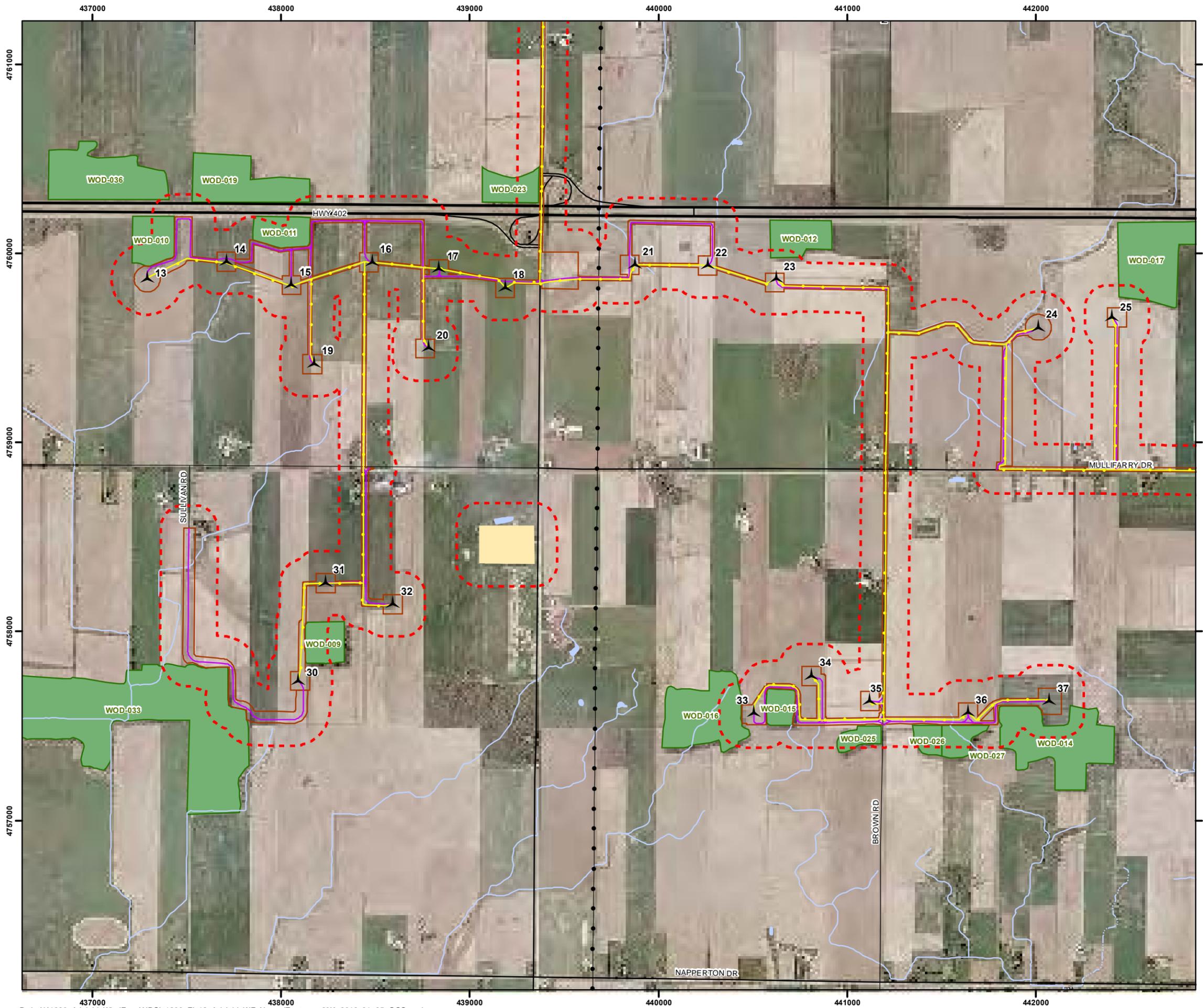


Figure 12

Adelaide Wind Energy Centre Natural Features - Southwest



- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Woodlot (WOD)
 - Wetland (WET)
 - Valleyland (VAL)

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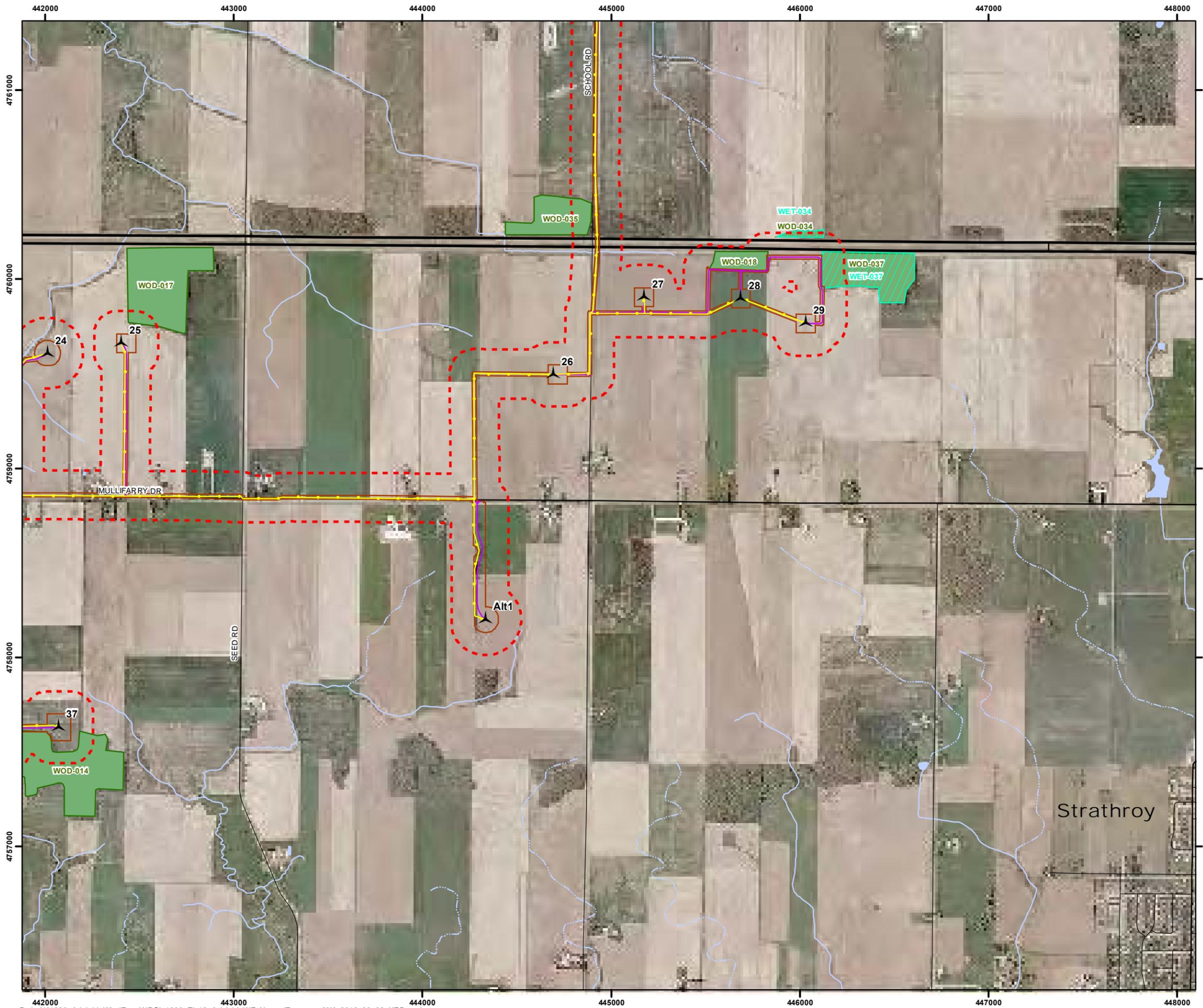
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Project: 1230 Date: January 6, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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0 200 400 600 800 1,000 Metres

Figure 13

Adelaide Wind Energy Centre Natural Features - Southeast



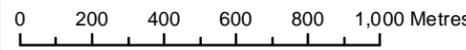
- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Woodlot (WOD)
 - Wetland (WET)
 - Valleyland (VAL)



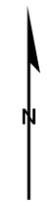
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Project: 1230 Date: January 6, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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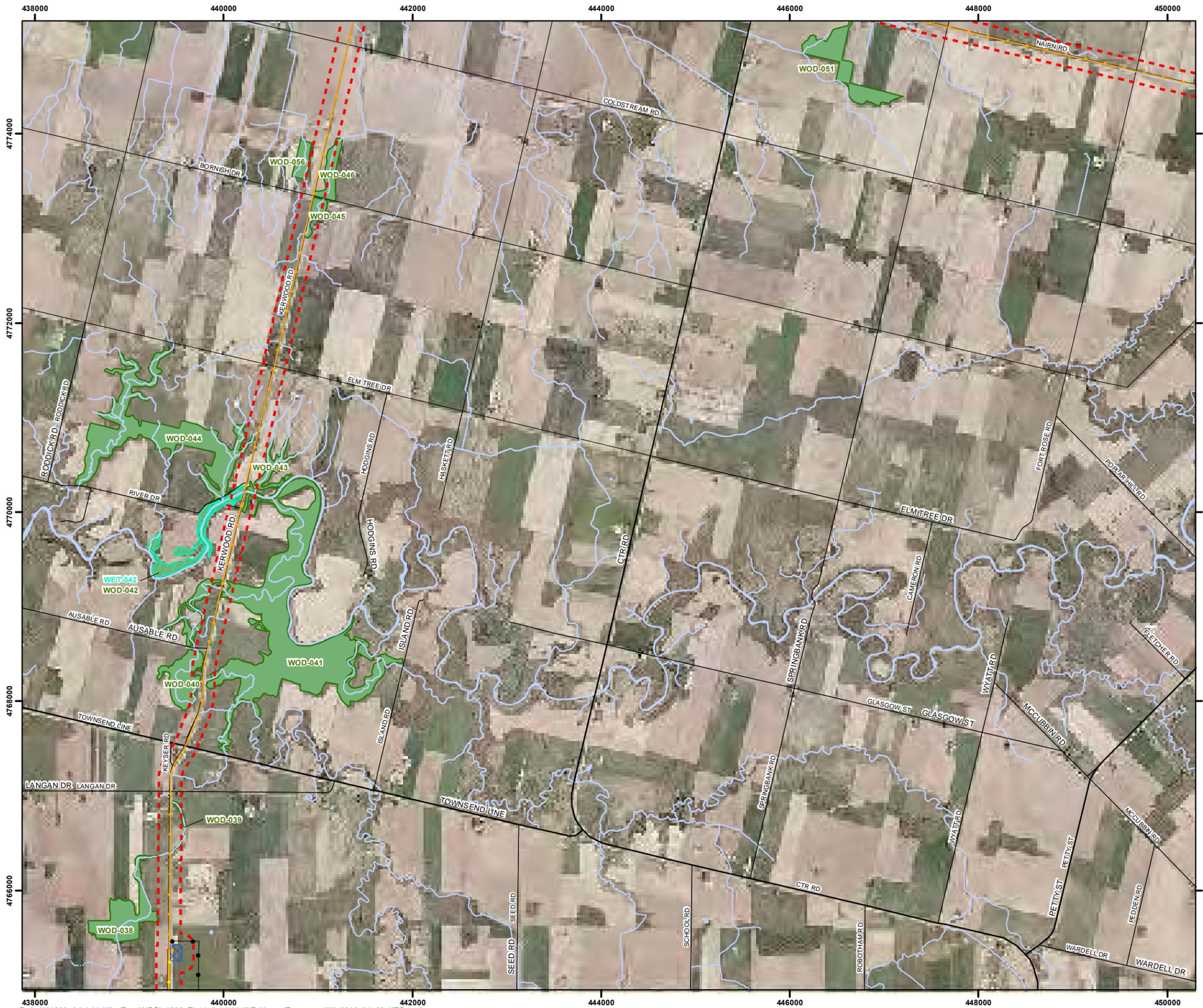
0 200 400 600 800 1,000 Metres



