

# **Environmental Protection Plan**

## **Dunmore Solar Project**

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**Prepared for:**

**Dunmore Solar, Inc.**

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## REPORT REFERENCE

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1.0	04/22/2021	Initial release	Western EcoSystems Technology, ULC

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## **1.0 INTRODUCTION**

### **1.1 Scope and Purpose**

The purpose of this Environmental Protection Plan (EPP) is to outline environmental protection measures that Dunmore Solar Inc. (Dunmore Solar) commits to undertaking during the construction and operation phases of the Dunmore Solar Power Project (the Project) located within 27, 33 and 34-012-04 W4M. The EPP will act as a field-ready document to assist in the planning and execution of construction and operational activities.

Specifically, the EPP will accomplish the following:

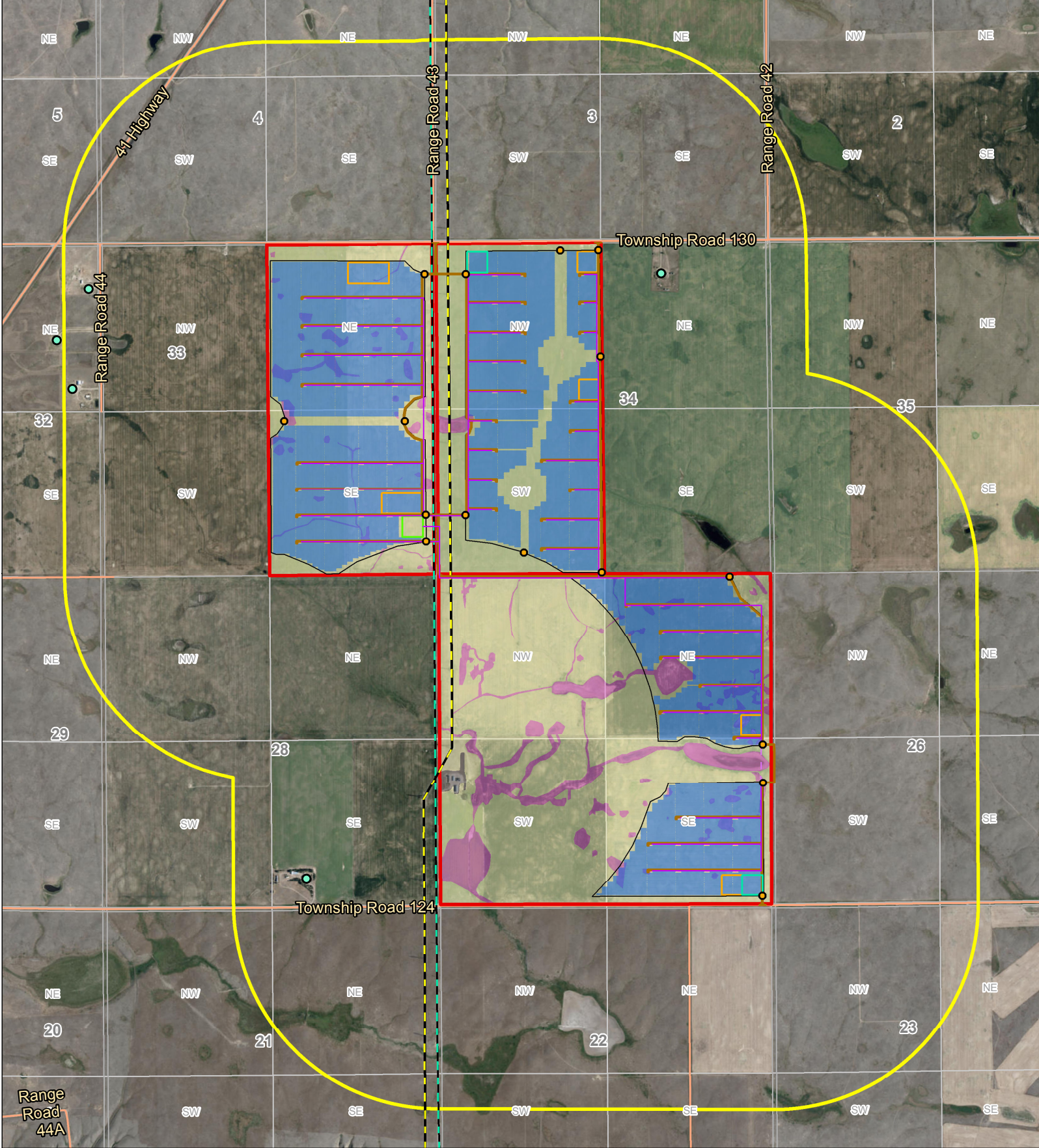
- Serve as a resource for all Dunmore Solar personnel, contractors, and subcontractors to be familiar with project-specific environmental protection measures and commitments.
- Provide concise and clear instructions to avoid or minimize potential environmental effects during the construction and operational phases of the Project.
- Serve as a resource to support on-the-ground decision making to ensure Dunmore Solar adheres to its environmental protection commitments.
- Ensure all parties are aware of relevant regulatory requirements and environmental guidelines.
- Ensure Environmental Monitors working on the Project are qualified and properly trained.
- Ensure all personnel on the Project are provided with basic environmental training to be able to identify wildlife features (e.g., nests, hibernacula), spills and leaks, erosion issues, weeds, and recognize species of management concern.
- Ensure environmental incidents will be properly investigated, documented, and reported.

