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October 05, 2022

Our Reference
Project No. 60663147

James Capotosto
Director
Manitoba Environment, Climante and Parks
Environmental Approvals Branch
1007 Century Street
Winnipeg MB R3H 0W4

RE: Selkirk Solar Glass Manufacturing Facility Project – Environment Act Proposal (EAP) Application

Dear Mr. Capotosto,

On behalf of Canadian Premium Sand Inc. ('CPS'), enclosed is an Environment Act Proposal (EAP) application including an EAP report for the Selkirk Solar Glass Manufacturing Project (the 'Project').

If you have any questions regarding the proposed Project, please contact me at your earliest convenience.

Yours sincerely,

Marlene Gifford
Biologist, Environmental Assessor
AECOM Canada Ltd.
T: 204-928-9210
E: marlene.gifford@aecom.com

cc: Alasdair Knox (CPS)
Glenn Leroux (CPS)

Environment Act Proposal Form

Manitoba

Name of the development:	Selkirk Solar Glass Manufacturing Facility
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88):	Class 2 (Manufacturing and Industrial Plant)
Legal name of the applicant:	Canadian Premium Sand Inc.
Mailing address of the applicant:	2000, 715 5th Avenue SW
Contact Person:	Alasdair Knox
City: Calgary	Province: Alberta Postal Code: T2P 2X6
Phone Number: (403) 990-0961	Fax: email: alasdair.knox@cpsmail.com
Location of the development:	City of Selkirk
Contact Person:	Alasdair Knox
Street Address:	See Sec. 1.4 of the EAP
Legal Description:	See Sec. 1.4 of the EAP (City of Selkirk Lot 1)
City/Town: Selkirk	Province: Manitoba Postal Code: N/A
Phone Number: (403) 990-0961	Fax: email: alasdair.knox@cpsmail.com
Name of proponent contact person for purposes of the environmental assessment:	Marlene Gifford, M.Sc., P.Biol., R.P.Bio. AECOM Canada Ltd.
Phone: (204) 928-9210 Fax:	Mailing address: 99 Commerce Dr. Winnipeg, MB R3P 0Y9
Email address: marlene.gifford@aecom.com	
Webpage address:	
Date: 2022-10-05	Signature of proponent, or corporate principal of corporate proponent: Printed name: Alasdair Knox

PRINT RESET

Selkirk Solar Glass Manufacturing Facility

Environment Act Proposal

Canadian Premium Sand Inc.

60663147

October 2022

Delivering a better world

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Alasdair Knox
VP, Project Engineering
Canadian Premium Sand Inc. (CPS)
2000, 715 5th Avenue SW
Calgary, AB T2P 2X6

October 5, 2022

Project #
60663147

Subject: Selkirk Solar Glass Manufacturing Facility – Environment Act Proposal

Dear Mr. Knox:

AECOM Canada Ltd. (AECOM) is pleased submit our report regarding the above-referenced project. If you have any questions, please do not hesitate to contact Marlene Gifford directly at 204-928-9210.

Sincerely,
AECOM Canada Ltd.

[redacted]

Marlene Gifford, M.Sc., P.Biol., R.P.Bio.
Biologist, Environmental Assessor
marlene.gifford@aecom.com

Clifton Samoiloff, B.Sc., EP(CEA)
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MG:CS:ag
Encl.

Statement of Qualifications and Limitations

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

AECOM: 2015-04-13

Quality Information

Prepared by

[redacted]

Marlene Gifford, M.Sc., P.Biol., R.P.Bio.
Biologist, Environmental Assessor

Reviewed by

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Kristiina Cusitar, BA, CET, EP(SAR)
Environmental Planner & IAP Manager

Reviewed by

Clifton Samoiloff, B.Sc., EP(CEA)
Senior Scientist and Project Manager

Revision History

Rev #	Revision Date	Revised By:	Revision Description

Distribution List

# Hard Copies	PDF Required	Association / Company Name
	✓	Canadian Premium Sand Inc.
	✓	AECOM Canada Ltd.
2		Manitoba Environmental Assessment Branch

Prepared for:

Canadian Premium Sand Inc.
2000, 715 5th Avenue SW
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Prepared by:

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Executive Summary

This report has been prepared in support of an Environment Act Licence application submitted by Canadian Premium Sand Inc. (CPS) for consideration by Manitoba Environment, Climate and Parks (MECP) Environmental Approvals Branch for a "manufacturing and industrial plant" which is a Class 2 development in section 3 of the Classes of Development Regulation made under *The Environment Act*. This Environment Act Proposal report contains the information described in the "Information Bulletin – Environment Act Proposal Report Guidelines" (MECP, 2022).

CPS is proposing to construct a glass manufacturing facility at the north end of the City of Selkirk, Manitoba (the 'Project'). This facility will produce high quality glass for use in the manufacture of solar panels, with the primary ingredient of high purity, low iron silica sand being sourced from CPS' quarry near Seymourville, Manitoba.

When completed, the facility will supply glass to solar panel manufacturers in North America who currently source their glass from China and the Pacific Rim. Given the size and rate of growth of the solar panel market, along with the vast sand resource available to CPS and the availability of land at the Selkirk site, CPS has plans to increase the amount of glass being produced over time. CPS plans to commence glass production with a single 'Phase 1' facility producing approximately 600 to 800 tonnes per day but intends to increase production capacity up to, but not exceeding, approximately 1,200 tonnes per day within a few years by constructing a second 'Phase 2' facility adjacent to the Phase 1 facility. The production tonnage per day refers to the average amount of solar glass product produced per day.

Key components of the Project will include a solar glass production building including an exhaust cleaning unit with stack to clean and discharge furnace off-gasses; fully covered raw material storage and conveyors; ancillary structures (e.g., batch plant building; office building; utility building; warehouse; workshop; parking lot; gatehouse); and electrical substation. The Project site will be accessed by two short (<150 m) paved facility access roads intersecting with Walker Avenue, with traffic directed less than 350 m west to Provincial Trunk Highway (PTH) 4. That section of Walker Avenue will be paved to accommodate Project traffic. Upgrades to the PTH 4 / Walker Avenue junction will be done to improve truck access / egress. Rail access for other raw material deliveries and outgoing finished product will be via a railway spur entering the Project site between Greenwood Ave/Wersch Street and PTH 4, parallel to PTH 9A.

Process water (recirculating) for furnace cooling and for washing (partly recirculating) will be supplied from the City of Selkirk Wastewater Treatment Facility. Potable water will be from the City of Selkirk municipal supply. There will be an on-site process water tank (concrete) sized to feed all industrial uses and have capacity for fire fighting. This tank will be supplied with water from the Selkirk Wastewater Treatment Facility, will be designed with water pump redundancy and with connection to emergency generators, and will be designed such that water for fire suppression will be available. Sewage, grey water, and un-recycled process water will be treated/filtered as required and disposed of via the City of Selkirk municipal sewerage system. Power for the operation of the facility will include both natural gas and electricity during normal operations.

Following provincial and municipal regulatory approval of the proposed Project, construction of the Phase 1 facility is proposed to commence in early 2023 with glass production being realized in mid-2025. The full build-out of the Phase 1 and Phase 2 facility is expected to occur within approximately five years of the completion of the Phase 1 facility i.e., by 2030. Each facility is expected to remain in operation for an estimated 30 years and will be operational 24 hours a day, seven days a week, 365 days per year with shutdowns being planned at approximately 15-year intervals for furnace maintenance.

The results of the environmental and socioeconomic effects assessment are summarized as follows:

Geology/Topography

Impacts on topography have been assessed as being minor to negligible.

The Project site has been previously disturbed by agriculture and mowing activities, and the area is relatively level. Therefore, the existing topographic condition and geology will not be appreciably altered by the Project during either Project construction or future decommissioning activities. Effects on topography will be minimized by using existing previously disturbed areas to the extent feasible to minimize disturbance to the natural topography. Levelling and grading will occur upon Project decommissioning to return the landscape to elevations typical to the surrounding area.

Soils

The potential for soil erosion and associated adverse impacts to the surrounding environment are anticipated to be minor and restricted to the Project site.

Areas disturbed during the construction phase that are not required for the Project operation phase (e.g., equipment laydown areas) will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion. An Erosion and Sediment Control Plan will be implemented for the construction and decommission phases of the Project.

Groundwater

Project effects on groundwater are assessed as negligible.

CPS will not be establishing new groundwater wells for Project operations. Facility process water will be sourced from water supplied from the Selkirk Wastewater Treatment Facility. Only a nominal amount of groundwater will be sourced from the City of Selkirk municipal groundwater supply for potable water (e.g., for washing; kitchen; washrooms). Mitigation measures to prevent accidents and malfunctions that may impact groundwater quality (e.g., spills of hazardous materials) will be applied.

Air Quality

Air dispersion modeling was performed to estimate air quality at sensitive receptors under the worst-case scenario conditions that could occur for this Project. The results of the modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g., dust).

Emissions generated by the furnace used in the glass production process will pass through a specialized chemical conversion and filter system for glass furnace off-gas treatment to minimize particulate matter (PM), nitrogen oxides (NOx) and sulfur oxides (SOx) to emission control guidelines and/or requirements. Other emissions generated from the annealing lehr and post processing steps such as cullet (broken glass) conveying for recycling, edge trimming, drilling and coating processes will be appropriately filtered (as required) before venting to the outside.

All raw material storage and conveyors will be within fully covered enclosures. The unloading system for raw materials required to produce solar glass will be equipped with a dust control system (baghouse) that will remove dust particles (e.g., silica dust) from the air via a dust bag. Dust bags will be replaced as needed and in accordance with manufacturer specifications.

Climate/Greenhouse Gases (GHGs)

The impact of the Project on GHG contributions to the atmosphere is assessed as minor.

Overall, the Project is estimated to generate approximately 398,649 tonnes of CO_2e annually during operations which is 1.8% of the reported emissions in 2019 which were 26.6 Mt CO_2e from Manitoba, and 0.05% of the reported 738 Mt CO_2e from Canada in 2019.

Noise

The facility will be an enclosed building which will minimize noise generated from solar glass production activities. Results of a Noise Impact Assessment concluded that Project operation activities are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the nearest residences to the facility.

Protected and other Vegetation

The overall Project impacts to vegetation are assessed as minor within the Project site and negligible within the local area.

Only approximately 3.1% of the Project site (36 ha) consists of natural vegetation that may require clearing to accommodate the construction and operation of the Project. The types of naturally vegetated land cover that will be cleared (primarily sparsely treed areas) are common within the regional area. Of the plant Species at Risk that may occur within the ecoregion, none are likely to occur at the Project site due to the Project site being almost entirely under current or recent cultivation.

Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required. Trees/wood will be cut and disposed of in accordance with applicable regulations. Areas disturbed during Project construction, not required for Project operations, will be left fallow and will be maintained (e.g., mowed) in accordance with applicable provincial regulations and City of Selkirk by-laws.

Protected and other Wildlife

Project impacts on the regional wildlife populations are assessed as negligible. The Project site currently provides minimal and sub-optimal wildlife habitat (generally) due to existing disturbances from past clearing and agriculture activities, and the current adjacent developed land use activities and adjacent roadways and railway. The amount of naturally vegetated area (scatterer clusters of trees, grasses and forbs) that may need to be cleared for the Project (1.1 ha) is negligible compared to the naturally vegetated area that remains within the regional area which consists of approximately 81% previously disturbed landcover due to human development such as agriculture, residential and commercial development areas.

Minimizing vegetation clearing to the extent feasible will limit adverse effects to the existing minimal sub-optimal wildlife habitat. Noise generated within the Project site is not expected to be of a magnitude that would substantially affect regional wildlife populations which are anticipated to be accustomed (habituated) to some level of noise due to the presence of existing developments in the regional area (e.g., roads; railway; surrounding commercial, agricultural, and residential developed areas).

The increase in vehicle traffic in the regional area as a result of Project construction and operation activities is anticipated to result in a minor increase the risk of vehicle collisions with wildlife given the relatively small spatial scale of the Project site and overall minor increase in regional area traffic.

Surface Water

The impacts on surface water are assessed as negligible. Due to the absence of surface water at the Project site, Project construction and operation activities are not expected to directly affect surface water (i.e., no existing waterbody will be removed/filled to accommodate the Project).

Where required, erosion and sediment control measures as outlined in an Erosion and Sediment Control Plan will be in place during all Project phases to avoid introduction of sediment-laden runoff water into the existing ditching system adjacent to existing roads such as PTH 4. Prior to Project construction, a Drainage Study will be conducted to manage post-development Project site surface water runoff (as needed) so that the pre-Project development flow to the existing ditching system is not exceeded to a level that would compromise existing road infrastructure, adjacent land uses and local/regional waterbodies.

Fish and Fish Habitat

Project related impacts on fish and fish habitat are not anticipated due to the absence of fish habitat within the Project site, and application of an Erosion and Sediment Control Plan.

Labour Force and Employment

Employment opportunities associated with the Project will be a positive, long term and continuous benefit for the regional area within a reasonable commute time to the facility.

Approximately 700 people will be employed under contract for site clearing and Project construction for Phase 1, with the need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people. Employment opportunities for Phase 2 are expected to be similar to Phase 1.

Once construction is complete, there will be approximately 300 employees for Phase 1, with an additional 150 to 200 staff required for Phase 2, employed for facility operations. At the end of the Project life (approximately 30 years), the decommissioning phase is expected to require approximately 250 staff.