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N

Figure 14

Adelaide Wind Energy Centre Natural Features - Kerwood T-Line



Legend

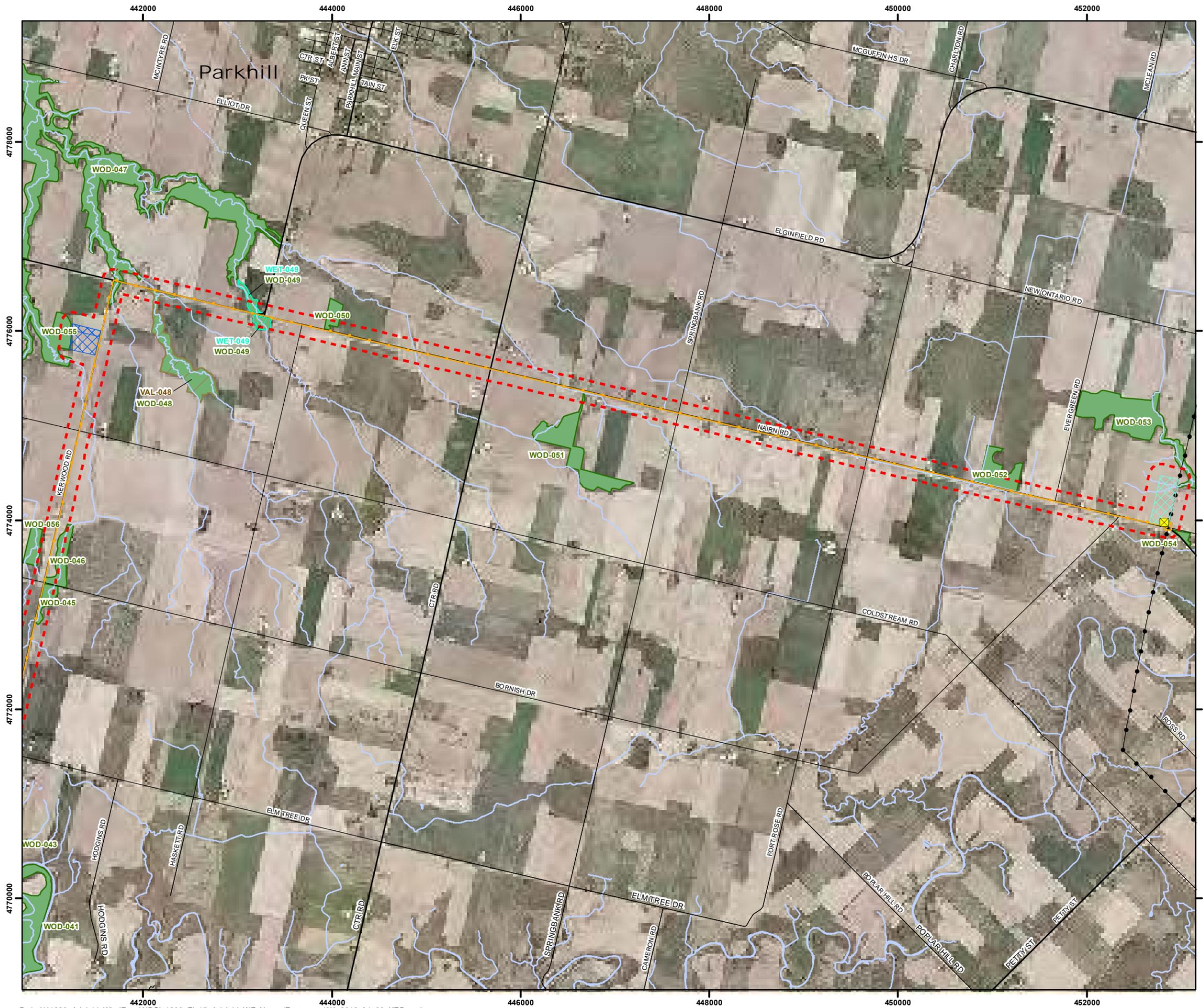
- Project Area (120m Buffer)
- Project Location
- Turbine
- Point of Common Coupling (PCC)
- Access Road
- Collector System
- Transmission Line
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Woodlot (WOD)
- Wetland (WET)
- Valleyland (VAL)

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Project: 1230 Date: April 9, 2012	NAD83 - UTM Zone 17 Scale: 1:40,000 (11x17")
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Adelaide Wind Energy Centre Natural Features - Nairn T-Line



- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Woodlot (WOD)
 - Wetland (WET)
 - Valleyland (VAL)



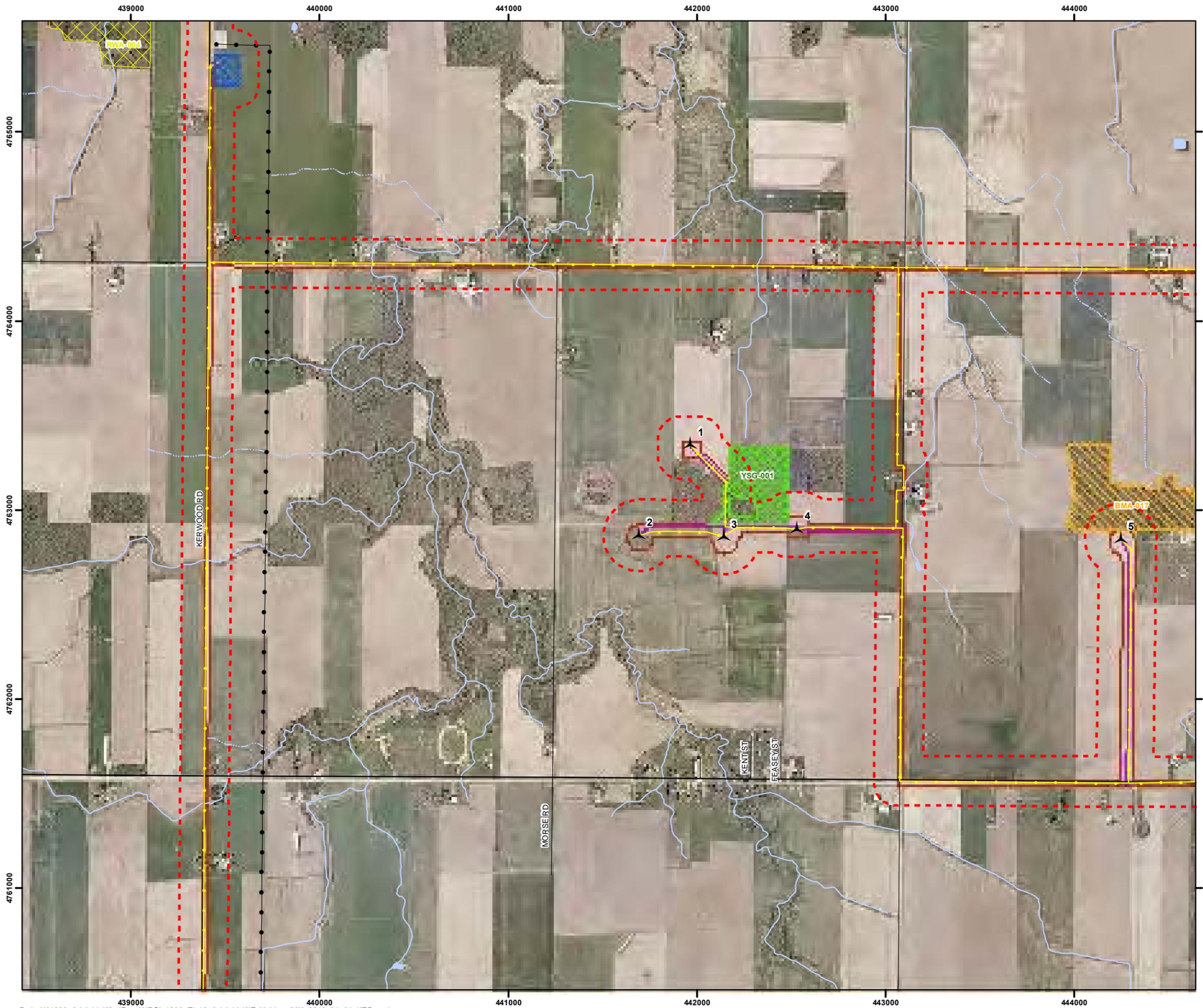
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Project: 1230 Date: April 9, 2012	NAD83 - UTM Zone 17 Scale: 1:40,000 (11x17")
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0 500 1,000 1,500 2,000 Metres

Figure 16

Adelaide Wind Energy Centre Wildlife Habitat - Northwest



- Legend**
- Project Area (120m)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Bat Maternity Colony (BMA)
 - Raptor Wintering Area (RWA)
 - Yellow Stargrass (YSG)



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Project: 1230 Date: April 4, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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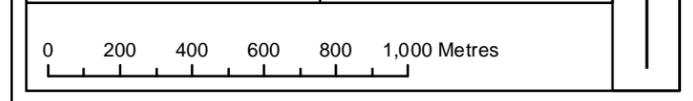
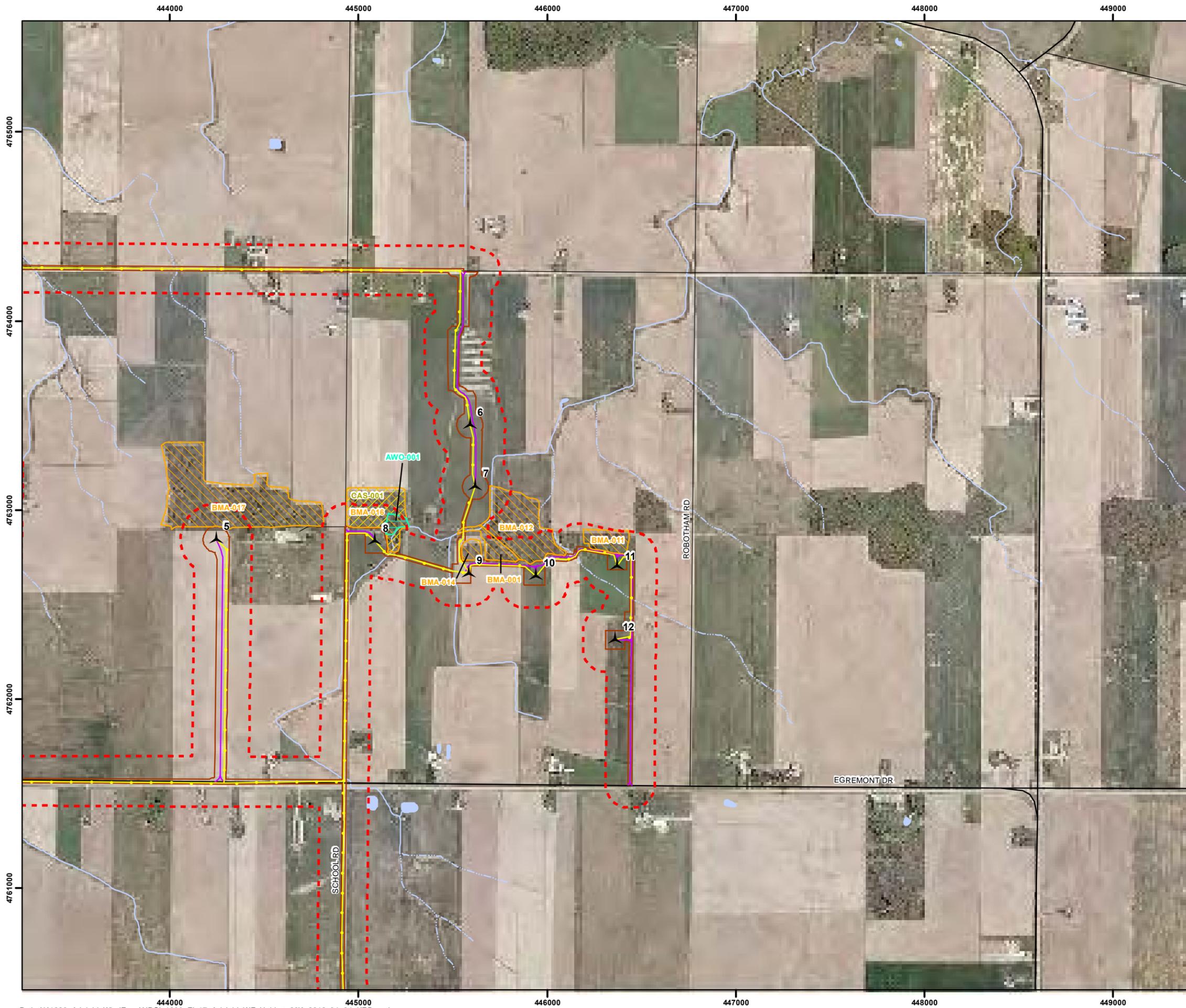