The EPP will be reviewed and updated prior to construction and operation phases beginning and following all site specific mitigation measures that have been discussed during consultations with stakeholders and regulators. There are minimum standards to be followed within this EPP; however, if other more suitable or practical site-specific environmental solutions not provided in this report are identified, they may be implemented during construction if approved by stakeholders and the applicable regulatory agencies.

### **1.2 Project Details**

The proposed Project, based on the preliminary design, is a 257.57 megawatt of direct current and 205 megawatt of alternating current photovoltaic solar generation facility located northeast of Dunmore, Alberta. The proposed construction footprint for the Project will be 251.9 hectares (ha), and the proposed operational footprint will be 251.9 ha. (Figure 1).

Pending approval, Project construction is scheduled to begin in January of 2022 and be completed in March 2023. The anticipated in-service date and commencement of commercial operation is in May 2023. Clean up and reclamation activities are planned to be completed by commercial operation.



### Dunmore Solar Energy Project

Project Area	Roads	Inverter	Gate	Fence Line
Study Area	Residence	PV Tables (Full)	O&M Building	Collector Line
Quarter Section	Cultivation	Temporary Workspace	Substation	Below Ground
Transmission Line (240kV)	Anthropogenic	Access Road	Below Ground (Drilled)	
Transmission Line (138kV)	Wetlands			

**Figure 1. The Dunmore Solar Energy Project Area near Dunmore, Alberta.**

Coordinate System: NAD 1983 UTM Zone 12N  
 Data Source: Esri World Imagery  
 Date: 11/23/2020 Author: B. Barbieri

## **2.0 REGULATORY REQUIREMENTS**

All relevant regulatory approvals for the Project will be obtained by Dunmore Solar prior to construction. All Dunmore Solar personnel, contractors, and subcontractors are responsible to know, understand, and comply with the following legislation (and associated regulations), guidelines, and project approvals.

### **2.1 Provincial and Federal legislation**

The following provincial and federal acts will need to be reviewed and followed, as necessary:

- *Wildlife Act* (Province of Alberta 2018)
- *Water Act* (Province of Alberta 2017a)
- *Migratory Birds Convention Act* (Government of Canada 2017)
- *Species at Risk Act* (Government of Canada 2019)
- *Wetland Policy* (Government of Alberta 2013)
- *Weed Control Act* (Province of Alberta 2017b)
- *Dangerous Goods Handling and Transportation Act* (Province of Alberta 2010)
- *Historical Resources Act* (Province of Alberta 2020)

### **2.2 Provincial Directives**

Dunmore Solar is committed to adhering to the following renewable energy project guidelines:

- *Wildlife Directives for Alberta Solar Energy Projects* (Government of Alberta 2017)
- *Post-construction Survey Protocols for Wind and Solar Energy Projects* (Government of Alberta 2020)
- *Conservation and Reclamation Directive for Renewable Energy Operations* (Government of Alberta 2018)

### **2.3 Project Approvals**

Dunmore Solar has received the following approvals:

- Alberta Culture Multiculturalism and the Status of Women (ACMSW) *Historical Resources Act* (Attachment I; March 12, 2021)
- Alberta Environment and Parks (AEP) Renewable Energy Referral Report (Attachment E; April 14, 2021)
- AEP *Water Act* Approval (anticipated)
- Alberta Utilities Commission Decision Report (anticipated)

### 3.0 ROLES AND RESPONSIBILITY

The successful implementation of the EPP is the responsibility of all Dunmore Solar personnel, contractors, and subcontractors working on the Project. The roles and responsibilities applicable to the Project are outlined below (Table 1).

**Table 1. Roles and Responsibilities for those working on the Dunmore Solar Power Project**

<b>Role</b>	<b>Responsibilities</b>
Operations Manager/Owner's Construction Representative	<ul style="list-style-type: none"> <li>Oversees the Dunmore Solar Power Project (the Project)</li> <li>Ensures appropriate resources are available to support the successful implementation of the environmental protection plan (EPP)</li> <li>Communicates EPP requirements to those responsible for Project construction and maintenance</li> <li>Approves the implementation of the EPP, and approves any changes needed to the EPP in conjunction with the Environmental Advisor</li> <li>Has final decision making authority and accountability for the implementation of the EPP</li> </ul>
Environmental Advisor	<ul style="list-style-type: none"> <li>Responsible for the implementation of the EPP</li> <li>Ensures Environmental Monitors are qualified and appropriately trained</li> <li>Ensures the EPP is conducted in accordance with jurisdictional requirements</li> <li>Updates the EPP when needed and ensures all personnel are updated</li> <li>Reports to the Operations Manager</li> <li>Could be a third party consultant</li> </ul>
Vegetation Reclamation Manager (VRM)	<ul style="list-style-type: none"> <li>Oversees the reclamation process, including weed management</li> <li>Leads the development of the Conservation and Reclamation (C&amp;R) and Vegetation Management Plan</li> <li>Reports to the Operations Manager</li> <li>Usually a third party consultant</li> </ul>
Construction Manager	<ul style="list-style-type: none"> <li>Manages construction of the Project</li> <li>Reviews and understands the EPP, and maintains a copy on-site</li> <li>Works together with the Operations Manager, Environmental Advisor, VRM, and Environmental Monitor to ensure the successful implementation of the EPP during the construction phase</li> <li>Reports to the Operations Manager</li> </ul>
Environmental Monitor	<ul style="list-style-type: none"> <li>Monitors the Project for compliance of the EPP</li> <li>Works with construction personnel to review and implement environmental protection measures</li> <li>Identifies and reports non-compliance of environmental protection measures to the Environment Advisor</li> <li>Will be an experienced biologist per definition by Alberta Environment and Parks</li> <li>Will be a third party consultant and report to the Environmental Advisor and Operations Manager</li> </ul>