Infrastructure and Services

The Project is expected to have minor impacts on regional emergency services because on-site process water tanks will have the capacity for emergency fire suppression, and an Emergency Response Plan will be available on site during Project construction and operation that will clearly outline appropriate emergency response protocol. Standard mitigation measures to avoid accidents and malfunctions will also be applied.

Community Services

Water requirements for the facility will be sustainably sourced from the City of Selkirk Wastewater Treatment Facility (for production processes) and from the City of Selkirk municipal supply (for potable water). Water for production processes will be recycled to the extent feasible. Un-recycled process water and sewage from on-site personnel will be treated/filtered as required and disposed of via the City of Selkirk municipal sewerage system which is not expected to compromise the capacity of the City of Selkirk's new (in 2021) Wastewater Treatment Facility. The City of Selkirk community services (e.g., water system upgrades) would potentially benefit from the additional tax revenue realized from the Project being located within the City of Selkirk.

Land and Resource Use

The Project site is currently designated for industrial use and will continue to be used for industrial purposes. Recent rezoning of the Project site and some adjacent land to 'heavy industrial' from 'light industrial' to accommodate the Project may facilitate opportunities for additional future industrial opportunities on the adjacent re-zoned land. Although land within the Project Site is not specifically designated by the City of Selkirk for agriculture use, the City of Selkirk is currently leasing the Project Site land for cereal crop agriculture use.

In consideration of the proximity of two airports/aerodromes to the Project Site, CPS will discuss with Transport Canada appropriate air safety measures to incorporate in the facility stack design (e.g., lighting).

Human Health

The measures that will be applied to minimize adverse effects on air quality (e.g., dust) and noise (as summarized above) are expected to adequately mitigate adverse effects on human health both on and off the Project site. The results of air dispersion modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g., dust, including silica dust). Results of a Noise Impact Assessment concluded that Project operation activities are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the nearest residences to the facility.

All CPS employees will abide by the standards, procedures and training required under *The Workplace Safety and Health Act* as well as with CPS's internal Health and Safety Program and Emergency Response Plan. Employee Orientation and Safety training will be mandated for all new hires in addition to required yearly safety reviews for existing staff. Applicable personal protective equipment (PPE) will be provided to employees. Where required, visitor orientation and PPE will be provided when visitors enter employee only areas. Therefore, the risk of adverse impacts on human health is determined to be negligible.

Indigenous Communities

The Project is expected to be an overall benefit to nearby Indigenous communities within commuting distance to the Project site as there will be increased employment opportunities associated with the Project. Potential human health effects as described above, would be applicable to the nearest Indigenous peoples to the Project site.

The Project is not expected to adversely impact the exercise of Indigenous or Treaty rights because:

- No fish or fish habitat will be affected by the Project;
- The Project will be located on private land accessible only for the purposes of the Project;
- The residual environmental impact of the Project on vegetation beyond the Project Site is assessed to be negligible; and
- The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible.

Heritage Resources

The Archaeological Unit of the Historic Resources Branch (HRB) advised that the potential for the Project to impact significant heritage resources is believed to be low. As recommended by HRB, CPS will have a Heritage Resources Protection Plan in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources if accidentally encountered. If heritage resources are discovered within the Project site, work will be stopped, HRB will be advised, and the discovered historic resources will be recorded by an archaeologist and adequately protected as required.

Traffic

Impacts to Local Study Area traffic will be not substantial because staff arrivals and departures will be staggered daily to accommodate the 24 hours, seven days/week operation schedule. Additional minor traffic will be related to weekly supply/parts deliveries and contractors for services such as waste disposal. Project-related traffic will be directed to travel along a short segment of Walker Avenue (less than 350 m in length), west to PTH 4. Therefore, the use of local roads beyond the short (<150 m) facility access roads (for transport trucks and facility staff) will be minor.

Results of a Traffic Impact Study concluded that no geometric or traffic control improvements are required at the Easton Dr (PTH 9A) at Wersch Street intersection or the Easton Drive (PTH 9A) at PTH 9 / PTH 4 intersection to

accommodate traffic related to Project operations. However, based on Manitoba Transportation and Infrastructure (MTI) rural intersection improvement warrants (standards), some improvements as described in the Traffic Impact Study are recommended for the PTH 4 at Walker Avenue intersection. These include widening PTH 4 to provide separate left and right turn lanes. Once these improvements are constructed, Project related traffic will not result in substantial impacts to traffic flow in the study area considered in the Traffic Impact Study.

Final design of the improvements at the PTH 4 at Walker Avenue intersection will be discussed with CPS, MTI, and the City of Selkirk.

Follow-up Plans and Overall Assessment

The follow-up plans that will be implemented include, but are not limited to, the following: Erosion and Sediment Control Plan; Drainage Study; Heritage Resources Protection Plan; and Emergency Response Plan.

It is recommended that mitigation measures and follow-up plans described in this report be implemented to avoid or minimize potential environmental effects and/or identify any unanticipated adverse effects early so that appropriate adaptive management action can be undertaken.

Summary

In summary, based on the proposed Project description and with the application of the proposed mitigation measures and follow-up plans outlined in this Environment Act Proposal, adverse residual environmental impacts resulting from the Project are expected to be sufficiently mitigated. The success of the Project is anticipated to provide substantial benefit to the City of Selkirk and local and regional area communities. Direct employment and potential business opportunities related to the services required for operating the Project are substantial. Further, the City of Selkirk and province of Manitoba will realize future tax revenue from the project and associated service supply.

List of Abbreviations

CO_2e	'Carbon Dioxide equivalent' – amount of CO_2 that would have equivalent global warming impact as the effect of different greenhouse gases
COSEWIC	Committee on the Status of Endangered Wildlife in Canada.
CPR	Canadian Pacific Railway
CPS	Canadian Premium Sand Inc.
EAB	Environmental Assessment Branch
EAP	Environment Act Proposal
EC	Environmental Component
ELC	Ecological Land Classification
GHG	Greenhouse Gas(es)
ha	Hectares
HRB	Historic Resources Branch
HRIA	Heritage Resources Impact Assessment.
km	Kilometre
kV	Kilovolt; a unit of electric potential and electromotive force, equal to 1000 volts
kVA	Kilovolt-ampere; tells you how much power the overall system is using
m	Metre
m^3	Cubic metres
MAAQC	Manitoba Ambient Air Quality Criteria
masl	Metres above sea level
MECP	Manitoba Environment, Climate and Parks
MBESEA	*The Endangered Species and Ecosystems Act*
MTI	Manitoba Transportation and Infrastructure
MVA	Megavolt amperes: describes the total electrical power in installations, and it captures both true and reactive power in an electrical circuit.1000 kVA = 1 MVA
NOx	Nitrogen Oxides: are produced in combustion processes, partly from nitrogen compounds in the fuel, but mostly by direct combination of oxygen and nitrogen in flames.
PM	Particulate matter (dust)
PPE	Personal Protection Equipment
PPM	Parts per million
PR	Provincial Road
PTH	Provincial Trunk Highway
Q1	QX = year quarter (e.g., **Q1** = January through March timeframe)
RM	Rural Municipality
RoW	Right-of-Way
SARA	*Species at Risk Act* (federal)
SC	Social Component
SOx	Sulfur Oxides: emitted by the burning of fossil fuels or other materials that contain sulfur.
TSP	Total suspended particulates (dust)

Terms / Glossary

Annealing	The process of slowly cooling hot glass until the temperature reaches the point where the glass is too firm to distort or bend but remains soft enough to relax to the preferred physical state and become more durable.
Annealing Lehr	A type of long kiln (temperature-regulated chamber) where glass is slowly cooled to produce glass of the desired tension and quality.
Batch	With reference to solar glass production, 'batch' is the mix of raw materials added at one time into a glass making furnace.
Batch Charger	A component that feeds raw materials used in the production of glass into a glass making furnace.
Batch Plant	Building where raw materials are mixed before being transported to the furnace.
Cullet	Recycled broken or waste glass (e.g., cuttings) used in glassmaking.
Process Water	Water used in the production of glass product.

Table of Contents

Figures

Tables

Appendices

1. General Project Information

1.1 Project Overview

Canadian Premium Sand Inc. (CPS) is proposing to construct a glass manufacturing facility at the north end of the City of Selkirk, Manitoba (the 'Project'). This facility will produce high quality glass for use in the manufacture of solar panels, with the primary ingredient of high purity, low iron silica sand being sourced from CPS' quarry near Seymourville, Manitoba.

When completed, the facility will supply glass to solar panel manufacturers in North America who currently source their glass from China and the Pacific Rim. Given the size and rate of growth of the solar panel market, along with the vast sand resource available to CPS and the availability of land at the Selkirk site, CPS has plans to increase the amount of glass being produced over time. CPS plans to commence glass production with a single 'Phase 1' facility producing approximately 600 to 800 tonnes per day but intends to increase production capacity up to, but not exceeding, approximately 1,200 tonnes per day within a few years by constructing a second 'Phase 2' facility adjacent to the Phase 1 facility. The production tonnage per day refers to the average amount of solar glass product produced per day.

It is currently planned that construction of the Phase 1 facility will commence in early 2023 with glass production being realized in mid-2025. The full build-out of the Phase 1 and Phase 2 facility is expected to occur within approximately five years after the completion of the Phase 1 facility i.e., by 2030. Each facility is expected to remain in operation for an estimated 30 years and will be operational 24 hours a day, seven days a week, 365 days per year with shutdowns being planned at approximately 15-year intervals for furnace maintenance.

Key project components for Phase 1 and Phase 2 are listed in **Table 1-1**.

Table 1-1: Key Project Components

Phase 1	Phase 2
Upgrades to the PTH 4 / Walker Avenue junction to improve truck access / egress	Phase 1 constructed to accommodate Phase 2
An access point for trucks transporting raw materials and finished product	Phase 1 constructed to accommodate Phase 2
A separate access point for personal transport vehicles – staff and visitors	Phase 1 constructed to accommodate Phase 2
Gatehouse to provide site security and monitor raw material deliveries and finished product deliveries	Phase 1 constructed to accommodate Phase 2
A railway access point for delivery of raw materials and transporting finished product	Phase 1 constructed to accommodate Phase 2
Covered stocks of raw materials contained within silos – silica sand, soda ash, limestone, dolomite, feldspar	Phase 1 component will be increased proportionately for Phase 2
A Batch Plant building where raw materials are mixed before being transported to the furnace	Phase 1 component will be increased proportionately for Phase 2
A production building containing the furnace and additional equipment to manufacture glass panels	Phase 1 component will be increased proportionately for Phase 2
An exhaust cleaning unit along with stack to clean and discharge furnace off-gasses	Phase 1 component will be increased proportionately for Phase 2
A warehouse to finish glass panels to customer requirements before storing them in preparation for delivery	Phase 1 component will be increased proportionately for Phase 2
Utility connections for natural gas and electrical power from Manitoba Hydro	Phase 1 component will be increased proportionately for Phase 2
Process Water connection from the City of Selkirk Wastewater Treatment Plant	Phase 1 component will be increased proportionately for Phase 2

Phase 1	Phase 2
A substation to convert electrical power for use on site	Phase 1 component will be increased proportionately for Phase 2
An office building	Phase 1 component will be increased proportionately for Phase 2
A workshop for on-site equipment repair and maintenance	Phase 1 component will be increased proportionately for Phase 2

Traffic movements in and out of the site will involve:

- Silica sand and some minor ingredients as well as finished product packaging materials arriving via truck
- Major ingredients (soda ash, limestone, dolomite, feldspar) arriving via train
- Finished product departing via a combination of truck and train depending on location of customer
- Staff and visitors arriving and departing via their own personal transport

The above-listed components are required for Phase 1 and Phase 2 and are collectively referred to as the ‘facility’ or the ‘Project’.

A conceptual image of Phase 1 (in operations by 2025) producing 600 to 800 tonnes per day of solar glass product is shown in **Figure 1-1**.

Figure 1-1: Conceptual Image of the Solar Glass Manufacturing Facility (Phase 1)

A conceptual image with the addition of Phase 2 (in operation by approximately 2030) producing up to a total of 1,200 tonnes per day, is shown in **Figure 1-2**.

Figure 1-2: Conceptual Image of the Solar Glass Manufacturing Facility (Phase 1 and Phase 2)

Glass for solar panels must be of the highest quality to ensure that the maximum amount of light is transmitted to the photovoltaic cells, ensuring that they operate at maximum efficiency. The major component of glass is silica sand (>60%) and the major contributor to transmissivity is iron content. The lower the iron content in the sand, the higher the transmissivity of the glass.

CPS' facility will take high quality, low iron sand from their quarry in Seymourville, Manitoba and mix it with soda ash, limestone, dolomite, and feldspar (obtained from external suppliers) before melting the mixture in a furnace heated by natural gas. The molten glass will be drawn through patterned rollers which flatten the glass into a long ribbon and imprint a permanent prismatic pattern to further improve light transmissivity. The glass ribbon is cooled in a controlled manner inside an 'annealing lehr' which relieves internal stresses within the glass. The glass is then cut to size before moving on to post-processing, which is specific to customer requirements but usually includes coating with an anti-reflective layer, trimming the edges and drilling holes. The finished sheets are packaged and stacked in the warehouse in preparation for delivery via rail or road.