Figure 17

Adelaide Wind Energy Centre Wildlife Habitat - Northeast



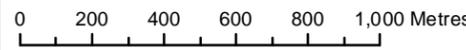
- Legend**
- Project Area (120m)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Bat Maternity Colony (BMA)
 - Amphibian Breeding Habitat - Woodland (AWO)
 - Carey's Sedge (CAS)
 - Yellow Stargrass (YSG)



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Project: 1230 Date: April 4, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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0 200 400 600 800 1,000 Metres



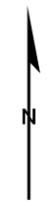
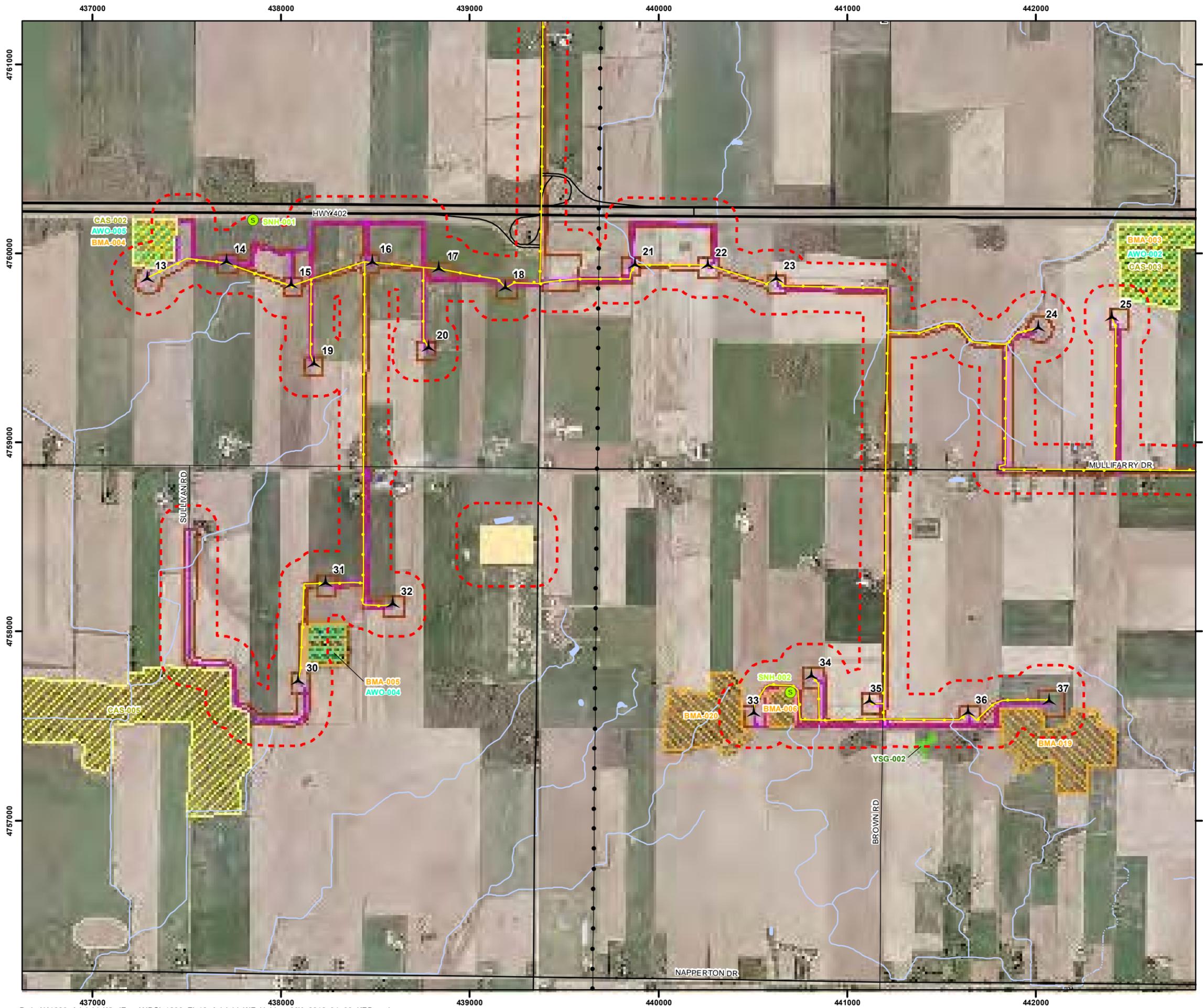


Figure 18

Adelaide Wind Energy Centre Wildlife Habitat - Southwest



Legend

- Project Area (120m)
- Project Location
- Turbine
- Point of Common Coupling (PCC)
- Access Road
- Collector System
- Transmission Line
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Snake Hibernaculum (SNH)
- Raptor Wintering Area (RWA)
- Amphibian Breeding Habitat - Woodland (AWO)
- Bat Maternity Colony (BMA)
- Carey's Sedge (CAS)
- Yellow Stargrass (YSG)

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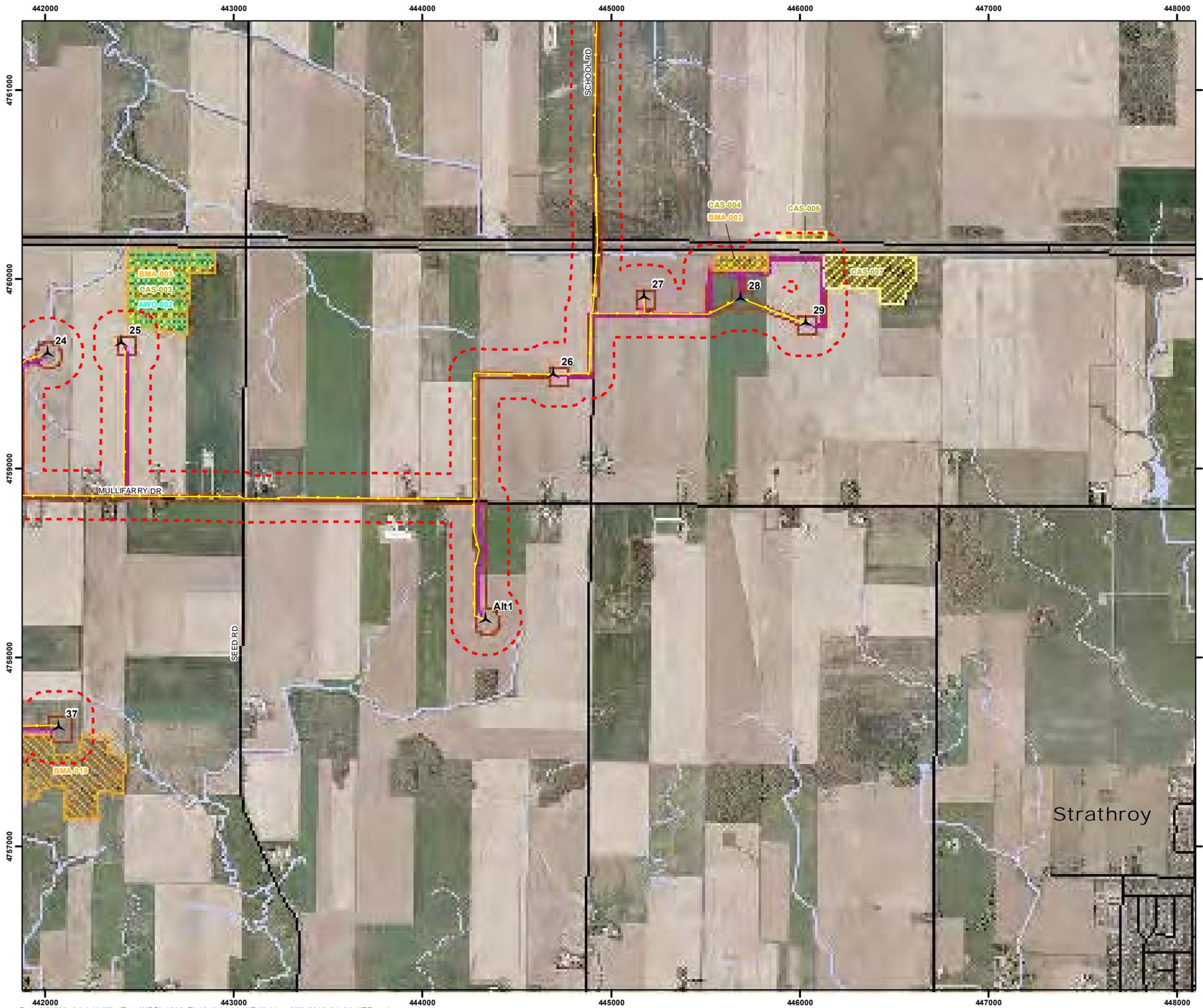
Project: 1230 Date: April 9, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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0 200 400 600 800 1,000 Metres

N

Figure 19

Adelaide Wind Energy Centre Wildlife Habitat - Southeast



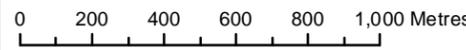
- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Amphibian Breeding Habitat - Woodland (AWO)
 - Bat Maternity Colony (BMA)
 - Carey's Sedge (CAS)
 - Yellow Stargrass (YSG)

Strathroy



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Project: 1230 Date: April 4, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")
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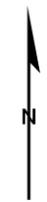
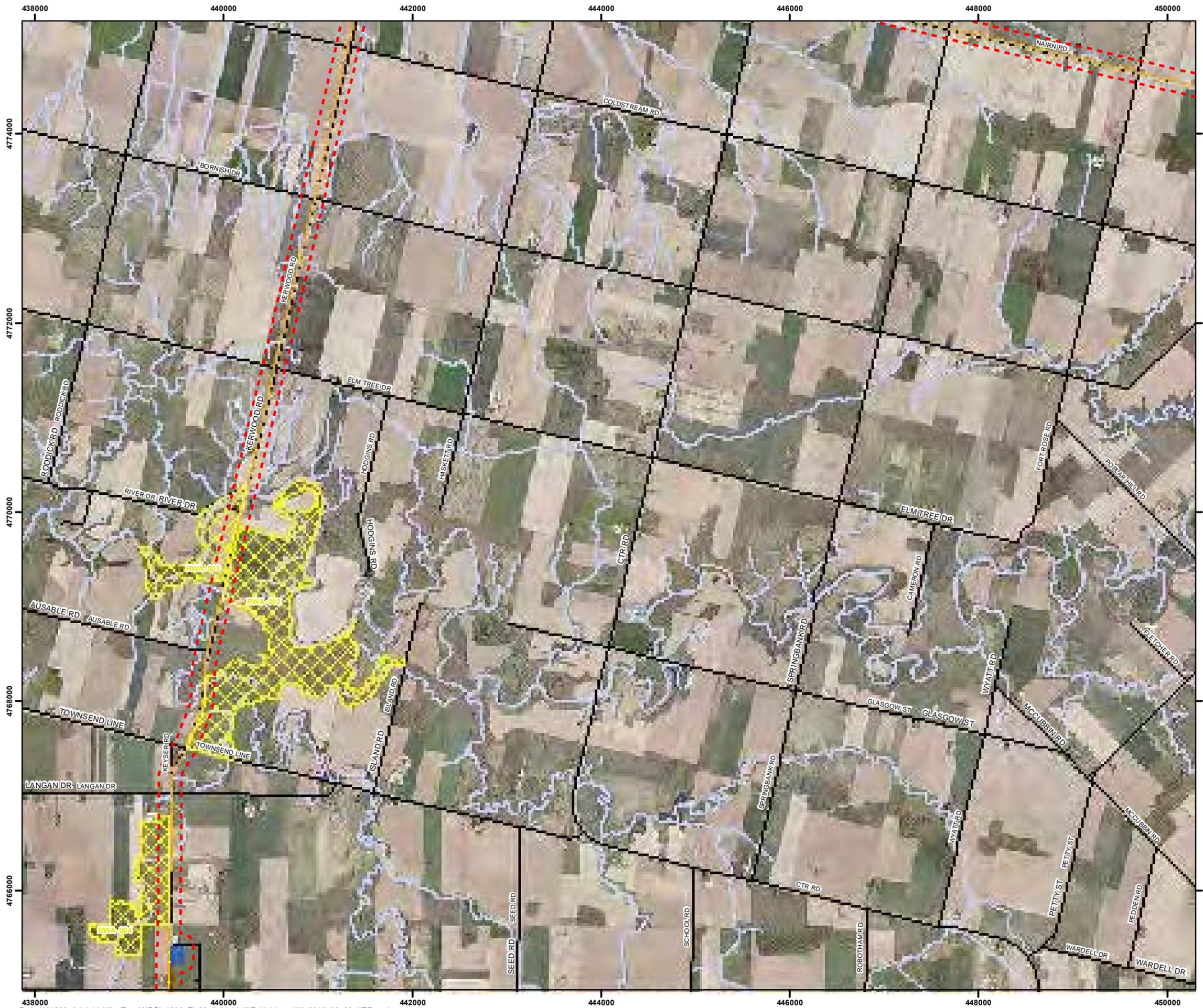


