—				E	N								
6	1074	10:10	10:19	9m	—				E	N								
11	1932	11:15	11:32	17m	—				E	N								
12	1198	11:41	11:52	11m	—				E	N								
14	4427	12:13	12:35	22m	—				E	N								
17	1421	1:09	1:23	14m	—				E	N								
19	2379	1:32	1:50	18m	→				E	N								
20	7854	2:00	2:33	33m	—	* Northern Harrier spotted in field adjacent to turbine (2nd time in last two weeks) *			E	N								
22	1146	2:43	2:54	11m	—				E	N								
27	1675	3:04	3:20	16m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cove SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 25 17 Personnel: Sean Cole

Start/End Time: 9:19 / 3:13

Weather Conditions: 14 TEMP (°C) | 5 km/h / NW WIND speed/direction | 90% CLOUD | 0mm PPT | 0.mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:19	9:39	20m	—				E	N								
6	1059	9:49	9:58	9m	—				E	N								
11	1932	10:14	10:31	17m	←				E	N								
12	1198	10:42	10:57	15m	Eastern Red Bat	-	-	17T	E 0447874	N 4763366	* TESTER CARCASS *			1	NW	Gravel	1	—
14	4427	11:08	11:30	22m	—				E	N								
17	1421	11:59	12:16	17m	—				E	N								
19	2379	12:45	1:04	19m	-				E	N								
20	7854	113	1:47	34m	Eastern Red Bat	-	—	17T	E 0440242	N 4765239	* TESTER CARCASS *			18	WNW	Gravel	1	—
22	1140	2:17	2:28	11m	←				E	N								
27	1660	2:55	3:13	18m	Am. Woodcock	-	-	17T	E 0435975	N 4765473	* TESTER CARCASS *			16	ENE	Gravel	1	—
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 29 17 Personnel: Sean Cole

Start/End Time: 9:21 / 2:15

Weather Conditions: 17 (TEMP (°C)) 9 km/h / SE (WIND speed/direction) 100% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:21	9:43	22m	—				E	N								
6	1059	9:54	10:04	10m	—				E	N								
11	1932	10:16	10:32	16m	—				E	N								
12	1198	10:42	10:54	12m	—				E	N								
14	4427	11:05	11:28	23m	—				E	N								
17	1421	11:43	11:58	15m	—				E	N								
19	2379	12:20	12:39	19m	—				E	N								
20	7654	12:49	1:25	36m	—				E	N								
22	1140	1:36	1:47	11m	Hoary Bat	f	51.3	17T	E 0486307	N 4763206	Early	12	Head Injury	5	SSE	Gravel	1	—
27	1660	1:59	2:15	16m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept. 1 1 17 Personnel: Sean Cole

Start/End Time: 9:14 / 2:05

Weather Conditions: 11 TEMP (°C) | 11 km/h / ENE WIND speed/direction | 90% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:14	9:37	23m	–				E	N								
6	1059	9:47	9:58	11m	Big Brown Bat	f	44.3	17T	E 0451973	N 4762593	Early	12	Wound to Abdomen	14	SW	Gravel	1	–
11	1932	10:16	10:32	16m	—				E	N								
12	1198	10:42	10:53	11m	—				E	N								
14	4427	11:05	11:27	22m	–	* Red-tailed hawk observed flying over field adjacent to search area *			E	N								
17	1421	11:38	11:57	19m	–				E	N								
19	2379	12:07	12:27	20m	—				E	N								
20	7854	12:39	1:14	35m	—				E	N								
22	1140	1:26	1:38	12m	—				E	N								
27	1660	1:49	2:05	16m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: Kimberly Zipfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 6 | 17 Personnel: Sean Cole

Start/End Time: 9:38 / 3:30

Weather Conditions:	TEMP (°C)	WIND speed/direction	CLOUD	PPT	PPT (last 24-hrs)
	14	5 km/h / ~~ENE~~ WNW	10%	0 mm	0 mm

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:38	10:00	22m	–				E	N								
6	1059	10:28	10:37	9m	Wh. Breast Nuthatch	–	–	17T	E 0451959	N 4762600	* TESTER CARCASS *			15	SW	Gravel	1	–
11	1932	11:35	11:51	16m	Blk. Capped Chickadee	–	–	17T	E 0449151	N 4763630	* TESTER CARCASS *			9	NNE	Grass	2	–
12	1198	12:00	12:11	11m	–				E	N						~~Grass~~ Gravel	~~2~~ 1	~~–~~
14	4427	12:19	12:41	22m	–				E	N								
17	1421	1:13	1:28	15m	–				E	N								
19	2379	1:37	1:55	18m	Eastern Red Bat	–	–	17T	E 0442987	N 4764969	* TESTER CARCASS *			40	ENE	weeds / Gravel	2	–
20	7854	2:05	2:39	34m	–				E	N								
22	1140	2:50	3:03	13m	–				E	N								
27	1660	3:15	3:30	15m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 6 | 17 Personnel: Sean Cole

Start/End Time: 9:10 / 3:02

Weather Conditions: 13 TEMP (°C) | 11 km/h / WNW WIND speed/direction | 90% CLOUD | 2mm PPT | 7mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:10	9:33	23m	-				E	N								
6	1059	9:43	9:52	9m	-				E	N								
11	1932	10:03	10:20	17m	-				E	N								
12	1198	10:31	10:42	11m	-				E	N								
17	1421	11:17	11:32	15m	-				E	N								
19	2379	12:03	12:23	20m	-				E	N								
20	7854	12:34	1:09	35m	-				E	N								
22	1140	1:39	1:49	10m	-				E	N								
27	1660	2:10	2:26	16m	-				E	N								
14	4427	2:41	3:02	21m	-				E	N								
↳	Note: had to return to turbine 14 @ end of day due to access road maintenance in morning								E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zyperek KZ. (field notes QA/QC personnel)

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FORM 019 / REV: 2015-04-16

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 12 17 Personnel: Sean Cole

Start/End Time: 9:10 / 3:03

Weather Conditions: 14 TEMP (°C) | 3 km/h / ENE WIND speed/direction | 0 % CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:10	9:32	22m	—				E	N								
6	1059	10:00	10:09	9m	Silver-Haired Bat	f	42.2	17T	E 0451978	N 4762616	Moderate	48	Wound to Abdomen	3	SE	Gravel	1	—
11	1932	11:05	11:23	18m	—				E	N								
12	1198	11:32	11:42	10m	—				E	N								
14	4427	11:56	12:17	21m	—				E	N								
17	1421	12:52	1:06	14m	—				E	N								
19	2379	1:13	1:32	19m	—				E	N								
20	7654	1:43	2:18	35m	-				E	N								
22	1140	2:28	2:39	11m	—				E	N								
27	1660	2:48	3:03	15m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupancic KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 15 17 Personnel: Seen Cole

Start/End Time: 9:32 / 3:36

Weather Conditions: 18 TEMP (°C) | 5 km/h / S WIND speed/direction | 100% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4551	9:32	9:57	25m	Big Brown Bat	-	-	17T	E 0449624	N 4762157	* TESTER CARCASS *			35	NE	Soil	1	-
6	1059	10:09	10:18	9m	-				E	N								
11	1932	10:29	10:48	19m	Silver-Haired Bat	-	-	17T	E 0449164	N 4763498	* TESTER CARCASS *			10	SSW	weeds/ soil	2	-
12	1198	11:29	11:39	10m	-				E	N								
14	4427	11:48	12:10	22	-				E	N								
17	1421	12:39	12:53	14m	Dark-Eyed Junco	-	-	17T	E 0444501	N 4765067	* TESTER CARCASS *			5	NW	weeds/ Soil	2	-
19	2379	1:20	1:39	19m	-				E	N								
20	7654	1:49	2:21	32m	-				E	N								
22	1140	2:49	2:59	10m	-				E	N								
27	1660	3:21	3:36	15m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Seen Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupko KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: ~~160961132~~ 160961067 Project Name: ~~[redacted]~~ Adelaide

Date: Sept 19 | 17 Personnel: Sean Cole

Start/End Time: 9:23 / 3:11

Weather Conditions: 20 (TEMP (°C)) | 6 Km/h / E (WIND speed/direction) | 100% (CLOUD) | 2mm (PPT) | 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1660	9:23	9:39	16m	Red-Eyed Vireo	m	-	17T	E 0435949	N 4765444	Early	12	none visible	8	SSE	Soil / Veg	2	-
22	1140	10:04	10:16	12m	-				E	N								
20	7854	10:47	11:23	36m	-				E	N								
19	2379	11:31	11:51	20m	-				E	N								
17	1421	12:20	12:35	15m	-				E	N								
14	4427	1:07	1:30	23m	-				E	N								
12	1198	1:39	1:52	13m	-				E	N								
11	1932	2:01	2:19	18m	-				E	N								
~~6~~ 6	1059	2:29	2:38	9m	-				E	N								
7	4551	2:47	3:11	24m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 22 / 17 Personnel: Sean Cole

Start/End Time: 9:17 / 3:15

Weather Conditions: 21 TEMP (°C) | 7 km/h / SE WIND speed/direction | 0% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7551	9:17	9:41	24m	—				E	N								
6	1059	10:11	10:20	9m	—				E	N								
11	1932	11:17	11:36	19	—				E	N								
12	1198	11:46	11:57	11m	—				E	N								
14	4427	12:05	12:28	23m	—				E	N								
17	1421	1:02	1:16	14m	—				E	N								
19	2399	1:24	1:45	19m	→				E	N								
20	7654	1:52	2:27	35m	—				E	N								
22	1148	2:38	2:48	10m	—				E	N								
27	1660	2:58	3:15	17m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 26/17 Personnel: Sean Cole

Start/End Time: 9:28 / 3:03

Weather Conditions: 22 TEMP (°C) | 7 km/h / S WIND speed/direction | 0% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

	Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
	27	1187	9:28	9:43	15m	—				E	N								
	22	1009	10:00	10:10	10m	—				E	N								
	20	4550	10:28	11:02	34m	—				E	N								
	19	2266	11:19	11:40	21m	—				E	N								
	17	1395	11:52	12:05	13m	—				E	N								
*	14	7654	12:28	1:08	40m	Turkey Vulture	-	-	17T	E 0447135	N 4764808	Early	8	head / abdomen	56	SW	Grass	1	-
	7	4526	1:26	1:54	28m	—				E	N								
	6	1050	2:03	2:13	10m	—				E	N								
	11	1812	2:22	2:41	19m	—				E	N								
	12	1148	2:51	3:03	12m	—				E	N								
										E	N								
*	Raptor found @ T14 is an Incidental find (56m out from turbine)									E									

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 29 '17 Personnel: Sean Cole

Start/End Time: 9:11 / 2:01

Weather Conditions: 11 TEMP (°C) | 8 km/h / NW WIND speed/direction | 75% CLOUD | 1mm PPT | 2mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4526	9:11	9:33	22m	–				E	N								
6	1050	9:45	9:54	9m	Wh. Throated Sparrow	–	–	17T	E 0451969	N 4762580	* TESTER CARCASS *			36	SSW	Gravel	1	–
11	1812	10:05	10:22	17m	–				E	N								
~~12~~ 12	1148	10:32	10:44	12m	–				E	N								
14	7664	10:52	11:23	31m	–				E	N								
17	1395	11:33	11:47	14m	–				E	N								
19	2266	11:56	12:16	20m	Warbler Species	–	–	17T	E 0442966	N 4764976	Early	12	Wound to Abdomen	18	NE	Gravel	1	–
20	4550	12:51	1:18	27m	–				E	N								
22	1009	1:29	1:39	10m	–				E	N								
27	1187	1:49	2:01	12m	–				E	N								
* had to take ~30m break @ 12:15 due to thunderstorm activity *									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 3 / 17 Personnel: Sean Cole

Start/End Time: 9:26 / 13:23

Weather Conditions: 17 TEMP (°C) | 9 km/h / SSE WIND speed/direction | 0% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4526	9:26	9:50	24m	–				E	N								
6	1050	10:21	10:31	10m	Silver-haired Bat	f	42.5	17T	E 0451861	N 4762311	Fresh	8	head / neck	4	NE	Soil / Veg	2	-
11	1812	11:26	11:43	17m	–				E	N								
12	1148	11:52	12:03	11m	-				E	N								
14	7654	12:11	12:45	34m	–				E	N								
17	1394	1:20	1:34	14m	Silver-haired Bat	-	-	17T	E 0444516	N 4765087	*TESTER CARCASS*	16		NE	Weeds	2	-	
19	2266	1:45	2:07	24m	Silver-Haired Bat	-	-	17T	E 0442451	N 4764961	*TESTER CARCASS*	2		SSE	Gravel	1	-	
20	4550	2:15	2:41	26m	–				E	N								
22	1009	2:52	3:02	10m	–				E	N								
27	1187	3:11	3:23	12m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut In Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupter KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 6 / 17 Personnel: Sean Cote

Start/End Time: 9:28 / 3:10

Weather Conditions: 14 (TEMP (°C)) 3 km/h / SW (WIND speed/direction) 100% (CLOUD) 0 mm (PPT) 2 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1187	9:28	9:40	12m	-				E	N								
22	1009	10:06	10:17	11m	-				E	N								
20	4550	10:49	11:14	25m	-				E	N								
19	2266	11:23	11:42	19m	-				E	N								
17	1395	12:12	12:26	14m	-				E	N								
14	7654	12:56	1:29	33m	-				E	N								
12	1148	1:37	1:49	12m	-				E	N								
11	1812	1:58	2:15	17m	-				E	N								
6	1050	2:26	2:37	11m	-				E	N								
7	4526	2:47	3:10	23m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cote SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupler KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: ~~160961132~~ 160961067 Project Name: ~~GV3~~ Adelaide

Date: Oct. 11 / 17 Personnel: Sean Cole

Start/End Time: 9:51 / 3:36

Weather Conditions: 10 TEMP (°C) | 20 km/h / ENE WIND speed/direction | 100% CLOUD | 6mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1187	9:51	10:02	11m	–				E	N								
22	1009	~~10:29~~ ~~10:26~~	10:39	10m	–				E	N								
20	4550	11:12	11:31	25m	–				E	N								
19	2266	11:48	12:07	19m	–				E	N								
17	1395	12:39	12:52	13m	–				E	N								
14	7654	1:24	1:58	34m	–				E	N								
12	1148	2:08	2:20	12m	–				E	N								
11	1812	2:29	2:46	17m	–				E	N								
6	1050	2:53	3:02	9m	–				E	N								
7	4526	3:12	3:36	24m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 13 17 Personnel: Sean Cole

Start/End Time: 9:16 / 3:19

Weather Conditions: 15 (TEMP (°C)) 6 km/h / S (WIND speed/direction) 100% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4526	9:17	9:40	23m	-				E	N								
6	1050	10:10	10:20	10m	-				E	N 4763617								
11	1812	11:17	11:34	17m	Blk. Capped Chickadee	-	-	17T	E 0449188	N 4756 ↑	*TESTER CARCASS*	38	E	Weeds	2	-		
12	1148	11:53	12:05	12m	-				E	N								
14	7654	12:14	12:46	32m	-				E	N								
17	1395	1:19	1:33	14m	-				E	N								
19	2266	1:42	2:02	20m	-				E	N								
20	4550	2:13	2:37	24m	-				E	N								
22	1009	2:46	2:56	10m	Wh. Throated Sparrow	-	-	17T	E 0438332	N 4763215	*TESTER CARCASS*	21	NE	Soil	1	-		
27	1187	3:06	3:19	13m	Hoary Bat	-	-	17T	E 0435972	N 4765454	*TESTER CARCASS*	15	SE	Soil	1	-		
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 17 / 17 Personnel: Sean Cove

Start/End Time: 9:26 / 3:29

Weather Conditions: 9 (TEMP (°C)) 15 km/h / SSW (WIND speed/direction) 0% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	4526	9:26	9:49	23m	—				E	N								
6	1050	10:21	10:30	9m	Kinglet Species	-	-	17T	E 0451974	N 4762600	Moderate	48	None Visible	16	SW	Gravel	1	-
11	1812	11:35	11:52	17m	—				E	N								
12	1148	12:03	12:14	11m	—				E	N								
14	7654	12:33	12:55	32m	—				E	N								
17	1395	1:31	1:45	14m	—				E	N								
19	2266	1:54	2:15	21m	—				E	N								
20	4550	2:24	2:48	24m	—				E	N								
22	1009	2:59	3:08	9m	—				E	N								
27	1167	3:18	3:29	11m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cove, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 20 17 Personnel: Sean Cole

Start/End Time: 9:16 / 3:03

Weather Conditions: 6 (TEMP (°C)) 3 km/h / ESE (WIND speed/direction) 0% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1187	9:16	9:28	12m	-				E	N								
22	1009	9:51	10:00	9m	-				E	N								
20	4550	10:32	10:57	25m	-				E	N								
19	1266	11:08	11:27	19m	-				E	N								
17	1395	12:07	12:14	13m	-				E	N								
14	1654	12:46	1:20	34m	-				E	N								
12	1148	1:28	1:39	11m	-				E	N								
11	1812	1:49	2:06	17m	-				E	N								
6	1050	2:16	2:26	10m	-				E	N								
7	4526	2:37	3:03	26m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, sc (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 24 / 17 Personnel: Sean Cole

Start/End Time: 9:09 / 3:10

Weather Conditions: 10 TEMP (°C) | 12 km/h / SSW WIND speed/direction | 100% CLOUD | 5mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:09	9:43	34m	Red-Breasted Nuthatch	-	-	17T	E 0449962	N 4762155	*TESTER CARCASS*			11	NW	Gravel	1	-
6	1050	10:12	10:21	9m	-				E	N								
11	1812	11:14	11:30	16m	-				E	N								
12	~~1148~~ 1145	11:38	11:49	11m	Hoary Bat	-	-	17T	E 0447872	N 4763355	*TESTER CARCASS*			8	SSW	Weeds	2	-
14	7654	11:57	12:28	31m	-				E	N								
17	1395	1:02	1:15	13m	-				E	N								
19	7674	1:24	1:56	32m	-				E	N								
20	4550	2:05	2:28	23m	-				E	N								
22	1009	2:39	2:48	9m	-				E	N								
27	1167	2:58	3:10	12m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 27 / 17 Personnel: Sean Cole

Start/End Time: 9:17 / 3:07

Weather Conditions: 9 TEMP (°C) | 8 km/h / S WIND speed/direction | 80% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1187	9:17	9:27	10m	-				E	N								
22	1009	9:49	9:58	9m	-				E	N								
20	4550	10:34	10:56	22m	-				E	N								
19	7674	11:05	11:36	31m	-				E	N								
17	1395	12:05	12:18	13m	-				E	N								
14	~~7654 1247~~	12:47	1:19	32m	-				E	N								
12	1148	1:26	1:37	11m	-				E	N								
11	1812	1:46	2:03	17m	-				E	N								
6	1050	2:14	2:23	9m	-				E	N								
7	7654	2:33	3:07	34m	-				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 31 / 17 Personnel: Sean Cole

Start/End Time: 9:21 / 3:10

Weather Conditions: 3 TEMP (°C) | 16 km/h / SW WIND speed/direction | 100% CLOUD | 0mm PPT | 2mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:21	9:55	34m	—				E	N								3
6	1050	10:20	10:28	8m	—				E	N								
11	1812	11:14	11:30	16m	—				E	N								
12	1148	11:38	11:47	9m	Hoary Bat	-	-	17T	E 0447871	N 4763360	*TESTER CARCASS*	2	W	Gravel	1	-		
14	7654	11:55	12:27	32m	—				E	N								
17	1995	12:57	1:16	19m	—				E	N								
19	7674	1:28	1:59	31m	Bk-Capped Chickadee	-	-	17T	E 0442972	N 4764975	*TESTER CARCASS*	26	NE	Weeds/ Gravel	2	-		
20	4550	2:08	2:29	21m	—				E	N								
22	1009	2:40	2:48	8m	Wh. Throated Sparrow	-	-	17T	E 0438320	N 4763206	*TESTER CARCASS*	15	SE	Gravel	1	—		
27	1187	2:58	3:10	12m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov 3 / 17 Personnel: Sean Cole

Start/End Time: 9:31 / 3:03

Weather Conditions: 7 TEMP (°C) | 14 km/h / NW WIND speed/direction | 20% CLOUD | 0mm PPT | 18mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	1187	9:31	9:42	11m	–				E	N								
22	1009	10:06	10:14	8m	–				E	N								
20	4550	10:40	11:01	21m	–				E	N								
19	7674	11:10	11:42	32m	–				E	N								
17	1995	12:07	12:19	12m	–				E	N								
14	7654	12:49	1:18	30m	–				E	N								
12	1148	1:25	1:36	11m	–				E	N								
11	1812	1:44	2:00	16m	–				E	N								
6	1050	2:09	2:18	9m	–				E	N								
7	7854	2:29	3:03	34m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov. 9 / 17 Personnel: Sean Cole

Start/End Time: 9:09 / 12:34

Weather Conditions: 2 (TEMP (°C)) 12 km/h / S (WIND speed/direction) 90% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:09	9:19	10m	–				E	N								
6	7854	9:27	9:41	14m	–				E	N								
11	7854	9:51	10:04	13m	–				E	N								
12	7854	10:16	10:29	13m	–				E	N								
14	7854	10:37	10:48	11m	–				E	N								
17	7854	10:56	11:10	14m	–				E	N								
19	7854	11:19	11:29	10m	–				E	N								
20	7854	11:38	11:50	12m	–				E	N								
22	7854	12:00	12:12	12m	–				E	N								
27	7854	12:21	12:34	13m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov 16 / 17 Personnel: Sean Cole