## 4.0 TRAINING

Dunmore Solar will ensure that all personnel and subcontractors have knowledge and awareness of this EPP, and environmental requirements and sensitivities related to the Project. Prior to commencing work, all personnel and subcontractors are required to participate in an environmental awareness training program. Key topics the training will include are the EPP, roles and responsibilities, how to recognize and respond to sensitive wildlife features (e.g., nests, hibernacula, amphibian breeding habitat), spills and leaks, waste management, sediment and erosion control, weeds, and how to report and document environmental incidents and emergencies.

## 5.0 ENVIRONMENTAL SETTING

The Project is located in the Dry Mixedgrass Subregion of the Grassland Natural Region (Natural Regions Committee 2006). The Project footprint encompasses primarily agricultural cropland. The Project falls within or adjacent to the following environmental sensitivities:

- Sensitive amphibian range
- Sensitive raptor range
- Burrowing owl (*Athene cunicularia*) range
- Sharp-tailed grouse (*Tympanuchus phasianellus*) range
- Adjacent (within 500 metres) to the sensitive snake range
- Pronghorn (*Antilocapra Americana*) migration corridor
- Proximity to a ferruginous hawk (*Buteo regalis*) nest
- Numerous small wetlands

A detailed description of the environmental setting and pre-construction wildlife and vegetation surveys can be found in the AEP Referral Report (AEP 2021), and the important environmental features (e.g., wetlands, nests) identified during those surveys are listed below (Table 2).

**Table 2. Important environmental features identified within the Project Area**

Feature ID	Feature Type	Required Setback (metres)
DUFEHAN02	Ferruginous hawk nest	1,000 (seasonal)
WT-03	Seasonal Graminoid Marsh	100 (April – August)
WT-06	Seasonal Graminoid Marsh	100 (April – August)
WT-08	Seasonal Graminoid Marsh	100 (April – August)
WT-66	Seasonal Graminoid Marsh	100 (April – August)
WT-222	Seasonal Graminoid Marsh	100 (April – August)
WT-618	Seasonal Graminoid Marsh	100 (April – August)
WT-623	Semi-permanent Graminoid Marsh	100
WT-624	Semi-permanent Graminoid Marsh	100



## **6.0 ENVIRONMENTAL PROTECTION MEASURES**

Dunmore Solar is committed to preventing and mitigating any potential environmental effects of the Project through informed planning, assessment, mitigation, and reclamation. This section outlines potential Project environmental impacts, mitigations, environmental monitoring, and control commitments by Dunmore Solar and its contractors in Project Construction (Table 3) and Operation phases (Table 4). These measures allow for efficient response to unforeseen and environmental emergency events and ensure all environmental guidelines and regulations are met.

### **6.1 Environmental Monitoring and Inspections**

A qualified Environmental Monitor will conduct environmental inspections to ensure that the construction of the Project meets the environmental commitments outlined in this EPP.

Post-construction wildlife monitoring will be conducted for a minimum of three years as outlined in the *Post-construction Survey Protocols for Wind and Solar Energy Projects* (Government of Alberta 2020). An experienced wildlife biologist will conduct post-construction monitoring surveys and will document wildlife mortality within the Project, carcass removal rate, searcher efficiency rate, and monitor impacts of the Project on species at risk and sensitive species (Government of Alberta 2020).

As per the *Conservation and Reclamation Directive for Renewable Energy Operations* (Government of Alberta 2018), a qualified environmental professions will complete interim monitoring site assessments following construction, during operation at key milestones (e.g., retrofitting) and when any temporary reclamation activities occur. Vegetation monitoring will be conducted for a minimum of three growing seasons after construction of the Project as outlined in the *Conservation and Reclamation Directive for Renewable Energy Operations* (Government of Alberta 2018).