1.2 Proponent Contact Information

Table 1-2: Proponent Contact Information

Name of Proponent	Canadian Premium Sand Inc. ('CPS')
Address of Proponent	2000, 715 5th Avenue SW Calgary, AB T2P 2X6
Principal Contact Person for the Environment Act Proposal (EAP)	Alasdair Knox, VP Project Engineering

1.3 Company Profile

Canadian Premium Sand Inc. is a Canadian-based publicly held company trading on the TSX Venture Exchange under the symbol of CPS.

- Corporation ID: 6699890
- Business Number: 823715875 RC0001
- Incorporation Date: September 21, 2005

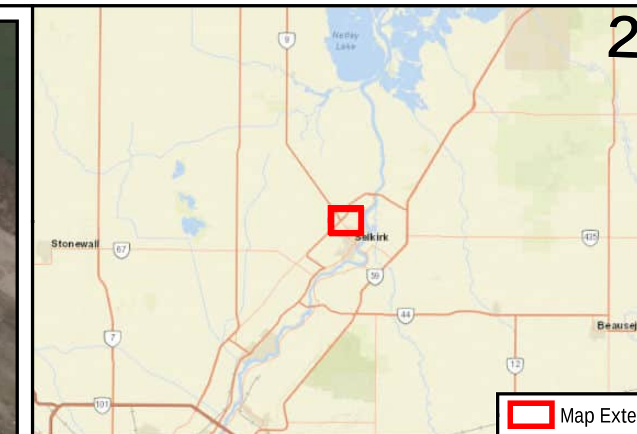
CPS is focused on using premium silica sand sourced from CPS' wholly-owned quarry[1] near Seymourville, Manitoba to produce high quality, low iron glass for solar panel production. CPS's sustainability initiatives will set a new standard for low-carbon footprint glass manufacturing and will include:

- Using high quality effluent from the City of Selkirk Wastewater Treatment Plant for process water
- Waste heat recovery and recycling
- Water recycling
- Optimizing use of Manitoba's renewable electricity
- Re-use of all broken glass (e.g., edge trimmings) known as 'cullet' which will be recycled to form part of the batch that is melted in the furnace

1.4 Project Location and Land Ownership

The Project will be located within the City of Selkirk as illustrated in **Figure 1-3**. CPS has entered an Option to Purchase the land required for the Project, which is currently owned by the City of Selkirk. The land required for Project development that will be purchased by CPS is Lot 1 as highlighted in **Figure 1-4**.

[1] *The CPS silica sand quarry is the Wanipigow Sand Extraction Project, Environment Act Licence No. 3285.*



LEGEND

PROJECT SITE AREA

GENERAL FEATURES

HIGHWAY

ROAD

RAILWAY

MUNICIPAL BOUNDARY

PROJECT SITE LOCATION

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

2

0 125 250 500
Metres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Imagery, Esri World Street Map, NRCan

PN#: 60663147

1:10,000
* when printed 11"x17"

AECOM

Figure 1-3

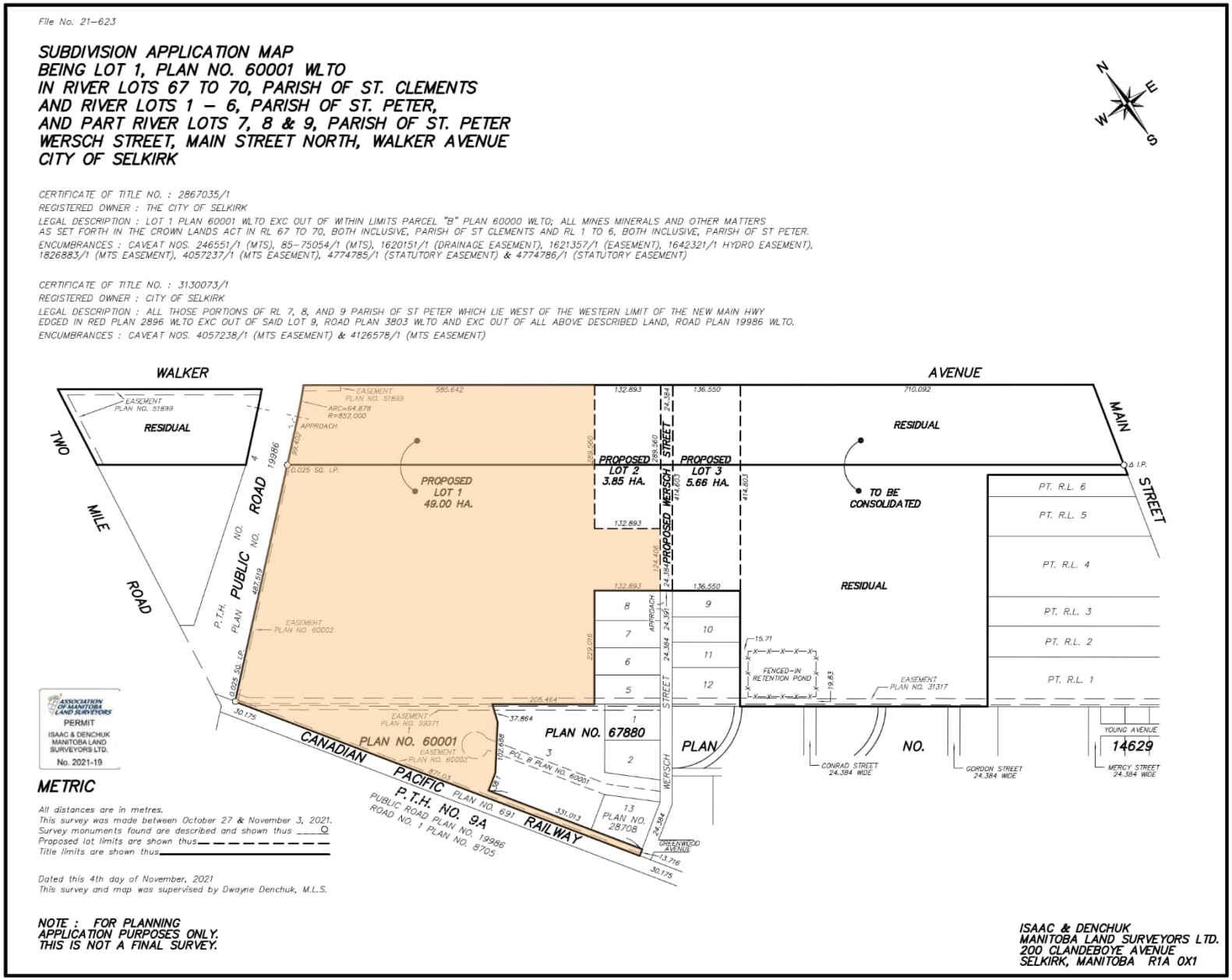


Figure 1-4: Land Ownership: City of Selkirk Lot 1

1.5 Project Phases

CPS is planning to construct the Project in two 'Phases', with Phase 2 increasing the production capacity of Phase1 up to, but not exceeding, approximately 1,200 tonnes per day. Initiation of construction activities for Phase 1 is planned to occur during early 2023, with glass manufacturing operations planned to begin in mid-2025 pending the issuance of regulatory permits and approvals required for Project construction and operation. As indicated in **Section 1.1**, the full build-out of the Phase 1 and Phase 2 facility is expected to occur within approximately five years of the completion of the Phase 1 facility i.e., by 2030. Planned activities are provided in the Project Description (**Section 2**).

Project phases include the following:

- Planning for Phase 1 and Phase 2
  - Current phase of the proposed Project
- Construction for Phase 1
  - Includes clearing for:
    - Upgrades to the Provincial Trunk Highway (PTH) 4 / Walker Avenue junction
    - On-site roads, truck parking and maneuvering areas plus car parking
    - On-site rail lines
    - Gatehouse
    - Batch plant building
    - Utilities building
    - Production building including exhaust cleaning unit and stack
    - Warehouse
    - Utility connections for natural gas, electrical power, water and sewage
    - Substation
    - Office building
    - Workshop
  - Construction of the above-listed components
  - Commissioning of the above-listed components
- Operation of Phase 1 includes:
  - Sand deliveries by truck
  - Deliveries of minor glass ingredients and packaging materials for finished product by truck
  - Deliveries of major glass ingredients by rail
  - Loading glass ingredients into batch plant
  - Loading batch into furnace
  - Melting batch to form molten glass
  - Rolling molten glass into a continuous sheet then cooling and cutting
  - Trimming, drilling, washing, coating and heat-treating glass sheets to form the finished product
  - Packaging and stacking the finished glass sheets then storing
  - Loading finished product onto rail cars and trucks
  - Transporting finished product off-site by rail and truck to customer locations
- Construction for Phase 2
  - Includes clearing for:
    - On-site roads, truck parking and maneuvering areas plus car parking
    - Covered stockpile structures1
    - Batch plant building
    - Utilities building
    - Production building including exhaust cleaning unit and stack
    - Warehouse

        - Office building
        - Workshop
    - Construction of the above-listed components
    - Commissioning of the above-listed components
- Operation of Phase 2 is the same as Phase 1

Project operation activities will occur 24 hours per day, seven days per week for the life of the Project which is anticipated to be approximately 30 years.

1.6 Regulatory Framework

1.6.1 The Environment Act

This Project will be reviewed by MECP under *The Environment Act* as a 'manufacturing and industrial plant' which is a Class 2 development in section 3 of the Classes of Development Regulation under group 4 'Manufacturing'.

CPS's intention is to use silica sand extracted from CPS's Wanipigow Sand Extraction Project near Seymourville, Manitoba as the source of high-quality silica sand required for the type of glass CPS will be manufacturing at the proposed solar glass manufacturing facility in the City of Selkirk. The Wanipigow Sand Extraction Project currently has an Environment Act Licence (No. 3285).

1.6.2 Other Project Regulatory Approvals

The City of Selkirk is responsible for all planning matters and commercial permits for the City of Selkirk. CPS will be applying for a City of Selkirk Business Permit as required under by-law No. 5273 and various other commercial building and development permits required by the City of Selkirk.

CPS is currently in discussions with Canadian Pacific Railway (CPR) to coordinate development of the railway spurs/siding within the railway RoW intersecting with the existing CPR-owned railway line (operated by Lake Line Railroad) and proposed rail spur at the Project site. CPR will have the responsibility for any permitting that may be associated with the rail spur.

CPS is also in discussions with Manitoba Hydro to coordinate access to electrical power and natural gas services required for the Project.

CPS will coordinate with Manitoba Transportation and Infrastructure (MTI) regarding approvals for the development of Project access road intersections to Walker Ave / Highway 4 for truck and private vehicle access.

CPS is in discussion with the City of Selkirk to coordinate access to process water from the output of the City's Wastewater Treatment Facility and connect the Project with Selkirk's existing water and wastewater infrastructure.

No federal permit or approval is required for any aspect of the Project.

1.7 Project Funding

Funding for the project will be arranged by CPS who will either own and operate the facility or participate as a significant shareholder within a corporate structure along side other shareholders.

1.8 Project Schedule

The proposed Project schedule is provided in **Table 1-3**.

Table 1-3: Proposed Project Schedule

Project Phases and Activity	Proposed Schedule (Subject to the results of Regulatory review)
Construction (Phase 1)	
Site preparation (clearing vegetation, grubbing, grading, leveling) and construction of the Phase 1 facility and associated infrastructure	Q1 2023 to Q1 2025
Operation (Phase 1)	
Commissioning the Phase 1 facility; glass product production	Mid-2025 Production: Year-round; 24 hours/day, seven days/week
Construction (Phase 2)	
Site preparation (clearing vegetation, grubbing, grading, leveling) and construction of the Phase 2 facility and associated infrastructure	Q1 2028 to Q1 2030
Operation (Phase 2)	
Commissioning the Phase 2 facility; glass product production	Q2 2030 Production: Year-round; 24 hours/day, seven days/week
Decommissioning (Phase 1 & 2)	
Facility dismantling and site reclamation	At end of Project Life (approximately 30 years from 2025): **2055**

Note: QX = year quarter (e.g., Q3 = July through September timeframe)

2. Project Description

2.1 Components and Activities

2.1.1 Solar Glass Production Process

The production process for flat, rolled glass for use in solar panels consists of the following steps:

- Receiving raw materials via road and rail
- Preparing a batch mix of raw materials
- Heating the batch mix in a gas and air fired furnace to produce molten glass
- Drawing the molten glass through rollers to form a long ribbon. The rollers also imprint one side of the molten glass with a prismatic pattern which increases the light transmissivity of the finished glass panel
- Cooling the molten glass ribbon in a controlled manner inside an annealing lehr to relieve internal stresses within the glass
- Cutting the glass ribbon into individual glass panels
- Returning (recycling) the waste glass (cullet) to the batch mixing process to be used in the next batch(es)
- Carrying out 'post processing' work on the individual glass panels to meet customer specifications. This varies, but usually includes coating with an anti-reflective layer, trimming the edges to a specific chamfer and drilling mounting and/or electrical connection holes. Again, the waste glass cullet from post processing is returned to the batch mixing process to be used in the next batch(es)
- Packaging and stacking the finished panels in the warehouse to await delivery to the customer
- Loading stacks of packaged, finished product onto trucks and rail cars for delivery by road and rail

The solar glass manufacturing process is illustrated in **Figure 2-1**.