Start/End Time: 11:12 / 12:32

Weather Conditions: 3 °C (TEMP) | 11 km/h / W (WIND speed/direction) | 100% (CLOUD) | 2 mm (PPT) | 9 mm (PPT last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	11:12	11:23	11m	–				E	N								
6	7654	11:31	11:45	14m	–				E	N								
11	7854	9:54	10:06	12m	–				E	N								
12	7854	10:14	10:26	12m	–				E	N							\	
14	7854	10:33	10:44	11m	–				E	N								
17	7854	10:53	11:07	14m	–				E	N								
19	7854	11:16	11:26	10m	–				E	N								
20	7854	11:36	11:49	13m	–				E	N								
22	7854	11:59	12:11	12m	–				E	N								
27	7854	12:20	12:32	12m	–				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K Zupfer KZ. (field notes QA/QC personnel)

* RAPTOR BLITZ *

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov. 23 / 17 Personnel: Sean Cole

Start/End Time: 9:21 / 12:37

Weather Conditions: 0 (TEMP (°C)) 15 km/h / SW (WIND speed/direction) 100% (CLOUD) 0 mm (PPT) 1 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
7	7854	9:21	9:32	11m	—				E	N								
6	7854	9:41	9:55	14m	—				E	N								
11	7854	10:05	10:17	12m	—				E	N								
12	7854	10:24	10:36	12m	—				E	N								
14	7854	10:43	10:53	10m	—				E	N								
17	7854	11:01	11:14	13m	—				E	N								
19	7854	11:22	11:33	11m	—				E	N								
20	7854	11:42	11:55	13m	—				E	N								
22	7854	12:05	12:16	11m	—				E	N								
27	7854	12:25	12:37	12m	—				E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

X RAPTOR BLITZ X

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov 30 / 17 Personnel: Sean Cole

Start/End Time: 8:06 / 1:19

Weather Conditions: 4 TEMP (°C) | 15 km/h S WIND speed/direction | 90% CLOUD | 3 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
27	7854	8:06	8:18	12	-				E	N								
26	7854	8:21	8:31	10	-				E	N								
22	7854	8:40	8:50	10	-				E	N								
21	7854	8:58	9:09	11	-				E	N								
20	7854	9:16	9:29	13	-				E	N								
19	7854	9:39	9:50	11	-				E	N								
18	7854	9:57	10:07	10	-				E	N								
17	7854	10:14	10:26	12	-				E	N								
16	7854	10:33	10:44	11	-				E	N								
13	7854	10:53	11:03	10	-				E	N								
14	7854	11:11	11:21	10	-				E	N								
12	7854	11:26	11:36	10	-				E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupper KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov 30 / 17 Personnel: Sean Cove

Start/End Time: 8:06 / ~~AMPM~~ 1:19

Weather Conditions: 4 TEMP (°C) | 15 km/h / S WIND speed/direction | 90% CLOUD | 3mm PPT | 0 PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
11	7854	11:42	11:53	11	–				E	N								
9	7854	11:59	12:09	10	–				E	N								
8	7854	12:16	12:26	10	–				E	N								
6	7854	12:34	12:44	10	–				E	N								
5	7854	12:52	1:01	9	–				E	N								
7	7854	1:08	1:19	11	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cove SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: Spring

Weather on placement date: 5°C TEMP (°C); 19 km/h / NE WIND speed/direction; 0% CLOUD; 0 PPT; no rain PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

	Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
Small rock in new corn	08/05	7	1	Small Bird	17T	E 449695	N 4762140	27	E	2	Date: May 9 Weather: Sunny 9°C Scav'ged? ☐-Y / ☒-N	Date: May 12 Weather: Sunny 12°C Scav'ged? ☐-Y / ☒-N	Date: May 16 Weather: 10°C, Rain Scav'ged? ☐-Y / ☒-N	Date: May 19 Weather: 7°C, Overcast Scav'ged? ☐-Y / ☒-N
~1m N of hazard pole	08/05	12	2	Big Bird	17T	E 447680	N 4763373	10	N	1	Date: May 9 Weather: Sunny 9°C Scav'ged? ☐-Y / ☒-N	Date: May 12 Weather: Sunny 12°C Scav'ged? ☐-Y / ☒-N	Date: May 16 Weather: 10°C, Rain Scav'ged? ☐-Y / ☒-N	Date: May 19 Weather: 7°C, Overcast Scav'ged? ☐-Y / ☒-N
beside small rock	08/05	17	3	Small Bird	17T	E 444453	N 4765100	46	WNW	1	Date: May 9 Weather: Sunny 9°C Scav'ged? ☐-Y / ☒-N	Date: May 12 Weather: Sunny 12°C Scav'ged? ☒-Y / ☐-N	Date: May 16 Weather: 10°C, Rain Scav'ged? ☒-Y / ☐-N	Date: May 19 Weather: 7°C, Overcast Scav'ged? ☒-Y / ☐-N
beside gravel	08/05	20	4	Small Bird	17T	E 440262	N 4765221	6	SE	1	Date: ~~May 9~~ May 9 Weather: Sunny 9°C Scav'ged? ☐-Y / ☒-N	Date: May 12 Weather: Sunny 12°C Scav'ged? ☐-Y / ☒-N	Date: May 16 Weather: 10°C, Rain Scav'ged? ☐-Y / ☒-N	Date: May 19 Weather: 7°C, Overcast Scav'ged? ☐-Y / ☒-N
b/w two Large rocks	08/05	27	5	Small Bird	17T	E 435973	N 4765447	21	S	1	Date: May 9 Weather: Sunny 9°C Scav'ged? ☐-Y / ☒-N	Date: May 12 Weather: Sunny, 12°C Scav'ged? ☐-Y / ☒-N	Date: May 16 Weather: 10°C, Rain Scav'ged? ☒-Y / ☐-N	Date: May 19 Weather: 7°C, Overcast Scav'ged? ☒-Y / ☐-N
						E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
						E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
						E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
						E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
						E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cote

SEASON: Spring

Weather on placement date: 14 TEMP (°C) | 10 kph / SW WIND speed/direction | 50% CLOUD | — PPT | rain PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
23/05	6	1	Eastern Red Bat	17	E 451969	N 4762626	6	NNW	1	Date: May 24 Weather: 16°C, rain Scav'ged? ☐-Y / ☒-N	Date: May 26 Weather: 11°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: May 30 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 2 Weather: 14°C, Sun Scav'ged? ☒-Y / ☐-N
23/05	11	2	Grey Catbird	17	E 449145	N 4763607	8	S	2	Date: May 24 Weather: 16°C, rain Scav'ged? ☐-Y / ☒-N	Date: May 26 Weather: 11°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: May 30 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 2 Weather: 14°C, Sun Scav'ged? ☒-Y / ☐-N
23/05	17	3	Silver-Haired Bat	17	E 444526	N 4765065	22	E	2	Date: May 24 Weather: 16°C, rain Scav'ged? ☐-Y / ☒-N	Date: May 26 Weather: 11°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: May 30 Weather: 20°C, Sun Scav'ged? ☐-Y / ☒-N	Date: June 2 Weather: 14°C, Sun Scav'ged? ☐-Y / ☒-N
23/05	19	4	White Throated Sparrow	17	E 442957	N 4764940	25	SE	2	Date: May 24 Weather: 16°C, rain Scav'ged? ☐-Y / ☒-N	Date: May 26 Weather: 11°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: May 30 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 2 Weather: 14°C, Sun Scav'ged? ☒-Y / ☐-N
23/05	22	5	Silver-Haired Bat	17	E 438309	N 4763222	6	NNE	2	Date: May 24 Weather: 16°C, rain Scav'ged? ☐-Y / ☒-N	Date: May 26 Weather: 11°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: May 30 Weather: 20°C, Sun Scav'ged? ☐-Y / ☒-N	Date: June 2 Weather: 14°C, Sun Scav'ged? ☐-Y / ☒-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cote (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zyper KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: Spring

Weather on placement date: TEMP (°C) 14 | WIND speed/direction 4Kph / N | CLOUD 100% | PPT — | PPT (last 24-hrs) light rain

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
05/06	7	1	big brown bat	17T	E 449655	N 4762158	19	NW	2	Date: June 6 Weather: 13°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: June 9 Weather: 26C Sun Scav'ged? ☐-Y / ☒-N	Date: June 13 Weather: 26°C Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 16 Weather: 23°C Sun Scav'ged? ☐-Y / ☒-N
05/06	12	2	Wh. Breasted Nuthatch	17T	E 447876	N 4763350	13	SSW	2	Date: June 6 Weather: 13°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: June 9 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 13 Weather: 26°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 16 Weather: 23°C, Sun Scav'ged? ☒-Y / ☐-N
05/06	14	3	big brown bat	17T	E 447167	N 4764854	3	W	1	Date: June 6 Weather: 13°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: June 9 Weather: 20°C, Sun Scav'ged? ☐-Y / ☒-N	Date: June 13 Weather: 26°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 16 Weather: 23°C, Sun Scav'ged? ☐-Y / ☒-N
05/06	20	4	bird species	17T	E 440264	N 4765233	6	E	2	Date: June 6 Weather: 13°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: June 9 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 13 Weather: 26°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 16 Weather: 23°C, Sun Scav'ged? ☒-Y / ☐-N
05/06	~~EE~~ 27	5	Hoary Bat	17T	E 436005	N 4765469	41	ENE	1	Date: June 6 Weather: 13°C, Overcast Scav'ged? ☐-Y / ☒-N	Date: June 9 Weather: 20°C, Sun Scav'ged? ☒-Y / ☐-N	Date: June 13 Weather: 26°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 16 Weather: 23°C, Sun Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

weed patch
reside gravel
grass patch
ravel b/w
azard poles
grass patch
Win gravel
esive
rge rock

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupper KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 | Project Name: Adelaide Wind Project
YEAR: 2017 | Personnel: Sean Cole
SEASON: Spring

Weather: 22 (TEMP °C) | 16 km/h / W (WIND speed/direction) | 5% (CLOUD) | – (PPT) | 5mm (PPT (last 24-hrs))

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
19/06	6	1	Am. Woodcock	17T	E 0451971	N 4762608	10	WSW	1	Date: June 20 Weather: 18°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 23 Weather: 19°C, Rain Scav'ged? ☐-Y / ☒-N	Date: June 27 Weather: 13, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 30 Weather: 19, Cloudy Scav'ged? ☒-Y / ☐-N
19/06	11	2	Hoary Bat	17T	E 0449163	N 4763635	19	NE	1	Date: June 20 Weather: 18°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 23 Weather: 19°C, Rain Scav'ged? ☐-Y / ☒-N	Date: 15, Cloudy Weather: June 27°C Scav'ged? ☐-Y / ☒-N	Date: June 30 Weather: 19, Cloudy Scav'ged? ☒-Y / ☐-N
19/06	17	3	Big Brown Bat	17T	E 0444495	N 4765064	17	W	2	Date: June 20 Weather: 21°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 23 Weather: 20°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 27 Weather: 16, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 30 Weather: 21, Cloudy Scav'ged? ☒-Y / ☐-N
19/06	19	4	Bird Species	17T	E 0442949	N 4764959	6	S	2	Date: June 20 Weather: 21°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 23 Weather: 24°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 27 Weather: 16, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 30 Weather: 21°C Cloudy Scav'ged? ☐-Y / ☐-N
19/06	22	5	Horned Lark	17T	E 0438340	N 4763210	30	ENE	1	Date: June 20 Weather: 21°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 23 Weather: 22°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: June 27 Weather: 18, Cloudy Scav'ged? ☒-Y / ☐-N	Date: June 30 Weather: 23, Cloudy Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page
[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)
[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑
Print Name & Initial: Dave Cameron DC (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: ~~Summer~~ 2017 Personnel: Sean Coie

SEASON: Summer

Weather: on placement date | TEMP (°C): 18°C | WIND speed/direction: 10 km/h / SW | CLOUD: 0% | PPT: 0mm | PPT (last 24-hrs): 0mm

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
ss patch ehind nsformer	04/07	7	1	Dark-Eyed Junco	17T	E 0449670	N 4762141	10	E	2	Date: July 5 Weather: 22, Sun Scav'ged? ☒-Y / ☐-N	Date: July 7 Weather: 20, Cloudy Scav'ged? ☒-Y / ☐-N	Date: July 11 Weather: 19, Fog Scav'ged? ☒-Y / ☐-N	Date: July 14 Weather: 17, Overcast Scav'ged? ☒-Y / ☐-N
corn row gravel	04/07	12	2	Hoary Bat	17T	E 0447873	N 4763375	16	NW	1	Date: July 5 Weather: 25, Sun Scav'ged? ☐-Y / ☒-N	Date: July 7 Weather: 22, Cloudy Scav'ged? ☐-Y / ☒-N	Date: July 11 Weather: 22, Sun Scav'ged? ☒-Y / ☐-N	Date: 13, Cloudy Weather: July 14 Scav'ged? ☒-Y / ☐-N
nel rner	04/07	14	3	Dark-Eyed Junco	17T	E 0447163	N 4764833	21	SE	1	Date: July 5 Weather: 26, Sun Scav'ged? ☐-Y / ☒-N	Date: July 7 Weather: 23, Cloudy Scav'ged? ☐-Y / ☒-N	Date: July 11 Weather: 22, Sun Scav'ged? ☒-Y / ☐-N	Date: July 14 Weather: 19, Cloudy Scav'ged? ☒-Y / ☐-N
side berm	04/07	19	4	Yellow Rumped Warbler	17T	E 0442983	N 4764976	38	NE	1	Date: July 5 Weather: 27, Sun Scav'ged? ☒-Y / ☐-N	Date: July 7 Weather: 25, Cloudy Scav'ged? ☒-Y / ☐-N	Date: July 11 Weather: 24, Sun Scav'ged? ☒-Y / ☐-N	Date: July 14 Weather: 19, Windy Scav'ged? ☒-Y / ☐-N
ed ren	04/07	27	5	Big Brown Bat	17T	E 0435962	N 4765454	6	SSW	2	Date: July 5 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 7 Weather: 27, Cloudy Scav'ged? ☐-Y / ☒-N	Date: July 11 Weather: 25, Sun Scav'ged? ☐-Y / ☒-N	Date: July 14 Weather: 20, Cloudy Scav'ged? ☒-Y / ☐-N
					E	N					Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N					Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N					Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N					Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N					Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Coie SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MSTRAUS MAS (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Seen Cote

SEASON: Summer

Weather on placement date: 17 TEMP (°C); 11 km/h / NW WIND speed/direction; 100% CLOUD; 0 mm PPT; 0 mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates			Position from Turbine		Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
				Zone	Easting	Northing	Dist. (m)	Direction					
17/07	6	1	Hoary Bat	17T	E 0451983	N 4762568	21	SSE	2	Date: July 18 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: July 21 Weather: 26, Sun Scav'ged? ☐-Y / ☒-N	Date: July 25 Weather: 20 Sun Scav'ged? ☒-Y / ☒-N	Date: July 28 Weather: 19 Cloud Scav'ged? ☐-Y / ☒-N
17/07	11	2	Turkey Vulture	17T	E 0449160	N 4763633	7	N	1	Date: July 18 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 21 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 25 Weather: 20, Sun Scav'ged? ☒-Y / ☐-N	Date: July 28 Weather: 20, Cloudy Scav'ged? ☒-Y / ☒-N
17/07	17	3	Eastern Red Bat	17T	E 0444497	N 4765059	5	WSW	1	Date: July 18 Weather: 28, Sun Scav'ged? ☒-Y / ☐-N	Date: July 21 Weather: 28, Sun Scav'ged? ☒-Y / ☐-N	Date: July 25 Weather: 21, Sun Scav'ged? ☒-Y / ☐-N	Date: July 28 Weather: 20, Cloud Scav'ged? ☒-Y / ☐-N
17/07	20	4	Dark-Eyed Junco	17T	E 0440265	N 4765245	21	NE	2	Date: July 18 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 21 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 25 Weather: 23 Sun Scav'ged? ☐-Y / ☒-N	Date: July 28 Weather: 28, Cloud Scav'ged? ☒-Y / ☐-N
17/07	22	5	Big Brown Bat	17T	E 0438328	N 4763216	19	ENE	1	Date: July 18 Weather: 28, Sun Scav'ged? ☐-Y / ☒-N	Date: July 21 Weather: 28 Sun Scav'ged? ☒-Y / ☐-N	Date: July 25 Weather: 25 Sun Scav'ged? ☒-Y / ☐-N	Date: July 28 Weather: 20, Cloudy Scav'ged? ☑-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Seen Cote SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: Summer

Weather on placement date: 22 TEMP (°C); 5km/h / NNE WIND speed/direction; 0% CLOUD; 0mm PPT; 0mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates			Position from Turbine		Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
				Zone	Easting	Northing	Dist. (m)	Direction					
31/07	7	1	Turkey Vulture	17T	E 0449637	N 4762159	24	WNW	1	Date: Aug 1 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 4 Weather: 22, Rain Scav'ged? ☐-Y / ☒-N	Date: Aug 9 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 11 Weather: 20, Rain Scav'ged? ☒-Y / ☐-N
31/07	12	2	Hoary Bat	17T	E 0447857	N 4763360	20	WSW	2	Date: Aug 1 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 4 Weather: 22, Rain Scav'ged? ☐-Y / ☒-N	Date: Aug 9 Weather: 25, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 11 Weather: 20, Rain Scav'ged? ☐-Y / ☒-N
31/07	14	3	Red Breasted Nuthatch	17T	E 0447181	N 4764852	11	SE	2	Date: Aug 1 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 4 Weather: 22, Rain Scav'ged? ☒-Y / ☐-N	Date: Aug 9 Weather: 25, Sun Scav'ged? ☒-Y / ☐-N	Date: Aug 11 Weather: 21, Cloud Scav'ged? ☒-Y / ☐-N
31/07	19	4	Red Breasted Nuthatch	17T	E 0442979	N 4764979	31	NE	1	Date: Aug 1 Weather: 24 Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 4 Weather: 22, Cloud Scav'ged? ☐-Y / ☒-N	Date: Aug 9 Weather: 25, Sun Scav'ged? ☒-Y / ☐-N	Date: Aug 11 Weather: 21, Cloud Scav'ged? ☒-Y / ☐-N
31/07	27	5	Hoary Bat	17T	E 0435980	N 4765465	18	E	1	Date: Aug 1 Weather: 24, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 4 Weather: 22, Cloud Scav'ged? ☒-Y / ☐-N	Date: Aug 9 Weather: 25 Sun Scav'ged? ☒-Y / ☐-N	Date: Aug 11 Weather: 21, Cloud Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: ~~Sum~~ 2017 Personnel: Sean Cole

SEASON: Summer

Weather: on placement date | 16 TEMP (°C) | 5 km/h / N WIND speed/direction | 75% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates			Position from Turbine		Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
				Zone	Easting	Northing	Dist. (m)	Direction					
14/08	6	1	Dark-Eyed Junco	17T	E 0451990	N 4762577	18	S	2	Date: Aug 15 Weather: 18, Rain Scav'ged? ☐-Y / ☒-N	Date: Aug 18 Weather: 22, Sun Scav'ged? ☐-Y / ☒-N	Date: Aug 22 Weather: 23, Rain Scav'ged? ☐-Y / ☒-N	Date: Aug 25 Weather: 14, Cloudy Scav'ged? ☐-Y / ☒-N
14/08	11	2	Eastern Red Bat	17T	E 0449146	N 4763613	13	SSW	2	Date: Aug 15 Weather: 20, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Aug 18 Weather: 22, Cloud Scav'ged? ☒-Y / ☐-N	Date: Aug 22 Weather: 23, Rain Scav'ged? ☒-Y / ☐-N	Date: Aug 25 Weather: 16, Sun Scav'ged? ☒-Y / ☐-N
14/08	17	3	Wh. Breasted Nuthatch	17T	E ~~0444524~~ 0445124	N 4765083	21	NE	1	Date: Aug 15 Weather: 24, Cloud Scav'ged? ☐-Y / ☒-N	Date: Aug 18 Weather: 23, Cloud Scav'ged? ☒-Y / ☐-N	Date: Aug 22 Weather: 23, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Aug 25 Weather: 17, Sun Scav'ged? ☒-Y / ☐-N
14/08	20	4	Big Brown Bat	17T	E 0440255	N 4765286	4	N	1	Date: Aug 15 Weather: 24, Cloud Scav'ged? ☐-Y / ☒-N	Date: Aug 18 Weather: 23, Cloud Scav'ged? ☒-Y / ☐-N	Date: Aug 22 Weather: 24, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Aug 25 Weather: 19, Sun Scav'ged? ☒-Y / ☐-N
14/08	22	5	Wh. Breasted Nuthatch	17T	E 0438347	N 4763205	33	ESE	2	Date: Aug 15 Weather: 24 Cloud Scav'ged? ☐-Y / ☒-N	Date: Aug 18 Weather: 23, Cloud Scav'ged? ☒-Y / ☐-N	Date: Aug 22 Weather: 24 Cloudy Scav'ged? ☒-Y / ☐-N	Date: Aug 25 Weather: 19, Sun Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

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[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: ~~Summer~~ Fall