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
General	Wildlife	Wildlife encounters and disturbance	<ul style="list-style-type: none"> <li>All personnel, contractors, and subcontractors will be provided with relevant and effective training to eliminate the risk to wildlife through feeding, harassment, or other activities.</li> <li>During sensitive wildlife periods, the amount of on-site personnel will be limited to the required minimum, in order to reduce disturbance to wildlife.</li> <li>All wildlife species of management concern (SOMC) sightings will be reported to the Environmental Monitor and Environmental Advisor. SOMC are wildlife species that have Restricted Activity Periods (RAPs) or setbacks, and/or are listed as sensitive, threatened, endangered, or special concern. The observation will be reported to the Operations Manager and appropriate mitigation will be determined and implemented, as required.</li> <li>If injured wildlife are encountered, it will be immediately reported to the Environmental Monitor, Environmental Advisor, and Construction Manager and documented. The Environmental Advisor or Construction Manager will contact the Calgary Wildlife Rehabilitation Centre (CWRS) or, for raptors, the Alberta Birds of Prey Centre. Alberta Environment and Parks (AEP) will be notified in all cases.</li> <li>If stranded or trapped wildlife are encountered, the Environmental Monitor will remove and relocate the individual(s) if it is safe to do so. AEP will be consulted for additional direction if required. The incident will be documented.</li> <li>If dead wildlife are encountered during construction, AEP will be notified and carcasses may be collected and labeled with date and location, and disposed of at the direction of AEP.</li> <li>AEP loadforms will be completed and submitted for each year of construction.</li> <li>The ferruginous hawk nest activity will be determined each spring and all work will occur outside of the 1,000-m setback, while the nest is active (approx. April – August), including vehicle traffic.</li> <li>Work will be suspended near a newly discovered or suspect SOMC during construction.</li> </ul>	<i>Wildlife Directives for Alberta Solar Energy Projects</i>
		Mortality - Vehicle collisions	<ul style="list-style-type: none"> <li>Speed restrictions (i.e., 30 kilometres (km)/hour) will be implemented on all Project roads from April – September during construction and 50 km/hour for the remainder of the year, so as to reduce potential for collision with snakes and other wildlife.</li> <li>All vehicles and construction equipment on the Project will yield to wildlife.</li> </ul>	Speed limits
		Habitat avoidance	<ul style="list-style-type: none"> <li>During sensitive wildlife periods, the amount of on-site personnel will be limited to the required minimum, in order to reduce disturbance to wildlife.</li> </ul>	BMP 200.4.1 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
General (continued)	Wildlife (continued)	Noise and light disturbance	<ul style="list-style-type: none"> <li>Schedule construction activities during daylight hours to minimize excessive noise and light disturbance to wildlife</li> <li>All construction equipment will be fitted with standard noise abatement equipment (e.g., mufflers).</li> <li>Idling of vehicles will not be allowed, unless required for construction. All construction equipment will be regularly inspected and maintained to ensure it is in good working order.</li> <li>All infrastructure lighting will be minimized, down-shielded, and controlled by sensors, wherever possible</li> </ul>	BMP 200.4.3 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>  Rule 012- Noise Control (Alberta Utilities Commission 2020)
Access	General	Trespassing	<ul style="list-style-type: none"> <li>Gates will be placed at the entrance of the construction footprint to prevent unauthorized public access onto the Project.</li> <li>Gates will remain closed and locked at all times.</li> </ul>	Appendix E of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>
		Access roads	<ul style="list-style-type: none"> <li>Access roads within the Project footprint will be constructed to follow the Road Class Specification outlined in Appendix D of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>.</li> <li>Access roads along municipal road allowances will be improved in consultation with and to the specifications required by Cypress County.</li> <li>Minimize disturbed area by maximizing use of existing roads.</li> <li>Where new access roads are required, minimize the number, length, and area of access roads.</li> </ul>	Appendix D of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>  BMPs in section 6.1 of the <i>Conservation and Reclamation Directive for Renewable Energy Operations</i>
Clearing	Vegetation	Weed infestation and introduction of invasive species	<ul style="list-style-type: none"> <li>Construction equipment and employee vehicles should arrive to the construction site clean and free of soil or plant debris.</li> <li>Environmental Monitor(s) should inspect equipment as it arrives to site. Any equipment failing inspection will need to be cleaned and re-inspected before allowed on site.</li> <li>Herbicides will be used in consultation with the Construction Manager and the Vegetation Reclamation Manager (VRM) and if used not used within 30 m of an open water body.</li> <li>Refer to the Conservation and Reclamation (C&amp;R) and Vegetation Management Plan for details of weed management.</li> </ul>	Mitigation Measures in section 6.1 of the <i>Conservation and Reclamation Directive for Renewable Energy Operations</i>  <i>Weed Control Act</i>  C&R and Vegetation Management Plan
		Accidental vegetation removal and loss of native species	<ul style="list-style-type: none"> <li>Vegetation clearing will be limited to the minimum amounts required for construction and operation.</li> <li>Construction areas will be clearly marked before clearing to avoid accidental vegetation removal.</li> <li>Areas where vegetation has been accidentally removed or damaged will be re-planted with similar native species.</li> </ul>	BMP 200.4.4 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>  5.2.1.1. Siting- <i>Conservation and Reclamation Directive for Renewable Energy Operations</i>