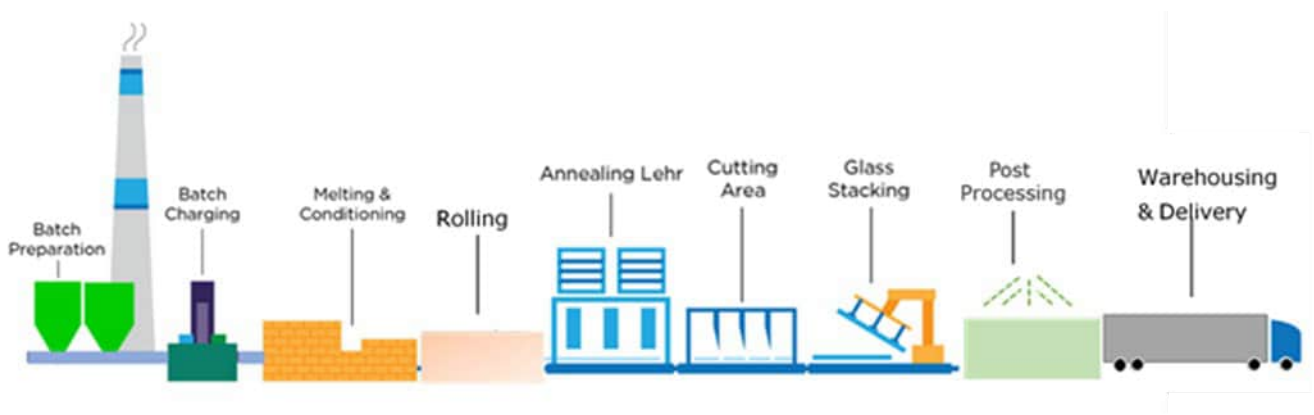


Figure 2-1: Conceptual Diagram of the Solar Glass Manufacturing Process

2.1.2 Emission Control

Emissions associated with the Project are detailed in **Appendix A** (Air Quality Impact Assessment) and generally include emissions from the glass production process, transportation, and handling of raw materials (such as silica sand) and transportation of solid wastes and the final solar glass product.

Emissions generated by the furnace used in the glass production process will pass through a specialized chemical conversion and filter system for glass furnace off-gas treatment to minimize particulate matter (PM), nitrogen oxides (NOx) and sulfur oxides (SOx) to emission control guidelines and/or requirements. This emissions control system will

convert SOx vapour to a $CaSO_4$ particulate. A ceramic filter baghouse is included in the emissions control system, which will capture the original particulate emissions and the newly converted CaSO4 particulate. The ceramic filters also contain a catalyst which facilitates the conversion of NOx to nitrogen and water vapor by way of injecting ammonia. The automated emission control system is designed to regulate the ammonia injection to prevent excess 'slippage' into the atmosphere. Post-filter system residual emissions from the two furnaces will be released to the ambient atmosphere via two approximately 70 m high stacks for the Project (Phase 1 and Phase 2 combined).

Airborne emissions generated from the annealing lehr are from the combustion of natural gas only.

There are no airborne emissions generated from the glass cutting and edge grinding process. The glass particles are washed off the finished product and filtered out for appropriate disposal or recycled on site as part of the cullet.

The anti-reflective coating process deposits a nano-porous silicate which is diluted in part by ethanol, n-propanol, and a small portion of methanol. The application process recirculates any unused coating material. Any waste material will be captured and disposed of in accordance with regulatory requirements.

The tempering or heat-strengthening process requires electric heating followed by air quenching. This process does not require emissions controls.

All raw material storage and conveyors will be within fully covered enclosures. The unloading system for raw materials required to produce solar glass will be equipped with a dust control system (baghouse) that will remove dust particles (e.g., silica dust) from the air via a dust bag. Dust bags will be replaced as needed and in accordance with manufacturer specifications. Used filters and dust bags will either be reconditioned for reuse by the supplier or disposed of at a licenced waste disposal facility.

Emissions associated with truck and rail transportation of raw materials and the final solar glass product will be minimized by maximizing efficiencies in delivery scheduling and transportation equipment (e.g., use of fewer, higher load capacity trucks) to minimize transportation trips and utilize fuel-efficient technologies as available. Motorized vehicle idling will be minimized to the extent feasible.

2.1.3 Buildings

The production process described above in **Section 2.1.1** is housed in several buildings with additional ancillary structures:

- **Truck Gatehouse** – clad, steel frame, single storey building for material delivery and finished product departure control
- **Raw Material Storage building** – two storey steel clad or tent type structure for receipt and storage of raw materials from both truck and train deliveries
- **Batch Plant** –steel-clad structure approximately 28 m high with access for truck and train traffic. Houses material storage silos and batch mixing equipment
- **Production Building** – approximately 25,000 m^2 steel-clad structure approximately 20 m high housing the furnace, rolling equipment, annealing lehr, ribbon cutting equipment and post processing equipment
- **Exhaust Cleaning Unit** – adjacent to the furnace end of the Production Building and containing the exhaust gas control system (see 'Emission Control' **Section 2.1.2**) including a stack approximately 70 m high for dispersion of exhaust from each Phase (one stack each for Phase 1 and Phase 2); the stack structure will include aeronautical safety marking and/or lighting as required and/or recommended by Transport Canada

- **Warehouse** – approximately 25,000m^2, 8 m high steel-clad frame building housing packaging process and finished product awaiting delivery. Includes loading docks for truck deliveries and equipment for loading rail cars
- **Office building** – two-storey, steel frame building housing reception, offices and staff welfare facilities
- **Workshop** – two-storey steel-clad frame building housing equipment and materials for repair and maintenance of equipment in the Production Building and Warehouse

The general layout of Project buildings and ancillary structures are illustrated in **Figure 2-2**.

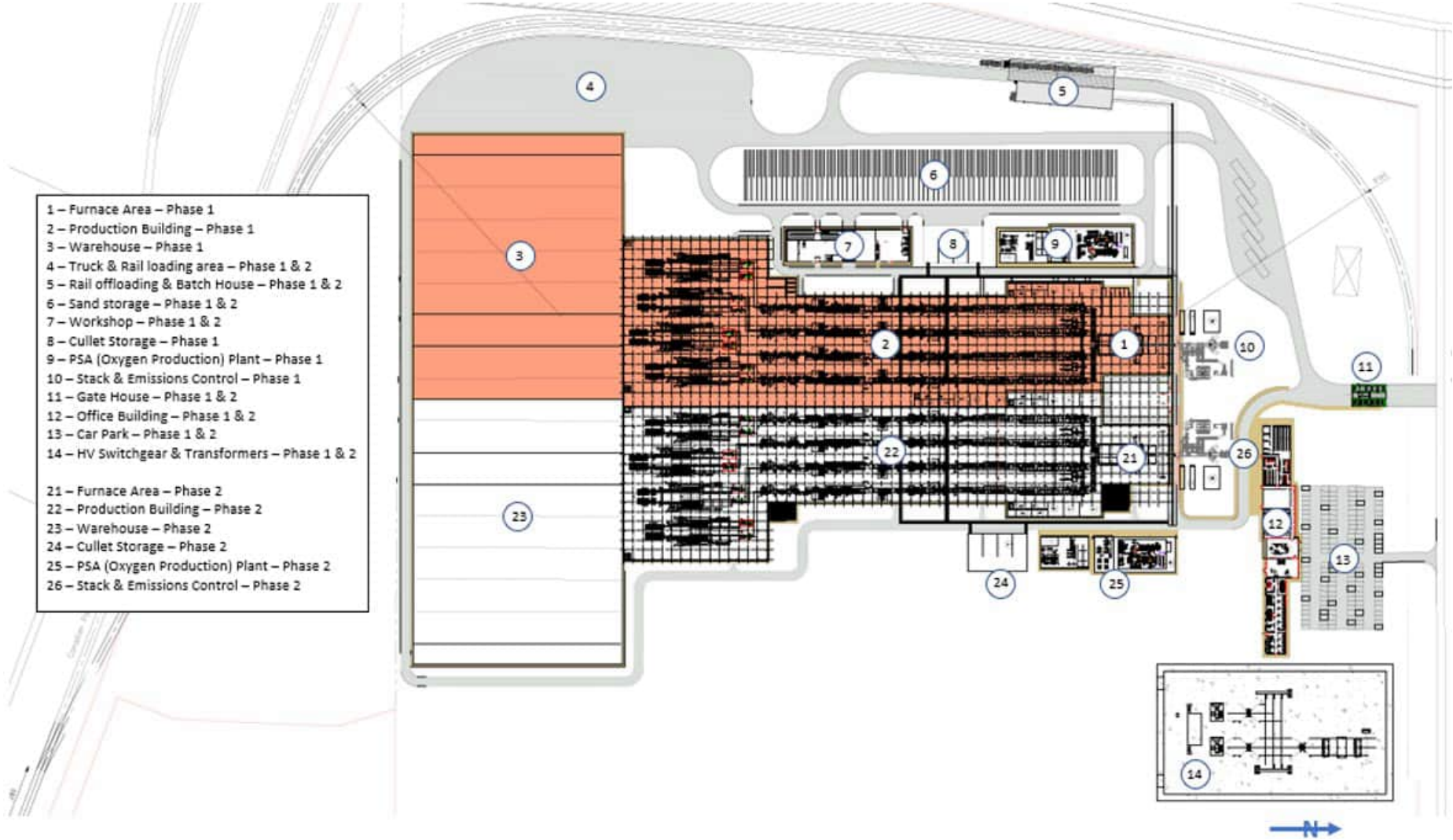


Figure 2-2: Conceptual Layout of Buildings and Ancillary Structures Comprising the Facility

2.1.4 Access

Project site access will be in three locations: two road access points and one rail access point.

Figure 2-3 illustrates the Project site access points and traffic flows.

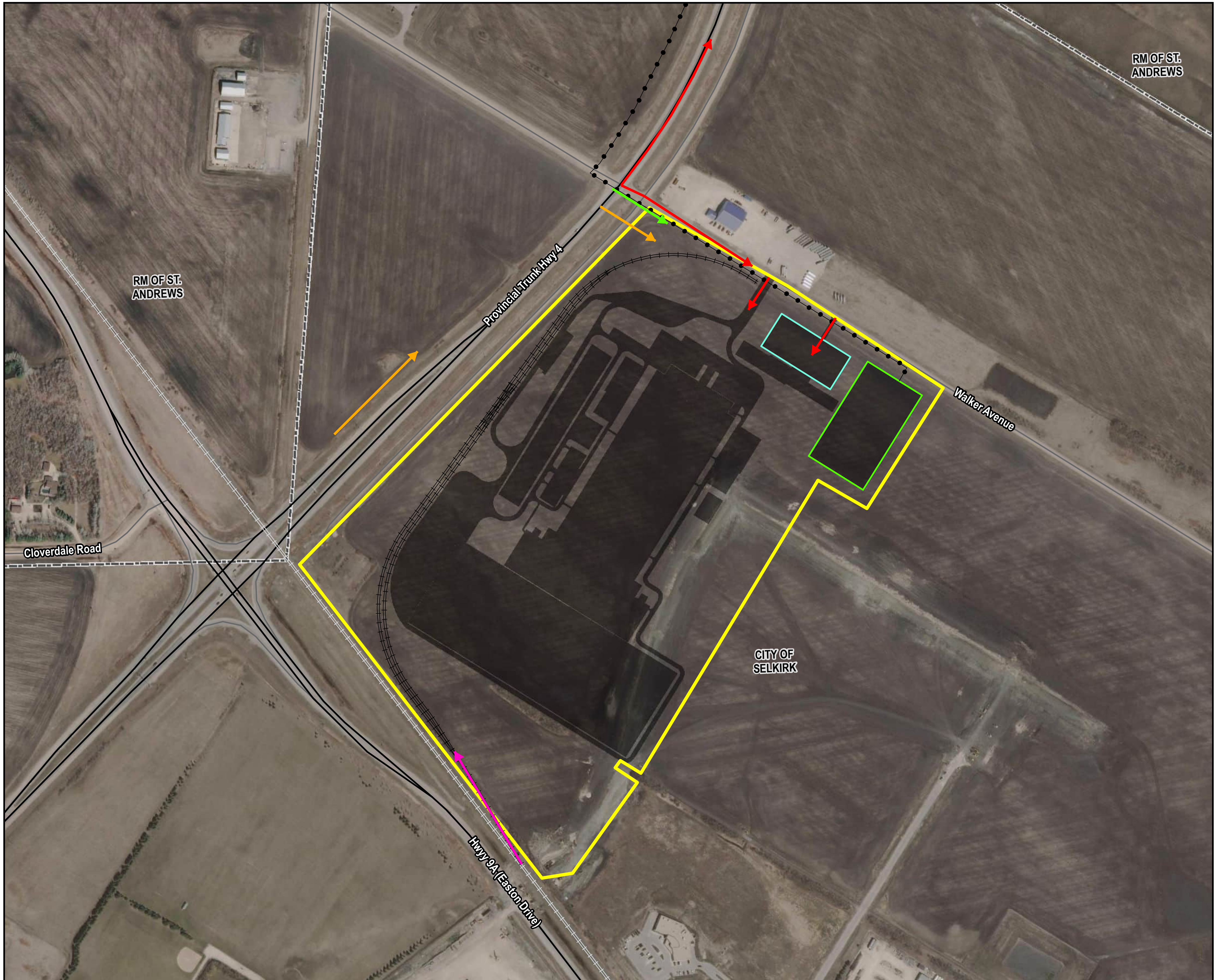
Road access for truck deliveries and outgoing finished product trucks will be to the north of the Project site. Trucks will approach the site on PTH 4, turning onto Walker Avenue before entering through the site gate at the Truck Gatehouse. Similarly, trucks will leave the site onto Walker Avenue before turning onto PTH 4. The section of Walker Avenue west of the Project site driveway gates to PTH 4 will be paved to reduce road dust generated by heavy transport trucks. The access road into the Project site and associated parking lot will also be paved.