Weather on placement date: 17 TEMP (°C) | 6 km/h / SE WIND speed/direction | 100% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
28/08	7	1	Robin	17T	E 0449639	N 4762144	21	WNW	1	Date: Aug 29 Weather: 17°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 1 Weather: 10°, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 6 Weather: 14, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 8 Weather: 12, Cloudy Scav'ged? ☒-Y / ☐-N
28/08	12	2	Eastern Red Bat	17T	E 0447878	N 4763369	6	N	2	Date: Aug 29 Weather: 19°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 1 Weather: 12°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Sept 6 Weather: 17, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 8 Weather: 12, Cloudy Scav'ged? ☒-Y / ☐-N
28/08	14	3	Song Sparrow	17T	E 0447182	N 4764851	19	SE	2	Date: Aug 29 Weather: 19°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 1 Weather: 13, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 6 Weather: 17, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 8 Weather: 12, Cloudy Scav'ged? ☒-Y / ☐-N
28/08	19	4	Eastern Red Bat	17T	E 0442990	N 4764954	41	ESE	1	Date: Aug 29 Weather: 20, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 1 Weather: 15, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 6 Weather: 18, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 8 Weather: 13, Cloudy Scav'ged? ☐-Y / ☒-N
28/08	27	5	Hoary Bat	17T	E 0435968	N 4765481	15	NE	1	Date: Aug 29 Weather: 21, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Sept 1 Weather: 16, Cloudy Scav'ged? ☐-Y / ☐-N	Date: Sept 6 Weather: 18, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 8 Weather: 14, Cloudy Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

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Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: fall

Weather on placement date: 10 TEMP (°C) | 6 km/h / NE WIND speed/direction | 0°10 CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
11/09	6	1	Red-Tailed Hawk	17T	E 0461969	N 4762622	11	NW	1	Date: Sept 12 Weather: 14, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 15 Weather: 18, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 19 Weather: 21, Rain Scav'ged? ☐-Y / ☒-N	Date: Sept 22 Weather: 24, Sunny Scav'ged? ☐-Y / ☒-N
11/09	11	2	Wh. Breasted Nuthatch	17T	E 0449156	N 4763628	10	NE	2	Date: Sept 12 Weather: 22, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 15 Weather: 20, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 19 Weather: 20, Rain Scav'ged? ☒-Y / ☐-N	Date: Sept 22 Weather: 25, Sunny Scav'ged? ☒-Y / ☐-N
11/09	17	3	Eastern Red Bat	17T	E 0444525	N 4765055	21	ESE	2	Date: Sept 12 Weather: 23, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 15 Weather: 22, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 19 Weather: 20, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Sept 22 Weather: 26, Sunny Scav'ged? ☒-Y / ☐-N
11/09	20	4	Blk. Capped Chickadee	17T	E 0440240	N 4765215	18	SW	1	Date: Sept 12 Weather: 24, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 15 Weather: 23, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 19 Weather: 20, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Sept 22 Weather: 30, Sunny Scav'ged? ☒-Y / ☐-N
11/09	22	5	Hoary Bat	17T	E 0438330	N 4763217	22	ENE	2	Date: Sept 12 Weather: 24, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 15 Weather: 23, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 19 Weather: 20, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Sept 22 Weather: 30, Sunny Scav'ged? ☐-Y / ☒-N
★ Sept 12: Bird @ Turbine 11 has been moved ~8m NE of location where it was set out → bird is still not scavenged ★					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: fall

Weather on placement date: 20 (TEMP (°C)) | 7 km/h / SE (WIND speed/direction) | 10% (CLOUD) | 0mm (PPT) | 0mm (PPT (last 24-hrs))

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
25/09	7	1	Wh. Breasted Nuthatch	17T	E 0449669	N 4762150	7	NE	1	Date: Sept 26 Weather: 31, Sunny Scav'ged? ☒-Y / ☐-N	Date: Sept 29 Weather: 11, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Oct 3 Weather: 17, Sunny Scav'ged? ☒-Y / ☐-N	Date: Oct. 6 Weather: 16, Cloudy Scav'ged? ☒-Y / ☐-N
25/09	12	2	Hoary Bat	17T	E 0447865	N 4763348	20	SW	2	Date: 31 Sunny Weather: Sept 26 Scav'ged? ☐-Y / ☒-N	Date: Sept 29 Weather: 12, Cloudy Scav'ged? ☐-Y / ☒-N	Date: 23°C, Sunny Weather: Oct 3 Scav'ged? ☐-Y / ☒-N	Date: Oct 6 Weather: 16, Cloudy Scav'ged? ☐-Y / ☒-N
25/09	14	3	Song Sparrow	17T	E 0447170	N 4764872	21	N	2	Date: Sept 26 Weather: 31 Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 29 Weather: 17, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 3 Weather: 24, Sunny Scav'ged? ☐-Y / ☒-N	Date: Oct. 6 Weather: 16, Cloudy Scav'ged? ☒-Y / ☐-N
25/09	19	4	Hoary Bat	17T	E 0442985	N 4764977	36	NE	2	Date: Sept 26 Weather: 27, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 29 Weather: 13, Rain Scav'ged? ☐-Y / ☒-N	Date: Oct 3 Weather: 24, Sunny Scav'ged? ☐-Y / ☒-N	Date: Oct 6 Weather: 15 Cloudy Scav'ged? ☒-Y / ☐-N
25/09	27	5	Eastern Red Bat	17T	E 0435950	N 4765490	29	E	1	Date: Sept 26 Weather: 22, Sunny Scav'ged? ☐-Y / ☒-N	Date: Sept 29 Weather: 13, Rain Scav'ged? ☐-Y / ☒-N	Date: Oct 3 Weather: 25, Sunny Scav'ged? ☒-Y / ☐-N	Date: Oct 6 Weather: 14, Cloudy Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: Kenneth Zyblut (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: Fall

Weather on placement date: 12 TEMP (°C) | 6 km/h / N WIND speed/direction | 100% CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
10/10	6	1	Silver-Haired Bat	17T	E 0451985	N 4762591	19	SE	1	Date: Oct 11 Weather: 9°C, Rainy Scav'ged? ☐-Y / ☒-N	Date: Oct 13 Weather: 15°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 17 Weather: 10°C, Sunny Scav'ged? ☐-Y / ☒-N	Date: Oct 20 Weather: 18°C Sunny Scav'ged? ☐-Y / ☒-N
10/10	11	2	Am. Woodcock	17T	E 0449181	N 4763636	35	NE	2	Date: Oct 11 Weather: 8°C, Rainy Scav'ged? ☐-Y / ☒-N	Date: Oct 13 Weather: 16°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Oct 17 Weather: 14°C, Sunny Scav'ged? ☒-Y / ☐-N	Date: Oct 20 Weather: 16°C, Sunny Scav'ged? ☒-Y / ☐-N
10/10	17	3	Silver-Haired Bat	17T	E 0444501	N 4765063	6	WSW	2	Date: Oct 11 Weather: 9°C, Rainy Scav'ged? ☐-Y / ☒-N	Date: Oct 13 Weather: 17°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Oct. 17 Weather: 16°C, Sunny Scav'ged? ☐-Y / ☒-N	Date: Oct 20 Weather: 16°C, Sunny Scav'ged? ☐-Y / ☒-N
10/10	20	4	Hoary Bat	17T	E 0440248	N 4765238	19	NW	2	Date: Oct 11 Weather: 10°C, Rainy Scav'ged? ☐-Y / ☒-N	Date: Oct 13 Weather: 17°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 17 Weather: 16°C, Sunny Scav'ged? ☒-Y / ☐-N	Date: Oct 20 Weather: 14°C, Sunny Scav'ged? ☒-Y / ☐-N
10/10	22	5	Song Sparrow	17T	E 0438345	N 4763214	36	ESE	1	Date: Oct 11 Weather: 10°C, Rainy Scav'ged? ☐-Y / ☒-N	Date: Oct 13 Weather: 17°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 17 Weather: 16°C, Sunny Scav'ged? ☒-Y / ☐-N	Date: Oct 20 Weather: 12°C, Sunny Scav'ged? ☒-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Ryder KR (field notes QA/QC personnel)

Stantec

Scavenger Trial Carcass Set-up & Daily Check Form

Project No: 160961067 Project Name: Adelaide Wind Project

YEAR: 2017 Personnel: Sean Cole

SEASON: fall

Weather: on placement date | 16 TEMP (°C) | 6 km/h / SW WIND speed/direction | 100% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Date Placed dd/mm	Turbine No.	Carcass No.	Species	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Visib. Class*	VISIT 1 [1,2]	VISIT 2 [1,2]	VISIT 3 [1,2]	VISIT 4 [1,2]
23/10	7	1	Hoary Bat	17T	E 0449647	N 4762134	21	SW	1	Date: Oct 24 Weather: 10°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 27 Weather: 16°C, Sun Scav'ged? ☐-Y / ☒-N	Date: Oct 31 Weather: 3°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Nov 3 Weather: 10°C, Cloudy Scav'ged? ☒-Y / ☐-N
23/10	12	2	Song Sparrow	17T	E 0447876	N 4763346	16	S	1	Date: Oct 24 Weather: 10°C, Rain Scav'ged? ☒-Y / ☐-N	Date: Oct 27 Weather: 15°C, Sun Scav'ged? ☒-Y / ☐-N	Date: Oct 31 Weather: 4°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Nov 3 Weather: 12°C, Cloudy Scav'ged? ☒-Y / ☐-N
23/10	14	3	Blk-Capped Chickadee	17T	E 0447164	N 4764871	12	NW	2	Date: Oct 24 Weather: 10°C, Rain Scav'ged? ☐-Y / ☒-N	Date: Oct 27 Weather: 15°C, Sun Scav'ged? ☒-Y / ☐-N	Date: Oct 31 Weather: 4°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Nov 3 Weather: 9°C, Cloudy Scav'ged? ☒-Y / ☐-N
23/10	19	4	Song Sparrow	17T	E 0442989	N 4764961	42	ESE	1	Date: Oct 24 Weather: 11°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 27 Weather: 14°C, Cloud Scav'ged? ☒-Y / ☐-N	Date: Oct 31 Weather: 5°C, Cloudy Scav'ged? ☒-Y / ☐-N	Date: Nov 3 Weather: 9°C, Sun Scav'ged? ☒-Y / ☐-N
23/10	27	5	Silver-Haired Bat	17T	E 0436981	N 4765478	21	NE	2	Date: Oct 24 Weather: 12°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 27 Weather: 10°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Oct 31 Weather: 7°C, Cloudy Scav'ged? ☐-Y / ☒-N	Date: Nov 3 Weather: 7°C, Sun Scav'ged? ☐-Y / ☒-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N
					E	N				Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N	Date: Weather: Scav'ged? ☐-Y / ☐-N

* See visibility class key at top of page

[1] N-Not scavenged includes partial scavenging in which sufficient carcass remains for subsequent scavenging (e.g. only head removed, ½ or more of body remaining)

[2] Y-Scavenged indicates that the carcass is entirely missing or parts remaining (e.g. feathers, wings, entrails) would not likely be further scavanged

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Sean Cole (field notes author)

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: May 2/17 Field Personnel: ~~N. Burnett~~ Sean Cole

TESTER: N. Burnett

Weather Conditions: 9°C (TEMP (°C)) 25 /S-SW (WIND (speed / direction)) 100's (CLOUD) trace (PPT) 20-30 mm (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates			Position from turbine		Substrate	Visibility Class*	Detected?	Scavenged?
						Zone	Easting	Northing	Dist. (m)	Direction				
17	7:48	14:20	WBNU	black flag	Frozen	17T	E 444525	N 4765080	18m	NE	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
19	~~8:00~~ 8:20	17:30	Bigfoot Bat	" "	"	17T	E 442974	N 4764960	33m	ENE	gravel	1	☐-Y / ☑-N	☐-Y / ☑-N
6	8:40	15:15	WBNU	" "	"	17T	E 451964	N 4762593	24m	SW	soil	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Kupfer (field notes QA/QC personnel)

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Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: May 9, 2017 Field Personnel: Sean Cole

TESTER: MEllah

Weather Conditions: 10 TEMP (°C) | 6km/h WNW WIND (speed / direction) | 0/10 CLOUD | none PPT | none PPT (last 24-hrs)

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
7	07:50	NA	Bat (silver haired)	black thread	frozen	17	E 449658	N 4762155	6.0	NW	gravel	2	☐-Y / ☑-N	☐-Y / ☑-N
14	08:18	NA	Bat (eastern red)	↓	frozen	17	E 447175	N 4764853	2.0	SE	soil	2	☐-Y / ☑-N	☐-Y / ☑-N
17	08:30	NA	Gray Catbird (bird)	↓	frozen	17	E 444507	N 4765060	3.0	S	soil	2	☐-Y / ☑-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Mellah (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: May 19, 2017 Field Personnel: ~~MEllah~~ Sean Cole

TESTER: MEllah

Weather Conditions: 8 (TEMP (°C)) 16 km/h NW (WIND (speed / direction)) 100% (CLOUD) none (PPT) scattered heavy rain (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
27	08:14	14:13	white throated sparrow	black thread	frozen	17T	E 435962	N 4765473	3.0	N	moss	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
22	08:30	16:24	Am. woodcock	"	frozen	17T	E 438317	N 4763225	15.0	NE	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
19	08:47	16:39	Hoary Bat	"	~~frozen~~ thawed	17T	E 442950	N 4764955	9.0	S	vegetation/ gravel	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: MEllah (field notes author)

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Print Name & Initial: Kimberly Zapfe KZ (field notes QA/QC personnel)

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Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: May 24/17 Field Personnel: ~~N. Burnett~~ Sean Cole

TESTER: N. Burnett

Weather Conditions: 15°C (TEMP (°C)) 6 km/h / East (WIND (speed / direction)) 90% (CLOUD) None. (PPT) ~1mm (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
11	7:40	13:00	Big Brown Bat	tagged	frozen	17T	E 0449146	N 4763613	9	SW	grasses	2	☑-Y / ☐-N	☐-Y / ☐-N
14	9:56	14:30	" " "	"	"	17T	E 0447175	N 4764836	18	S	Clover patch	2	☑-Y / ☐-N	☐-Y / ☐-N
17	8:10	Not collected	w. throated sparrow	"	"	17T	E 0444528	N 4765052	24	SE	grasses/reeds	2	☐-Y / ☑-N	☑-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Natka Burnett KB. (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: May 30/17 Field Personnel: ~~N. Burnett~~ Sean Cole

TESTER: N. Burnett

Weather Conditions: 15°C (TEMP (°C)) | 6km/h South (WIND (speed / direction)) | 10:i (CLOUD) | no ppt (PPT) | ~20mm (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
7	7:35	N/A	Silver-haired bat	thread	thawed	17T	E 0449657	N 4762143	3	W	gravel (large)	1	☑-Y / ☐-N	☐-Y / ☐-N
6	7:51	16:47	Big Brown Bat	thread	thawed	17T	E 0451975	N 4762607	4	N	gravel (large)	1	☐-Y / ☑-N	☐-Y / ☑-N
12	8:10	N/A	Silver-haired Bat	thread	thawed	17T	E 0447872	N 4763358	4	NW	gravel (large)	1	☑-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

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Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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Searcher Efficiency Record Form

2, 1, 1
bird bat bird

Project No: ~~160961073~~ 160961067 Project Name: ~~K2 Wind Farm~~ Adelaide
Date: June 20, 2017 Field Personnel: Sean Cooke
TESTER: Brennan Obermayer

Weather Conditions: 23 (TEMP (°C)) 7, 7. (WIND (speed / direction)) 15% (CLOUD) 0 (PPT) Rain (PPT (last 24-hrs))

25-6 ft from puddle

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged
7	7:30	18:00	YRWA	~~thread~~ glass	frozen	17T	E 0449854	N 4762180	36	N	soil	1	☐-Y / ☒-N	☐-Y / ☒-N
~~2~~ 2	7:55	—	HORA	~~glass~~ thread	frozen		E 0438307	N 4763229	18	N	soil/crop	2	☒-Y / ☐-N	☐-Y / ☒-N
12	8:12	—	HOARY BAT	~~thread~~ glass	frozen		E 0447839	N 4763373	33	W	soil	1	☒-Y / ☐-N	☐-Y / ☒-N
3							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

Print Name & Initial: BO (field notes author)

Quality Control: This form is complete ☑ & legible ☑
Print Name & Initial: Melissa Stamp MS (field notes QA/QC personnel)

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: June 27/17 Field Personnel: N. Burnett

TESTER: N. Burnett Sean Cole.

Weather Conditions: 12°C (TEMP (°C)) 13 km/hr west (WIND (speed / direction)) 85 (CLOUD) trace. (PPT) ~5mm (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
11	8:25	–	Deer-eyed Junco	thread	thawed	17T	E 0449154	N 4763614	12m	SE	grass/weeds	2	☑-Y / ☐-N	☐-Y / ☑-N
17	8:35	–	" " "	"	"	"	E 0444517	N 4765054	14m	SE	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
12	8:42	–	" " "	"	"	"	E 0447857	N 4763365	16m	W	grasses/weeds	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

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Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: July 7, 2017 Field Personnel: S. Cole

TESTER: D. Cameron

Weather Conditions:

TEMP (°C)	WIND (speed / direction)	CLOUD	PPT	PPT (last 24-hrs)
20	8 km/h / -	100	1mm	0

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
11	0916	-	Bird sp.	Paper tag	Thawed	17T	E 449170	N 4763603	26	WSW	Gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
17	0848	1616	Eastern Red Bat	Thrown	Thawed	17T	E 5510019	N 4840990	3	N	Soil	1	☐-Y / ☑-N	☑-Y / ☐-N
14	0901	-	Bird sp.	Paper tag	Thawed	17T	E 447179	N 4764861	8	NNE	Grass	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

Print Name & Initial: Dane Cameron D. C (field notes author)

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Print Name & Initial: Kimberly Zapfen KZ. (field notes QA/QC personnel)

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Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: July 14, 2017 Field Personnel: S. Cobb

TESTER: D. Cameron

Weather Conditions: 21 (TEMP (°C)) | 10 km/h / - (WIND (speed / direction)) | 100 (CLOUD) | 1 mm (PPT) | (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
27	0755	-	Big Brown Bat	Thread	Thawed	17T	E 435964	N 4765473	4	N	Grass	2	☑-Y / ☐-N	☐-Y / ☑-N
22	0813	-	Eastern Red Bat	Thread	↓	17T	E 435329	N 4763194	19	NE	Grass	2	☑-Y / ☐-N	☐-Y / ☑-N
20	0829	-	American Robin	Paper tag	↓		E 440238	N 4765238	19	NW	Gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Dane Cameron DC (field notes author)

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Print Name & Initial: Kimberly Zupfer KZ. (field notes QA/QC personnel)

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Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: July 21/17 Field Personnel: N. Burnett

TESTER: Sean Cole

Weather Conditions: 21°C (TEMP (°C)) | 4km/hr / West (WIND (speed / direction)) | 10% (CLOUD) | none (PPT) | none (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates			Position from turbine		Substrate	Visibility Class*	Detected?	Scavenged?
						Zone	Easting	Northing	Dist. (m)	Direction				
11	7:35	–	Red-breasted nuthatch	Flagged	thawed	17T	E 0449157	N 4763631	8m	NNE	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
14	7:45	–	" " "	"	"	17T	E 0447165	N 4764841	14m	South	grasses	2	☑-Y / ☐-N	☑-Y / ☐-N
12	7:55	–	Big Brown Bat	"	"	17T	E 0447872	N 4763374	15m	West	gravel/dirt	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

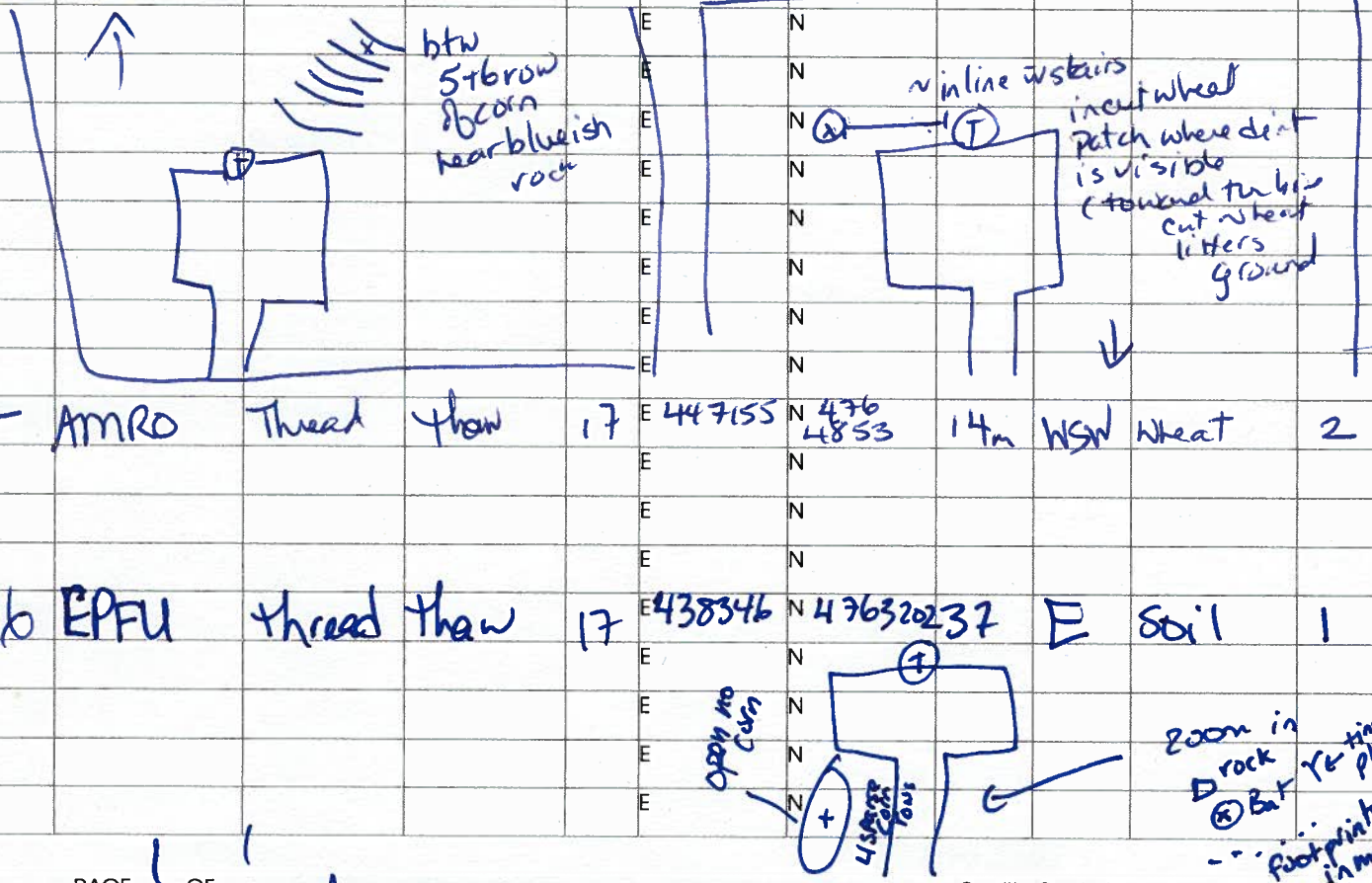
Date: July 25/17 Field Personnel: MSTRAUS

TESTER: S. Cole

Weather Conditions: 15 (TEMP (°C)) | 10-15 / N (WIND (speed / direction)) | 35% (CLOUD) | 0 (PPT) | Rain. (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
11	0750	1641	Hoary Bat	thread	thaw	17	E 449148	N 4763629	11m	NNW	soil	2	☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
14	0810	—	AMRO	Thread	thaw	17	E 447155	N 4764853	14m	WSW	Wheat	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
22	0834	1616	EPFU	thread	thaw	17	E 438346	N 4763202	37	E	soil	1	☐-Y / ☑-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N



PAGE 1 OF 1

Print Name & Initial: MSTRAUS (field notes author)

Quality Control: This form is complete ☑ & legible ☐

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: Aug 1/17 Field Personnel: N. Burnett

TESTER: Sean Cote.