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
Clearing (continued)	Wildlife	Disturbance to wildlife habitat (e.g., nests, dens, hibernacula)	<ul style="list-style-type: none"> <li>• The preliminary construction schedule has been planned to account for timing restrictions associated with wildlife features.</li> <li>• Appropriate buffers will be established around known wildlife features in accordance with the Directive.</li> <li>• If construction must occur within the wildlife setbacks, then Environmental Monitor must be on site to monitor wildlife behavior during construction. Additional mitigation may be required in consultation with the Environmental Advisor, Operations Manager, and/or AEP.</li> <li>• All vegetation clearing should be scheduled to occur outside of the migratory bird nesting period for Zone B3/B4 (April 15 – August 31); however, nesting may occur earlier in some species, or later. The Environmental Advisor will be contacted prior to clearing.</li> <li>• If clearing must occur during the nesting period, nest surveys will be completed by the Environmental Monitor in such a way as to cover the area of disturbance as well as a species-appropriate buffer.</li> <li>• Nest surveys will be conducted no more than seven days prior to clearing or construction activity commencing. If construction activities have not commenced within three to seven days (depending on species present, time of year, and habitat) after a nest survey has been conducted, another nest survey will be required.</li> <li>• Construction employees must report the discovery of any new wildlife features (e.g., nests, hibernacula, dens, burrows, leks) to the Environmental Monitor immediately, and stop work in that area until the Environmental Advisor and Construction Manager can determine the appropriate course of action (e.g., implementing mitigation measures).</li> <li>• If an active nest is found, construction works will cease and a species-appropriate buffer (minimum 100 m) will be applied until the nest is no longer active (i.e., young have left the nest).</li> <li>• Construction within the ferruginous hawk setback will not occur between April 15 and August 31 or when the nest is considered active.</li> <li>• During the ferruginous Hawk nesting season (approximately April 15 to August 31), construction traffic will not use Range Road 43 within the setback.</li> </ul>	<p>Appendix C of the <i>Wildlife Directives for Alberta Solar Energy Projects</i></p> <p>Standards 100.3.3 and 100.3.19 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i></p>

Table 3. Potential impacts and mitigation measures for the construction phase.

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
Clearing (continued)	Wildlife (continued)	Disturbance to amphibians	<ul style="list-style-type: none"> <li>The preliminary construction schedule has been planned to account for timing restrictions associated with wildlife features.</li> <li>There will be no construction activities during sensitive amphibian periods from April 1 – August 31 when work is needed within 100 m of a seasonal or semi-permanent wetland.</li> <li>Low tire pressure equipment, tracked equipment, or rig matting will be used to reduce the potential for adverse effects to soil quality and amphibians when working within 100 m of a seasonal or semi-permanent wetland.</li> <li>Pre-construction amphibian surveys will be repeated at all seasonal and semi-permanent wetlands prior to construction.</li> <li>Silt fencing will be erected around all wetlands between the wetland and construction activities, to avoid amphibians moving into the construction area.</li> <li>An Environmental Monitor will be onsite during construction to monitor for amphibian presence and relocate amphibians, as required.</li> </ul>	Appendix C of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>
		Disturbance to snakes	<ul style="list-style-type: none"> <li>Prior to construction, all on-site personnel will be provided with snake training and be familiar with species characteristics, behavior, and suitable habitat for snake species with ranges occurring within the Project.</li> <li>A speed limit reduction (30 km/hour) will be implemented from April 1 – September 30 during construction and operation.</li> <li>If silt fencing is used between April 1 and September 30, the Environmental Monitor will inspect the length of the silt fencing daily.</li> <li>Report all snake sightings to the Environmental Monitor and immediately suspend any construction activity in the immediate area of the snake sighting, until the Environmental Monitor and Construction Manager discuss appropriate mitigation, if warranted.</li> <li>Report all trapped, injured, or dead snakes to the Environmental Monitor.</li> </ul>	
	Wetlands	Disturbance to wetlands	<ul style="list-style-type: none"> <li><i>Water Act</i> approval will be obtained prior to any impacts to wetlands.</li> <li>Wetland setbacks will be marked in advance of construction activities.</li> <li>All construction will occur outside of the wetland setbacks between April and September.</li> <li>Construction within the wetland setbacks to only occur between October and March and low tire pressure equipment, tracked equipment, or rig matting will be used.</li> </ul>	<i>Water Act</i> Approval
	Soil	Compaction	<ul style="list-style-type: none"> <li>Construction will not occur during or after high rainfall events when soil is wet and risk of compaction is increased, unless low tire pressure equipment, tracked equipment, or rig matting will be used.</li> </ul>	Erosion and Sediment Control
	Erosion and sediment control	<ul style="list-style-type: none"> <li>Erosion and sediment control measures will be implemented where necessary (e.g., straw bales, silt fencing).</li> <li>Revegetation will occur as soon as practicable.</li> </ul>		