Figure 20

Adelaide Wind Energy Centre Wildlife Habitat - Kerwood T-Line



- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Raptor Wintering Area (RWA)



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Project: 1230 Date: January 27, 2012	NAD83 - UTM Zone 17 Scale: 1:40,000 (11x17")	

Figure 21

Adelaide Wind Energy Centre Wildlife Habitat - Nairn T-Line



- Legend**
- Project Area (120m Buffer)
 - Project Location
 - Turbine
 - Point of Common Coupling (PCC)
 - Access Road
 - Collector System
 - Transmission Line
 - Staging Area
 - Interconnection Facilities
 - Substation
 - Existing Transmission Line
 - Railroad
 - Highway
 - Primary Road
 - Secondary Road
 - Permanent Watercourse
 - Intermittent Watercourse
 - Waterbody
 - Raptor Wintering Area (RWA)



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Project: 1230 Date: April, 2012	NAD83 - UTM Zone 17 Scale: 1:40,000 (11x17")
0 500 1,000 1,500 2,000 Metres	

6.0 Description of the Proposed Undertaking

In accordance with the Renewable Energy Approval (REA), the presence of significant natural features within the Adelaide Wind Energy Centre project area has been reviewed by NRSI biologists. Based on natural features, vegetation communities, and wildlife habitat present within the project area, summarized in previous sections, NRSI biologists have examined the potential for this project impact the surrounding features. NRSI has used the detailed records review, site investigation, and evaluation of significance to determine the environmental significance of each of these potentially significant features, using provincially accepted evaluation criteria outlined in the Natural Heritage Reference Manual (OMNR 2011a), Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000), and Significant Wildlife Habitat Ecoregion 7E Schedule (OMNR 2011b).

Additional information relating to the development of this project, including detailed descriptions of the construction activities, have been provided in the Construction Plan Report, prepared by GL-Garrad Hassan under separate cover. This document provides additional construction details and potential environmental impacts associated with the construction of the Adelaide Wind Energy Centre. The specific environmental impacts relating to the natural heritage features and wildlife habitats have been discussed in detail within the following sections.

- Table 6 provides a summary of construction phase activities and the potential negative environmental effects
- Table 9 provides a summary of significant natural features within 120m, potential negative environmental impacts to the features and mitigation measures applied to address negative impacts
- Table 11 provides a summary of potential effects and mitigation measures for generalized candidate significant wildlife habitat during the construction and decommissioning phases
- Table 13 provides a summary of construction phase mitigation measures that will be implemented to address negative environmental impacts to significant and provincially significant natural features.

6.1 Site Preparation and Servicing

Several site preparation activities will be required at the Adelaide Wind Energy Centre in advance of specific construction activities. These tasks largely include activities associated with clearing and leveling of the project location. Potential vegetation

removal and grading activities associated with the development of the this project have been considered in Table 5 below.

Table 5. Summary of Site Preparation and Servicing Activities and Potential Negative Environmental Effects overlapping, and within 120m, of the Adelaide Wind Energy Centre

Project Activity	Extent of Effect	Potential Negative Effects
Vegetation Removal (Shoreline/Riparian Habitat)	None Expected	N/A
Vegetation Removal (Wetland Habitat)	None Expected	N/A
Vegetation Removal (Upland Habitat)	<p>Vegetation removal may occur within the project area within hedgerows and other non-significant features. No vegetation removal is expected to occur within features that have been identified as significant.</p> <p>For the purposes of this report, NRSI assumes that no specific vegetation will be removed, however given the close proximity of the project location to several significant features, accidental damage to limbs and/or root zones may occur and has been addressed within this EIS.</p> <p>Other areas of upland vegetation clearing will be limited to hedgerow crossings which will occur perpendicular to the hedgerow orientation.</p>	<ul style="list-style-type: none"> • Loss of vegetation and wildlife habitat • Loss of natural linkages and corridors for animal movement • Disturbance of wildlife species
Grading	Minimal grading is expected to occur within the project area.	<ul style="list-style-type: none"> • Increased erosion, sedimentation and turbidity • Changes in natural drainage and altered surface runoff • Changes in soil moisture • Disturbance of wildlife species

6.2 Construction

The construction phase of the Adelaide Wind Energy Centre will involve the installation of up to 38 operational wind energy generating turbines, as well as all supporting infrastructure, such as access roads, electrical cabling, transmission lines, and associated buildings. The details of these construction activities, and potential negative effects that may be associated with each activity, have been outlined in Table 6 below.

Table 6. Summary of Construction Phase Activities and Potential Negative Environmental Effects overlapping, and within 120m, of the Adelaide Wind Energy Centre

Project Activity	Extent of Effect	Potential Negative Effects
Building Construction	Three 'buildings' will be associated with the Adelaide Wind Energy Centre. These include the substation, switchyard, and point of interconnection.	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Water contamination by oils, gasoline, grease, and other materials • Increase in impervious surfaces and increased surface run-Off • Temporary noise, and potential avoidance, disturbance of wildlife species
Turbine Erection	<p>A total of 38 operational turbines will be installed as part of the Adelaide Wind Energy Centre.</p> <p>As part of the turbine erection, laydown areas and crane pads will be placed around the base of the turbine. Within this area, the ground will be leveled.</p> <p>The crane pads, measuring approximately 15x35m, will require the removal of 600mm of topsoil and addition of clean, compacted, gravel.</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Water contamination by oils, gasoline, grease, and other materials • Increase in impervious surfaces and increased surface run-Off • Temporary noise, and potential avoidance, disturbance of wildlife species
Roads – Water Crossings	<p>A total of 18 water body crossing locations have been identified as part of the Adelaide Wind Energy Centre.</p> <p>Of these, 7 represent crossings with overhead cabling lines, which are expected to have little, if any, direct impact on water features.</p> <p>The remaining 11 locations will be crossed by underground cabling, either through horizontal directional drilling or through open cut burying in dry conditions and/or following appropriate in-water guidelines.</p> <p>No new access road crossings of water bodies are proposed.</p>	<ul style="list-style-type: none"> • Changes in stream alignment or flow regimes • Increased erosion, sedimentation, and turbidity • Loss of riparian vegetation • Interruption of a linkage along a watercourse • Attraction of wildlife to roadsides or roads • Barriers to wildlife movement • Temporary noise, and potential avoidance, disturbance of wildlife species
Roads - Paving	<p>Access roads will be constructed to be 11m wide during the construction phase to allow for large cranes. After construction, these roads will be reduced to a final post-construction width of 6m.</p> <p>Access road construction will include clearing top-soil to a depth of 300-600mm. Roads will be</p>	<ul style="list-style-type: none"> • Increased surface runoff and reduced infiltration • Increased erosion, sedimentation, and turbidity • Loss of wildlife habitat • Barriers to wildlife movement • Increased wildlife mortality due to vehicle collisions

Project Activity	Extent of Effect	Potential Negative Effects
	topped with clean type 'A' or Type 'B' gravel.	
Underground Cabling – Open Cut	<p>Most of the underground cabling within the project area will be installed by way of open cut trenches. This will include all cabling on private land (with the exception of the 1 location of directional drilling), and all of the roadside collector system.</p> <p>Trenches will be approximately 0.9m deep, and all excavated soil will be retained and used to fill the trench after cables have been laid.</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Temporary noise, and potential avoidance, disturbance of wildlife species
Underground Cabling – Horizontal Direction Drilling	<p>A single location of horizontal directional drilling will occur within the Adelaide Wind Energy Centre (under feature WOD-002).</p> <p>This directional drilling will occur south of T7 and will be used to extend cabling beneath a water body and woodland without direct impact.</p> <p>Upon finalization of water body crossing details, it is possible that additional locations of directional drilling may be required at the request of ABCA and/or SCRCA</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Water contamination by chemical spill • Temporary noise, and potential avoidance, disturbance of wildlife species
Overhead Cabling	<p>Overhead cabling will be proposed along the length of the transmission line, extending from the Adelaide substation, to the switchyard along Kerwood Road, then along Elginfield and Nairn Roads to the Point of Interconnection.</p> <p>Overhead cabling will either be mounted on existing or new poles that will be between 18-30m tall. Poles will be installed using augered holes that are approximately 1-2m deep.</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Loss of upland vegetation • Direct wildlife (avian) mortality due collisions with lines • Temporary noise, and potential avoidance, disturbance of wildlife species

6.3 Operation

The operational phase of the Adelaide Wind Energy Centre will include the operation of up to 38 wind energy generating turbines, as well as all associated regular maintenance activities. The potential negative effects of this facility during the operational phase of the project have been summarized in Table 7 below.

Table 7. Summary of Operational Phase Activities and Potential Negative Environmental Effects within 120m of the Adelaide Wind Energy Centre

Project Activity	Extent of Effect	Potential Negative Effects
Groundwater and Surfacewater Taking	None Expected	N/A
Application of Herbicides	Application of herbicides may occur within the project area to help control vegetation growth beneath turbines and/or along above ground cabling routes (i.e. transmission lines)	<ul style="list-style-type: none"> • Loss of natural vegetation • Contamination of wetlands, woodlands, water bodies, or other wildlife habitats, • Direct mortality to local wildlife
Turbine Operation	The Adelaide Wind Energy Centre will consist of up to 38 total operational wind turbines.	<ul style="list-style-type: none"> • Disturbance to wildlife species • Direct mortality to avian and bat species (bird and bat mortality is addressed in the Environmental Effects Monitoring Plan of the Design and Operations Report and is not discussed further in this EIS)
Turbine Maintenance	<p>Regular maintenance will occur at all of the operational turbines at the Adelaide Wind Energy Centre.</p> <p>In addition to regularly scheduled maintenance, occasional unscheduled maintenance activities may be required.</p>	<ul style="list-style-type: none"> • Water contamination by oils, gasoline, grease, and other materials • Disturbance of wildlife species

6.4 Decommissioning

The decommissioning phase of the Adelaide Wind Energy Centre will include the dismantling and removal of the project infrastructure associated with this project. The Details of this project phase, along with potential negative effects, have been provided in Table 8 below.