Weather Conditions: 11°C (TEMP (°C)) 3km / SE. (WIND (speed / direction)) none (CLOUD) none (PPT) None (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
11	7:40	-	~~Bat~~ Unidentified bat sp.	Thread	thawed	17T	E 0449150	N 4763638	13m	North	grasses	2	☑-Y / ☐-N	☐-Y / ☑-N
1	7:50	-	" " "	"	"	17T	E 0444510	N 4765080	12m	North	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
12	7:58	-	Bat sp.	thread.	"	17T	E 0447860	N 4763374	19m	West	grasses	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

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Stan

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: Aug. 9/17 Field Personnel: N. Burnett.

TESTER: Sean Cole

Weather Conditions: 14°C (TEMP (°C)) | 4 km/hr / South (WIND (speed / direction)) | 10% (CLOUD) | none (PPT) | none. (PPT (last 24-hrs))

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
6	6:42	-	White-breasted Nuthatch	thread	thawed	17T	E 0451974	N 4762603	5m	NW	grasses	2	☑-Y / ☐-N	☐-Y / ☑-N
11	6:48	-	Bat sp.	"	"	"	E 0449150	N 4763616	6m	East	gravel/dirt	1	☑-Y / ☐-N	☐-Y / ☑-N
12	6:59	-	White Breasted Nuthatch	"	"	"	E 0447862	N 4763351	14	West	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zyfer KZ. (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160960710 Project Name: ADELAIDE

Date: AUG 25, 2017 Field Personnel: S. COLE

TESTER: L. USKOV

Weather: on placement date | 10 TEMP (°C) | 7 / NE WIND speed/direction | 0 CLOUD | 0 PPT | 0 PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates			Position from Turbine		Substrate	Visib. Class*	Detected?	Scavenged?
					Zone	Easting	Northing	Dist. (m)	Direction				
27	0544	–	AMWO	THREAD		E 435973	N 4765472	12	E	GRAVEL	1	☒-Y / ☐-N	☐-Y / ☒-N
20	0558	–	RBAT	"		E 440240	N 4765237	14	NW	GRAVEL	2	☒-Y / ☐-N	☐-Y / ☒-N
12	0612	–	RBAT	"		E 447877	N 4763362	1	S	GRAVEL	1	☒-Y / ☐-N	☐-Y / ☒-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: (field notes author)

Quality Control: This form is complete ☒ & legible ☒

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: Sept. 6/17 Field Personnel: Sean Cole

TESTER: Kimberly Zupfer.

Weather Conditions: 9 TEMP (°C) | 2 km/h / SW WIND (speed / direction) | 0% CLOUD | — PPT | — PPT (last 24-hrs)

foggy.

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS*
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed	Time Collected	Species	Marker Used	Condition frozen/thawed	UTM Coordinates Zone	Easting	Northing	Position from turbine Dist. (m)	Direction	Substrate	Visibility Class*	Detected?	Scavenged?
6	7:54am	—	White breasted Nuthatch	thread	thawed	17	E451970	N4762607	15	SW	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
11	8:10am	—	Black capped chickadee	thread	thawed	17	E449149	N4763631	8	N	weeds.	2	☑-Y / ☐-N	☐-Y / ☑-N
19	8:27am	—	Eastern Red Bat	thread.	thawed	17	E442989	N4764976	40	E	grass	2	☑-Y / ☐-N	☐-Y / ☑-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N
							E	N					☐-Y / ☐-N	☐-Y / ☐-N

Print Name & Initial: Kayla M. Kimberly Zupfer. (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MELISSA STRAUS MAS. (field notes QA/QC personnel)

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FORM 019 / REV: 2017-09-05

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide

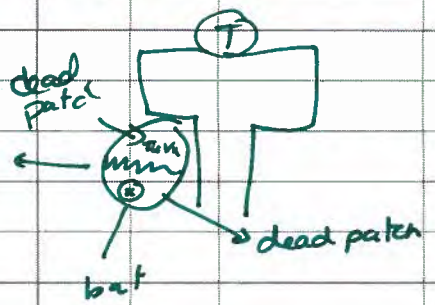
Date: Sept 15, 2017

Person placing tester: M. STRAUS Person being tested: Sean Cole

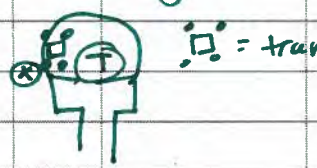
Weather: on placement date | TEMP (°C): 15 | WIND speed/direction: 3 / S | CLOUD: Fog | PPT: Fog | PPT (last 24-hrs): 0

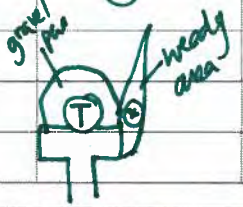
% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Substrate	Visib. Class*	Detected?	Scavenged?
7	0800	–	Big Brown Bat	Thrud	17	E 449629	N 4762159	36	WNW	Soil	1	☑-Y / ☐-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
11	820	–	Silverhaired Bat	Thrud	17	E 449144	N 4763610	8	S	Veg	2	☑-Y / ☐-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
17	850	–	Junco	Thrud	17	E 444501	N 4765869	3	NW	Veg	2	☑-Y / ☐-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N



In woody is 2 patch ~2m btw corn + 2m to gravel





PAGE 1 OF 1

Print Name & Initial: M. STRAUS (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind farm

Date: Sept. 29/17

Person placing tester: Kimberly Zupfer Person being tested: Sean Cole

Weather: on placement date | 11 TEMP (°C) | 6 / SW km/h WIND speed/direction | 100% CLOUD | 4mm PPT | — PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates			Position from Turbine		Substrate	Visib. Class*	Detected?	Scavenged?
					Zone	Easting	Northing	Dist. (m)	Direction				
7	7:27	4:18	Black capped chickadee	thread	17T	E 449656	N 4762150	5	NWN	grasses	2	☐-Y / ☑-N	☐-Y / ☑-N
6	7:40	↓	White throated sparrow	thread	17T	E 451975	N 4762573	36	SWS	soil	1	☑-Y / ☐-N	☐-Y / ☑-N
19	7:58	4:27	Eastern Red Bat	thread	17T	E 442961	N 4764954	19	SE	gravel	1	☐-Y / ☑-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Kimberly Zupfer KZ (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: MELISSA STEPLUS MAS (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 1609610067 Project Name: Adelaide Windfarm

Date: Oct. 3/17

Person placing tester: Kimberly Person being tested: Sean Cole

Weather: on placement date 8 TEMP (°C) 7 km/h / NE WIND speed/direction 51. CLOUD — PPT — PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates			Position from Turbine		Substrate	Visib. Class*	Detected?	Scavenged?
					Zone	Easting	Northing	Dist. (m)	Direction				
14	7:54	4:07	White-throated Sparrow	thread	17	E 447157	N 4764854	13	W	grass	1	☐-Y / ☑-N	☑-Y / ☐-N
17	8:04	—	Silver-haired Bat	thread	17	E 444516	N 4765083	17	NEN	grass	2	☑-Y / ☐-N	☐-Y / ☑-N
19	8:21	—	Silver-haired Bat	thread	17	E 442947	N 4764966	1	S	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Kimberly Zapore KZ. (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MELISSA STRAUS MAS (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: Oct. 13/17

Person placing tester: Kimberly Z. Person being tested: Sean Cole

Weather: on placement date | 15 TEMP (°C) | 8 km/h S WIND speed/direction | 80% CLOUD | 1mm PPT | 5mm PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates			Position from Turbine		Substrate	Visib. Class*	Detected?	Scavenged?
					Zone	Easting	Northing	Dist. (m)	Direction				
11	7:28	—	Black-capped chickadee	thread	17	E 449187	N 4703617	41	E	grass	2	☒-Y / ☐-N	☐-Y / ☒-N
22	7:46	—	White-throated sparrow	thread	17	E 438329	N 4703218	21	ENE	Soil	1	☒-Y / ☐-N	☐-Y / ☒-N
27	7:58	—	Hoary Bat	thread	17	E 435968	N 4705455	14	SES	Soil	1	☒-Y / ☐-N	☐-Y / ☒-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Kimberly Zupfer KZ. (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MELISA SMALS MAS (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm
Date: Oct. 24/17
Person placing tester: Kimberly Z. Person being tested: Sean Cole
Weather: on placement date 9 TEMP (°C) 14 / S km/h WIND speed/direction 30% CLOUD — PPT rain PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates Zone	Easting	Northing	Position from Turbine Dist. (m)	Direction	Substrate	Visib. Class*	Detected?	Scavenged?
7	7:32	—	Red-breasted Nuthatch	thread	17	E 449651	N 4762159	10	NNW	gravel	1	☑-Y / ☐-N	☐-Y / ☑-N
14	7:55	4:49	Big Brown Bat	thread	17	E 447190	N 4764844	24	E	grass/soil	2	☐-Y / ☑-N	☐-Y / ☑-N
12	8:06	-	Hoary Bat	thread	17	E 447872	N 4763353	6	S	weeds.	2	☑-Y / ☐-N	☐-Y / ☑-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

PAGE 1 OF 1

Print Name & Initial: Kimberly Zupp. (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: MELISSA STRAUS MAS (field notes QA/QC personnel)

Stantec

Searcher Efficiency Record Form

Project No: 160961067 Project Name: Adelaide Wind Farm

Date: Oct. 31, 2017

Person placing tester: K. Zupfer Person being tested: Sean Cole

Weather: on placement date 4 TEMP (°C) 20 / W km/h WIND speed/direction 100% CLOUD light rain PPT rain PPT (last 24-hrs)

% VEGETATION COVER	VEGETATION HEIGHT	VISIBILITY CLASS
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Time Placed HH:mm	Time Collected HH:mm	Species	Marker Used	UTM Coordinates			Position from Turbine		Substrate	Visib. Class*	Detected?	Scavenged?
					Zone	Easting	Northing	Dist. (m)	Direction				
22	7:41	-	White-throated Sparrow	thread	17T	E 438322	N 4763262	15	ESE	gravel	1	☑-Y / ☐-N	☐-Y / ☐-N
19	7:55	-	Black-capped chickadee	thread	17T	E 442972	N 4764981	29	NE	weeds	2	☑-Y / ☐-N	☐-Y / ☐-N
12	8:04	-	Hoary Bat	thread	17T	E 447871	N 4763361	1	W	gravel	1	☑-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N
						E	N					☐-Y / ☐-N	☐-Y / ☐-N

Print Name & Initial: [signature] (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: MELISSA STRAUS MAS (field notes QA/QC personnel)

APPENDIX G2
FIELD FORMS (RAPTOR MONITORING PROGRAM)

Stantec

780-8125

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Stantec

Raptor Behaviour Driving Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: April 24/17 Field Personnel: Melissa Straus

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	8°C	3-4	0	0	0

Start Time: 11:00AM End Time: 1800

Total KM Driven:

Raptor No. (as on map)	Time	Species & No.	Age/Sex (if determined)	Height* (m)	Habitat	Behaviour (i.e. hunting, perching, actively migrating)
1	11:03	TuVu x1	?	0	Ag - Con	On ground - flew low
2	11:55	TuVu x4	?	@ tree line	Ag / woodlot	Soaring above woodlot;
3	11:56	RTHA	Adult	@ turbine	Woodlot	Soaring over woodlot towards woodlot
4	1245	TuVu x3	?	@ turbine	Ag / woodlot	Soaring, on ground
5	14:00	TuVu x5	?	@ turbine	Woodlot	Soaring, soon moving east
6	14:05	TuVu x5	?	@ turbine	Woodlot	Soaring, east
7	15:24	TuVu x3	?	@ turbine	Ag / woodlot	Soaring
8	1537	TuVu x1	?	@ turbine	Woodlot	Soaring
9	1545	RTHA	Adult	@ ~30m	Ag field	On ground - soared up - slowly gained altitude moving east.
10	1553	TuVu x2	?	~ Turbine	Woodlot	Soaring
11	1553	RTHA	Adult	@ turbine	Ag	Same as #9. Above Ag Soaring
12	1644	TuVu x2	?	@ turbine	woodlot	Soaring
13	17:03	TuVu x1	?	@ T	woodlot /	Soaring
14	18:00	RTHA (?)	Adult?	25m	scrub woods	On nest "C"

* *Height of blade sweep varies from project to project; check with project manager.*

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

REV: 2011-05-06 / FORM 036b

Stantec Consulting Ltd.
1 - 70 Southgate Drive, Guelph ON N1G 4P5

Nest Search Survey Form

Project Number: 160961067
Project Name: Adelaide
Date: April 24/17
Field Personnel: M. Straus
Start / End Time: 11:00 / 1800
Other Personnel:
specify organization(s)

Weather Conditions:	8°C	3-4	0	0	0
	TEMP (°C)	WIND	CLOUD	PPT (current)	PPT (last 24 hrs)

Description of Area Searched:
Wooded areas/edges where access allowed w/ in 1km of turbines.

Species Observed (with highest breeding evidence code):
TAVU
RTHA

Others
MODO
EAST
SAVS
HOSP
HSWA
KILL

obstruction
location

Nests Found:

SPECIES	BUFFER MARKED (radius, m)	UTM COORDINATES Zone	Easting	Northing	DESCRIPTION OF NEST LOCATION & COMMENTS
(A) RTHA? Correct size, structure No birds.	N/A - empty	17	E 436020	N 4765469	Nest empty - viewed for 15-20 mins. Turkus around (within 50m) no interactions. Can clearly see nest ~5m below canopy height, in top fork of super canopy tree (oak??) ~60m south of Ag field cover. status: revisit to confirm.
(B) RTHA? Correct size, no birds (80% sure)	N/A - appears empty	17	E 444948	N 4765502	~15m↑ in fork; large stick nest consistent w RTHA size. Visibility is poor due to trees in the way + stem lines. North + same binocular view as large oak on outside of woodlot / hedgerow union. ~8m canopy.
C RTHA	N/A occupied	17	E 447836	N 4763122	will be impossible to relocate. Reuse of 2016 RTHA nest. Adult on nest. Eye visible-face. Hawk for sure. Didn't see tail. Flushed when got too close. Couldn't see red tail. Inc/Breeding.
			E	N	Put 2 small orange flags on woodlot edge. Eastern = straight back ~35m. West = better view point.
			E	N	

Action Taken:

PAGE 1 OF 1

Print Name & Initial: M STRAUS MJB (field notes author)
Quality Control: This form is complete ☑ & legible ☑
Print Name & Initial: (field notes QA/QC personnel)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide

Feature ID: Nests A, B, C. (indicate on map) UTM Coordinates: See below. Zone Easting Northing

Species:

VISIT No. (2) – Nest A – Not Active – 17T 436020, 4765469 – near Turbine T27

Date: May 2/17 Field Personnel: N. Burnett.

Time: 9:05 – 9:30

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	9	25km/hr SW	100%	trace.	~20-30mm

NOTES:

Nest Not active during time of survey, No raptors or TUVU observed near nest or woodlot.

VISIT No. (3) Nest B – Not active – near turbine T17 – 17T 444948, 4765502 – walked closer to nest from waypoint

Date: May 2/17 Field Personnel: N. Burnett

Time: 9:40 – 10:05

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	9	25km/hr SW	100%	trace	~20-30mm

NOTES:

Nest – not active during survey, no hawks observed near nest or woodlot.

Print Name: N. Burnett. (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

CONTINUED SITE: Nest C - Near T-12. Nest Monitoring Survey Form

VISIT No.: (2) - Nest C - Active. - Near T-12 447836, 4763122 and walked to edge of woodlot.

Date: May 2/17 Field Personnel: N. Burnett

Time: 10:15 - 12:15

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	9°C	25km/hr SW	100%	trace	~20-30mm

NOTES:

Hawk (presumably RTHA) flew off nest, shortly after arrival / start of survey. species not confirmed as it took off right away when I drove in on access road. (not upon approach to nest). See behaviour form. Head and face suggests Red tailed Hawk; but was bunkered down in nest for duration of survey - limited view of the hawk.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete & legible ☑

Signature: (field notes QA/QC personnel)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: May 2/17 Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	9°C	25km/hr SW	100%	trace.	~20-30mm

Station #: NestC - year 7-12 - visit 2 UTM: 17T - 447836, 4763122

Start Time: 10:15 End Time: 12:15

Raptor Species: Red-tailed Hawk - most likely flushed off nest If in kettle, indicate size: N/A.

Raptor #: upon arrival down access road Age: Adult

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop. wetland)	Description
1	cropland	Ag field - soybeans
2	woodlot - were nests.	Hardwoods, ~~fairly~~ mature - maples, basswood, beech

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
10:15		X			X	~25m	2	on nest, took off south upon arrival down access Rd.
10:35					X	~25m	2	RTHA returned to nest, hunkered down during brief rain.
12:15					X - on nest	~25m	2	from 10:35 - 12:15 - limited activity - sitting on nest, stretching, hunkered down during frequent bouts of rain ~ every 15 minutes
								* No sign of a 2nd RTHA - limited activity and no 2nd RTHA may be a result of poor weather.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: N. Burnett (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaid wind Farm

Feature ID: see below (indicate on map) UTM Coordinates: Zone Easting see below Northing

Species: see below

VISIT No.: ~~2~~ (3) - nest C, south of turbine 12

Date: May 9, 2017 Field Personnel: MEllah

Time: 09:12 UTM: 17T 447697E, 4763356N

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	6	6 km/h WNW	0/10	none	none

NOTES:

Nest C - active

- Red Tailed Hawk (RTHA) on nest upon arrival to site (09:15)
- 09:45 RTHA flew out of nest to the south, into woodlot.
- RTHA did not return to nest within survey duration (2hrs).

VISIT No.: (3) - nest B, north of turbine 17

Date: May 9, 2017 Field Personnel: MEllah

Time: 11:35 UTM. 17T 444530E, 4765627N

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	10	BS: 1	0/10	none	none

NOTES:

- observed nest for 10 mins, no activity, ~~inactive nest~~

Print Name: (field notes author) Quality Control: This form is complete & legible ☑

Signature: (field notes QA/QC personnel)

CONTINUED SITE: Nest Monitoring Survey Form

VISIT No.: (3) nest A, NE of turbine 27

Date: May 9, 2017 Field Personnel: MEllah

Time: 12:15 UTM 11T 436029E, 4765467N

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	10	BS:1	0/10	none	none

NOTES:

- observed nest for 10 mins, no activity

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: (field notes author) Quality Control: This form is complete & legible ☑

Signature: (field notes QA/QC personnel)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide Wind Farm
Date: May 9, 2017
Field Personnel: MEMah

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	6	6km/h WNW	0/10	none	none

Station #: Nest C, near T12
UTM: 17T 447697E, 4763356N
Start Time: 09:15
End Time: 11:15
Raptor Species: Red Tailed Hawk
If in kettle, indicate size: /
Raptor #: /
Age: adult
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	cropland	
2	woodland - nest location	semi mature deciduous

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
09:15					X	nest ~25	2	adult on nest
09:42		X				/	2	adult from nest flew out, into woodlot (south), away from turbine
11:15								adult did not return to nest within survey duration (2hrs).