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
Clearing (continued)	Historical Resources	Loss or destruction of historical resources	<ul style="list-style-type: none"> <li>• A <i>Historical Resources Act</i> clearance has been obtained</li> <li>• Notify the Environmental Monitor upon the discovery of any historical resources. Cease work in the vicinity until appropriate mitigation measures can be implemented.</li> </ul>	<i>Historical Resources Act</i>
Earthworks	Vegetation	Weed infestation and introduction of invasive species	<ul style="list-style-type: none"> <li>• Construction equipment and employee vehicles should arrive to the construction site clean and free of soil or plant debris.</li> <li>• Environmental Monitor(s) should inspect equipment as it arrives to site. Any equipment failing inspection will need to be cleaned and re-inspected before being allowed onto site.</li> <li>• Herbicides will be used in consultation with the Construction Manager and the VRM and if used, not used within 30 m of an open water body.</li> <li>• Refer to the C&amp;R and Vegetation Management Plan for details of weed management.</li> </ul>	BMP 200.4.4 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>  5.2.1.1. <i>Siting- Conservation and Reclamation Directive for Renewable Energy Operations</i>
	Soil	Erosion and sediment control	<ul style="list-style-type: none"> <li>• Erosion and sediment control measures will be implement where necessary (e.g., straw bales, silt fencing).</li> <li>• Revegetation will occur as soon as practicable.</li> </ul>	Erosion and Sediment Control
		Contamination of soils	<ul style="list-style-type: none"> <li>• A spills and leaks protocol will be followed to prevent, minimize and clean up any spills or leaks that may cause contamination of soils.</li> <li>• Emergency spill kits will be kept onsite</li> <li>• Hazardous materials will be stored in appropriate locations and disposed of by authorized means.</li> <li>• If a spill occurs, work will cease in the spill area and the appropriate authorities notified. Efforts will be made to control the spill. The Construction Manager and Environmental Advisor will be notified immediately.</li> </ul>	BMPs in section 6.1 of the <i>Conservation and Reclamation Directive for Renewable Energy Operations</i>  C&R Plan
		Compaction and rutting	<ul style="list-style-type: none"> <li>• Construction will be conducted under dry or frozen ground conditions to limit the potential for soil disturbance and compaction.</li> <li>• The Environmental Monitor will inspect the construction area regularly for excessive rutting and compaction.</li> <li>• Compacted areas will be paratilled, or harrowed, and rutted areas will be bladed smooth.</li> <li>• Construction will not occur during or after high rainfall events when soil is wet and risk of compaction is increased, unless low tire pressure equipment, tracked equipment, or rig matting will be used.</li> </ul>	

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
Earthworks (continued)	Soil (continued)	Surface Disturbance	<ul style="list-style-type: none"> <li>Minimal surface disturbance techniques such as matting, reduced soil stripping, frozen construction, minimized fencing and reduced road grades will be implemented and followed</li> <li>Top soil stripping is not required except for the substation location, inverter stations, and trenched areas required for the collector system.</li> <li>Topsoil will be salvaged from these areas and stored separately from subsoils. Sub soil and top soil will be replaced following backfill of trenches and excavated areas.</li> <li>At the substation, top soil will be salvaged and stockpiled in a location determined by the Construction Manager and VRM.</li> <li>If top soil needs to be sourced, it will be sourced locally.</li> </ul>	
	Hydrology	Storm water Management	<ul style="list-style-type: none"> <li>Dunmore Solar will develop and implement a storm water management plan prior to the start of construction.</li> </ul>	Storm water management plan
		Erosion and sediment control	<ul style="list-style-type: none"> <li>Erosion and sediment control measures will be implemented where necessary (e.g., straw bales, silt fencing).</li> <li>Revegetation will occur as soon as practicable.</li> </ul>	
		Contamination of groundwater	<ul style="list-style-type: none"> <li>A spills and leaks protocol will be followed to prevent, minimize and clean up any spills or leaks that may cause contamination of soils.</li> <li>Emergency spill kits will be kept onsite</li> <li>Hazardous materials will be stored in appropriate locations and disposed of by authorized means.</li> <li>If a spill occurs, work will cease in the spill area and the appropriate authorities notified. Efforts will be made to control the spill. The Construction Manager and Environmental Advisor will be notified immediately.</li> </ul>	
		Snow Management	<ul style="list-style-type: none"> <li>Snow will be removed from construction areas, where necessary, to provide safe working conditions and/or to expose soils for grading and excavation.</li> <li>Snow removal equipment must remain within the Project Footprint and access roads.</li> <li>Snow removal will not occur within setbacks of waterbody or wetlands.</li> <li>Snow will not be placed within waterbodies during removal.</li> </ul>	
Air	Fugitive Dust Management	<ul style="list-style-type: none"> <li>All vehicles will abide by posted speed limits.</li> <li>Dust suppressants will be applied as deemed necessary by the Environmental Monitor and Construction Manager.</li> <li>Material stockpiles will be sheltered from wind or dust suppressants (e.g., sprayed with water) will be used to minimize dust.</li> <li>Areas will be revegetated as soon as practicable after construction activities are complete.</li> </ul>		

**Table 3. Potential impacts and mitigation measures for the construction phase.**

Construction Activity	Environmental Component	Project Impact or Concern	Mitigation Measures	Reference
Material handling and storage	General	Spills and leaks	<ul style="list-style-type: none"> <li>• A spills and leaks protocol will be followed to prevent, minimize and clean up any spills or leaks that may cause contamination of soils.</li> <li>• Emergency spill kits will be kept onsite</li> <li>• Hazardous materials will be stored in appropriate locations and disposed of by authorized means.</li> <li>• If a spill occurs, work will cease in the spill area and the appropriate authorities notified. Efforts will be made to control the spill. The Construction Manager and Environmental Advisor will be notified immediately</li> <li>• Hazardous materials will be appropriately labelled in accordance with applicable regulations and stored in designated areas with appropriate safety measures as outlined in the spill management and prevention plan</li> <li>• All fuel storage and equipment servicing areas will be located at least 100 m away from any wetland and/or waterbody.</li> <li>• Hazardous materials will be transported in accordance with the <i>Dangerous Goods Handling and Transportation Act</i>.</li> </ul>	Spill management and prevention protocol
		Waste Disposal	<ul style="list-style-type: none"> <li>• All garbage, construction materials, debris and hazard waste will be contained and disposed of by authorized and approved off-site vendors.</li> </ul>	

Dunmore Solar Power Project = the Project, BMP = best management practices; m = metres.