Road access and egress for employees and visitors will be via a second short access road off Walker Avenue to the north of the Project site. Employee and visitor access to the Project site via the car park area will be controlled at the office building entrance.

To control traffic on Walker Avenue east of the Project site, ‘no turning’ signage at both the transport truck access road and the employee/visitor access road indicating no turning right (east) onto Walker Avenue will be posted at the egress points of the Project site access roads. Additional signage indicating no left turn from Walker Avenue. onto the Project site access roads will be posted pending discussion with, and approval by, the City of Selkirk.

Rail access for material deliveries and outgoing finished product will be via a spur railway line entering the Project site between Greenwood Ave/Wersch Street and PTH 4, parallel to PTH 9A (Easton Drive; **Figure 2-3**).

Additional information regarding traffic is provided in **Section 6.7**.



LEGEND

PROJECT SITE AREA AND COMPONENTS
- PROJECT SITE AREA
- SUBSTATION
- PARKING LOT
- PROJECT SITE LAYOUT *
- PROPOSED RAIL SPUR
- PROPOSED POWERLINE

ACCESS POINTS AND TRAFFIC FLOW
- NATURAL GAS
- POWER (ELECTRICAL)
- RAIL
- ROAD

GENERAL FEATURES
- HIGHWAY
- ROAD
- EXISTING RAILWAY
- MUNICIPAL BOUNDARY

* PROJECT SITE LAYOUT COMPONENTS ARE DETAILED IN FIGURE 2-2

PROJECT SITE ACCESS AND TRAFFIC FLOW

ENVIRONMENT ACT PROPOSAL CPS SOLAR GLASS FACILITY PROJECT

N W E S

0 125 250
Metres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Imagery, Esri World Street Map, NRCan

PN#: 60663147

1:5,000
* when printed 11"x17"

Figure 2-3

AECOM

Map location: \\na.aecomnet.com\LFS\AMER\Winnipeg-CAWPG1\DCS\Projects\ENV...
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2.1.5 Raw Materials Receiving and Storage

The raw materials for the manufacturing of solar glass includes:

- Silica sand – approximately 51%, delivered by truck
- Soda ash – approximately 14%, delivered by rail
- Limestone – approximately 4%, delivered by rail
- Dolomite – approximately 13%, delivered by rail
- Saltcake – approximately 3%, delivered by rail
- Cullet (broken glass pieces, recycled from the on-site glass cutting and trimming processes): approximately 15%[2]

CPS will consider utilizing waste glass from other sources. However, such glass would have to be high quality, low iron glass that was previously used in the manufacture of solar panels. In addition, utilizing waste glass would have to be economically viable and not compromise the quality of CPS' glass. At this point, CPS has not found an acceptable source of such waste glass.

In addition to the raw materials listed above, less than 0.3% of the glass composition will include minor components to help control the light transmission of the glass. These minor components may include sodium antimonate and manganese dioxide.

Silica sand will be transported in trucks from CPS' sand quarry located near Seymourville, Manitoba. The sand will have been washed at the quarry and will arrive at the facility ready to be used in the glass manufacturing process without additional processing. The Environment Act Licence for CPS' sand quarry (No. 3285) allows for the extraction and processing of one million tonnes of silica sand per year. However, CPS intends to use sand from their quarry to supply the raw silica sand required to produce glass at this proposed facility which will only require approximately 300,000 tonnes per year of silica sand. Therefore, the annual volume of sand being transported from CPS' sand quarry to the proposed glass manufacturing facility is anticipated to be substantially less than what was originally proposed in the Environment Act Proposal for the Wanipigow Sand Extraction Project (AECOM 2018).

Under normal circumstances, sand deliveries will occur all year round for seven days a week, 16 hours per day. Additional information regarding Project-related traffic, including sand transport truck traffic, is provided in the 'Traffic' **Section 2.10**.

To ensure security of sand supply during periods when sand transportation from Seymourville cannot be guaranteed, a 10-day volume of sand will be maintained at the Project site within storage silos within the batch plant.

Separate silos dedicated to each of the various raw materials required for solar glass production will be located within the batch plant. Each raw material silo has hoppers and dedicated elevators to transport raw materials within the batch plant to the furnace. Each of the elevators has a dedicated dust collection system. Staff will be equipped with required PPE to protect workers from exposure to hazards as per *The Workplace Safety and Health Act*.

With the exception of silica sand, other raw materials required for solar glass production will be transported to the Project site by railway from their source point which will be in North America or a port location. Rail connection to the facility will be made by construction of a railway spur (approximately 2,000 m of new track) from the existing Canadian Pacific Railway (CPR) line located adjacent to the south side of the Project site and parallel to PTH 9A (**Figure 2-3**).

[2] *Note that the tonnes per day of glass product produced includes use of cullet which is recycled (melted and used) in the batch process.*

As with sand, these materials will arrive at the facility ready to be used without further processing. The raw materials for solar glass production transported by railway to the Project site are not classed as dangerous goods by the federal *Transportation of Dangerous Goods Act, 1992*.

Rail movements for raw materials receiving include the following:

- Approximately 40% of raw materials will be transported to the facility by railway (sand will be transported by truck)
- Three trains per week, each with one locomotive and 16 rail cars per train
- On any day, there will be two locomotives on site/day operating two hrs/day to move rail cars on site

The above-described trains will also be used to transport up to 50% of the solar glass product (**Section 2.1.6**).

Rail traffic will enter the site during the day under normal operations. However, to meet operational needs following a supply issue, there may be times when rail traffic enters site during the night.

Security of raw materials supply to the furnace will be ensured through use of raw materials storage silos. Materials in storage silos will be mixed in the batch plant; then the batch mix will move via covered conveyors into the batch plant.

Cullet (broken glass pieces) will be transported from the cutting and trimming process back to the furnace via conveyor and/or truck to be utilised within the raw material batch.

2.1.6 Product Transportation

Once the glass panels have been manufactured to the customers specification and packaged for delivery, they will be stored in the warehouse. Depending on customer location, finished product will be transported via road or railway. At this point, it assumed that up to 50% of finished product could be transported by railway.

Road transport of the finished product via trucks will likely be seven days a week, 16 hours a day with the option to expand to night-time if required.

2.2 Production Capacity

The glass manufacturing facility will operate 24 hours a day, seven days a week, 365 days a year throughout the Project 30-year life expectancy. The only break will be for repair and maintenance of the furnace which is anticipated to occur approximately every 15 years.

Production capacity of the facility is linked to the size of the furnace which is rated in metric tons per day of glass produced. During Phase 1, the glass manufacturing plant will house a 600 to 800 tonnes per day furnace and will operate at this capacity throughout its lifespan once it is brought up to full capacity during the commissioning period. When the second plant is constructed (Phase 2) the total glass output will total up to 1,200 tonnes per day for the Project, which is equivalent to approximately 110,000 m^2 of solar glass per day (40 million m^2 annually).

All material input requirements, staffing, utilities and finished product deliveries will be sized to meet the furnace production capacity.

2.3 Raw Material Requirements

As indicated in **Section 2.1.5**, the raw materials for the manufacturing of glass includes:

- Silica sand – approximately 51%
- Soda ash – approximately 14%
- Limestone – approximately 4%
- Dolomite – approximately 13%
- Saltcake – approximately 3%
- Cullet (broken glass pieces, recycled from the on-site glass cutting and trimming processes): approximately 15%)

In addition to the raw materials listed above, less than 0.3% of the glass composition will include minor components to help control the light transmission of the glass. These minor components may include sodium antimonate and manganese dioxide.

Water use and power use requirements for product production are provided in **Sections 2.4** and **2.5**.

2.4 Water Use

Water has two distinct uses on site:

- Potable water for staff uses (e.g., washrooms)
- Process water for all industrial uses (primarily makeup water for the recirculating cooling system)

For both Phase 1 and Phase 2 of Project development, there will be two distinct water supply systems on site to ensure that process water does not contaminate the potable water supply.

1. Potable water will be from the City of Selkirk municipal supply with an estimated requirement of 14 m^3/hour.
2. Process water will be required for furnace cooling and glass washing. Both the furnace cooling and glass washing systems are recirculating that will be supplied with makeup water from the City of Selkirk Wastewater Treatment Facility at a rate of approximately 150 m^3/hour.

There will be an on-site process water tank (concrete) sized to feed all process uses and have capacity for fire fighting. This tank will be supplied with water from the Selkirk Wastewater Treatment Facility and will be designed with water pump redundancy and with connection to emergency generators and will be designed such that water for fire suppression will be available.

CPS has confirmed that the City of Selkirk will be responsible for obtaining a Notice of Alteration to their existing Wastewater Treatment Facility Environment Act Licence for discharging process water to the CPS facility.

2.5 Power Use

Power for the operation of the facility will include both natural gas and electricity during normal operations (**Sections 2.5.1** and **2.5.2**).

In the rare event that there is power loss to the facility, at least two, and no more than four, emergency diesel generators (up to 1,500 kW each) will be on stand-by to keep equipment functioning that may otherwise be damaged by a temporary or prolonged loss of power. Each generator will be operated for one hour per month to ensure they are functional when needed.

2.5.1 Natural Gas

Natural gas will be required for:

- Operation of the furnace to melt and condition the raw components for the solar glass product;

- Operation of the annealing lehr to slowly cool the glass and produce glass of the desired tension and quality; and
- Heating system for workshops, laboratory, office and staff kitchen.

Natural gas will be supplied by an existing natural gas pipeline adjacent to the Project Site. The total estimated annual natural gas usage for the Project (Phase 1 and Phase 2 combined) is approximately 7,000 to 8,400 Nm^3 per hour.

2.5.2 Electricity

Electricity will be used for powering the remaining facility components not powered by natural gas (**Section 2.5.1**).

Electrical power for the site will be supplied from the Manitoba Hydro 115 kV line running to the north of the site from a short radial tap off. The current discussions with Manitoba Hydro are for 20 MVA load once Phase 2 is complete.

The substation as indicated on in **Figure 2-2** as MV (medium voltage) switchgear and transformers includes two 20,000 kVA transformers to share the full electrical demand of Phase 1 and 2 while allowing for either transformer to service the Project site. This allows for annual maintenance or emergency service.

All Manitoba Hydro interconnection requirements will be met as well as all requirements of the Canadian Electrical Code and the Manitoba Hydro Electrical Code.

There will be three 3,150 kVA transformers for the hardening ovens for Phase 1, and three additional 3,150 kVA transformers for Phase 2. Two 2,000 kVA transformers will serve the furnaces for operations and back-up in case natural gas supply is temporarily interrupted. Two more 2,000 kVA transformers will be added for Phase 2.

The remaining transformers ranging in size from 2,000 kVA to 500 kVA.

2.6 Equipment Use

Table 2-1 presents the on-site heavy equipment use expected during Project construction and operation phases.

Table 2-1: Project Heavy Equipment Use

Equipment	Units*
CONSTRUCTION PHASE	
Warehouse forklift	12
Telehandler/Lull	3
15 50-ton crane	3
50 100-ton crane	1
100 300-ton crane	1
Aerial lift (various)	8
Scissors lift (electric)	14
Spydercrane (diesel)	2
Side-by-side diesel/gas	4
Parts Washer	1
½ Ton Trucks	10
Zoom Boom	4
Skid Steer	4
Mobile Cranes	4
Excavators	3
Dozers	3
Pile Driving Equipment (Crane, Loader and Service Truck)	2

Equipment	Units*
Rock Trucks	2
Tandems – (anywhere from 2 to 20)	20
Redi-Mix Trucks	6
Directional Drilling Equipment	1
Roller Packers	4
Fuel Truck	1
OPERATION PHASE	
Railcar mover/switch locomotive (diesel)	2
Liebherr L-556 Wheel Loader	3
Forklifts (various sizes, up to 8 tonnes lift capacity)	14
4 x 4 pick-up trucks	3
DECOMMISSIONING	
Warehouse forklift	10
Telehandler/Lull	2
15 50-ton crane	4
50 100-ton crane	1
Aerial lift (various)	6
Scissors lift (electric)	10
Spydercrane (diesel)	1
Sidexside diesel/gas	3
Parts Washer	1
Track Hoe Excavator	2
Dump Truck	2
Brokk (electric)	2

* Not all operating simultaneously during any given phase. Excludes heavy machinery/equipment not based on the Project site. Refer to **Appendix A** (Air Quality Impact Assessment) for a full list of heavy machinery for Project operations.

2.7 Site Drainage

Storm water and other clean surface water will be diverted away from the facility via drainage ditches, which will direct water toward a stormwater retention pond to be situated on the property. Although the location of the stormwater pond is currently under review, the pond will be sited, designed, and managed in accordance with applicable regulations and design standards for stormwater containment facilities in Manitoba.

As required by MTI, ditches adjacent to PTH 4 and PTH 9A will not be utilised for site drainage purposes.