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Quality Control: This form is complete ☑ & legible ☑.

Signature: MMah (Field Personnel)

Signature: Kimberly Zupfer (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Feature ID: Nest C (indicate on map) UTM Coordinates: 17T (Zone) 447694E (Easting) 4763363N (Northing)

Species: Red tailed hawk

VISIT No.:

Date: May 19 2017 Field Personnel: MEllah

Time: 09:15

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	9	16km/h NW	100%	none	Heavy rain

NOTES:

Nest C:

- Activity not observed
- nest intact

- Raptor Behaviour Survey also conducted for this nest, see form.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

PAGE 1 OF 1

Print Name: (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide Wind Farm
Date: May 19, 2017
Field Personnel: MEllah

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	9	16 km/h NW	100%	none	heavy rain

Station #: Turbine 12 - nest C
UTM: 17T 447694E, 4763363 N
Start Time: 09:15
End Time: 11:15
Raptor Species: Red Tailed Hawk (RTHA)
If in kettle, indicate size:
Raptor #:
Age: (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
2	woodland - deciduous	location of nest
1	agricultural field	fallow / hay field

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
10:30			3			500	1	RTHA gliding / flapping into Study Area from south direction, landed in woodlot near (~100m) from nest. Harassed by crow, flew out of sight. Note: activity in nest not observed.
								@ no activity in nest observed in survey

Height of blade sweep varies from project to project; check with project manager.
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Quality Control: This form is complete ☑ & legible ☑.

Signature: MEllah (Field Personnel)

Signature: (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Feature ID: Nest C (indicate on map) UTM Coordinates: See previous surveys. Zone Easting Northing

Species: Red-tailed Hawk.

VISIT No.:

Date: May 24/17 Field Personnel:

Time: 9:00

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	16° C	8 km/hr - East	100	None	~1mm.

NOTES:

Nest Active - observed a RTHA in proximity of the nest 2 times during the survey. For more details - see the raptor behavioural observations sheet.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: N. Burnett (field notes author) Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Date: May 24/17 Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	16°C	8km/hr - East	100	None.	1mm

Station #: Turbine 12 - Nest C UTM: see previous surveys

Start Time: 9:00 End Time: 11:00

Raptor Species: Red-tailed Hawk (RTHA) If in kettle, indicate size: \

Raptor #: \ Age: \ (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Agricultural field (around turbine)	cropland-planted, not evident what crop is.
2	deciduous forest - woodland	nest location

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
9:10		✓	✓			30	2	RTHA gliding + flapping just south of nest - flew by nest heading East to West
9:15			✓			20	1	TUVU flew over field near turbine - away from nest
9:40	✓					15	1	TUVU soaring west of turbine near corner in access Rd.
10:55		✓			✓	25	2	RTHA came in and landed at nest. Arrived from the South.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Quality Control: This form is complete ☑ & legible ☑.

Signature: [signature] (Field Personnel)

Signature: Melissa Staves (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160606067 Project Name: Adelaide Wind Farm

Feature ID: Nest C (indicate on map) UTM Coordinates: See previous notes Zone Easting Northing

Species: RTHA nest.

VISIT No.:

Date: May 30/17 Field Personnel: N. Burnett

Time: 8:15 - 10:15

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	15°C	6km/hr - south	10%	none	~20mm

NOTES:

During survey RTHA returned to the nest and then ~20 minutes later left the nest; end of the survey.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

PAGE 1 OF 1

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067 | Project Name: Adelaide Wind Farm

Date: May 30/17 | Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15	6km/hr - South	10%	none	~20mm

Station #: West C | UTM: see previous notes

Start Time: 8:15 | End Time: 10:15

Raptor Species: Active RTHA nest | If in kettle, indicate size: —

Raptor #: — | Age: —

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Agfield.	tilled, planted - unknown crop currently.
2	woodland	deciduous forest. - medium age.

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
9:20			✓			50	1	TGUU flying over Agfield - West to East between turbine + woodlot
9:32				✓		10	1	NoHA flying South along Agfield/edge row
9:40		✓			✓	20	2	RTHA returned to nest from South
10:00		✓				20		RTHA flew West along woodlot from nest

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: N. Burnett. (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160944067 Project Name: Adelaide Wind farm

Feature ID: Nest C (indicate on map) UTM Coordinates: Zone Easting Northing: see past surveys - edge of woodlot

Species: RTHA nest

VISIT No.:

Date: June 6/17 Field Personnel: N. Burnett

Time: 10:07 - 12:07

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	13	23 km/hr - North.	100	trace.	~2-4 mm

NOTES:

Turkey vultures and an American crow were seen in proximity of the nest - flying. only RTHA activity was the return of a RTHA to the nest ~ 20 minutes after survey began, followed by it leaving ~5 minutes later. No other activity

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160960067
Project Name: Arkona Wind Farm
Date: June 6/17
Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	13	23 km/hr - North	100	trace	~2-4mm.

Station #: Nest C
Start Time: 10:07
Raptor Species: Red-tailed Hawk
Raptor #: \

UTM: See past surveys
End Time: 12:07
If in kettle, indicate size: \
Age: Adult. (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Agfield - Hay	Hay field - just coming up
2	Woodlot	Deciduous forest.

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
10:07	✓					40m	2	Turkey Vulture southwest - flying east to west
10:10		✓				30m	2	AmCR flying east - west south of nest over woodlot
10:25	✓					80m	2	4 TuVu's will above nest. Soaring North to south.
10:32		✓			✓	25m	2	RTHA returns to nest for about 5 minutes
10:37		✓				25m	2	RTHA leaves nest - flying south.

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: N. Burnett (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: (Project Manager)

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Raptor Behaviour Driving Survey Form

Project Number: 160961067 Project Name: Adelaide Windfarm

Date: June 14, 2017 Field Personnel: Brennan Obermayer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	27-28	20	10%	0	0

Start Time: 12:45 - 17:00 End Time: ~~4:45~~ 17:00

Total KM Driven: 4300 -

Raptor No. (as on map)	Time	Species & No.	Age/Sex (if determined)	Height* (m)	Habitat	Behaviour (i.e. hunting, perching, actively migrating)
1	12:00	TUVU x2	A/UNK	~~50~~ m	Field	Soaring
2	12:16	TUVU x2	A/UNK	40m	Forest	Soaring
3	12:25	TUVU x4	A/UNK	35m	Field	↓
4	1:05	TUVU x1	↓	40m	Field	↓
5	1:11	TUVU x1	↓	25	~~Forest Edge~~	Perching
6	1:30	TUVU x2	↓	20	Field	Soaring
7	1:45	TUVU x1	↓	50	↓	↑
8	1:55	TUVU x2	↓	50	↓	↓
9	1:59	TUVU x1	↓	50	↓	↓
10	2:24	TUVU x1	↓	40	↓	↓
11	2:46	TUVU x4	↓	0	Field	Perched on ground
12	4:10	TUVU x2	↓	45	↓	Soaring
13	~~4:45~~	AMKE x2	A/M+F	12	Road edge	Perching. Has rodent in talon

** Height of blade sweep varies from project to project; check with project manager.*

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

REV: 2011-03-06 / FORM 036b

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Raptor Behaviour Observational Survey Form

Project Number: 160960 1067 | Project Name: Adelaide W.F.

Date: June 14, 2017 | Field Personnel: Brennan Obermeyer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	22	20	15%	0	0

Station #: 12 | UTM:

Start Time: 9:45 | End Time: 11:45

Raptor Species: RTHA | If in kettle, indicate size:

Raptor #: | Age: / (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	~~Crop~~ Grassland	young corn w lots of weeds
2	Crop	
3	Forest	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
11:45								No Raptors Observed.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide W.F.

Date: June 20, 2016 Field Personnel: Brennan Obermayer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	17	15 /W	80	0	Rain.

Station #: 12 UTM:

Start Time: 08:15 End Time: 10:15

Raptor Species: RTHA If in kettle, indicate size:

Raptor #: Age: (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Forest	
2	Field	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below)					Height* (m)	Habitat Unit # (from table above)	Notes
	1	2	3	4	5			
10:15								No Raptors Observed.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Feature ID: nest C (indicate on map) UTM Coordinates: See surveys - previous Zone Easting Northing

Species: RTHA

VISIT No.:

Date: June 20/17 Field Personnel: N. Burnett

Time: 8:43 10:45

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	12	13/14m/hr - West	85	trace	~5mm

NOTES:

nest watched for 2 hours - no activity or hawks observed, only TUVUs soaring nearby.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete, ☑ & legible ☐

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide Wind Farm
Date: June 27/17
Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	12°C	13km/west	85	trace.	~5mm

Station #: nestC
UTM: see previous surveys - edge of woodlot - Behind T-12
Start Time: 8:43
End Time: 10:45
Raptor Species: RTHA nest
If in kettle, indicate size: —
Raptor #: —
Age: ~~Adult~~ Adult
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot - deciduous	
2	Agricultural - corn	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
8:50	✓					40	1	two TuVu's flying over woodlot and nest - west to East

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: N. Burnett
(Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature:
(Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind farm

Feature ID: - (indicate on map) UTM Coordinates: See previous surveys Zone Easting Northing

Species: Red-tailed Hawk (RTHA)

VISIT No.:

Date: July 7, 2017 Field Personnel: D. Cameron

Time: 0920 - 1120

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	20	8 km/h	100	1 mm	-

NOTES:

- Juvenile RTHA circled T13 for a minute and then flew North.
- No other raptor observations

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: Dana Cameron (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Date: July 7, 2017 Field Personnel: D. Cameron

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	20	8 km/h	100	1 mm	0 mm

Station #: Turbine 12 nest - C UTM: See previous surveys

Start Time: 0920 End Time: 1120

Raptor Species: Red-tailed Hawk (RTHA) If in kettle, indicate size: -

Raptor #: - Age: -

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Agriculture Field (near turbine)	Cropland - planted; Corn
2	Deciduous Forest - woodland	Nest location

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
1058	1					80	2	Juvenile RTHA circling T13 and flying North

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Quality Control: This form is complete ☑ & legible ☑.

Signature: _____ (Field Personnel)

Signature: _____ (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Feature ID: Nest C (indicate on map) UTM Coordinates: Zone Easting Northing

Species: RTHA

VISIT No.:

Date: July 14, 2017 Field Personnel: Dane Cameron

Time: 8:45 - 10:45

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	21	10 km/h	100 %	1mm	

NOTES:

- Adult RTHA seen circling ≈ 100m high west of nest. Circled for ≈ 5 mins before Flying West, out of sight. @ 9:45
- 2 Adult RTHA seen circling North of nest before Flying West. @ 9:59

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

Print Name: Dane Cameron (field notes author) Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide Wind Farm
Date: July 14, 2017
Field Personnel: D. Cameron

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	21	10 km/h	100 %	1 mm	

Station #: Nest C, near T12
UTM: 17T 447697E, 4763356N
Start Time: 0845
End Time: 1045
Raptor Species: RTHA
If in kettle, indicate size: –
Raptor #:
Age: Adult (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Cropland	
2	Deciduous woodland - nest location	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
0946	X					~100	2	Adult RTHA seen West of nest
0959	X	X				~100	2	2 Adult RTHA seen circling North of Nest

Height of blade sweep varies from project to project; check with project manager.
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: D. Cameron (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: M Stevens (Project Manager)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, Ontario N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Adelaide Wind Farm

Feature ID: T-12-Nest "C" (indicate on map) UTM Coordinates: See post sheets. Zone Easting Northing

Species: RTHA Nest-T-12

VISIT No.:

Date: July 27/17 Field Personnel: N. Burnett

Time: 8:02 - 10:02

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	21° C	4km/hr-West	10%	none	none.

NOTES:

No hawks or activity noted during survey.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

PAGE 1 OF 1

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Signature: (field notes QA/QC personnel)

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Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160960667 Project Name: Adelaide Wind Farm

Date: July 21/17 Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	21°C	4km/hr - West	10%	none	none.

Station #: T-12 "West C" UTM: see past sheets.

Start Time: 8:02 End Time: 10:02

Raptor Species: RT HA Nest. If in kettle, indicate size: /

Raptor #: / Age: adult

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodland	deciduous trees - mature
2	cropland	cornfield

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
8:02-10:02			no	flight	or bird	activity		noted during survey.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: N. Burnett (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: M Straus (Project Manager)

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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Driving Survey Form

Project Number: 160961067. Project Name: Adelaide

Date: May 25/17 Field Personnel: MSMAUS

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15	10-15 km/h	35	0	Rain

Start Time: 7:45. End Time: 845

Total KM Driving: 6 Driving while setting up Se.

Raptor No. (as on map)	Time	Species & No.	Age/Sex (if determined)	Height* (m)	Habitat	Behaviour (i.e. hunting, perching, actively migrating)
(1)	840	TUVU x6 ?		@blade	Ag	soaring in kettle
(2)	850	TUVU x8 ?		@blade	Pasture	Soaring in kette

** Height of blade sweep varies from project to project; check with project manager.*

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: (Project Manager)

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Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 | Project Name: Adelaide
Date: July 25/17 | Field Personnel: M STRAUS

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15	10-15km/h N	5	0	Rain

Station #: RTHA nest @ T12 | UTM: n/a.
Start Time: 900 | End Time: 11:30
Raptor Species: RTHA / TUVU | If in kettle, indicate size: n/a.
Raptor #: 1 | Age: ADULT RTHA. (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	woodland w nest	nest no longer visible.
2	corn field.	
3	Ag to east/west	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
900-910								AMCR obs. within 20-50 m of nest flying around, resting. NO RTHA obs. → 2x8
930-945			✓			@blade	1→3→1	TUVU skimmed woodlot (over nest) then soared w out of sight. came back 10 min later to E. nest
940-1000			✓			@blade	1	TUVU (adult) x3
955-1015			✓			@blade	1	TUVU x 1 (may or may not be 1 of 3 – they disappear behind woods). → NB see TUVU as 4 obs. @ once now
10:20		✓	✓			@blade	1	RTHA came from woodlot - not in nest
*1022-1035	✓					very above	1→3 last	but cruised over woodlot winding higher + higher with ↑ → turbine height (may be 200-300m?) watched w/scope then glided east out of view

* *Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 2

Signature: M Straus (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: K Zupko (Project Manager)

Time	Behaviour (see definitions below)					Height* (m)	Habitat Unit # (from table above)	Notes
	1	2	3	4	5			
1035	✓					@ -	1	TUVU
1035			✓			above	1 → 3	RTHA - same as @ 1020
1055	✓					@	1	TUVU x 2
11.05	✓					@	1	TUVU x 1

* *Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 2 of 2

Signature: _____ (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: _____ (Project Manager)

Stantec

Legend

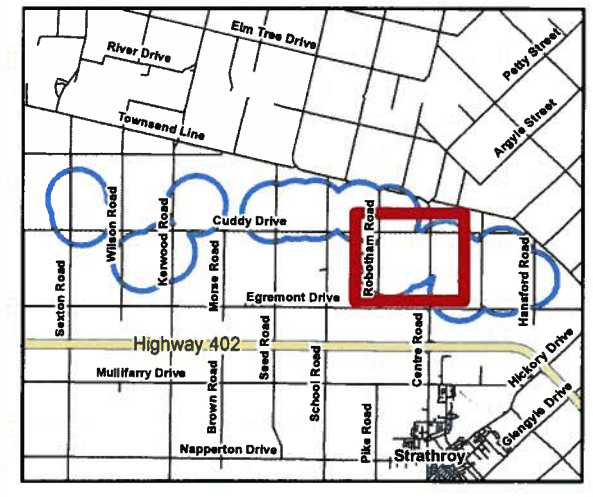
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



July 25, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
2b

Title

T12 Raptor Nest Location

\\Cd1220-f02\01609\active\60960710\drawing\MXD\Terrestrial\Post_Con_Monitoring\2016\160961067_Post_Con_Fig2b_T12RaptorNestBehavior_20170206.mxd
Revised: 2017-02-06 By: mkraus

Stantec Consulting Ltd.
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Guelph, Ontario N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Nest Monitoring Survey Form

Project Number: 160960967 Project Name: Adelaide Wind Farm.

Feature ID: Nest C (indicate on map) UTM Coordinates: See previous surveys. Zone Easting Northing

Species: RTHA.

VISIT No.:

Date: Aug 1/17 Field Personnel: N. Burnett.

Time: 8:00 - 10:00

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	16	3km/hr - SE	None	None	None.

NOTES:

Nest watched for 2 hours - no activity observed.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

PAGE 1 OF 1

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Signature: (field notes QA/QC personnel)

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Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide Windfarm.
Date: Aug. 1/17
Field Personnel: N. Burnett.

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	16°C	3km/SE	None	None.	None.

Station #: Nest C
UTM: See previous surveys - behind T-12
Start Time: 8:00
End Time: 10:00
Raptor Species: RTHA nest.
If in kettle, indicate size: \
Raptor #: \
Age: Adult.
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Agfield - Corn	

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
NO observations of hawks or owls								

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: N. Burnett (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: (Project Manager)

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Nest Monitoring Survey Form

Project Number: 160961067 Project Name: Nobleford Wind Farm

Feature ID: Nest C (indicate on map) UTM Coordinates: See past surveys Zone Easting Northing

Species: RTHA

VISIT No.:

Date: Aug. 9/17. Field Personnel: N. Burnett

Time: 7:00 – 9:00

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs
	14°C	4 km/hr - south	10%	none	none.

NOTES:

No observations at nest noted. except RTHA + hot flew east - west along woodlot edge - near nest.

VISIT No.:

Date: Field Personnel:

Time:

Weather Conditions:	TEMP (°C)	WIND	CLOUD	PPT	PPT last 24 hrs

NOTES:

PAGE 1 OF 1

Print Name: N. Burnett (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Signature: (field notes QA/QC personnel)

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Raptor Behaviour Observational Survey Form

Project Number: 160404067
Project Name: Adelaide Wind Farm.
Date: Aug 9/17
Field Personnel: N. Burnett

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	14°C	4Km/hr-South	10%	none	none

Station #: West C
UTM: See past surveys
Start Time: 7:00
End Time: 9:00
Raptor Species: RTHA nest.
If in kettle, indicate size: \
Raptor #: \
Age: \ (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	deciduous-mature
2	Ag crops	corn fields / soybeans West of N-S access Rd.

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
8:45		✓	✓			~20m	1	RTHA flew east-west along edge of woodlot near nest.

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: N. Burnett (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: M Straus (Project Manager)

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Raptor Behaviour Observational Survey Form

Project Number: 160960007 Project Name: Adelaide

Date: Aug 18/17 Field Personnel: M. Straus

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	23 (feels 29)	18 – 26km/h SW	75	0	Rain

Station #: UTM: /

Start Time: 915 End Time: 1115.

Raptor Species: RTHA / TUVU If in kettle, indicate size: max # TUVU: ~~4~~ 12

Raptor #: RTHA nest Age: (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	FOD
2	Ag	Corn field.

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	915	✓					@blade	1	TUVU x4 over woodlot
B	930	✓					@blade, below @blade	1	TUVU x3 south - below woodlot then above (likely same as A)
C	945	✓					blow @	1	TUVU x2 - Sometimes right over nest @ tree height. Likely same 2 as above. lose them as they go behind woodlot.
D	955	✓					@blade	1	x ~~8~~ 7 TUVU.
E	1018	✓					@blade		x 12 TUVU (some likely same as observed above

Height of blade sweep varies from project to project; check with project manager.