Table 8. Summary of Decommissioning Phase Activities and Potential Negative Environmental Effects within 120m of the Adelaide Wind Energy Centre

Project Activity	Extent of Effect	Potential Negative Effects
Building Removal	Three 'buildings' will be associated with the Adelaide Wind Energy Centre. These include the substation, switchyard, and point of interconnection.	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Water contamination by oils, gasoline, grease, and other materials • Disturbance of wildlife species
Turbine Removal	<p>Up to 38 operational turbines will be removed as part of the decommissioning plan for the Adelaide Wind Energy Centre.</p> <p>As part of the turbine removal, laydown areas and crane pads will be placed around the base of the turbine. Within this area, the ground will be leveled.</p> <p>Following the removal of turbines, the land is expected to return to land use present prior to turbine installation. In all cases this will be agricultural activities.</p> <p>Removal of turbine components will also include the removal of the top 3 feet of the underground foundation.</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Water contamination by oils, gasoline, grease, and other materials • Disturbance of wildlife species
Underground Cabling Removal – Open Cut	<p>Most of the underground cabling within the project area will be installed by way of open cut trenches. This will include all cabling on private land (with the exception of the 1 location of directional drilling), and all of the roadside collector system.</p> <p>Underground electrical lines will be cut, the ends buried to 1 m below grade, and left in place</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Disturbance of wildlife species
Underground Cabling Removal – Horizontal Direction Drilling	<p>A single location of horizontal directional drilling will occur within the Adelaide Wind Energy Centre. (under feature WOD-002)</p> <p>This directional drilling will occur south of T7 and will be used to extend cabling beneath a water body and woodland without direct impact.</p> <p>After the duration of the project, this cable will be left in place to avoid the potential for additional, and unnecessary, impacts</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Disturbance of wildlife species

Project Activity	Extent of Effect	Potential Negative Effects
	associated with the removal of this cable.	
Overhead Cabling	<p>As part of this project, overhead cabling will be installed along the length of the transmission line, extending from the Adelaide substation, to the switchyard along Kerwood Road, then along Elginfield and Nairn Roads to the Point of Interconnection.</p> <p>Upon decommissioning of the project, these lines will be dismantled and removed. All poles and cabling solely associated with this project will be removed at the end of the project life.</p>	<ul style="list-style-type: none"> • Increased erosion, sedimentation, and turbidity • Disturbance of wildlife species

6.5 Approach to Impact Assessment

For the purposes of this report, the analysis of potential impacts has been divided into the different classifications of significant natural features, as identified by the evaluation of significance section of this report, with significant wildlife habitat further subdivided based on the distance to project location, type of wildlife habitat, and methods of determining significance, as follows:

- Significant Natural Features
- Significant Woodlands
- Significant Wetlands
- Significant Valleylands
- Significant Wildlife Habitat (SWH)
 - Project Location within SWH
 - Project Location within 120m of Confirmed SWH
 - Project Location within 120m of SWH Treated as Significant
 - Generalized Impacts to Wildlife Habitat

Potential impacts on each of the significant features or wildlife habitats within the Adelaide project area have been discussed collectively based on their respective distance to the closest project location that has the potential to have an operational impact. Given the potential impacts at various distances to project location, NRSI has grouped groups of features or wildlife habitats into 3 broad distance categories, overlapping, 0-30m, and 30-120m, from the project location. The impacts within each of these distance categories are expected to be relatively consistent within the given distance, with slightly different impacts (and related mitigation measures) associated

with each distance category. These distance categories have been chosen as they each have the potential for different types of impacts on wildlife habitat and natural features. Although there is expected to be a gradual increase in potential impacts as development occurs closer to natural features or wildlife habitat, a distance of 30m has been chosen as a suitable division between specific types of impacts. For areas where the project location is within 30m of a natural feature or significant wildlife habitat, there is increased potential for impacts relating to sedimentation and erosion, visual and noise disturbance to wildlife, impacts for accidental spills, and other localized impacts.

7.0 Environmental Impact Study

In accordance with the Renewable Energy Approval (REA), the presence of significant natural features within the Adelaide Wind Energy Centre project area has been reviewed by NRSI biologists. Based on natural features, vegetation communities, and wildlife species present within the project area, summarized in previous sections, NRSI biologists have evaluated the project area for potentially significant natural areas and habitats. NRSI has used the detailed records review to evaluate the environmental significance of each of these potentially significant features, using evaluation criteria outlined in the Natural Heritage Assessment Guide (OMNR 2011) and Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000).

Each of these significant natural features are discussed in more detail below, including potential impacts and proposed mitigation measures, types are described further below. Additional consideration has been given to mitigation measures and monitoring programs for this project in the Environmental Effects Monitoring Plan, which has been prepared under separate cover by GL-Garrad Hassan. This report summarizes the potential environmental effects of the project and details the monitoring programs that will be implemented during the various phases of the Adelaide Wind Energy Centre.

- For significant woodlands, wetlands and valleylands, Table 9 provides a summary of performance objectives, mitigation measures to assist in achieving the performance objectives and a program for monitoring the negative environmental effects along with a contingency plan to be implemented if any mitigation measures fail.
- For significant wildlife habitats, Table 10 provides a summary of summary of performance objectives, mitigation measures to assist in achieving the performance objectives and a program for monitoring the negative environmental effects along with a contingency plan to be implemented if any mitigation measures fail.
- Table 14 provides a summary of the post-construction monitoring commitments

7.1 Significant Woodlands, Wetlands, and Valleylands

NRSI biologists have identified several significant woodlands, wetlands, and valleylands within 120m of the Adelaide Wind Energy Centre project location. Potential negative impacts and proposed mitigation measures for each of these features has been detailed in Table 9 below. This table discusses each of these three natural feature types (woodland, wetland, and valleyland) based on the general distances that they are found

from the project location. As described above, for purposes of impact assessment and recommended mitigation measures, the general distance categories have been established as overlapping, 0-30m, and 30-120m from the project location.

Table 9. Summary of Significant Natural Features and Wildlife Habitat within 120m of the Adelaide Wind Energy Centre

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
WOD-002	Overlapping (Horizontal Directional Drilling under feature)	<ul style="list-style-type: none"> Accidental damage to vegetation, including root zones 	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to species to be retained, Entry and exit pits will be located at least 30m from the dripline of this woodland, Directional drilling will be a minimum of 5 feet below the surface, which will be maintained for the entire length below the feature.. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize direct impacts on vegetation communities, with emphasis on protecting root zones <p>No monitoring or contingency plan required.</p>
	All other infrastructure >0.1m and addressed below as 0-30m	<ul style="list-style-type: none"> Spills (i.e. drilling frac-out) 	<ul style="list-style-type: none"> Appropriate geotechnical studies will be completed to ensure accurate information on substrate conditions is available, Develop a spill response plan and train staff on appropriate procedures in the event that a spill or 'frac-out' occurs Keep emergency spill kits on site. Dispose of waste material by authorized and approved offsite vendors. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impacts to woodland integrity and diversity. <p>No monitoring or contingency plan required</p>
WOD-001 WOD-002 WOD-003 WOD-004 WOD-005 WOD-006 WOD-008 WOD-009 WOD-010 WOD-011 WOD-013 WOD-014 WOD-015 WOD-016 WOD-020 WOD-026	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation, including limbs and root zones 	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to species to be retained. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, <p>Monitoring:</p> <ul style="list-style-type: none"> None required <p>Contingency Measure:</p> <ul style="list-style-type: none"> Any tree limbs or roots that are accidentally damaged by construction activities will be pruned using proper arboricultural techniques.
		<ul style="list-style-type: none"> Sedimentation and erosion 	<ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) 	<p>Performance Objective</p> <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
WOD-027 WOD-033 WOD-035 WOD-037 WOD-040 WOD-041 WOD-042 WOD-044 WOD-045 WOD-046 WOD-047 WOD-049 WOD-050 WOD-051 WOD-052 WOD-053 WOD-055 WOD-057			around the construction area,	Monitoring: <ul style="list-style-type: none"> None required Contingency Measure: <ul style="list-style-type: none"> Maintain or restore vegetated buffers, including riparian zones
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Develop a spill response plan and train staff on appropriate procedures, Keep emergency spill kits on site 	Performance Objective: <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats Monitoring: <ul style="list-style-type: none"> None required Contingency Measure: <ul style="list-style-type: none"> none required
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	Performance Objective: <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition No monitoring or contingency plan required
WOD-004 WOD-009 WOD-010 WOD-012 WOD-013 WOD-016 WOD-017 WOD-019 WOD-026 WOD-036 WOD-038 WOD-043 WOD-048 WOD-056 WOD-057	30-120m	<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Develop a spill response plan and train staff on appropriate procedures. Keep emergency spill kits on site. Dispose of waste material by authorized and approved offsite vendors. 	Performance Objective: <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats Monitoring: <ul style="list-style-type: none"> None required Contingency Measure: <ul style="list-style-type: none"> None required
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	Performance Objective: <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition No monitoring or contingency plan required

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
WET-037 WET-042 WET-049	0-30m	<ul style="list-style-type: none"> Sedimentation and erosion 	<ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the construction area. This will also serve to demarcate boundaries to keep workers and equipment out of these features 	<p>Performance Objectives:</p> <ul style="list-style-type: none"> Maintain vegetated buffers, including riparian zones Minimize impacts to natural features and associated wildlife habitats <p>No monitoring or contingency plan required:</p> <ul style="list-style-type: none"> Restore vegetated buffers, including riparian zones if damaged
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Develop a spill response plan and train staff on appropriate procedures. Keep emergency spill kits on site. Dispose of waste material by authorized and approved offsite vendors. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats <p>No monitoring or contingency plan required</p>
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition <p>No monitoring or contingency plan required</p>
		<ul style="list-style-type: none"> Changes to surface water hydrology 	<ul style="list-style-type: none"> Limit changes in land contours, Maintain streams and timing and quantity of flow, 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Maintain existing surface water flow patterns <p>No monitoring or contingency plan required.</p>
WET-001a WET-034	30-120m	<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Develop a spill response plan and train staff on appropriate procedures. Keep emergency spill kits on site. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats <p>No monitoring or contingency plan required</p>

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
			<ul style="list-style-type: none"> Dispose of waste material by authorized and approved offsite vendors. 	
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition <p>No monitoring or contingency plan required</p>
VAL-020	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation, including limbs and root zones 	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to species to be retained, No vegetation removal will occur in rare plant communities or on sensitive landforms. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, <p>No monitoring required</p> <p>Contingency Plan:</p> <ul style="list-style-type: none"> Any tree limbs or roots that are accidentally damaged by construction activities will be pruned using proper arboricultural techniques.
		<ul style="list-style-type: none"> Sedimentation and erosion 	<ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the construction area, 	<p>Performance Objective</p> <ul style="list-style-type: none"> Maintain vegetated buffers, including riparian zones Minimize impacts to natural features and associated wildlife habitats <p>No monitoring plan required</p> <p>Contingency Measure:</p> <ul style="list-style-type: none"> Restore vegetated buffers, including riparian zones, if accidentally damaged
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Develop a spill response plan and train staff on appropriate procedures. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats <p>No monitoring or contingency plan required</p>

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
			<ul style="list-style-type: none"> Keep emergency spill kits on site. Dispose of waste material by authorized and approved offsite vendors. 	
		<ul style="list-style-type: none"> Changes to surface water hydrology 	<ul style="list-style-type: none"> Limit changes in land contours, Maintain streams and timing and quantity of flow, 	Performance Objective: <ul style="list-style-type: none"> Maintain streams and timing and quantity of flow Maintain existing surface water flow patterns No monitoring or contingency plan required
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	Performance Objective: <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition No monitoring or contingency plan required
VAL-048	30-120m	<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. 	Performance Objective: <ul style="list-style-type: none"> Minimize impacts to natural features and associated wildlife habitats No monitoring or contingency plan required
		<ul style="list-style-type: none"> Changes to surface water hydrology 	<ul style="list-style-type: none"> Limit changes in land contours, Maintain streams and timing and quantity of flow 	Performance Objective: <ul style="list-style-type: none"> Maintain streams and timing and quantity of flow Maintain existing surface water flow patterns No monitoring or contingency plan required
		<ul style="list-style-type: none"> Changes in soil moisture and compaction 	<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible, Minimize paved surfaces and design roads to promote infiltration, 	Performance Objective: <ul style="list-style-type: none"> Minimize impact to soil moisture regime and vegetation species composition No monitoring or contingency plan required

7.2 Significant Wildlife Habitat

NRSI biologists have completed comprehensive site investigations and evaluations of significance of all potential wildlife habitats within the Adelaide Wind Energy Centre. These studies have determined that several significant, or presumed significant, wildlife habitats are present within 120m of the project location. In accordance with the REA Regulation, each of these features within 120m of a project component expected to have an operational impact, as per Appendix D of the Natural Heritage Assessment Guide (OMNR 2011a), has been specifically addressed below. Other significant, or presumed significant, wildlife habitats present within 120m of project components that will not have an operational impact on the habitat have been collectively addressed as part of the generalized mitigation measures in Section 7.3.4.

7.2.1 Project Location within Wildlife Habitat

A single significant wildlife habitat was identified as overlapping the project location. However, this habitat, BMA-015 (Bat Maternity Colony), will be crossed by underground cabling installed using horizontal directional drilling. As a result, this wildlife habitat will be considered to be located outside the project location and is not within 120m of a project component with the potential for operational impacts. As such, this feature has been further considered as generalized wildlife habitat and addressed in Section 7.3.4.