2.8 Waste and Waste Disposal

2.8.1 Wastewater

CPS' objective is to recycle and reuse process water as much as possible to minimize Project generated waste. Waste sources will be:

- Sewage from personnel on site
- Un-recycled process water

Sewage (approximately 20m^3 per hour) will be disposed of via the City of Selkirk municipal sewerage system.

Process water which is not recycled (approximately 150 m^3/day) will be filtered as required and disposed of via the City of Selkirk municipal sewerage system. Pre-treatment of process wastewater at the solar glass facility will include the following:

- Water used to wash glass particles from the glass cutting and edge-smoothing process will be treated using gravity settling, or other mechanical means, to reduce particulates in the wash water to meet wastewater discharge requirements. Particulates will be collected and either recycled on site as part of the cullet or disposed of at a licenced waste disposal facility.
- Water used in other washers for the glass production process will be treated using gravity settling, or other mechanical means, to reduce particulates in the wash water to meet wastewater discharge requirements; with a portion of the wash water recycled in the glass production process. Particulates will be collected and either recycled on site as part of the cullet or disposed of at a licenced waste disposal facility.

CPS will seek an Industrial Service Agreement with the City of Selkirk, as required, for the use of City of Selkirk wastewater, and discharge of CPS Project wastewater to the City of Selkirk municipal sewerage system.

2.8.2 Solid and Hazardous Waste

Domestic and commercial waste will be removed from the Project site by a licensed local contractor and disposed of at a licensed waste disposal facility. Recyclable materials will be collected in designated recycling containers and transported to a licenced recycling facility.

Hazardous wastes will be handled, stored, and disposed in accordance with applicable regulatory requirements. Additional information on the handling, storage and disposal of hazardous materials is provided in **Section 6.8** ‘Accidents and Malfunctions’.

2.9 Employees

There will be no worker camp on site due to the proximity of the Project site to Selkirk, the City of Winnipeg, and other communities within close commuting distance. Information regarding the estimated number of employees and positions required for Project construction and operation phases is provided in **Sections 2.9.1** and **2.9.2**.

2.9.1 Construction and Decommissioning

During Project construction for Phase 1, approximately 700 people will be employed under contract for site preparation and Project construction. The need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people. Employment opportunities for Phase 2 are expected to be similar to Phase 1.

At the end of the Project life (approximately 30 years), the decommissioning phase is expected to require approximately 250 staff.

2.9.2 Operation

The operation phase of the Project will employ approximately 300 employees for Phase 1, with an additional 150 to 200 staff required for Phase 2, in the following key occupations:

- Plant Manager
- Production Manager
- Foremen, Shift Supervisors and Operational Leads/Supervisors
- Equipment Operators
- Electrical and Equipment/Machinery Technicians

- Service Staff / Millwrights
- Logistics staff / Forklift Operators / Warehouse Staff
- Office and Administration Staff
- Environment, Safety and Health Professionals
- Maintenance and Quality Control Technicians

2.10 Traffic

At this time, the following schedule is anticipated for the various materials entering and finished goods leaving the facility:

- Silica sand – 100% by road
- Soda Ash – 100% by rail
- Limestone – 100% by rail
- Dolomite – 100% by rail
- Saltcake – 100% by rail
- Other items such as packaging materials – 100% by road
- Finished Product (solar glass) – split between road and rail. Up to 50% of finished product could be shipped by rail

Truck movements will occur seven days per week over a period of 16 hours per day including the period of spring road restrictions where CPS sand truck loads will be reduced to accommodate allowable load weight limits, where applicable, for the provincial Spring Road Restrictions Program. This schedule minimizes the number of trucks on the road daily. Given these parameters, between five and eight truck trips per hour (inbound and outbound) are anticipated during Project operations for the transportation of sand, packaging materials and finished product.

The number of truck trips per hour could vary over the course of a year. For example, if operationally feasible, sand truck deliveries may be reduced on weekends during 'Cottage Season' (from May long weekend to September long weekend) as sand trucks will be travelling to and from Seymourville on the east side of Lake Winnipeg. However, this will require that additional trucks will operate during weekdays in this period to ensure that the glass plant maintains enough sand on site for operations.

CPS may need to transport sand during nighttime to maintain glass manufacturing operations following a supply issue.

Please note that the information on truck movements supplied within the Traffic Impact Study (**Appendix H**) was prepared at an earlier stage in the design process. The Traffic Impact Study (**Appendix H**) assumed a total of seven inbound and seven outbound truck trips per hour. AECOM has informed MTI that the maximum number of inbound and outbound trucks may increase to eight trucks per hour as described in this **Section 2.10**[3].

Three trains per week will enter and leave the Project site via a railway spur for the transportation of soda ash, limestone, dolomite and the finished product. Each train will have one locomotive and 16 rail cars (**Section 2.1.5**).

Figure 2-3 in **Section 2.1.4** shows the proposed traffic flow and routing in relation to the Project site.

[3] *Email communication from Brad Cook, P.Eng. AECOM Canada Ltd. to Karen Toews, Manager, Roadside Development, Manitoba Transportation and Infrastructure, regarding updated number of transport trucks per hour for the CPS Solar Glass Manufacturing Facility, September 27, 2022.*

3. Scope of the Assessment

To assess the potential environmental impact of the proposed Project, spatial and temporal boundaries were defined as follows:

3.1 Temporal Boundaries

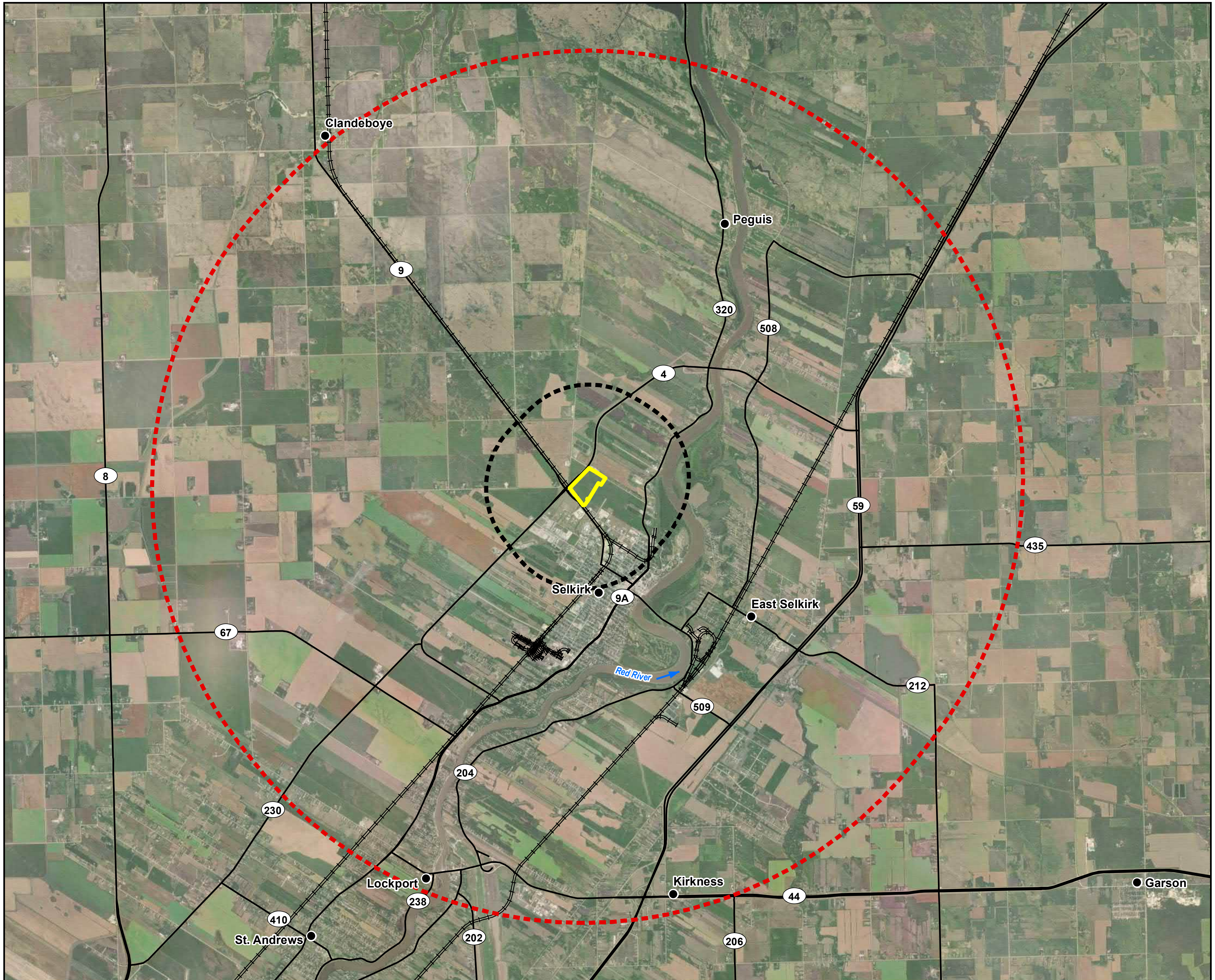
The temporal boundaries of the assessment are divided as follows:

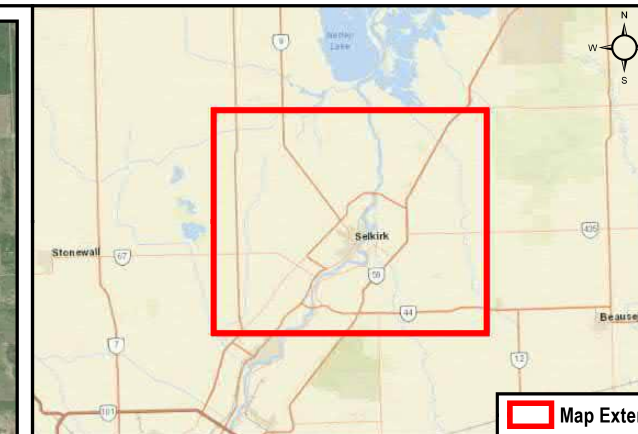
- **Construction Phase**: Includes clearing for, and construction of, infrastructure required for Project operations including the facility and permanent infrastructure.
  - Q1 2023 – Q1 2025 (Phase 1)
  - Q1 2028 to Q1 2030 (Phase 2)
- **Operation Phase** – Includes commissioning of the facility; solar glass panel product production and loading of product on site to railcars and trucks for transportation to market.
  - Q1 2025 – 2055
- **Decommissioning Phase**
  - After the expected life of the Project (approximately 30 years), the facility will be removed, and previously disturbed areas leveled and rehabilitated. After the life of the Project, future use of the Project infrastructure (access road, railway line, natural gas, and power lines/power infrastructure) within the Project Site will be discussed with the City of Selkirk and Manitoba Hydro to determine if there is potential to repurpose and for others to assume long-term maintenance of these components. Otherwise, all Project components including the Project infrastructure will be decommissioned and disturbed areas will be rehabilitated.

3.2 Spatial Boundaries

Spatial boundaries used for the assessment are described below and shown in **Figure 3-1**. However, where specifically noted, the boundaries may be adjusted to suit the Environmental Component (EC), or Social Component (SC) affected.

- **Project Site** – includes the footprint of the Project, which is the area that will encompass the land on which project components are located and immediate surrounding area that will be directly affected by the Project.
- **Local Study Area** – is comprised of an area 2 km beyond the Project Site, which is intended to take into account the majority of direct and indirect effects of the Project on ECs (such as wildlife habitat loss related to vegetation clearing and noise).
- **Regional Study Area** – is comprised of an area up to 10 km beyond the Project Site, which is intended to account for the maximum spatial extent of potential effects of the Project unless otherwise indicated.





LEGEND

PROJECT SITE AREA

LOCAL STUDY AREA

REGIONAL STUDY AREA

GENERAL FEATURES

HIGHWAY

RAILWAY

SPATIAL BOUNDARIES FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

N W E S

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Datum: NAD 1983 UTM Zone 14N

Source: Esri World Imagery, Esri World Street Map, NRCan

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Figure 3-1

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3.3 Biophysical and Socioeconomic Components

In accordance with the "Information Bulletin – Environment Act Proposal Report Guidelines" (MECP, 2022), the scope of the environmental assessment includes potential Project effects on the:

- Biophysical environment:
  - Including wildlife, fisheries, surface water, groundwater, and forestry resources
- Impact of such effects on the socioeconomic environment:
  - Including human health and safety
  - Potential impacts on Indigenous communities such as resource use and cultural or traditional activities

Environmental assessment methods, including a specific list of the environmental components included within this assessment due to the potential for interactions with the Project, are described in **Section 6.1.**

4. Existing Environment

4.1 Physical Environment

Baseline information regarding the Project Site and Local and Regional Study Areas was gathered using available desktop information and through a reconnaissance visit to the Project Site on July 27, 2021 (**Appendix B**).

4.1.1 Physical Setting

The physiographical location of the Project can be described using the Ecological Land Classification (ELC) system, used for overseeing ecological resources within Canada in a geographical representation. The Project is categorized as being within the following subsets of the ELC, which are also illustrated in **Figure 4-1**:

- **Boreal Plain Ecozone**, which encompasses the;
- **Interlake Plain Ecoregion**, which contains the;
- **Gimli Ecodistrict** within which the Project is located.