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: K. Zupko (Project Manager)

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
F	1030	✓					@	2	1 of TuVu went very close to T13 in blade sweep passed through it
G	1045	✓					@	1	x4 (Likely same ones as before)
H	1055	✓					@below-	1	x1 (from south side of woodlot)
I	1045	✓					@below->	1	x3
	* no RTHA observed								
*	most TuVu flight paths came from south side of woodlot + would T or 3 over the woodlot. Most generally drifted west before disappearing on south side. Few (x2) came north, one of east side + 1 on west.								
*	RTHA nest not visible								

** Height of blade sweep varies from project to project; check with project manager.*

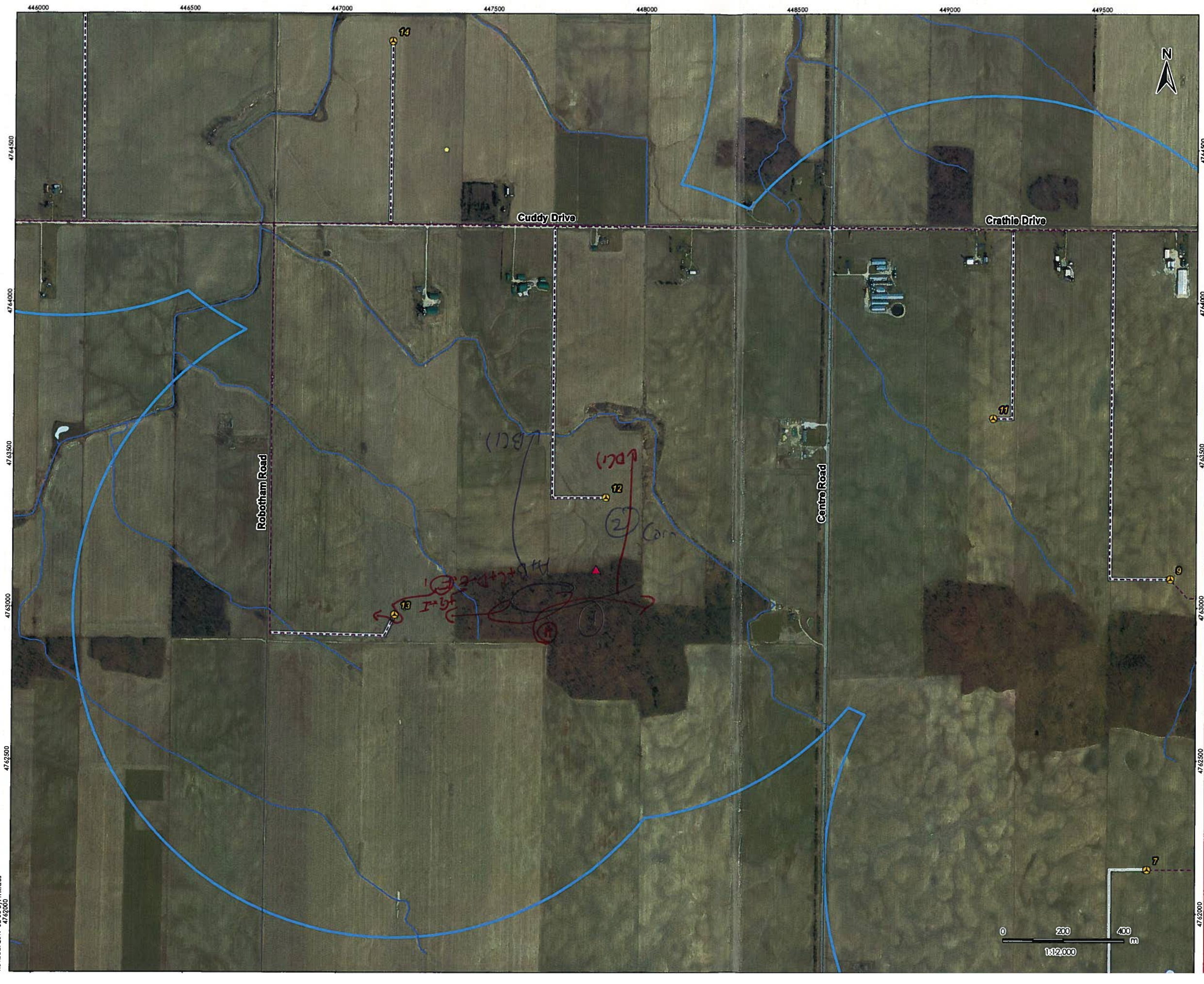
1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 2 of 2

Signature: Melissa Straus (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: Kimberly Zurbuch (Project Manager)



Stantec

Legend

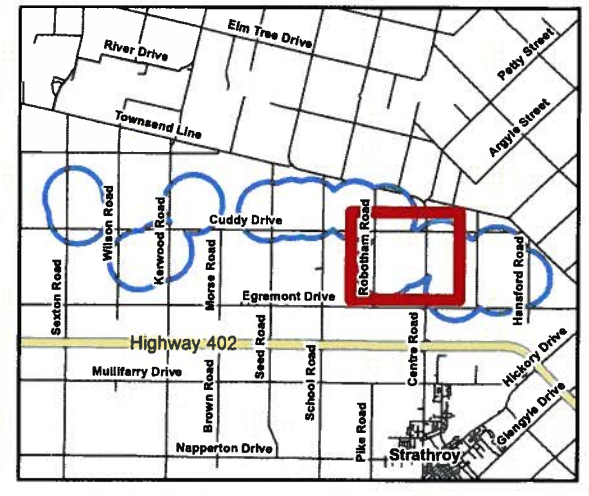
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



August 18, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
2b

Title

T12 Raptor Nest Location

\\Cd1220-f02\01609\active\609607\0\drawing\MXD\Terrestrial\Post_Con_Monitoring\2016\160961067_Post_Con_Fig2b_T12RaptorNestBehavior_20170206.mxd
Revised: 2017-02-06 By: mkraus

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1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: Aug 25/17 Field Personnel: L. USKOV

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	10	7/NE	0	0	0

Station #: TURBINE 12 UTM:

Start Time: 0630 End Time: 0830

Raptor Species: — If in kettle, indicate size: —

Raptor #: — Age: —

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
	FOD (CORN) FIELD	SEE MAP

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
								NO ACTIVITY
								SEEN

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑

Signature: Kimberly Zupfer KZ (Project Manager)

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Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

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Raptor Behaviour Observational Survey Form

Project Number: 160961067. Project Name: Adelaide

Date: Aug 30/17. Field Personnel: Melissa Straus

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	22 (feels 28°C)	6km/h NW	90	0	0

Station #: RTHA nest. UTM: /

Start Time: 11:43 End Time: 13:43

Raptor Species: RTHA / TuVu. If in kettle, indicate size: max # 5

Raptor #: 1 → Age: Adult RTHA (rodkill).
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
A	Woodland	FOD / SWD w RTHA nest.
B	Corn field (Ag)	

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
(1)	11:43	✓					@	B	TuVu
(2)	11:55	✓					@→above	A	2 TuVu
(3)	12:15					✓	below	A	RTHA perched/hunting? @ edge of woodlot. Pitched up on woodlot scan. Didn't see it come in. Scanned @ 11:55 not sure if I missed it + then it was gone – my scan may have been higher). Pmenig. Left @.
(4)	1224–12:39	✓	✓				below→at→above	A→B→A→east	PMCR harassed so flopped into corn field (30sec) Circled using thermals back towards woodlot. Over woodlot winding up, gradually moving to the east. Out of sight @ 1239.

* *Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: K. Zupfer (Project Manager)

Time	Behaviour (see definitions below)					Height* (m)	Habitat Unit # (from table above)	Notes
	1	2	3	4	5			
⑤ 1300	✓					below → @	A	TUVU x 2 over woodlot
⑥ 1315	✓							TUVU x 5 over woodlot (includes 2 fr. 1300)

** Height of blade sweep varies from project to project; check with project manager.*

1 – ~~Thermal~~ Soaring (kiting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

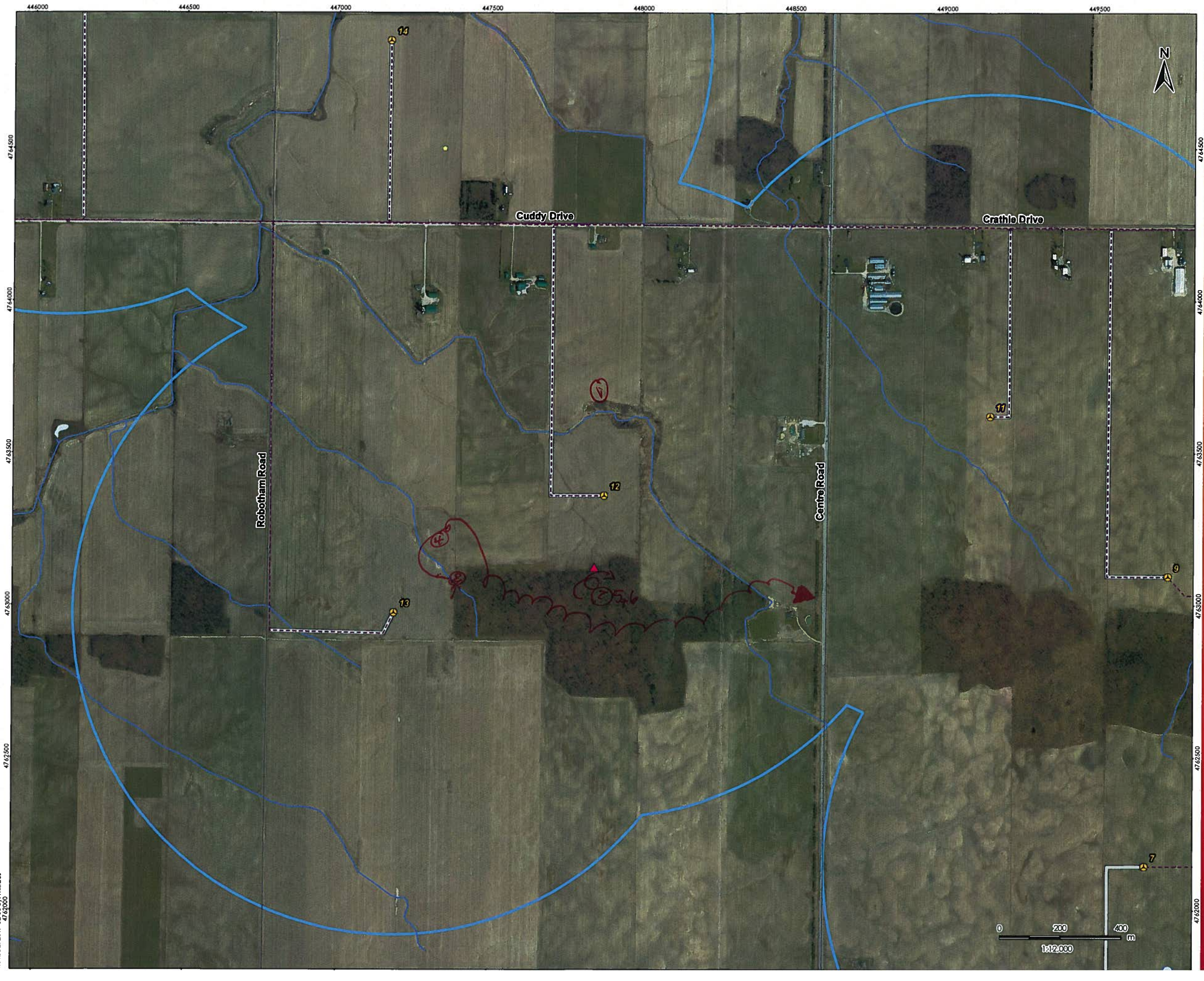
Pg. 2 of 2

Quality Control: This form is complete ☑ & legible ☑

Signature: Meline Sivers
(Field Personnel)

Signature:
(Project Manager)

REV: 2011-05-06 / FORM 036-a



Stantec

Legend

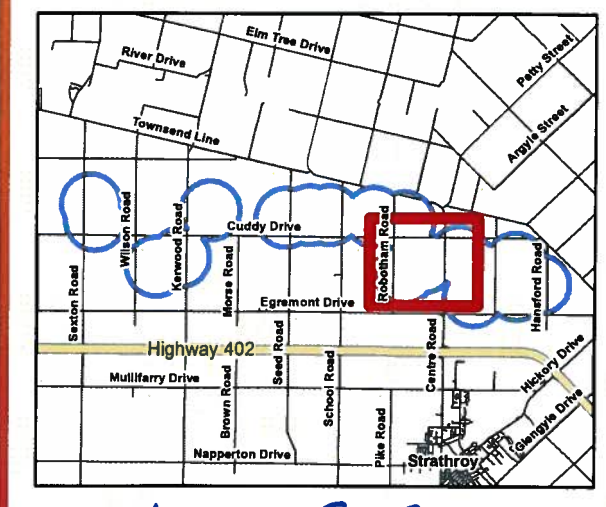
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



August 30, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067
Project Name: Adelaide
Date: Sept. 6/17
Field Personnel: Kimberly Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	10	4km/h SW	0% @start 50% @ end	—	—

Station #:
UTM: ✓
Start Time: 8:50 am
End Time: 10:50am
Raptor Species: RTHA / TUVU
If in kettle, indicate size: Max # TUVU = 3
Raptor #: RTHA nest
Age: ✓ (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field.	Corn field.

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	9:56	✓					below/@ blade	2	TUVU x 1 N. East corner of woodlot, above woodlot.
B	10:07	✓					Above blade	1	TUVU x 1 flying east over woodlot.
C	10:09	✓					Above @ blade	1	TUVU x 1 flying over woodlot, NE side near T13
D	10:18	✓	✓	✓			@ blade	1/2	TUVU x 1 Flew over whole woodlot, from west to east.
E	10:33	✓					Above blade	1	TUVU x 1 flew in from west over woodlot. high up.
F	10:34	✓					@ blade	1	TUVU x 3. 1, same as before, circling over woodlot.
G	10:36	✓		✓			@ blade/ above	1	RTHA x 1, TUVU x 1, almost as if they were fighting in air, RTHA disappeared into trees. RTHA was diving @ TUVU.

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: Kimberly Zupfer (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: M Straus (Project Manager)

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
H	10:39	✓					above blade	1	TUVU x 1, likely same one as before, over woodlo
I	10:43	✓					@ blade	2	TUVU x 1

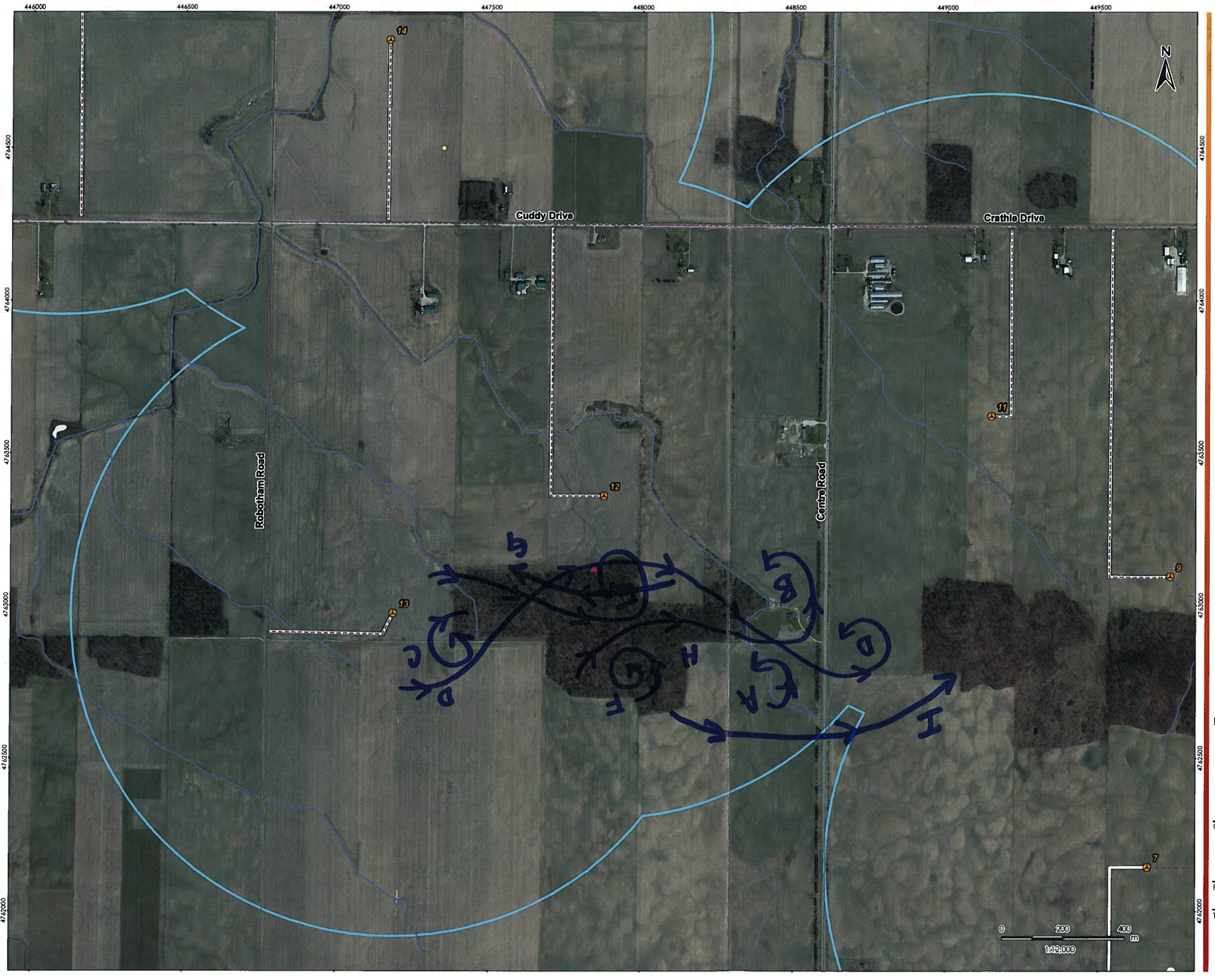
** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: _____ (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: _____ (Project Manager)



Stantec

Legend

- Raptor Study Area
- Raptor Nest Location

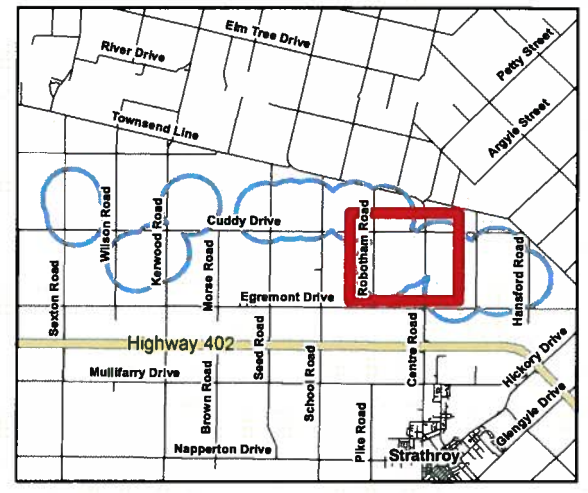
Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody

* flip upside down



September 6, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
2b

Title

T12 Raptor Nest Location

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Revised: 2017-02-06 By: mraus

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067. Project Name: Adelaide

Date: Sept 15/17. Field Personnel: M STRAUS

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15.	3km/h S (CB=1)	60%.	Fog - burned off @ 930. Waited to ↑ visibility.	Fog

Station #: T12 UTM: N/A. T12

Start Time: 950 End Time: 1150

Raptor Species: RTHA nest w TUVU If in kettle, indicate size: 2 max

Raptor #: (if any) as incidentals Age: Adult.
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	w nest
2	Ag	Corn.

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	11:15	✓					@	1	TUVU
	11:23			✓			@	2	same TUVU gliding off to north.
B	11:35	✓					@	2	way off to south observed.
C	11:38	✓					@	2	x2 in distance
D	11:48	✓		✓			@	1	same trajectory/behaviour as A

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: M Straus (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: K Zupfer. (Project Manager)

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Revised: 2017-02-06 By: mraus

Stantec

Legend

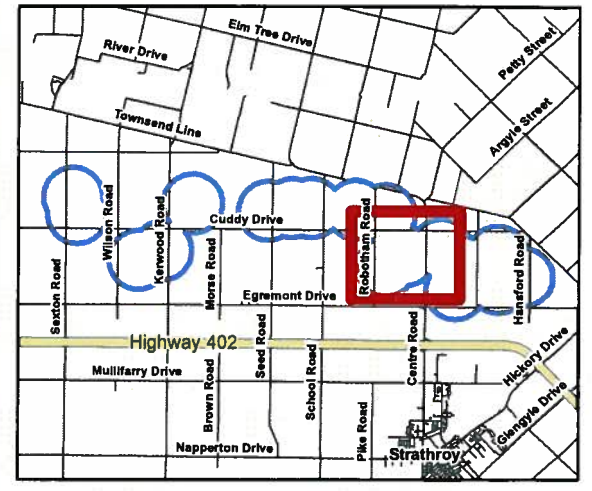
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



September 15, 2017

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: Sept. 18/17 Field Personnel: Kimberly Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	21	10km/h NW	100%.	Some	—

Station #: T12 UTM: —

Start Time: 1:36 End Time: 3:36

Raptor Species: TUVU & RTHA If in kettle, indicate size: max #TUVU = 3

Raptor #: RTHA nest Age: — (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Agriculture	Corn field.