**Table 4. Potential impacts and mitigation measures during the operation phase**

Operation Activity	Environmental Component	Project Impact or Concern	Mitigation measures	Reference
Access	General	Trespassing	<ul style="list-style-type: none"> <li>• Gates will be placed at all access points for the Project to prevent unauthorized public access.</li> <li>• Gates will remain closed and locked at all times.</li> <li>• A perimeter fence will encompass the entirety of the Project.</li> </ul>	
General	Wildlife	Mortality Risk-collisions with infrastructure	<ul style="list-style-type: none"> <li>• Dunmore Solar will follow the Post-construction Survey Protocols for Wind and Solar Energy Projects and requirements set forth in the Alberta Environment and Parks (AEP) Referral Report.</li> <li>• Post-construction monitoring wildlife surveys (PCM surveys) will be conducted annually, by an experienced qualified biologist, for a minimum of three years after the Project is operational.</li> <li>• PCM surveys will accomplish the following:                             <ul style="list-style-type: none"> <li>○ Document wildlife mortalities</li> <li>○ Determine carcass removal rate</li> <li>○ Determine searcher efficiency in detecting available wildlife carcasses</li> <li>○ Monitor impacts of the Project on wildlife</li> </ul> </li> </ul>	AEP Referral Report  <i>Post-Construction Survey Protocols for Wind and Solar Energy Projects.</i>



Table 4. Potential impacts and mitigation measures during the operation phase

Operation Activity	Environmental Component	Project Impact or Concern	Mitigation measures	Reference
		Fencing and minimizing wildlife interference	<ul style="list-style-type: none"> <li>• Use of wildlife friendly fencing to allow the passage of small and medium sized wildlife while preventing larger wildlife (e.g., pronghorn) from entering the Project and potentially being trapped or hurt by, or damaging the Project infrastructure.</li> <li>• Fence line will be monitored during operation. If wildlife mortalities are observed then mitigation measures will be developed in consultation with AEP.</li> </ul>	<p>Standard 100.2.7 of the <i>Wildlife Directives for Alberta Renewable Energy Projects</i></p> <p><i>Post-Construction Survey Protocols for Wind and Solar Energy Projects.</i></p>
	Soil	Spills and leaks	<ul style="list-style-type: none"> <li>• A spills and leaks protocol will be followed to prevent, minimize and clean up any spills or leaks that may cause contamination of soils.</li> <li>• Emergency spill kits will be kept onsite</li> <li>• Hazardous materials will be stored in appropriate locations and disposed of by authorized means.</li> <li>• If a spill occurs, work will cease in the spill area and the appropriate authorities notified. Efforts will be made to control the spill. The Construction Manager and Environmental Advisor will be notified immediately</li> <li>• Hazardous materials will be appropriately labelled in accordance with applicable regulations and stored in designated areas with appropriate safety measures as outlined in the spill management and prevention plan</li> <li>• All fuel storage and equipment servicing areas will be located at least 100 m away from any wetland and/or waterbody.</li> <li>• Hazardous materials will be transported in accordance with the <i>Dangerous Goods Handling and Transportation Act</i>.</li> </ul>	Spill management and prevention plan
General (continued)	Hydrology	Erosion and Sediment control	<ul style="list-style-type: none"> <li>• Erosion and sediment control measures will be implement where necessary (e.g., straw bales, silt fencing).</li> <li>• Revegetation will occur as soon as practicable.</li> </ul>	
Maintenance	Wildlife	Mortality Risk – collision with vehicles	<ul style="list-style-type: none"> <li>• Speed restrictions (i.e., 30 kilometres (km)/hour) will be implemented on all Project roads from April to September during construction and operation and 50 km/hour for the remainder of the year, so as to reduce potential for collision with snakes and other wildlife.</li> <li>• All vehicles and construction equipment on the Project will yield to wildlife.</li> </ul>	Speed limits
		Disturbance to wildlife species	<ul style="list-style-type: none"> <li>• Appropriate buffers will be established around known wildlife features in accordance with the Directive.</li> <li>• If maintenance must occur within the wildlife setbacks, then an Environmental Monitor may be required to monitor wildlife behavior during maintenance as determined in consultation with the Environmental</li> </ul>	<p>Appendix C of the <i>Wildlife Directives for Alberta Solar Energy Projects</i></p> <p>Qualified Wildlife Biologist to conduct pre-disturbance wildlife surveys.</p>