The Gimli Ecodistrict has an annual average temperature of 1.4°C, and annual precipitation is approximately 520 mm, of which approximately one quarter falls as snow and is highly variable from year to year (Smith et al., 1998). Summers are typically short and warm, with winters being long and cold. Natural vegetation within the Ecodistrict is dominated primarily by trembling aspen, with other hardwoods including Manitoba maple, green ash, American elm and cottonwood commonly occurring in woodlots near or adjacent to the Red River (Smith et al., 1998). A substantial area of the Ecodistrict is cultivated for agricultural use (Smith et al., 1998).

4.1.2 Geology/Topography

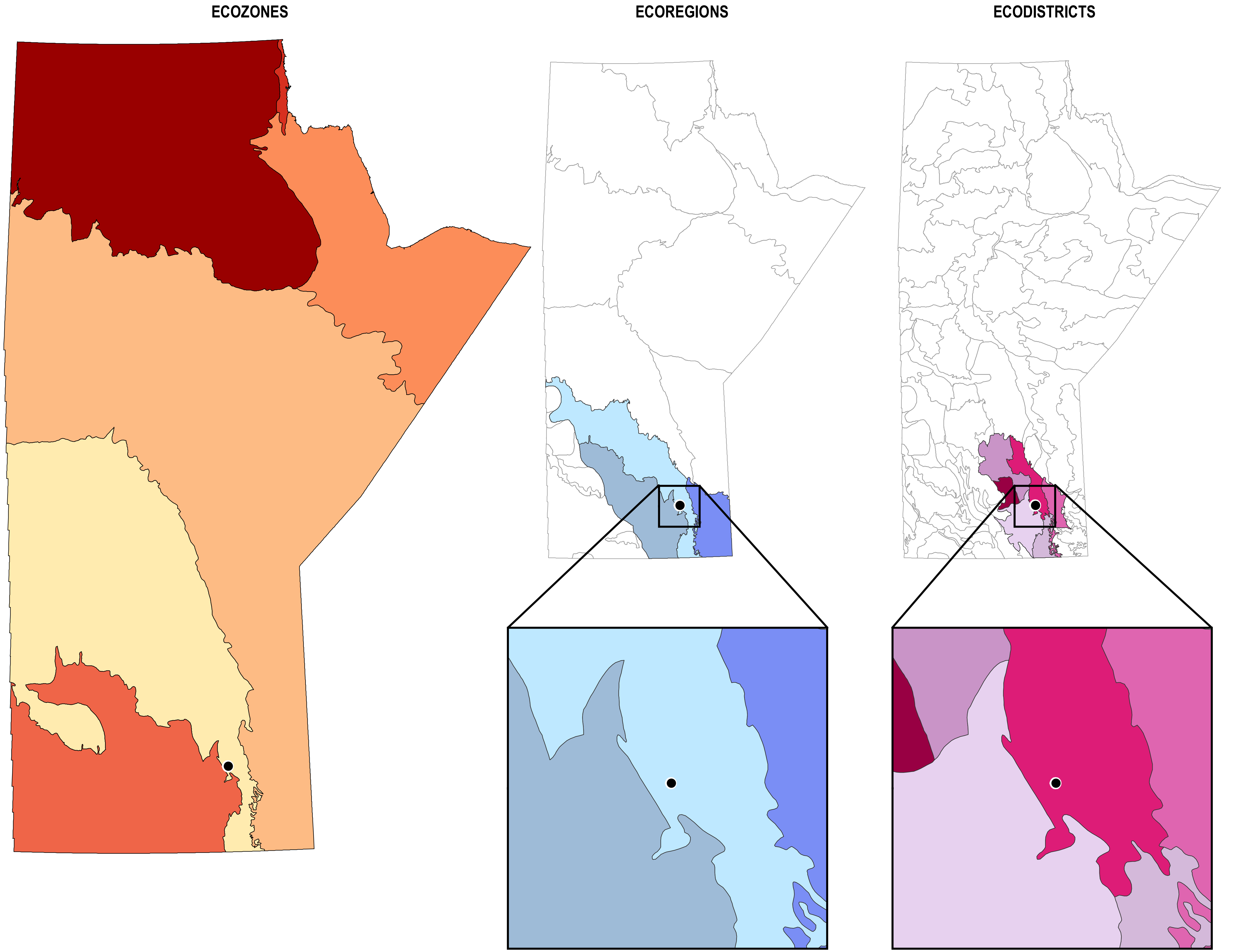
The topography of the Gimli Ecodistrict can be described as nearly level in the lowlands with short slopes less than 2% in lake terrace areas closer to Lake Winnipeg (Smith et al., 1998). The area of this Ecodistrict south of Lake Winnipeg where the Project Site is located slopes very gently towards Lake Winnipeg at a rate of less than 0.5 m per km. This topography is characteristic of the glaciolacustrine lowland area where the Project is located (Smith et al., 1998).

Topography within the Project Site is relatively level at approximately 225 to 226 masl. Topography elevations in the Project Site and surrounding Local Study Area are illustrated in **Figure 4-2**.

4.1.3 Soils

Soils of the Gimli Ecodistrict in the lowland area within which the Project Site is located consists of poorly drained Peaty Gleysols and shallow organic soils (Smith et al., 1998).

Soils within the Project Site are those that are characteristic of the level to very gently sloping topography of the Red River Plain (Manitoba Agriculture, Food and Rural Initiatives, 2010). These soils are generally poorly drained and moderately to strongly calcareous and clayey lacustrine deposits. Surface runoff is mostly slow to very slow and permeability is mostly very slow in the soil series present in the Project Site (Manitoba Agriculture, Food and Rural Initiatives, 2010). The tall grass prairie, prairie meadow grasses and aspen-dominant woodlands once found associated with these soils have been mostly replaced with cultivated fields as the case with the Project Site. Additional information on the soil characteristics within the Project Site are provided in **Appendix C.**



LEGEND

- ● PROJECT SITE LOCATION

ECOZONE NAME

- BOREAL PLAIN
- BOREAL SHIELD
- HUDSON PLAIN
- PRAIRIE
- SOUTHERN ARCTIC
- TAIGA SHIELD

ECOREGION NAME

- INTERLAKE PLAIN
- LAKE MANITOBA PLAIN
- LAKE OF THE WOODS
- OTHER ECOREGIONS

ECODISTRICT NAME

- WINNIPEG
- STEINBACH
- ASHERN
- STEAD
- GIMILI
- LUNDAR
- OTHER ECODISTRICTS

PHYSIOGRAPHIC SETTING

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

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Source: Manitoba Land Initiative

PN#: 60663147

Figure 4-1

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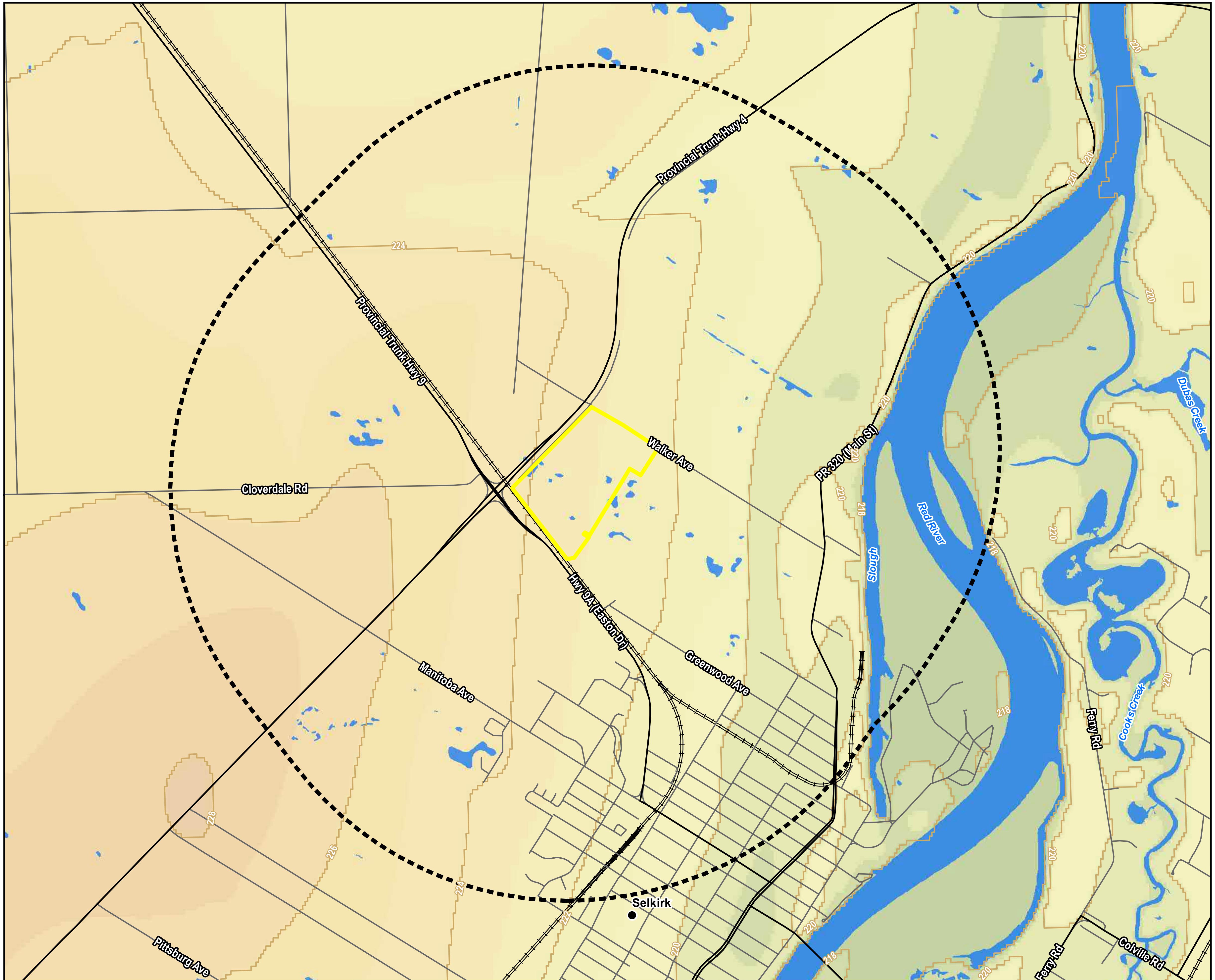

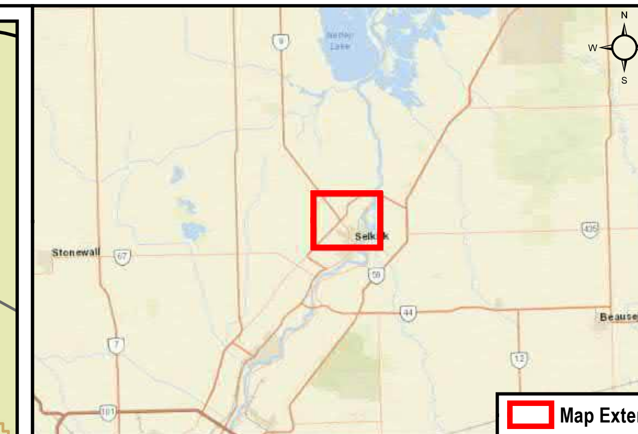

LEGEND

PROJECT SITE AREA

LOCAL STUDY AREA

GENERAL FEATURES

HIGHWAY

ROAD

RAILWAY

WATERBODY

CONTOUR (2 m INTERVAL)

ELEVATIONS (m)

243

215

TOPOGRAPHY

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

N W E S

0 0.5 1

Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Street Map, NRCan

PN#: 60663147

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AECOM

Figure 4-2

4.1.4 Groundwater

The City of Selkirk sources its raw water from six groundwater wells; four within the City of Selkirk and at two in the neighbouring RM of St. Andrews (City of Selkirk, 2020). The principal aquifer in the Selkirk area is the Carbonate Aquifer System which is a regional aquifer system extending throughout the Manitoba Interlake (Friesen Drillers Ltd., 2015). The carbonate aquifer is a significant source of ground water supply for municipal, industrial, rural residential and agricultural uses throughout a large portion of south-eastern and central Manitoba (Betcher et al., 1995). Major groundwater discharge at the City of Selkirk occurs through the Red River, both north and south of the City of Selkirk, and at the City of Selkirk pumping station (Friesen Drillers Ltd., 2015). The Stonewall Uplands area is a particularly import regional aquifer recharge zone highly influenced by total annual precipitation (Friesen Drillers Ltd., 2015).

Although groundwater movement is primarily to the west and northwest in southeastern Manitoba, drawdown cones developed by groundwater withdrawal within the City of Selkirk exert a considerable local influence groundwater movement (Betcher et al., 1995). The regional groundwater flow systems and hydraulics are highly complex in the Selkirk area (Friesen Drillers Ltd., 2015).

4.2 Atmospheric Environment

4.2.1 Air Quality

Influences on air quality at the Project Site are associated with adjacent agriculture and various other industrial operations, traffic on adjacent PTH 4, PTH 9 and PTH 9A (Easton Drive), Provincial Road (PR) 320 (Main Street), Walker Avenue (gravel) to the north and other local adjacent roads, and the railway line immediately adjacent to the southwest border of Project Site. Existing baseline air quality parameters for the Project Site were estimated to complete an air quality impact assessment for this Project (**Section 6.3.1**; **Appendix A)**.