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	1:38	✓					@blade	2	2x TUVU - east of turbine
B	1:48	✓					@blade	1	TUVU x1 - over east side of woodlot
C	2:32		✓				below/@ blade	2	TUVU x1 - flying straight, west side
D	2:36	✓	✓	✓			@blade	1	TUVU x1 - across woodlot, then circled.
E	2:43	✓					@/above blade	2	TUVU x3 - circling SE of turbine

* *Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Quality Control: This form is complete ☑ & legible ☑

Signature: [signature] (Field Personnel)

Signature: K Zupfer (Project Manager)

REV: 2011-05-06 / FORM 036-a

446000 446500 447000 447500 448000 448500 449000 449500

4764500 4764000 4763500 4763000 4762500 4762000

Cuddy Drive

Crathie Drive

Robotham Road

Centre Road

14 12 13 11 9 7

N

0 200 400 m

1:12,000

Stantec

Legend

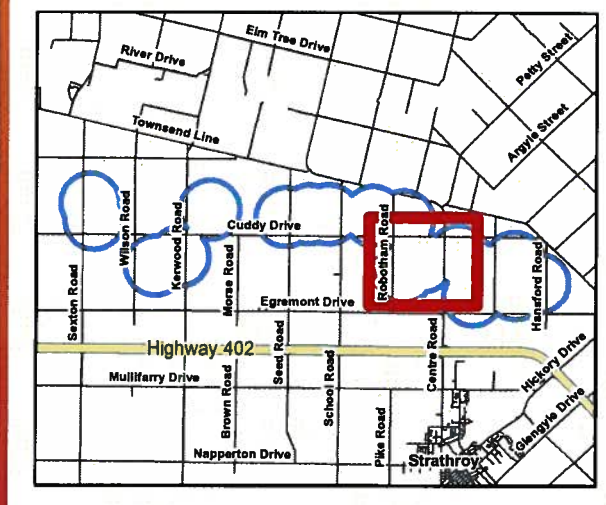
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



September 18, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

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Revised: 2017-02-06 By: mtraus

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: Sept. 29/17 Field Personnel: Kimberly

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	12	7km/h SW	100%	4mm	—

Station #: T12 UTM: —

Start Time: 8:11 am End Time: 10:11 am

Raptor Species: RTHA / TUVU If in kettle, indicate size: max = TUVU x 8

Raptor #: RTHA Nest Age: — (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Agriculture	Corn field

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	10:04	✓					@blade	1	TUVU x 2 over woodlot
B	10:05	✓	✓	✓			@blade	1	TUVU x 1 flew in from east side
C	10:06	✓					@above blade	1	TUVU x 8 over woodlot - 2 same as before
D	10:10	✓					@blade	1	TUVU x 5 over woodlot, some same

** Height of blade sweep varies from project to project; check with project manager.*

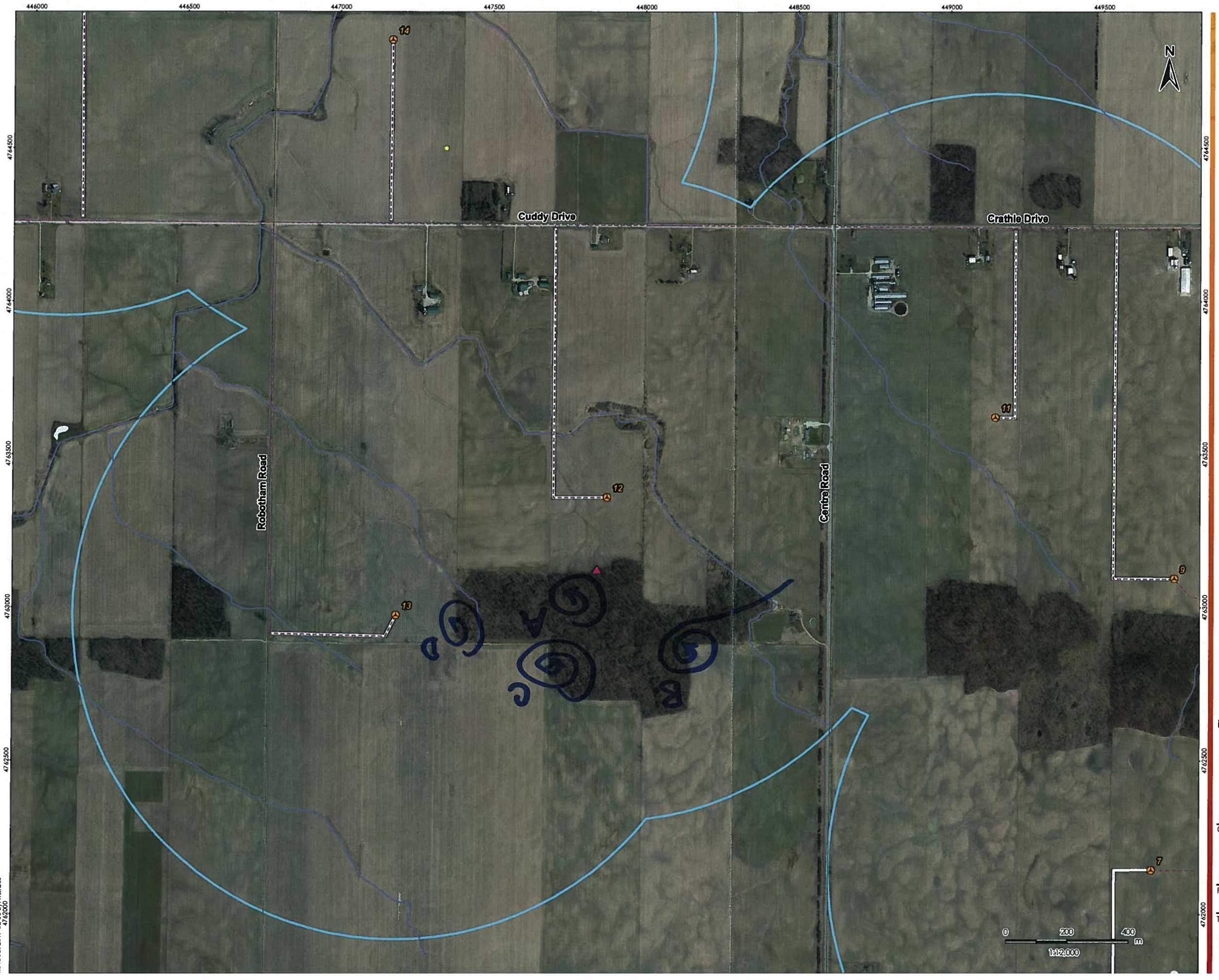
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: Kimberly Zupko (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: M Straus (Project Manager)



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Revised: 2017-02-06 By: mkraus

Stantec

Legend

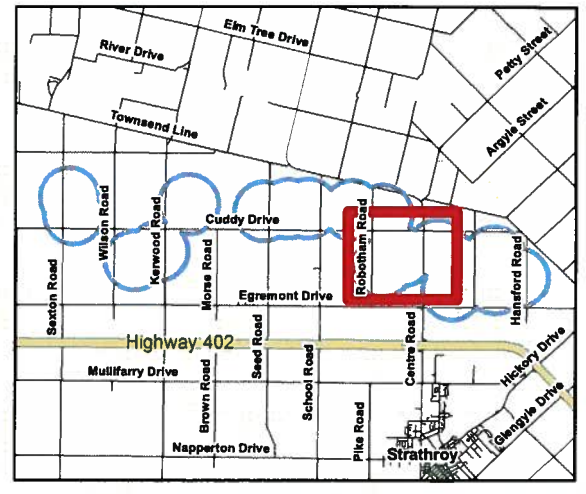
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



September 29, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160960106 7 | Project Name: Adelaide Wind farm
Date: Oct. 3/17 | Field Personnel: Kimberly Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	8-14	7km/h NE	5%.	—	—

Station #: T12 | UTM: —
Start Time: 8:33 | End Time: 10:33
Raptor Species: TUVU & RTHA | If in kettle, indicate size: max. = TUVU x 1
Raptor #: RTHA Nest | Age: — (e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field	Corn field

Provide a line entry for each change in behavior or habitat.

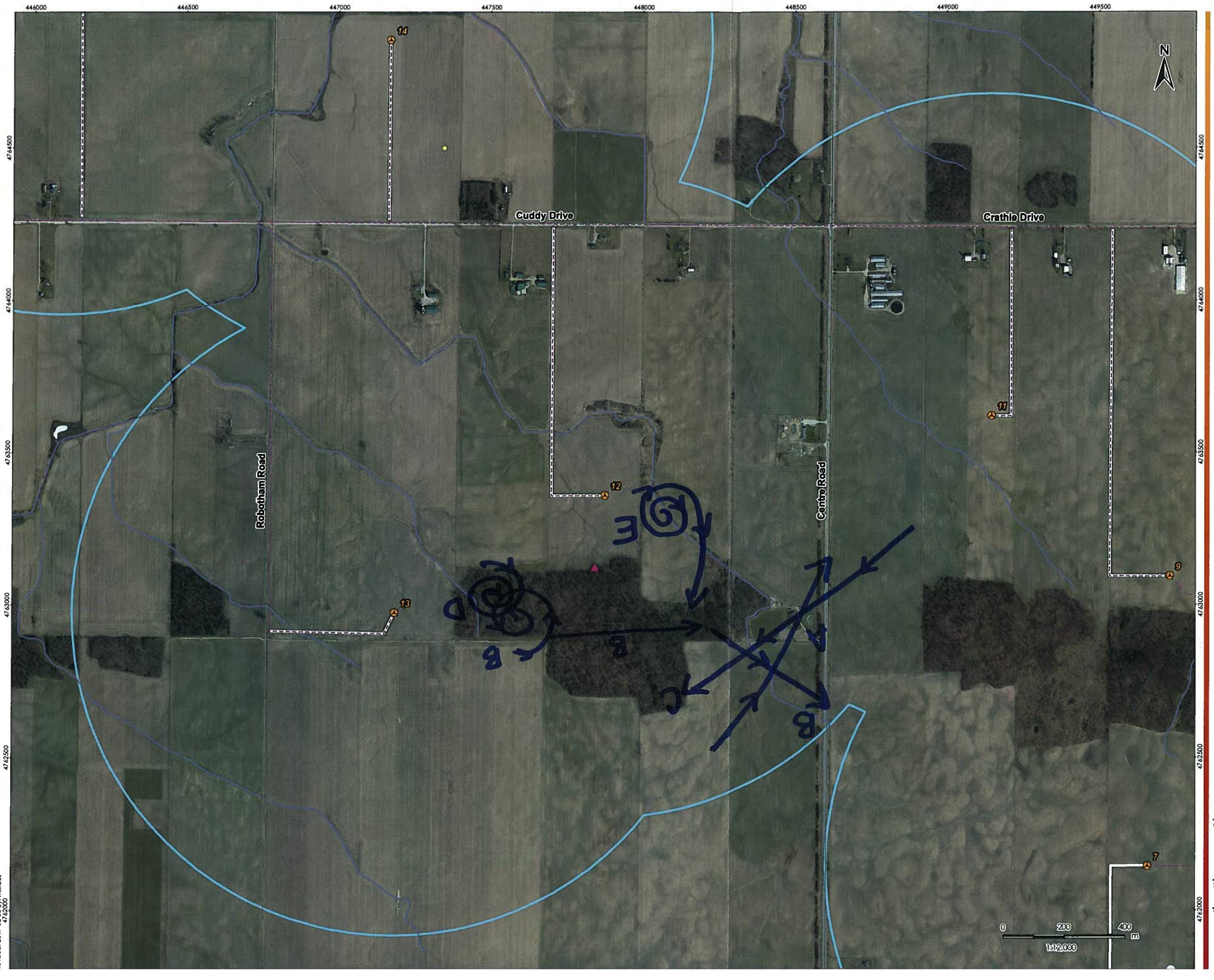
	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	10:12		✓	✓			@ blade	2	TUVU x1 SE of turbine, heading E
B	10:15	✓		✓			@ blade	1	TUVU x1 over woodlot, headed East
C	10:24			✓			below blade	2	TUVU x1 SE of turbine, heading S
D	10:29	✓					@ blade	1	TUVU x1 over woodlot
E	10:32	✓	✓	✓			@/below blade	2	TUVU x1 flying close to T12, E side

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: Kimberly Zupfer (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: M Straus (Project Manager)



Stantec

Legend

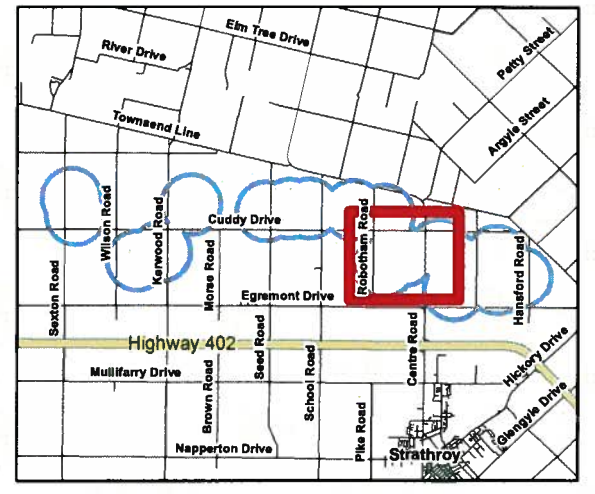
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



October 3, 2017.

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.

2b

Title

T12 Raptor Nest Location

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Revised: 2017-02-06 By: mkraus

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160960607 Project Name: Adelaide Wind farm

Date: Oct. 13/17 Field Personnel: Kimberly Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	15	8km/h S	80%	light rain	light rain

Station #: T12 UTM: —

Start Time: 8:13 End Time: 10:13

Raptor Species: RTHA, TUVU If in kettle, indicate size:

Raptor #: RTHA Nest @ T12 Age: —
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field	corn field

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	8:13		✓			✓	below blade	2	RTHA x1 perched on fence of access road, ~~flew away when I drove~~ by. Flew below blade height over to T13. Perched in a tree by T13. ↳ stayed perched until 8:43am. Flew down behind the woodlot, out of sight.
B	9:40		✓				below blade	2	RTHA x1 Flew from woodlot towards T12 access road – dissapeared behind corn.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

see back.

Signature: Kim Zupfer (Field Personnel)

Quality Control: This form is complete ☐ & legible ☑.

Signature: Melissa Strauss (Project Manager)

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
C 10:14		✓				below blade	2	RTHA x1, near barn by end of access road when leaving T12. flew across the cut wheat field towards the west.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: _____ (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____ (Project Manager)

446000 446500 447000 447500 448000 448500 449000 449500

4764500 4764000 4763500 4763000 4762500 4762000

Cuddy Drive

Crathie Drive

Robotham Road

Centre Road

11 12 13 9 7

N

0 200 400 m

1:12,000

Stantec

Legend

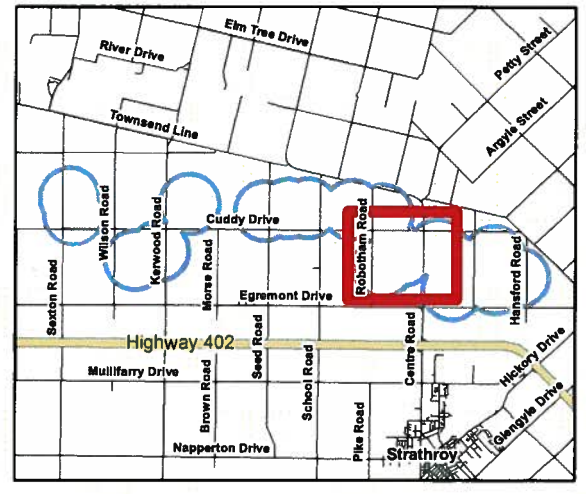
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



Oct. 13, 2017

Notes

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February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
2b

Title

T12 Raptor Nest Location

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Revised: 2017-02-06 By: mkraus

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide Wind farm
Date: Oct. 17/17 Field Personnel: Kimberly Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	9	15KM/h SW	0%	—	—

Station #: T12 UTM: —
Start Time: 9:37 End Time: 11:37
Raptor Species: RTHA, TUVU If in kettle, Indicate size: Max: TUVU x 2, RTHA x 1
Raptor #: RTHA Nest @ T12 Age: —
(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field	Corn field

Provide a line entry for each change in behavior or habitat.

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
A	10:19	✓					@ blade/ above	1	TUVU x 1 - flying over woodlot.
B	10:26	✓		✓			@ blade	1/2	TUVU x 1 - woodlot, then flew NE
C	10:40	✓					above blade	2	TUVU x 1 - flying E of T12
D	10:44					✓	below blade	1	RTHA x 1 - perched in tree by T13,
E	10:49	✓					@ blade	1	Same area as previous week (Oct. 13/17) ↳ flew down behind woodlot (south)
									→ TUVU x 1, over woodlot.
F	10:58			✓			@ blade		TUVU x 1 - flew W to E over woodlot.

** Height of blade sweep varies from project to project; check with project manager.*
1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: Kimberly Zupfer (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.
Signature: M Straus (Project Manager)

	Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
GK	11:24		✓	✓			@blade	1	RTHA x1 - over woodlot, then down really fast into woodlot
HG	11:26	✓					above blade	1	TUVU x2 - very high over woodlot.

* *Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: _____ (Field Personnel)

Quality Control: This form is complete ☐ & legible ☐.

Signature: _____ (Project Manager)

446000 446500 447000 447500 448000 448500 449000 449500

4764500 4764000 4763500 4763000 4762500 4762000

Cuddy Drive

Crathie Drive

Robotham Road

Centre Road

14 12 13 11 9 7

N

0 200 400 m

1:12,000

Stantec

Legend

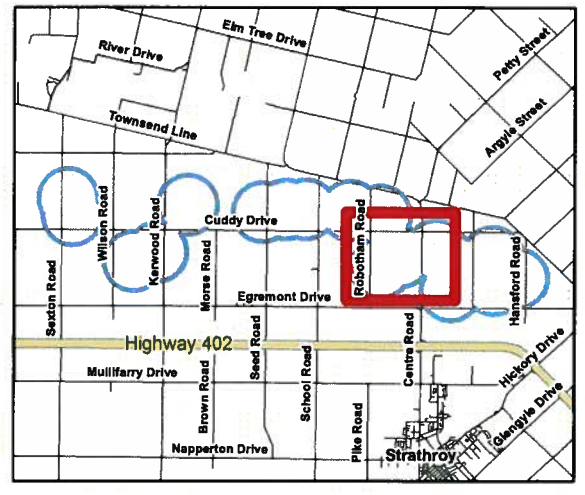
- Raptor Study Area
- Raptor Nest Location

Project Components

- MET Tower
- Turbine Location
- Access Road
- Collector Line
- Substation Constructible Area

Existing Features

- Expressway / Highway
- Road
- Watercourse
- Constructed Drain
- Waterbody



October 17, 2017

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.
3. Orthoimagery © First Base Solutions, 2016. Airphoto Date 2010.

February 2017
160961067

Client/Project

Suncor Energy
Adelaide Wind Project

Figure No.
2b

Title

T12 Raptor Nest Location

\\Cd1220-f02\01609\active\160960710\drawing\MXD\Terrestrial\Post_Con_Monitoring\2016\160961067_Post_Con_Fig2b_T12RaptorNestBehavior_20170206.mxd
Revised: 2017-02-06 By: mkraus

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: Oct. 24/17 Field Personnel: Kimberly.

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	9	14 km/h S	30%.	—	rain

A environment canada weather statement: wind gusts up to 90 km/h in southern Ontario.

Station #: T12 UTM: —

Start Time: 8:07 End Time: 10:07

Raptor Species: TUVU, RTHA If in kettle, indicate size: —

Raptor #: RTHA nest @ T12 Age: —

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field	corn

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
							NO	RAPTORS OBSERVED.

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kitting): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Signature: Kimberly Ryder (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: Melissa Straus (Project Manager)

Stantec Consulting Ltd.
1 – 70 Southgate Drive
Guelph, ON
Canada N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Raptor Behaviour Observational Survey Form

Project Number: 160961067 Project Name: Adelaide

Date: Oct. 31, 2017 Field Personnel: K. Zupfer

Weather Conditions:	TEMP (°C):	WIND:	CLOUD:	PPT:	PPT (in last 24 hrs):
	5	22 km/h SW	90%.	light rain, hail, snow	rain

Station #: T12 UTM: —

Start Time: 8:05 End Time: 10:05

Raptor Species: RTHA, TUVU If in kettle, indicate size:

Raptor #: RTHA nest @ T12 Age: —

(e.g. juvenile or adult)

Provide a description of each habitat unit within the observational area.

Habitat Unit #	Habitat Type (i.e. woodland, grassland, crop, wetland)	Description
1	Woodlot	
2	Ag. Field.	corn

Provide a line entry for each change in behavior or habitat.

Time	Behaviour (see definitions below) 1	2	3	4	5	Height* (m)	Habitat Unit # (from table above)	Notes
								NO RAPTORS OBSERVED!

** Height of blade sweep varies from project to project; check with project manager.*

1 – Thermal Soaring (kittling): Soaring in a circle within a thermal, without wingbeats
2 – Flapping: Flight powered by wingbeats
3 – Gliding: Flight in straight line without wingbeats
4 – Hovering: Hovering with or without wingbeats
5 – Perched: Perching

Pg. 1 of 1

Signature: (Field Personnel)

Quality Control: This form is complete ☑ & legible ☑.