Table 4. Potential impacts and mitigation measures during the operation phase

Operation Activity	Environmental Component	Project Impact or Concern	Mitigation measures	Reference
			<p>Advisor and Operations Manager. Additional mitigation may be required in consultation with the Environmental Advisor, Operations Manager, and/or AEP.</p> <ul style="list-style-type: none"> <li>All vegetation clearing should be scheduled to occur outside of the migratory bird nesting period for Zone B3/B4 (April 15 – August 31); however, nesting may occur earlier in some species or later. The Environmental Advisor will be contacted prior to clearing.</li> <li>If clearing must occur during the nesting period, nest surveys will be completed by Environmental Monitor in such a way as to cover the area of disturbance as well as a species-appropriate buffer.</li> <li>Nest surveys will be conducted no more than 7 days prior to clearing or construction activity commencing. If construction activities have not commenced within 3-7 days (depending on species present, time of year, and habitat) after a nest survey has been conducted, another nest survey will be required.</li> <li>If an active nest is found, construction works will cease and a species appropriate buffer (minimum 100 m) will be applied until the nest is no longer active (i.e., young have left the nest).</li> <li>Maintenance employees must report the discovery of any new wildlife features (e.g., nests, hibernacula, dens, burrows, leks) to the Environmental Monitor immediately, and stop work in that area until the Environmental Advisor and Construction Manager can determine the appropriate course of action (e.g., implementing mitigation measures).</li> </ul>	BMP 200.4.2 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>
		Noise and light disturbance	<ul style="list-style-type: none"> <li>Maintenance activities will be conducted in daylight hours to the extent practicable to minimize disturbance to wildlife.</li> <li>Idling of vehicles will not be allowed, unless required for maintenance activities.</li> <li>All infrastructure lighting will be minimized, down-shielded, and controlled by sensors wherever possible.</li> </ul>	<p>Rule 012- Noise Control</p> <p>BMP 200.4.3 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i></p>
Maintenance (continued)	Vegetation	Mowing	<ul style="list-style-type: none"> <li>If required, mowing should occur outside the breeding bird and migratory bird Restricted Activity Periods (RAPs) to reduce impacts on nesting birds.</li> <li>If mowing is required within the breeding bird and/or migratory bird RAPs then pre-disturbance nest surveys may be required in consultation with the Environmental Advisor and the Operations Manager.</li> </ul>	Standards 100.3.3 and 100.3.19 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i>
		Weed management	<ul style="list-style-type: none"> <li>Construction equipment and employee vehicles should arrive to the construction site clean and free of soil or plant debris.</li> <li>Environmental Monitor(s) should inspect equipment as it arrives to site. Any equipment failing inspection will need to be cleaned and re-inspected before being allowed onto site.</li> <li>Herbicides will be used in consultation with the Construction Manager and the Vegetation Reclamation Manager and if used not used within 30 m of an open water body.</li> <li>Refer to the Conservation and Reclamation and Vegetation Management Plan for details of weed management.</li> </ul>	<p>BMP 200.4.4 of the <i>Wildlife Directives for Alberta Solar Energy Projects</i></p> <p>5.2.1.1. Siting- <i>Conservation and Reclamation Directive for Renewable Energy Operations</i></p>

**Table 4. Potential impacts and mitigation measures during the operation phase**

<b>Operation Activity</b>	<b>Environmental Component</b>	<b>Project Impact or Concern</b>	<b>Mitigation measures</b>	<b>Reference</b>
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Dunmore Solar Power Project = the Project, BMP = best management practices; m = metres

## **6.2 Non-compliances and Resolution**

All incidents that are in non-compliance of the environmental commitments made by Dunmore Solar in this EPP will be reported to the Environmental Advisor and Construction or Operations Manager. Appropriate steps will be taken to rectify the situation through the implementation of appropriate mitigation measures, and properly document the incident. The Environmental Advisor will report the incident to the appropriate regulators if necessary.

If the situation arises where the consensus on the appropriate mitigation measures, or on the success of implemented mitigation cannot be reached, then the Environmental Advisor and Operations Manager/Owners Representative will be notified and consulted. The Environmental Advisor, in consultation with Dunmore Solar, will determine the proper course of action to ensure that all environmental commitments outlined in the EPP and appropriate legislation have been appropriately met, and reported as necessary.

## **6.3 Unforeseen Environmental Impacts**

Unforeseen environmental impacts may arise during the construction and operation of the Project that are not covered in this EPP and there may be need to revise, refine, modify, and/or create new procedures to address and mitigate unanticipated environmental impacts. If this were to occur, the issue will be resolved in consultation with the Environmental Monitor, Environmental Advisor, Construction or Operations Manager, Dunmore Solar, and AEP as needed.

The general procedure to follow in the event modification is required to the EPP is outlined below:

- Environmental Monitor identifies an environmental impact that falls outside of the scope of this EPP. If the issue is identified by other personnel on the Project they will report it to the Environmental Monitor as soon as possible
- Construction work will be halted in the area of the new issue, taking into account safe work practices and work area securement, until an appropriate mitigation has been determined
- Environmental Monitor reports the environmental issue to the Environmental Advisor and Construction or Operations Manager and, together, with Dunmore Solar, develop appropriate mitigation and modification to the EPP to address the new environmental impact. AEP will be consulted at this stage if needed
- Environmental Monitor oversees and assists with the implementation of new mitigation measures

## **7.0 REPORTING**

The Environmental Monitor and Environmental Advisor, with support from Dunmore Solar, will ensure that all necessary reports are completed in a timely manner and submitted to the relevant regulators if needed.

Examples of reports required for the Project include:

- Annual Environment reports
- Post-construction monitoring reports
- Environmental monitoring reports
- Spill reports
- Environmental incidents
  - Injured, stranded, or dead wildlife encounters
  - All other wildlife encounters
  - Discovery of wildlife features (e.g., nests, dens, hibernacula)

## 8.0 REFERENCES

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Province of Alberta. 2020. Historical Resources Act. Revised Statutes of Alberta 2000, Chapter H-9. Current as of March 31, 2020. Queen's Printer. Edmonton, Alberta. Accessed August 2020. Available online: <https://www.qp.alberta.ca/documents/Acts/h09.pdf>