No other significant wildlife habitats are found overlapping with the Adelaide project location.

7.2.2 Project Location within 120m of Confirmed Significant Habitat

Through the detailed surveys that have been conducted as part of the evaluation of significance, NRSI biologists have confirmed the presence of 3 significant wildlife habitats, all bat maternity colonies, within 120m of project components that may have operational impacts on this wildlife habitat type. Each of these habitats, potential negative effects, and mitigation measures to be implemented, is discussed in Table 10 below.

Table 10. Summary of Significant Natural Features and Wildlife Habitat within 120m of the Adelaide Wind Energy Centre

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
BMA-001 BMA-002 BMA-006 Bat Maternity Colony	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation, including limbs and root zones 	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to potentially significant bat roosting trees 	Objective <ul style="list-style-type: none"> Protection of bat roosting habitat No monitoring or contingency plan required.
		<ul style="list-style-type: none"> Noise disturbance and/or avoidance behaviour 	<ul style="list-style-type: none"> Impacts are expected to be minimal, and temporary, in nature, and no specific mitigation measures have been determined necessary. 	Objective <ul style="list-style-type: none"> Avoid disturbance of locally roosting bat species Determine if local bat populations are adversely impacted by the presence of operational turbines Monitoring <ul style="list-style-type: none"> Conduct post-construction acoustic monitoring of these features for 3 years after construction, following pre-construction methods Contingency Plan <ul style="list-style-type: none"> If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
BMA-001 BMA-002 Bat Maternity Colony	30-120m	<ul style="list-style-type: none"> Noise disturbance and/or avoidance behaviour 	<ul style="list-style-type: none"> Construction activities will not occur within 30m of this habitat. 	<p>Objective</p> <ul style="list-style-type: none"> Avoid disturbance of locally roosting bat species Determine if local bat populations are adversely impacted by the presence of operational turbines <p>Monitoring</p> <ul style="list-style-type: none"> Features BMA-001, and BMA-002 will be monitored for 3 years post-construction, following pre-construction methods as indicated in the row above. <p>Contingency Plan</p> <ul style="list-style-type: none"> If permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.

7.2.3 Project Location within 120m of Wildlife Habitat Treated as Significant

In addition to wildlife habitats that have been confirmed to be significant through the completion of the evaluation of significance, NRSI biologists have also identified several other wildlife habitats that could be considered to be significant, but require additional studies. For the purpose of this report, these habitats will be treated as significant with a commitment for additional pre-construction surveys to be undertaken during the appropriate season prior to any construction activities.

Wildlife habitats that have been treated as significant for the purposes of this EIS include 23 specific habitats, representing 5 different wildlife habitat types. These specific habitats, described in Table 11, include 3 raptor wintering areas, 7 bat maternity colonies, and 4 amphibian breeding habitats – woodland, and 9 habitats for two different plant species of conservation concern. Following the completion of the additional pre-construction surveys (described below), any feature determined to be significant, based on a comparison of data to provincial standards, will require the mitigation measures and contingency plans described below to be applied to that specific feature.

Table 11. Potential Impacts, Mitigation Measures, and Survey Methods for Wildlife Habitats that have been Presumed Significant

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
RWA-002 RWA-003 RWA-004 Raptor Wintering Area	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation, including tree limbs Noise disturbance and/or avoidance behaviour 	<p>Thirty minute visual raptor surveys focused on identifying raptors along woodland/field edge habitat. Surveys will be conducted on 3 visits in January 2012, with another 3 visits occurring in February 2012 (depending on January results).</p> <p>Detailed methods included in EOS Report</p>	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental vegetation damage within raptor wintering areas Use underground cabling or single-wooded overhead poles, wherever possible Utilize a lighting scheme that will minimize risk to bird collisions, while fulfilling Transport Canada requirements 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of raptor wintering area habitat Limit disturbance to raptors overwintering within the project area. <p>Monitoring:</p> <ul style="list-style-type: none"> Conduct post-construction surveys of this wildlife habitat for 1 year after construction, following pre-construction methods. If visual surveys indicate that there is an avoidance effect an additional 2 years of post-construction acoustic monitoring will occur following pre-construction methods. The need to conduct an addition 2 years of monitoring will be determined in consultation with MNR. <p>Contingency Measures:</p> <ul style="list-style-type: none"> MNR will be consulted to determine contingency measures
BMA-011 BMA-012 BMA-014 BMA-016 BMA-017	within 120m of a turbine	<ul style="list-style-type: none"> Accidental damage to vegetation, including tree limbs 	Surveys will be in accordance with Bats and Bat Habitats (OMNR 2011).	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to potentially significant bat roosting trees 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of bat roosting habitat Avoid disturbance of locally

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
BMA-019 BMA-020 Bat Maternity Colony		<ul style="list-style-type: none"> Noise disturbance and/or avoidance behaviour 	<p>A single 1.5hr visual point count surveys at each of up to 10 snags for woodlands <10ha, and an additional snag for each additional hectare of size (to a maximum of 35).</p> <p>Surveys will be conducted during the month of June, on nights with suitable weather conditions.</p> <p>Site specific bat surveys are dependent on receiving site access for each of these features. If site access is not available, possible alternative methods will be discussed with the MNR.</p> <p>Detailed Survey methods are provided in the EOS Report</p>	<ul style="list-style-type: none"> Impacts are expected to be minimal, and temporary, in nature, and no specific mitigation measures have been determined necessary. Propose a lighting scheme to that will minimize potential risk to bat collisions while fulfilling Transport Canada requirements 	<p>roosting bat species</p> <p>Monitoring:</p> <ul style="list-style-type: none"> Features that are deemed significant based on results of pre-construction monitoring will receive post-construction monitoring for 3 years, following pre-construction methods, for all features deemed significant. <p>Contingency Measure:</p> <ul style="list-style-type: none"> If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.
AWO-004 AWO-005 Amphibian Breeding Habitat (Woodland)	0-30m	<ul style="list-style-type: none"> Noise disturbance and/or avoidance behaviour Accidental intrusion into habitat during 	<p>Two daytime visits to conduct salamander egg mass surveys within areas of standing water. The first visit will occur after the first warm rain in March with the second visit occurring in conjunction with the first</p>	<ul style="list-style-type: none"> Impacts are expected to be minimal, and temporary, in nature, and no specific mitigation measures have been determined necessary. Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Direct habitat protection and minimize amphibian mortality <p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant based on results of pre-construction

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
		<p>construction</p> <ul style="list-style-type: none"> Sedimentation and erosion Changes in surface hydrology Direct mortality of dispersing amphibians along access roads 	<p>call survey to be completed in April (see below).</p> <p>Three (3) evening amphibian call surveys (depending on site access), occurring once in each of April, May and June. Each survey will last 3 minutes, following accepted Marsh Monitoring Program protocol.</p> <p>During each survey, biologists will record species and calling abundance codes, along with other appropriate information (date, time, weather, etc.), as well as identify any amphibian movement corridors.</p> <p>Detailed survey protocols are provided in EOS Report</p>	<p>damage to potentially significant amphibian breeding habitat</p> <ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the construction area Limit changes in land contours, Maintain streams and timing and quantity of flow Post speed limits along construction access roads, and maintain signage during the operational phase of the project 	<p>surveys the following monitoring will be completed: post-construction amphibian call surveys for 1 year to assess any potential changes in amphibian breeding populations or species distribution.</p> <ul style="list-style-type: none"> Based on the results of the 1st year post-construction monitoring, the need for an additional monitoring (up to 2 years) will be determined in consultation with MNR. Conduct post-construction visual assessments of access roads to look for amphibian mortalities to determine if amphibian populations are being impacted by increased traffic associated with access roads. <p>Contingency Measure:</p> <ul style="list-style-type: none"> If the results of the monitoring indicate a feature is no longer significant, the MNR will be consulted to discuss the need (if any) for additional post-construction surveys and mitigation.

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
AWO-001 AWO-002 Amphibian breeding habitat (Woodland)	30-120m	Noise disturbance and/or avoidance behaviour	See pre-construction survey methods above	<ul style="list-style-type: none"> Impacts are expected to be minimal, and temporary, in nature, and no specific mitigation measures have been determined necessary. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Direct habitat protection and minimize amphibian mortality <p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant based on results of pre-construction surveys the following monitoring will be completed: post-construction amphibian call surveys for 1 year to assess any potential changes in amphibian breeding populations or species distribution. Based on the results of the 1st year post-construction monitoring, the need for an additional monitoring (up to 2 years) will be determined in consultation with MNR. Conduct post-construction visual assessments of access roads to look for amphibian mortalities to determine if amphibian populations are being impacted by increased traffic associated with access roads. <p>Contingency Measure:</p>
		Road barrier effects on movement from breeding to summer habitat		<ul style="list-style-type: none"> Where amphibian movement corridor is identified as part of the pre-construction survey, an amphibian-friendly culvert will be installed where proposed access roads could act as a barrier to amphibian movement 	
		Direct mortality of dispersing amphibians along access roads		<ul style="list-style-type: none"> Post speed limits along construction access roads, and maintain signage during the operational phase of the project 	
		<ul style="list-style-type: none"> Accidental intrusion into habitat during construction 		<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to potentially significant amphibian breeding habitat 	

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
					<ul style="list-style-type: none"> If the results of the monitoring indicate a feature is no longer significant, the MNR will be consulted to discuss the need (if any) for additional post-construction surveys and mitigation.
CAS-001 CAS-002 CAS-004 CAS-005 CAS-007 Carey's Sedge Habitat	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation 	Single site visit to complete standardized area searches of forest habitat.	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to potentially significant Carey's Sedge Habitat. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of habitat for Carey's Sedge Minimize impacts on current species composition, Reduce the potential spread of non-native or invasive species. <p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant following pre-construction survey results, the following monitoring will be implemented: Standardized transects will be repeated in years 1, 3 and 5 of operation during the appropriate bloom period <p>Contingency Measure</p> <ul style="list-style-type: none"> If negative impacts are noted during post-construction surveys, the MNR will be consulted to determine appropriate contingency measures.
		<ul style="list-style-type: none"> Sedimentation and erosion 		<ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the construction area, 	
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) 		<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. 	
		<ul style="list-style-type: none"> Increased species competition through introduction of invasive species 		<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to minimize seed transfer into suitable habitat Regularly clean vehicles and equipment Minimize the use of vehicles in off-road and non-agricultural habitats where invasive or non-native species are concentrated. 	

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
CAS-002 CAS-003 CAS-004 CAS-006 Carey's Sedge Habitat	30-120m	Spills (i.e. oil, gasoline, grease, etc.)	Same as Carey's Sedge Habitat methods described above.	All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature.	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of habitat for Carey's Sedge Minimize impacts on current species composition, Reduce the potential spread of non-native or invasive species. <p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant following pre-construction survey results, the following monitoring will be implemented: Standardized transects will be repeated in years 1, 3 and 5 of operation during the appropriate bloom period <p>Contingency Measure</p> <ul style="list-style-type: none"> If negative impacts are noted during post-construction surveys, the MNR will be consulted to determine appropriate contingency measures.
		<ul style="list-style-type: none"> Increased species competition through introduction of invasive species 		<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to minimize seed transfer into suitable habitat Regularly clean vehicles and equipment Minimize the use of vehicles in off-road and non-agricultural habitats where invasive or non-native species are concentrated 	
YSG-001 Yellow Stargrass Habitat	0-30m	<ul style="list-style-type: none"> Accidental damage to vegetation 	Single site visit to complete standardized area searches of meadow habitat.	<ul style="list-style-type: none"> Clearly delineate work area using erosion fencing, or similar barrier, to avoid accidental damage to potentially significant Yellow Stargrass Habitat 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of habitat for Yellow Stargrass Minimize impacts on current species composition, Reduce the potential spread of non-native or invasive species.
		<ul style="list-style-type: none"> Sedimentation and erosion 		<ul style="list-style-type: none"> Implement a sediment and erosion control plan, Install, monitor, and maintain erosion and sediment control 	

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
		<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) Increased species competition through introduction of invasive species 		<p>measures (i.e. silt fences) around the construction area,</p> <ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Clearly delineate work area using erosion fencing, or similar barrier, to minimize seed transfer into suitable habitat Regularly clean vehicles and equipment Minimize the use of vehicles in off-road and non-agricultural habitats where invasive or non-native species are concentrated. 	<p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant following pre-construction survey results, the following monitoring will be implemented: Standardized transects will be repeated in years 1, 3 and 5 of operation during the appropriate bloom period <p>Contingency Measure</p> <ul style="list-style-type: none"> If negative impacts are noted during post-construction surveys, the MNR will be consulted to determine appropriate contingency measures.
YSG-002 Yellow Stargrass Habitat	30-120m	<ul style="list-style-type: none"> Spills (i.e. oil, gasoline, grease, etc.) Increased species competition through introduction of invasive species 	Same as Yellow Stargrass Habitat methods described above.	<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature. Clearly delineate work area using erosion fencing, or similar barrier, to minimize seed transfer into suitable habitat Regularly clean vehicles and equipment Minimize the use of vehicles in off-road and non-agricultural habitats where invasive or non-native species are concentrated. 	<p>Performance Objective:</p> <ul style="list-style-type: none"> Protection of habitat for Yellow Stargrass Minimize impacts on current species composition, Reduce the potential spread of non-native or invasive species. <p>Monitoring:</p> <ul style="list-style-type: none"> For features deemed significant following pre-construction survey results, the following monitoring will be implemented: Standardized transects will be repeated in years 1, 3 and 5 of operation during

Feature ID	Distance to Project Location	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Objectives, Post-Construction Monitoring, and Contingency Plans
					<p>the appropriate bloom period</p> <p>Contingency Measure</p> <ul style="list-style-type: none"> • If negative impacts are noted during post-construction surveys, the MNR will be consulted to determine appropriate contingency measures.