Signature: Melissa Straus (Project Manager)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 3 / 17 Personnel: Sean Cole

Start/End Time: 10:31 / 12:13

Weather Conditions: 8 (TEMP (°C)) 2km/h / S (WIND speed/direction) 0% (CLOUD) none (PPT) heavy rain (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	10:31	10:40	9m	—				E	N								
21	7854	11:41	11:51	10m	—				E	N								
18	7854	12:45	12:53	8m	—				E	N								
15	7584	12:58	1:06	8m	—	* Turkey Vulture found @ 15 yesterday (May 2 17) by mainten. Staff			E	N								*
13	7854	1:11	1:19	8m	—				E	N								
9	7854	1:28	1:35	7m	—				E	N								
8	7854	1:42	1:50	8m	—				E	N								
5	7854	2:04	2:13	9m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer Kzupfer. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

Raptor Blitz ✓

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 9 / 17 Personnel: Sean Cole

Start/End Time: 9:46 / 1:24

Weather Conditions: 9 (TEMP (°C)) 3 Km/h / W (WIND speed/direction) 0% (CLOUD) none (PPT) none (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:46	9:55	9m	—				E	N								
8	7854	10:39	10:50	11m	—				E	N								
9	7854	11:00	11:10	10m	—				E	N								
13	7854	1:15	1:24	9m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* Raptor Blitz *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 12 / 17 Personnel: Sean Cole

Start/End Time: 12:44 / 4:03

Weather Conditions: 14 (TEMP (°C)) | 8km/h / NE (WIND speed/direction) | 5% (CLOUD) | — (PPT) | — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:44	12:53	9m	—				E	N								
18	7854	1:45	1:55	10m	—				E	N								
21	7854	2:30	2:39	9m	—				E	N								
26	7854	3:55	4:03	8m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 16 | 17 Personnel: Sean Cole

Start/End Time: 9:38 / 12:33

Weather Conditions: 13 TEMP (°C) | 14 Km/h / SE WIND speed/direction | 100% CLOUD | rain PPT | — PPT (last 24-hrs)

↳ stopped in afternoon

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:38	9:47	9m	—				E	N								
8	7854	10:33	10:41	8m	—				E	N								
9	7854	10:48	10:57	9m	—				E	N								
13	7854	12:25	12:33	8m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: May 19 / 17 Personnel: Sean Cole

Start/End Time: 12:42 / 4:36

Weather Conditions: 8 (TEMP (°C)) | 8 kph / NW (WIND speed/direction) | 100% (CLOUD) | — (PPT) | — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:42	12:52	10m	Bobolink	m	—	17	E 446094	N 4765026	Advanced	72	Abdomen	19	NW	So:l	1	
18	7854	1:49	1:57	8m	—				E	N								
21	7854	3:03	3:11	8m	—				E	N								
26	7854	4:27	4:36	9m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

RAPTOR BLITZ

Project No: 160961067
Project Name: Adelaide Wind Project
Date: May 24 / 17
Personnel: Sean Cole
Start/End Time: 9:24 / 12:51

Weather Conditions: 19 TEMP (°C) | 16 kph / ESE WIND speed/direction | 80% CLOUD | – PPT | – PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:24	9:33	9m	–				E	N								
8	7854	10:15	10:23	8m	–				E	N								
9	7854	10:41	10:51	10m	–				E	N								
13	7854	12:42	12:51	9m	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zyla KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067
Project Name: Adelaide Wind Project
Date: May 26 / 17
Personnel: Sean Cole
Start/End Time: 12:12 /

Weather Conditions: 13 TEMP (°C) | 14Kph / WNW WIND speed/direction | 100% CLOUD | — PPT | heavy rain PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	~~7854~~	12:12	12:22	10m	—				E	N								
18	7854	1:09	1:20	11m	—				E	N								
21	7854	2:32	2:43	11m	—				E	N								
26	7854	3:35	3:47	12m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupker KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* Raptor Blitz *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 6 / 17 Personnel: Sean Cole

Start/End Time: 9:35 / 1:05

Weather Conditions: 13 TEMP (°C) | 14 km/h / N WIND speed/direction | 100% CLOUD | — PPT | light rain PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:35	9:45	10m	—				E	N								
8	7854	10:34	10:43	9m	—				E	N								
9	7854	10:51	11:00	9m	—				E	N								
13	7854	12:55	1:05	10m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 9 / 17 Personnel: Sean Cole

Start/End Time: 12:15 / 3:42

Weather Conditions: 23 (TEMP (°C)) 7 km/h / W (WIND speed/direction) 60% (CLOUD) — (PPT) — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:15	12:24	9m	—				E	N								
18	7854	1:13	1:23	10m	—				E	N								
21	7854	2:35	2:45	10m	—				E	N								
26	7854	3:31	3:42	11m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K Zupler KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 13 / 17 Personnel: Sean Cole

Start/End Time: 9:33 / 1:08

Weather Conditions: 26 (TEMP (°C)) 7 km/h / SE (WIND speed/direction) 75% (CLOUD) — (PPT) — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:33	9:45	12 m	—				E	N								
8	7854	10:32	10:42	10m	—				E	N								
9	7854	10:49	10:58	9m	—				E	N								
13	7854	12:59	1:08	9m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: June 16 / 17 Personnel: Sean Cole

Start/End Time: 11:39 / 3:14

Weather Conditions: 25 (TEMP (°C)) 8 km/h / W (WIND speed/direction) 5% (CLOUD) – (PPT) – (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:39	11:49	10m	–				E	N								
18	7854	12:37	12:49	12m	–				E	N								
21	7854	2:02	2:13	11m	–				E	N								
26	7854	3:01	3:14	13m	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067
Date: June 20 / 17
Start/End Time: 9:54 / 1:38

Project Name: Adelaide Wind Project
Personnel: Sean Cole

Weather Conditions: 18 (TEMP (°C)) 10 km/h / W (WIND speed/direction) 80% (CLOUD) — (PPT) — (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:54	10:06	12m	—				E	N								
8	7854	10:52	11:03	11m	—				E	N								
9	7854	11:10	11:19	9m	—				E	N								
13	7854	1:29	1:38	9m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.
3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC
(field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC
(field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067
Project Name: Adelaide Wind Project
Date: July 5 | 17
Personnel: Sean Cole
Start/End Time: 9:35 / 1:28

Weather Conditions: 22 TEMP (°C) | 5 km/h E WIND speed/direction | 0% CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7654	9:35	9:47	12m	—				E	N								
8	7654	10:38	10:48	10m	—				E	N								
9	7654	10:54	11:06	11m	Silver Haired Bat	m	42.9	17T	E 0449709	N 4763093	Early	8	none visible	24	SW	Soil	1	-
13	7654	1:18	1:28	10m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

[1] See bat forearm diagram on reverse of page.
[3] INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Dane Cameron DC (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 7 17 Personnel: Sean Cole

Start/End Time: 12:29 / 4:19

Weather Conditions: 20 (TEMP (°C)) 8 km/h / W (WIND speed/direction) 80% (CLOUD) 1mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:29	12:39	10m	—				E	N								
18	7854	1:30	1:41	11m	—				E	N								
21	7854	3:10	3:21	11m	—				E	N								
[illegible]									E	N								
26	7854	4:07	4:19	12m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupler KZ (field notes QA/QC personnel)

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FORM 019 / REV: 2015-04-16

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 14 / 17 Personnel: Sean Cole

Start/End Time: 12:26 / 4:22

Weather Conditions: 17 (TEMP (°C)) 14 km/h / WNW (WIND speed/direction) 100% (CLOUD) 0mm (PPT) 8mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:26	12:39	13m	—				E	N								
18	7854	1:31	1:42	11m	—				E	N								
21	7854	3:11	3:22	11m	—				E	N								
26	7854	4:10	4:22	12m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole / SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: M STRAUS / MS (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 17 / Personnel: Sean Cole

Start/End Time: 11:01 / 2:30

Weather Conditions: 27 (TEMP (°C)) 10 km/h / SSW (WIND speed/direction) 10% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	11:01	11:14	13m	–				E	N								
8	7854	12:04	12:15	11m	–				E	N								
9	7854	12:23	12:33	10m	–				E	N								
13	7854	2:20	2:30	10m	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: MSTRAUS MAS (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: July 21 /17 Personnel: Sean Cole

Start/End Time: 11:17 / 3:20

Weather Conditions: 28 (TEMP (°C)) 11 km/h / NNW (WIND speed/direction) 5% (CLOUD) 0mm (PPT) 6mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:17	11:30	13m	—				E	N								
16	7854	12:21	12:32	11m	—				E	N								
21	7854	2:04	2:16	12m	—				E	N								
26	7854	3:06	3:20	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: MS MM (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 1 17 Personnel: Sean Cole

Start/End Time: 10:06 / 1:07

Weather Conditions: 27 (TEMP (°C)) | 5 km/h / WSW (WIND speed/direction) | 0% (CLOUD) | 0mm (PPT) | 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	10:06	10:20	14m	Eastern Red Bat	f	37.1	17T	E 0550672	N 4861692	Advanced	72	none visible	28	ESE	Gravel	1	—
8	7854	10:46	10:57	11m	—				E [redacted]	N [redacted]								
9	7854	11:05	11:18	13m	—				E	N								
13	7854	12:53	1:07	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: Kimberly Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 4 / 17 Personnel: Sean Cole

Start/End Time: 11:55 / 3:19

Weather Conditions: 22 TEMP (°C) | 18 km/h / S WIND speed/direction | 100% CLOUD | 3 mm PPT | 1.5mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:55	12:10	15m	—				E	N								
18	7854	12:42	12:54	12m	—				E	N								
21	7854	2:27	2:38	11m	—				E	N								
26	7854	3:08	3:19	11m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zapfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 9/17 Personnel: Sean Cole

Start/End Time: 10:41 / 1:12

Weather Conditions: 24 (TEMP (°C)) 13 km/h / SW (WIND speed/direction) 0% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	10:41	10:51	10m	—				E	N								
8	7854	11:21	11:32	11m	—	Note: Red-tailed hawk observed flying close to turbine during search			E	N								
9	7854	11:41	11:54	13m	—				E	N								
13	7854	12:58	1:12	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 11/17 Personnel: Sean Cole

Start/End Time: 11:49 / 3:21

Weather Conditions: 21 TEMP (°C) | 16 km/h / S WIND speed/direction | 100% CLOUD | 2mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:49	12:04	15m	—				E	N								
18	7854	12:37	12:50	13m	—				E	N								
21	7854	2:26	2:39	13m	—				E	N								
26	7854	3:10	3:21	11m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes/author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 15 17 Personnel: Sean Cole

Start/End Time: 9:40 / 12:44

Weather Conditions: 18 (TEMP (°C)) | 9 km/h / NW (WIND speed/direction) | 100% (CLOUD) | 2 mm (PPT) | 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7254	9:40	9:50	10m	—	*	~600 mm	6	E S.A. inaccessible due to large pile of manure dumped near turbine	N								
8	7854	10:20	10:31	11m	—				E	N								
9	7854	10:40	10:55	15m	←				E	N								
13	7854	12:30	12:44	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☐

Print Name & Initial: Kimberly Zapfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 18/17 Personnel: Sean Cole

Start/End Time: 11:06 / 2:28

Weather Conditions: 22 (TEMP (°C)) 16 km/h / SW (WIND speed/direction) 80% (CLOUD) 0mm (PPT) 4mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:06	11:20	14m	—				E	N								
18	7854	11:52	12:05	13m	Hoary Bat	f	54.3	17T	E 0443757	N 4765066	Moderate	24	none visible	41	W	Gravel	1	—
21	7854	1:35	1:47	12m	—				E	N								
26	7854	2:16	2:28	12m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 22 17 Personnel: Sean Cove

Start/End Time: 9:48 / 12:59

Weather Conditions: 23 TEMP (°C) | 16 km/h / SW WIND speed/direction | 100% CLOUD | 3 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:48	10:00	12m	—				E	N								
8	7854	10:29	10:43	14m	—				E	N								
9	7854	10:54	11:07	13m	—				E	N								
13	7854	12:45	12:59	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cove, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zipfer KZ (field notes QA/QC personnel)

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FORM 019 / REV: 2015-04-16

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Aug 25 17 Personnel: Seen Cole

Start/End Time: 11:38 / 2:50

Weather Conditions: 17 (TEMP (°C)) 5 km/h / NW (WIND speed/direction) 50% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	11:38	11:52	14m	—				E	N								
18	7854	12:25	12:36	11m	—				E	N								
21	7854	1:56	2:06	12m	—				E	N								
26	7854	2:37	2:50	13m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Seen Cole (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 6 | 17 Personnel: Sean Cove

Start/End Time: 10:06 / 1:04

Weather Conditions: 14 TEMP (°C) | 5km/h / WNW WIND speed/direction | 10% CLOUD | 0mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	10:08	10:19	11m	—				E	N								
8	7854	10:48	11:01	13m	—				E	N								
9	7854	11:11	11:25	14m	—				E	N								
13	7854	12:50	1:04	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cove, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupet KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 8 17 Personnel: Sean Cole

Start/End Time: 10:53 / 2:07

Weather Conditions: 12 (TEMP (°C)) | 11 KM/h / WNW (WIND speed/direction) | 90% (CLOUD) | 2mm (PPT) | 7mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	10:53	11:07	14m	—				E	N								
18	7854	11:41	11:53	12m	* Incidental find; heavily scavenged Raccoon found (indicates Scavenger presence) *				E	N								
22	7854	1:18	1:30	12m	—				E	N								
26	7854	1:57	2:07	10m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 12 | 17 Personnel: Sean Cole

Start/End Time: 9:40 / 12:41

Weather Conditions: 14 (TEMP (°C)) 3 km/h / ENE (WIND speed/direction) 0% (CLOUD) 0 mm (PPT) 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7654	9:40	9:51	11m	—				E	N								
8	7654	10:20	10:33	13m	—				E	N								
9	7654	10:42	10:55	13m	—				E	N								
13	7654	12:27	12:41	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 15 | 17 Personnel: Sean Cote

Start/End Time: 12:17 / 3:16

Weather Conditions: 21 (TEMP (°C)) 5 km/h / S (WIND speed/direction) 5% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
15	7854	12:17	12:31	14m	—				E	N								
18	7854	1:01	1:13	12m	—				E	N								
21	7854	2:29	2:41	12m	—				E	N								
26	7854	3:08	3:18	10m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cote (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: ~~160961132~~ 160961067 Project Name: ~~EM3~~ Adelaide

Date: Sept 19 / 17 Personnel: Sean Cole

Start/End Time: 9:43 / 12:58

Weather Conditions: 20 TEMP (°C) | 6 km/h / E WIND speed/direction | 100% CLOUD | 2mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	9:43	9:53	10m	—				E	N								
21	7854	10:26	10:38	12m	—				E	N								
19	7854	11:59	12:12	13m	—				E	N								
16	7854	12:43	12:58	15m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Sept 22 | 17 Personnel: Sean Gole

Start/End Time: 9:50 / 12:51

Weather Conditions: 22 TEMP (°C) | 7 km/h / SE WIND speed/direction | 0 CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:50	10:01	11m	—				E	N								
8	7854	10:30	10:42	12m	—				E	N								
9	7854	10:53	11:07	14m	—				E	N								
13	7854	12:37	12:51	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Gole SG (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: Kimberly Zupfer KZ (field notes QA/QC personnel)

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FORM 019 / REV: 2014-04-16

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 3 | 17 Personnel: Sean Cole

Start/End Time: 9:59 / 1:09

Weather Conditions: 17 (TEMP (°C)) | 9 km/h / SSE (WIND speed/direction) | 0% (CLOUD) | 0 mm (PPT) | 0 mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:59	10:11	12m	–				E	N								
8	7854	10:39	10:51	12m	–				E	N								
9	7854	11:02	11:16	14m	–				E	N								
13	7854	12:56	1:09	13m	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

★ RAPTOR BLITZ ★

Stantec

Mortality Survey Observation Form

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 6 / 17 Personnel: Sean Cote

Start/End Time: 9:44 / 12:49

Weather Conditions: 14 TEMP (°C) | 3 km/h / SW WIND speed/direction | 100% CLOUD | 0 mm PPT | 2 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	9:44	9:55	11m	-				E	N								
21	7854	10:26	10:39	13m	-				E	N								
18	7854	11:50	12:03	13m	-				E	N								
15	7854	12:35	12:49	14m	-				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cote, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: ~~160961132~~ 160961067 Project Name: ~~GV3~~ Adelaide

Date: Oct 11 / 17 Personnel: Sean Cole

Start/End Time: 10:06 / 1:15

Weather Conditions: 10 (TEMP (°C)) 20 km/h / ENE (WIND speed/direction) 100% (CLOUD) 6mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	10:06	10:17	11m	—				E	N								
21	7854	10:49	11:02	13m	—				E	N								
18	7854	12:17	12:30	13m	—				E	N								
15	7854	1:01	1:15	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 13 '17 Personnel: Sean Cole

Start/End Time: 9:50 / 1:11

Weather Conditions: 15 (TEMP (°C)) 6 km/h / S (WIND speed/direction) 100% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:50	10:01	11m	—				E	N								
8	7854	10:33	10:45	12m	—				E	N								
9	7854	10:57	11:09	12m	—				E	N								
13	7854	12:57	1:11	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 17 / 17 Personnel: Sean Cole

Start/End Time: 9:57 / 1:20

Weather Conditions: 10 TEMP (°C) | 15 km/h / SSW WIND speed/direction | 0% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:57	10:10	13	—				E	N								
8	7854	10:41	10:53	12	—				E	N								
9	7854	11:03	11:16	13	—				E	N								
13	7854	1:06	1:20	14	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zucker KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 20 / 17 Personnel: Sean Cox

Start/End Time: 9:32 / 12:38

Weather Conditions: 6 TEMP (°C) | 3 km/h / ESE WIND speed/direction | 0% CLOUD | 0 mm PPT | 0 mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	9:32	9:42	10m	-				E	N								
21	7854	10:04	10:22	13m	-				E	N								
18	7854	11:39	11:50	11m	-				E	N								
15	7854	12:24	12:38	14m	-				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cox SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 24 17 Personnel: Sean Cole

Start/End Time: 9:53 / 12:51

Weather Conditions: 10 TEMP (°C) | 12 km/h / SSW WIND speed/direction | 100% CLOUD | 5mm PPT | 0mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	9:53	10:04	11m	—				E	N								
8	7854	10:30	10:43	13m	—				E	N								
9	7854	10:54	11:05	11m	—				E	N								
13	7854	11:37	11:51	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct. 27 / 17 Personnel: Sean Cole

Start/End Time: 9:30 / 12:40

Weather Conditions: 9 (TEMP (°C)) 8 km/h / S (WIND speed/direction) 80% (CLOUD) 0mm (PPT) 0mm (PPT (last 24-hrs))

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	9:30	9:40	10m	—				E	N								
21	7854	10:07	10:19	12m	Turkey Vulture	—	—	17T	E 0439171	N 4763520	Advanced	120	none visible	21	SE	Weeds	2	—
18	7854	11:45	11:57	12m	—				E	N								
15	7854	12:26	12:40	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

* RAPTOR BLITZ *

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Oct 31 / 17 Personnel: Sean Cole

Start/End Time: 10:02 / 12:48

Weather Conditions: 2 TEMP (°C) | 16 km/h / SW WIND speed/direction | 100% CLOUD | 0mm PPT | 2mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
5	7854	10:02	10:13	11m	—				E	N								
8	7854	10:37	10:49	12m	—				E	N								
9	7854	10:57	11:07	10m	—				E	N								
~~13~~	7854	12:34	12:48	14m	—				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

PAGE 1 OF 1

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☑ & legible ☑

Print Name & Initial: K. Zupfer KZ (field notes QA/QC personnel)

Stantec

Mortality Survey Observation Form

★ RAPTOR BLITZ ★

Project No: 160961067 Project Name: Adelaide Wind Project

Date: Nov 3 / 17 Personnel: Sean Cole

Start/End Time: 9:45 / 12:40

Weather Conditions: 8 TEMP (°C) | 14 km/h / NW WIND speed/direction | 20% CLOUD | 0mm PPT | 18mm PPT (last 24-hrs)

DECOMPOSITION CODES[2]:

Fresh	Moderate	Complete
Early	Advanced	Scavenged

% VEG. COVER	VEG. HEIGHT	VISIBILITY CLASS[4]
≥ 90% bare ground	≤ 15cm tall	Class 1 (Easy)
≥ 25% bare ground	≤ 15cm tall	Class 2 (Moderate)
≤ 25% bare ground	≤ 25% > 30cm tall	Class 3 (Difficult)
Little/no bare ground	≥ 25% > 30cm tall	Class 4 (Very difficult)

Turbine No.	Area (m²)	Start Time	End Time	Duration	Species	Sex (m/f/u)	Bat Forearm[1] (mm)	UTM Coordinates Zone	Easting	Northing	Decomposition Code[2]	Est. Hours Since Death	Injury[3] Sustained	Distance from Turbine (m)	Direction from Turbine	Substrate	Visibility Class[4]	Photo #
26	7854	9:45	9:56	11m	–				E	N								
21	7854	10:21	10:33	12m	–				E	N								
18	7854	11:49	12:00	11m	–				E	N								
15	7854	12:26	12:40	14m	–				E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								
									E	N								

1 See bat forearm diagram on reverse of page.

3 INJURY TYPES: None Visible / Broken Limb / Broken Neck / Broken Wing / Cut in Half / Decapitated / Head Injury / Severed Wing / Wound to Abdomen

Print Name & Initial: Sean Cole, SC (field notes author)

Quality Control: This form is complete ☐ & legible ☑

Print Name & Initial: K. Zupfer KZ. (field notes QA/QC personnel)

APPENDIX H: NOTIFICATION

Stantec

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	05/03/2017
Confirmation ID:	M-101-6182096038
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Turkey Vulture
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	05/05/2017
Confirmation ID:	M-101-4182473415
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Red-tailed Hawk
Condition:	Part
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	05/19/2017
Confirmation ID:	M-101-1184773183
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Bobolink
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	05/24/2017
Confirmation ID:	M-101-5185815936
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Osprey
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	08/01/2017
Confirmation ID:	M-101-8196746181
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Little Brown Myotis (Little Brown Bat)
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	08/11/2017
Confirmation ID:	M-101-4198097943
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Turkey Vulture
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

Ontario

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	09/27/2017
Confirmation ID:	M-101-3203453682
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Turkey Vulture
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca

CONFIRMATION OF REGISTRATION

Form Name:	Notice of Possession
Date Registration Filed:	10/27/2017
Confirmation ID:	M-101-1206688058
Version Number:	001
Update Date:	

STANTEC CONSULTING LTD.

70 Southgate DR , SUITE, 1
Guelph, ON N1G4H5

Dear Sir/Madam,

You have registered under section 2 or 3.2 of Ontario Regulation 666/98 under the Fish and Wildlife Conservation Act, 1997 and/or subsection 23.15(6) of Ontario Regulation 242/08 under the Endangered Species Act, 2007.

Your Notice of Possession form has been received by the Ministry of Natural Resources and Forestry for the possession of the following:

Species Name:	Turkey Vulture
Condition:	Whole
Number Acquired:	1

You may be required to show this record for certain activities.

Please refer to Ontario Regulations 666/98 and/or 242/08 for requirements that apply to your activity.

Any questions related to this registration and/or the Natural Resources Registry should be directed to:

Registry and Approval Services Centre
Ministry of Natural Resources and Forestry
300 Water Street
Peterborough, ON, K9J8M5
Toll-free: 1-855-613-4256
E-mail: mnr.rasc@ontario.ca