7.2.4 Generalized Impacts to Wildlife Habitat

In addition to the series of wildlife habitats identified above, NRSI biologists have also identified a number of wildlife habitat types that may be present within the Adelaide Wind Energy Centre project area, but are located within 120m of project components that are not expected to have an operational impact on these habitats. In accordance with the Natural Heritage Assessment Guide (OMNR 2011a), potential impacts to these habitats are typically associated with the temporary disturbance of construction activity and can be grouped together as generalized impacts and mitigation measures.

NRSI biologists have reviewed the full suite of wildlife habitats that require generalized consideration, and have compiled a comprehensive list of mitigation measures that will be implemented during the construction and decommissioning phases in Table 12.

Table 12. Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat during the Construction and Decommissioning Phases of the Adelaide Wind Energy Centre

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
Wind Turbine Erection	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> Increased erosion and sedimentation into woodlands, wetlands, and other natural features, Soil compaction 	<ul style="list-style-type: none"> Develop and implement an erosion and sediment control plan, Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body, Maintain erosion control measures for the duration of construction or decommissioning activities, Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body, Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes. 	<ul style="list-style-type: none"> Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, Maintain vegetated buffers, particularly within riparian zones, Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> Clearly post construction speed limits. 	<ul style="list-style-type: none"> Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> Soil or water contamination. 	<ul style="list-style-type: none"> Develop a spill response plan and train staff on appropriate procedures, Keep emergency spill kits on site, Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, Dispose of waste material by authorized and approved offsite vendors. 	<ul style="list-style-type: none"> Minimize impacts to natural features and wildlife habitats, Avoid contamination of water or wetland features
	Dewatering activities (if necessary)	<ul style="list-style-type: none"> Reduced stream flow rate, Increased water temperature. 	<ul style="list-style-type: none"> Control rate and timing of water pumping, Pump from deep wells to infiltration galleries adjacent to water bodies or wetlands, Restrict taking of water during periods of extreme low flow. 	<ul style="list-style-type: none"> Maintain ground and surface water conditions with those near pre-construction conditions

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	Installation of impervious surfaces.	<ul style="list-style-type: none"> • Increase surface run-off, • Changes in surface water drainage. 	<ul style="list-style-type: none"> • Maintain vegetative buffers around water bodies, • Control quantity and quality of stormwater discharge using best management practices, • Minimize grading activities to maintain existing drainage patterns as much as possible. 	<ul style="list-style-type: none"> • Limit disturbances to surface water drainage patterns
Temporary Access Roads, Crane Paths, and Turnaround Areas	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands, wetlands, and other natural features, • Soil compaction 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body, • Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes, • Re-vegetate temporary roads to pre-construction conditions as soon as possible after construction activities are complete. 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (i.e. breeding bird season), wherever possible, • Conduct nest searches if vegetation removal must occur during the breeding bird season (May 1-July 31) • Clearly post construction speed limits. 	<ul style="list-style-type: none"> • Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (i.e. oil,	<ul style="list-style-type: none"> • Soil or water contamination. 	<ul style="list-style-type: none"> • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of water or

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	gasoline, grease, etc.).		<ul style="list-style-type: none"> • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material by authorized and approved offsite vendors. 	wetland features
	Installation of impervious surfaces.	<ul style="list-style-type: none"> • Increase surface run-off, • Changes in surface water drainage. 	<ul style="list-style-type: none"> • Maintain vegetative buffers around water bodies, • Control quantity and quality of stormwater discharge using best management practices, • Minimize grading activities to maintain existing drainage patterns as much as possible. 	<ul style="list-style-type: none"> • Limit disturbances to surface water drainage patterns
Permanent Access Roads	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands, wetlands, and other natural features, • Soil compaction 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body, • Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes. 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (i.e. breeding bird season), wherever possible, • Conduct nest searches if vegetation removal must occur during the breeding bird season (May 1-July 31) • Clearly post construction speed limits. 	<ul style="list-style-type: none"> • Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or	<ul style="list-style-type: none"> • Soil or water 	<ul style="list-style-type: none"> • Develop a spill response plan and train staff on 	<ul style="list-style-type: none"> • Minimize impacts to natural features

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	accidental fluid release (i.e. oil, gasoline, grease, etc.).	contamination.	<p>appropriate procedures,</p> <ul style="list-style-type: none"> • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material by authorized and approved offsite vendors. 	<p>and wildlife habitats,</p> <ul style="list-style-type: none"> • Avoid contamination of water or wetland features
	Installation of impervious surfaces.	<ul style="list-style-type: none"> • Increase surface run-off, • Changes in surface water drainage. 	<ul style="list-style-type: none"> • Maintain vegetative buffers around water bodies, • Control quantity and quality of stormwater discharge using best management practices, • Minimize grading activities to maintain existing drainage patterns as much as possible. 	<ul style="list-style-type: none"> • Limit disturbances to surface water drainage patterns
Overhead Cabling	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands, wetlands, and other natural features, • Soil compaction, • Removal of vegetation within the road right-of-way. 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc. to delineate construction activities within 30m of a wetland, woodland, or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body, • Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes, • For roadside collector routes, vegetation removal (if any) will be kept to a minimum and will be limited to the road right-of-way. 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (i.e. breeding bird season), wherever possible. 	<ul style="list-style-type: none"> • Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> • Soil or water contamination. 	<ul style="list-style-type: none"> • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material by authorized and approved offsite vendors. 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of water or wetland features
Underground Cabling	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands, wetlands, and other natural features. 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Locate all entry and exit pits at least 30m from natural features (i.e. woodlands, wetlands) or water bodies, • Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal, • Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body. 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> • Restore and re-vegetate entry and exit pits to pre-construction conditions as soon as possible after construction. 	<ul style="list-style-type: none"> • Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> • Soil or water contamination. 	<ul style="list-style-type: none"> • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Ensure drill depth is at an appropriate level below the watercourse to prevent 'frac-out', • Drill entry and exit pits should be at least 30m 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of water or wetland features

Project Component	Project Activity	Potential Negative Effects	Mitigation Measures	Objectives, Monitoring, and Contingency Plans
			<p>from natural features (i.e. woodlands, wetlands, etc.) or water bodies,</p> <ul style="list-style-type: none"> • Dispose of waste material by authorized and approved offsite vendors. 	
Operation and Maintenance Building, Transformer Station, and Substation	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> • Increased erosion and sedimentation into woodlands, wetlands, and other natural features, • Soil compaction 	<ul style="list-style-type: none"> • Develop and implement an erosion and sediment control plan, • Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body, • Maintain erosion control measures for the duration of construction or decommissioning activities, • Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body, • Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes. 	<ul style="list-style-type: none"> • Minimize direct impacts on vegetation communities and protect rare/sensitive habitats, • Maintain vegetated buffers, particularly within riparian zones, • Minimize the impacts of sedimentation on nearby natural features
	Noise/human activity.	<ul style="list-style-type: none"> • Disturbance and/or mortality to local wildlife. 	<ul style="list-style-type: none"> • Avoid construction or decommissioning activities during sensitive time periods (i.e. breeding bird season), wherever possible, • Clearly post construction speed limits. 	<ul style="list-style-type: none"> • Limit potential wildlife road mortalities
	Accidental damage to vegetation.	<ul style="list-style-type: none"> • Damage or removal of vegetation adjacent to the project location. 	<ul style="list-style-type: none"> • Where construction activity occurs within 30m of a naturally vegetated feature (i.e. woodland, wetland, etc.), the construction area should be clearly delineated with protective fencing, such as silt fencing, • Damaged trees should be pruned through implementation of proper arboricultural techniques. 	<ul style="list-style-type: none"> • Minimize impacts to natural vegetation
	Chemical spills or accidental fluid release (i.e. oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> • Soil or water contamination. 	<ul style="list-style-type: none"> • Develop a spill response plan and train staff on appropriate procedures, • Keep emergency spill kits on site, • Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies, • Dispose of waste material by authorized and approved offsite vendors. 	<ul style="list-style-type: none"> • Minimize impacts to natural features and wildlife habitats, • Avoid contamination of water or wetland features

8.0 Summary of Commitments

For each natural feature or wildlife habitat that has been determined to be significant, or presumed significant, NRSI biologists have identified potential negative impacts, mitigation measures, and contingency plans associated with the construction, operation, and decommissioning phases of this project.

To assist in the summary of the potential impacts and mitigation measures associated with the Adelaide Wind Energy Centre, NRSI has summarized the full extent of pre-construction monitoring commitments, mitigation measures, and post-construction monitoring commitments in the following sections.

8.1 Pre-Construction Monitoring Commitments

In accordance with the Natural Heritage Assessment process, NRSI biologists have identified several natural features that have been treated as significant for the purposes of this report. These features have been treated as significant until additional pre-construction surveys can be completed to confirm (or deny) the significance based on provincially accepted evaluation criteria. The pre-construction surveys that will be conducted as part of the commitments made in this EIS are summarized in Table 13 below.

The survey methods described below have assumed that site access will be granted. In the event that specific site access is not available for all, or part, of a specific feature, a potential alternative survey method will be discussed with appropriate MNR staff.

Table 13. Summary of Pre-construction Monitoring Commitments for the Adelaide Wind Energy Centre

Wildlife Habitat Type	Generalized Methods	Location/Feature(s)
Raptor Wintering Area	Thirty minute visual raptor surveys focused on identifying raptors along woodland/update edge habitat. Surveys will be conducted on 3 visits in January 2012, with another 3 visits occurring in February 2012 (depending on January results).	RWA-002 RWA-003 RWA-004
Bat Maternity Colony	A series of single 1.5hr visual point count surveys at potential roosts within each habitat. The number of monitoring locations will be determined by the size of each wildlife habitat (10 stations for habitats <10ha, and 1 additional snag	BMA-011 BMA-012 BMA-014 BMA-016 BMA-017 BMA-019

Wildlife Habitat Type	Generalized Methods	Location/Feature(s)
	<p>for each additional 1ha, to a maximum of 35 stations).</p> <p>At each station, visual surveys will occur from 30min before dusk and end 1hr after dusk, and will include a combination of both visual and acoustic documentation of bat activity.</p> <p>Surveys will be in accordance with Bats and Bat Habitats (OMNR 2011).</p> <p>Specific surveys, following the methods described above may not be conducted if site access cannot be secured for specific habitats. If site access is not available, alternative methods (if applicable) will be discussed with the MNR.</p>	BMA-020
Amphibian Breeding Habitat - Woodland	<p>Three evening amphibian call surveys will occur once in each of April, May, and June. Each survey will last 3 minutes, following accepted Marsh Monitoring Program protocol.</p> <p>During each survey, biologists will record species and calling abundance codes, along with other appropriate information (date, time, weather, etc.)</p> <p>Specific surveys, following the methods described above may not be conducted if site access cannot be secured for specific habitats. If site access is not available, alternative methods (if applicable) will be discussed with the MNR.</p>	AWO-001 AWO-002 AWO-004 AWO-005
Carey's Sedge Habitat	<p>Single site visit to complete standardized area searches of forest habitat during the appropriate bloom period.</p>	CAS-001 CAS-002 CAS-003 CAS-004 CAS-005 CAS-006 CAS-007
Yellow Stargrass Habitat	<p>Single site visit to complete standardized area searches of meadow habitat during the appropriate bloom period.</p>	YSG-001 YSG-002

8.2 Construction Mitigation Measures

The various reporting sections above identify several mitigation measures that are recommended to limit potential impacts to significant natural features or wildlife habitats for the development of the Adelaide Wind Energy Centre. To assist in fully identifying all mitigation measures that are recommended for this development, a summary table of construction related mitigation measures has been provided below, including the mitigation objective and specific location where each mitigation measure should be applied. The purpose of the table below is to consolidate the construction mitigation measures that are applicable to the natural heritage features and wildlife habitats that

have been identified through the Natural Heritage Assessment process. These mitigation measures, along with other requirements not associated with the natural heritage, have all been included in the Construction Plan Report that has been prepared under separate cover by GL-Garrad Hassan.

Table 14. Summary of Construction Phase Mitigation Measures Recommended for the Adelaide Wind Energy Centre

Mitigation Measure	Objective(s)	Location(s)
<ul style="list-style-type: none"> Any vegetation removal required along roadside collector lines or transmission lines should be minimized, and occur entirely within the road right-of-way. 	<ul style="list-style-type: none"> Minimize vegetation removal and impacts on wildlife habitats 	Transmission Line Roadside Collector Lines
<ul style="list-style-type: none"> Any accidentally damaged trees should be pruned through the implementation of proper arboricultural techniques 	<ul style="list-style-type: none"> Protect tree species from permanent damage 	Entire Project
<ul style="list-style-type: none"> Develop and implement an erosion and sedimentation control plan. 	<ul style="list-style-type: none"> Protect natural features and wildlife habitats, where appropriate 	Entire Project
<ul style="list-style-type: none"> Clearly delineate work area using silt fencing, erosion blankets, or similar barrier Maintain erosion control measures for the duration of construction or decommissioning activities. 	<ul style="list-style-type: none"> Minimize erosion impacts on features when construction activities are proposed within 30m of significant natural features 	Within 30m of all confirmed significant natural features and wildlife habitats
<ul style="list-style-type: none"> Minimize vehicle traffic on exposed soils, and limit heavy machinery traffic on sensitive slopes 	<ul style="list-style-type: none"> Limit unnecessary risk of increased erosion or sedimentation 	Entire Project
<ul style="list-style-type: none"> Re-vegetate temporary access roads or crane paths to pre-construction conditions as soon as possible. 	<ul style="list-style-type: none"> Limit the potential for erosion or sedimentation due to exposed soil conditions 	Entire Project
<ul style="list-style-type: none"> Maintain vegetation buffers around water bodies 	<ul style="list-style-type: none"> Minimize the potential for erosion, and protect wildlife habitat, within riparian areas 	Entire Project
<ul style="list-style-type: none"> Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body 	<ul style="list-style-type: none"> Limit the potential for increased erosion within 30m of significance natural features 	Entire Project
<ul style="list-style-type: none"> All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant feature. 	<ul style="list-style-type: none"> Minimize the risk of contamination of chemical spill around significant natural features 	Entire Project
<ul style="list-style-type: none"> Develop a spill response plan, train staff on appropriate procedures, and keep emergency spill kits on site. 	<ul style="list-style-type: none"> Minimize potential long-term effects or significance contaminations in the event an accidental spill occurs 	Entire Project
<ul style="list-style-type: none"> Dispose of waste material by authorized and approved offsite vendors 	<ul style="list-style-type: none"> Limit the potential for contamination of significant natural features 	Entire Project
<ul style="list-style-type: none"> Implement infiltration techniques to the maximum extent possible. 	<ul style="list-style-type: none"> Minimize potential impacts to soil moisture regime and groundwater stores 	Entire Project
<ul style="list-style-type: none"> Minimize paved surfaces and design roads to promote infiltration. 	<ul style="list-style-type: none"> Minimize potential impacts to soil moisture regime and groundwater stores 	Entire Project

Mitigation Measure	Objective(s)	Location(s)
<ul style="list-style-type: none"> Keep changes to land contours to a minimum. 	<ul style="list-style-type: none"> Maintain existing surface water drainage patterns 	Within 120m of: VAL-020, 048 AWO-001*, 002*, 004*, 005*
<ul style="list-style-type: none"> Maintain streams, including timing and quantity of flow. 	<ul style="list-style-type: none"> Maintain existing surface water drainage patterns 	Within 120m of: VAL-020, 048 AWO-001*, 002*, 004*, 005*
<ul style="list-style-type: none"> Minimize grading activities to maintain existing drainage patterns, to the fullest extent possible. 	<ul style="list-style-type: none"> Maintain existing surface water drainage patterns 	Entire Project
<ul style="list-style-type: none"> Control rate and timing of water pumping, and restrict taking of water during periods of extreme low flow. 	<ul style="list-style-type: none"> Limit potential impacts on water temperature, surface water storage, and wildlife habitat 	Entire Project
<ul style="list-style-type: none"> Pump from deep wells to infiltration galleries adjacent to water bodies or wetlands. 	<ul style="list-style-type: none"> Minimize impacts to ground water stores, wetlands, or water bodies 	Entire Project
<ul style="list-style-type: none"> Control quantity and quality of stormwater discharge using best management practices. 	<ul style="list-style-type: none"> Maintain water flow patterns similar to pre-construction conditions and avoid potential contamination of water sources 	Entire Project
<ul style="list-style-type: none"> Post speed limits along construction access roads, and maintain signage during the operational phase of the project. 	<ul style="list-style-type: none"> Limit the potential for wildlife road mortality 	AWO-001*, 002*, 004*, 005*
<ul style="list-style-type: none"> Post wildlife crossing signs along construction access roads, and maintain signage during the operational phase of the project. 	<ul style="list-style-type: none"> Limit the potential for wildlife road mortality 	AWO-001*, 002*, 004*, 005*
<ul style="list-style-type: none"> Horizontal directional drill entry/exit pits should be located at least 30m from any significant natural feature 	<ul style="list-style-type: none"> Minimize impacts on significant natural features, water bodies, and wildlife habitat 	Horizontal Directional Drilling WOD-002
<ul style="list-style-type: none"> Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal 	<ul style="list-style-type: none"> Limit the potential for soil or water contamination 	Horizontal Directional Drilling
<ul style="list-style-type: none"> Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction 	<ul style="list-style-type: none"> Minimize the presence of exposed soil to reduce the potential for erosion 	Horizontal Directional Drilling

* Only if these habitats are determined to be significant through pre-construction surveys described in Section 8.1

8.3 Post-Construction Monitoring Commitments

In accordance with appropriate provincial guidance and the results of pre-construction surveys, a series of post-construction surveys may be required at the Adelaide Wind Energy Centre. Some of these surveys will only be required depending on the results of additional pre-construction surveys that have been committed to in Section 8.1 above. Others are already known to be required based on the results of pre-construction surveys or standard monitoring required for all wind energy developments.

Table 15. Summary of Post-construction Monitoring Commitments at the Adelaide Wind Energy Centre

Survey Type	Location(s)	Generalized Methods	Purpose
Mortality Monitoring	Entire Project	<p>Post-construction mortality monitoring will be conducted following both the <i>Birds and Bird Habitats</i> (OMNR 2011) and <i>Bats and Bat Habitats</i> (OMNR 2011) provincial guidelines for three (3) years after the project has become operational.</p> <p>A suitable sub-set of turbines will be searched approximately every 3 days (twice weekly) for bird and bat mortalities from May 1st to October 31st, and approximately every 7 days (weekly) throughout November.</p> <p>In addition, all turbines not part of the chosen sub-set will be searched once during each month, specifically targeting raptors.</p> <p>Searcher efficiency and carcass removal trials will be conducted in accordance with provincial guidelines.</p>	<p>To assess the direct impact of this facility on bird and bat populations.</p> <p>If mortality rates surpass provincially determined thresholds, mitigation measures will be discussed with the MNR.</p>
Acoustic Bat Monitoring	BMA-001 BMA-002 BMA-006	Post-construction acoustic bat monitoring will be repeated at these habitats for three years (3) following the same methods utilized during pre-construction surveys (March 2010 <i>Bats and Bat Habitats</i> guidelines).	To assess the potential disturbance impact of operational turbines on significant bat maternity roosts located within 120m of a turbine.
Exit Counts and Acoustic Bat Monitoring	BMA-011* BMA-012* BMA-014* BMA-016* BMA-017* BMA-019* BMA-020*	<p>Post-construction exit counts and acoustic bat monitoring will be repeated at any of these habitats deemed to be significant for three (3) years following the same methods utilized during pre-construction surveys (July 2011 <i>Bats and Bat Habitats</i> guidelines).</p> <p>These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.</p>	To assess the potential disturbance impact of operational turbines on significant bat maternity roosts located within 120m of a turbine.
Winter Raptor Surveys	RWA-002* RWA-003* RWA-004*	<p>Post-construction winter raptor surveys will be repeated at this habitat, if deemed to be significant, for one (1) year following the same methods utilized during pre-construction surveys.</p> <p>If the first year of post-construction raptor surveys indicate that this feature is no longer significant, an additional two (2) years of post-construction monitoring will occur following the same methods utilized during pre-construction surveys.</p> <p>These surveys are only required if habitats are evaluated to be significant</p>	To assess the potential disturbance impact of overhead cabling on significant raptor wintering areas.

Survey Type	Location(s)	Generalized Methods	Purpose
		based on pre-construction surveys.	
Amphibian Call/Egg Mass Surveys	AWO-001* AWO-002* AWO-004* AWO-005*	Post-construction amphibian egg mass and call surveys will be repeated at any of these habitats deemed to be significant for one (1) year following the same methods utilized during pre-construction surveys. Based on the results of the 1 st year post-construction monitoring, the need for an additional monitoring (up to 2 years) will be determined in consultation with MNR. These surveys are only required if habitats are evaluated to be significant based on pre-construction surveys.	To assess the potential disturbance impact of access roads on significant amphibian breeding habitats (woodland).
Carey's Sedge Habitat	CAS-001* CAS-002* CAS-003* CAS-004* CAS-005* CAS-006* CAS-007*	Post-construction vegetation surveys will be completed in years 1, 3 and 5 following the same methods used during pre-construction standardized area searches of identified forested habitats. These surveys are only required if habitats are evaluated to be significance based on pre-construction surveys.	To assess the potential impact of operation (access roads) activity on significant habitat for Carey's Sedge.
Yellow Stargrass Habitat	YSG-001* YSG-002*	Post-construction vegetation surveys will be completed in years 1, 3 and 5 following the same methods used during pre-construction standardized area searches of identified meadow habitats. These surveys are only required if habitats are evaluated to be significance based on pre-construction surveys.	To assess the potential impact of operation (access roads) activity on significant habitat for Yellow Stargrass.

* Only if these habitats are determined to be significant through pre-construction surveys described in Section 8.1

9.0 Environmental Impact Summary

The Adelaide Wind Energy Centre will result in the erection of up to 38 operational wind turbines as well as the installation of supporting infrastructure, such as access roads, cabling, transmission lines, and buildings. Through a comprehensive review of background material in conjunction with site-specific investigations and evaluation of significance surveys, NRSI biologists have identified several significant, or presumed significant, natural features and wildlife habitats within project area.

As part of this Environmental Impact Study, NRSI biologists have recommended a series of monitoring commitments and mitigation measures to be implemented as part of the development of this project. These recommendations have been developed in association with the specific natural features and wildlife habitats that have been identified within the project area.

Assuming the implementation of the planned mitigation measures, monitoring programs, and contingency plans (if necessary), there is unlikely to be any significant impacts to natural heritage features, including woodlands, wetlands, valleylands, or significant wildlife habitat.

10.0 References

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