4.2.2 Noise and Vibration

The above-described influences on regional air quality (**Section 4.2.1**), would also contribute to noise levels at the Project Site. Based on the planned equipment use and activities, the Project is not expected to be a source of significant vibration. Therefore, vibrations are not considered further in this report. Noise has limited distance influence depending on the nature of the noise source (e.g., size, weight and type of facility machinery) and landscape features surrounding the sources of noise that may act to attenuate noise (e.g., tree cover; Yip et al., 2017; Albert, 2004; and surrounding topography, e.g., Pijanowski et al., 2011).

Existing noise at the Project Site is currently primarily influenced by the same human-generated noise that influences air quality as described above in **Section 4.2.1** (e.g., adjacent roads and other industries) and by natural sounds such as ambient weather (e.g., wind). Existing baseline noise and estimated Project-related noise levels are provided in a noise impact assessment for this Project (**Section 6.3.3**; **Appendix D**).

4.3 Terrestrial Environment

4.3.1 Vegetation

A reconnaissance investigation of the Project Site completed by AECOM on July 27, 2021, indicated that almost the entire Project Site was under cereal crop cultivation except for approximately one hectare in total of scattered clusters of trees, grasses, and forbs (naturally vegetated areas). These small, fragmented areas of natural vegetation are in the south quarter of the Project Site, which includes a fragmented windrow along the existing railway parallel with PTH 9A (Easton Drive) as shown in representative Project Site photographs in **Appendix B**. No land cover or habitats considered rare for the Regional Study Area were observed in the Project Site. The areas and percentages of land

cover types within the Project Site as compared to the Local and Regional Study Areas are provided in **Table 4-1**, **Table 4-2** and **Table 4-3**[4] and are illustrated in **Figure 4-3**, **Figure 4-4** and **Figure 4-5**. Representative Project Site photos are provided in **Appendix B**.

Table 4-1: Landcover

Cover Type	Project Site*		Local Study Area		Regional Study Area	
	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)
Fields (Agriculture)	35	96	1,028	57	22,821	67
Forested*	0.0	0	131	7	3,410	10
Marsh Muskeg	0.0	0	2.0	0	159	0.5
Meadow	0.0	0	43	2	980	3
Protection Forest	0.0	0	14	1	316	1
Developed	1.3	4	457	25	4,703	14
Water	0.0	0	65	4	713	2
Willow/Alder	0.0	0	55	3	833	3

Project Site = 36 ha; Local Study Area = 1,795 ha; Regional Study Area = 33,935 ha

Source: Manitoba Land Initiative, 2017

***Note**: Reconnaissance investigation of the Project Site on July 27, 2021 indicated that almost the entire Project Site was under cereal crop cultivation except for approximately one hectare in total of scatterer clusters of trees, grasses and forbs (naturally vegetated areas).

Table 4-2: Dominant Tree Species

Tree Species	Project Site		Local Study Area		Regional Study Area	
	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)
Non-Forested	35	97	1,663	93	30,524	90
Ash	0	0	7	0.4	125	0.4
Elm	0	0	22	1.4	110	0.3
Manitoba Maple	0	0	5	0.3	33	0.1
Oak	0	0	7	0.4	407	1.2
Trembling Aspen	1	3	84	5	2,727	8
Willow	0	0	5	0.3	9	0.0

Source: Manitoba Land Initiative, 2017

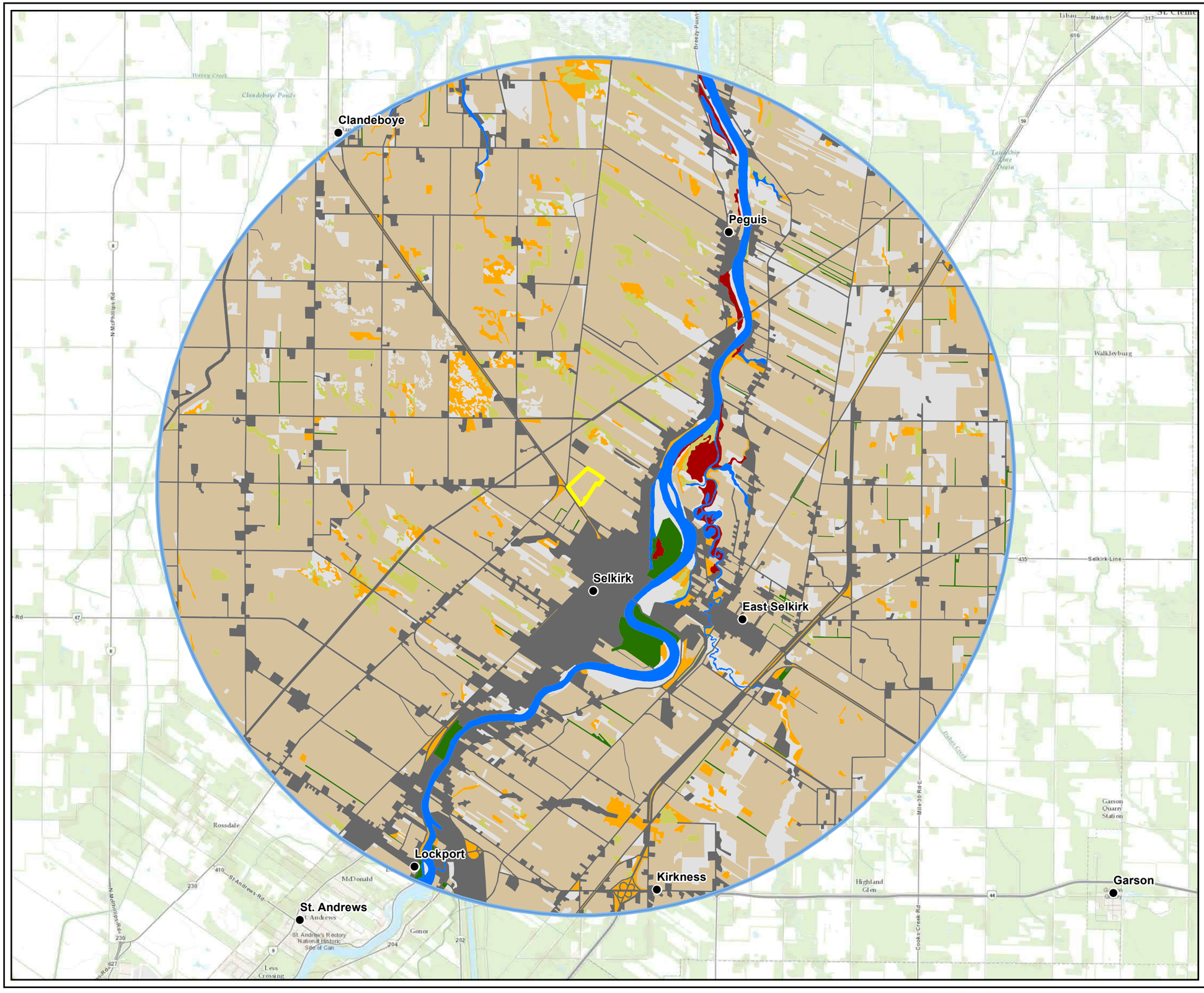
Table 4-3: Forest Age Classes

Forest Age Class*	Project Site		Local Study Area		Regional Study Area	
	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)	Hectares (ha)	Percent (± 1%)
Not Categorized	0	0	65	4	759	2
Young < 3m	35	96	1,040	58	23,011	68
Young > 3m	0	0	137	8	2,431	7
Immature	0	0	64	4	1,962	6
Mature	1.3	4	466	26	5,580	16
Overmature	0	0	23	1	191	1

Source: Manitoba Land Initiative, 2017

* Forest age information is based on the Manitoba Forest Resource Inventory data for 'Cutting Class' which is based on size, vigour, state of development and maturity of a stand for harvesting purposes.

[4] *Landcover information is from the latest Manitoba Lands Initiative online database and would not necessarily reflect current forest cover age classes, e.g., as observed during site reconnaissance on July 21, 2021 (see site photographs in Appendix B).*



LEGEND

- PROJECT SITE AREA
- REGIONAL STUDY AREA

COVER TYPE

- PROTECTION FOREST
- WILLOW/ALDER
- FIELDS (AGRICULTURE)
- MARSH MUSKEG
- MEADOW
- DEVELOPED
- FOREST
- WATER

COVER TYPES IN THE REGIONAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

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0 0.5 1 2 3 4 5
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Topographic Map,Esri World Street Map, Manitoba Land Initiative

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Figure 4-3

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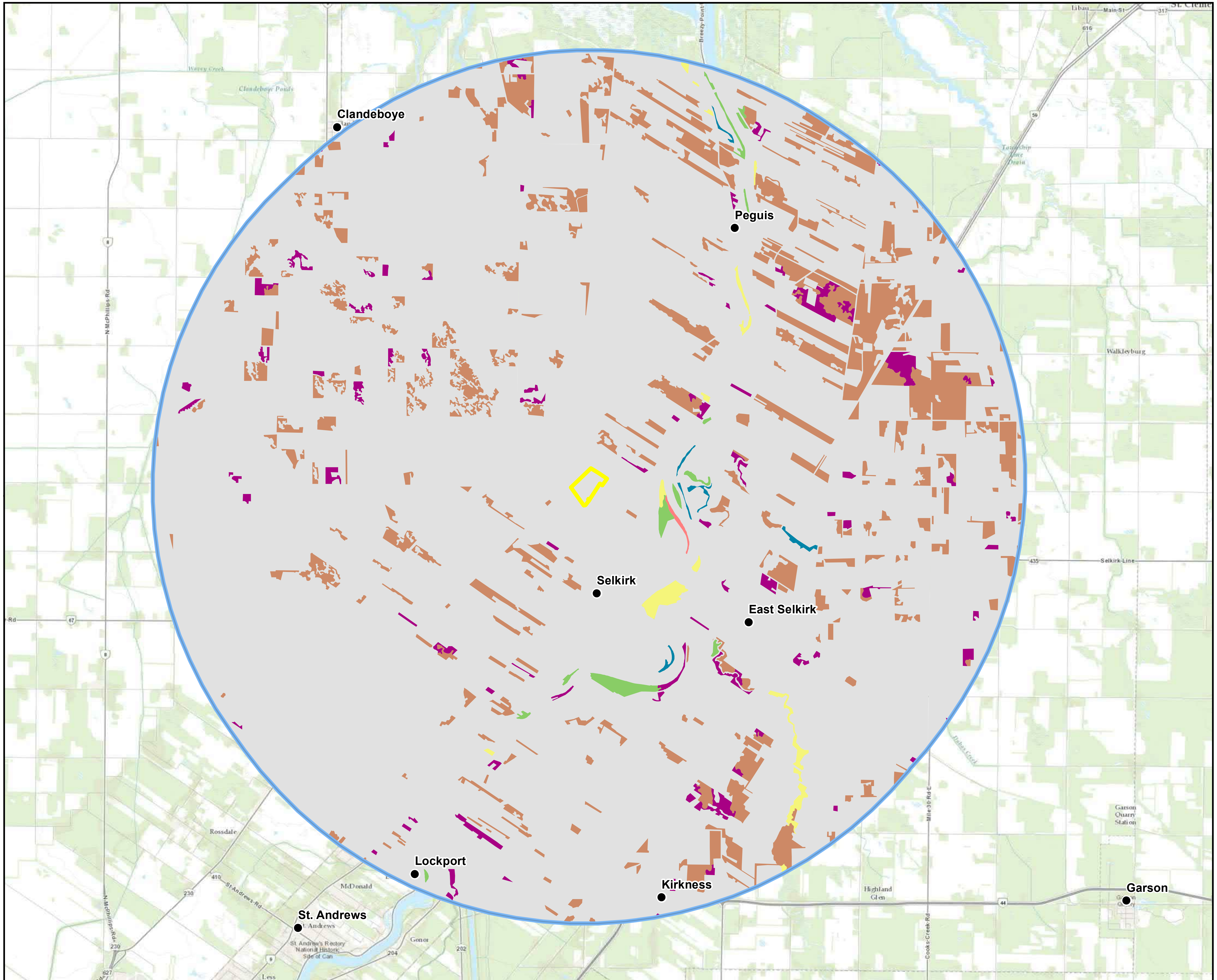

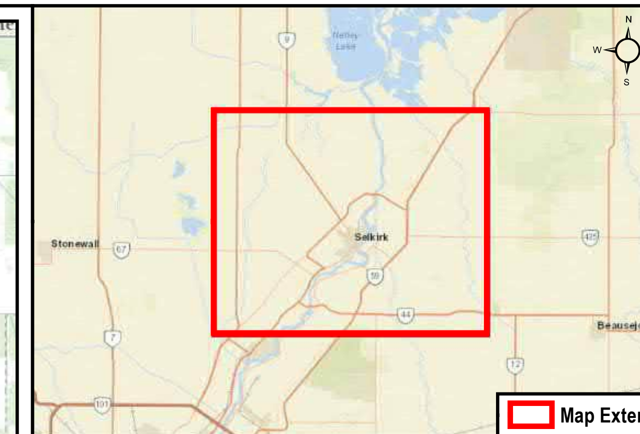

LEGEND

- PROJECT SITE AREA
- REGIONAL STUDY AREA

DOMINANT TREE SPECIES

- NON-FORESTED
- ASH
- ELM
- MANITOBA MAPLE
- OAK
- TREMBLING ASPEN
- WILLOW

DOMINANT TREE SPECIES IN THE REGIONAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL CPS SOLAR GLASS FACILITY PROJECT

0 0.5 1 2 3 4 5
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Topographic Map,Esri World Street Map, Manitoba Land Initiative

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Figure 4-4

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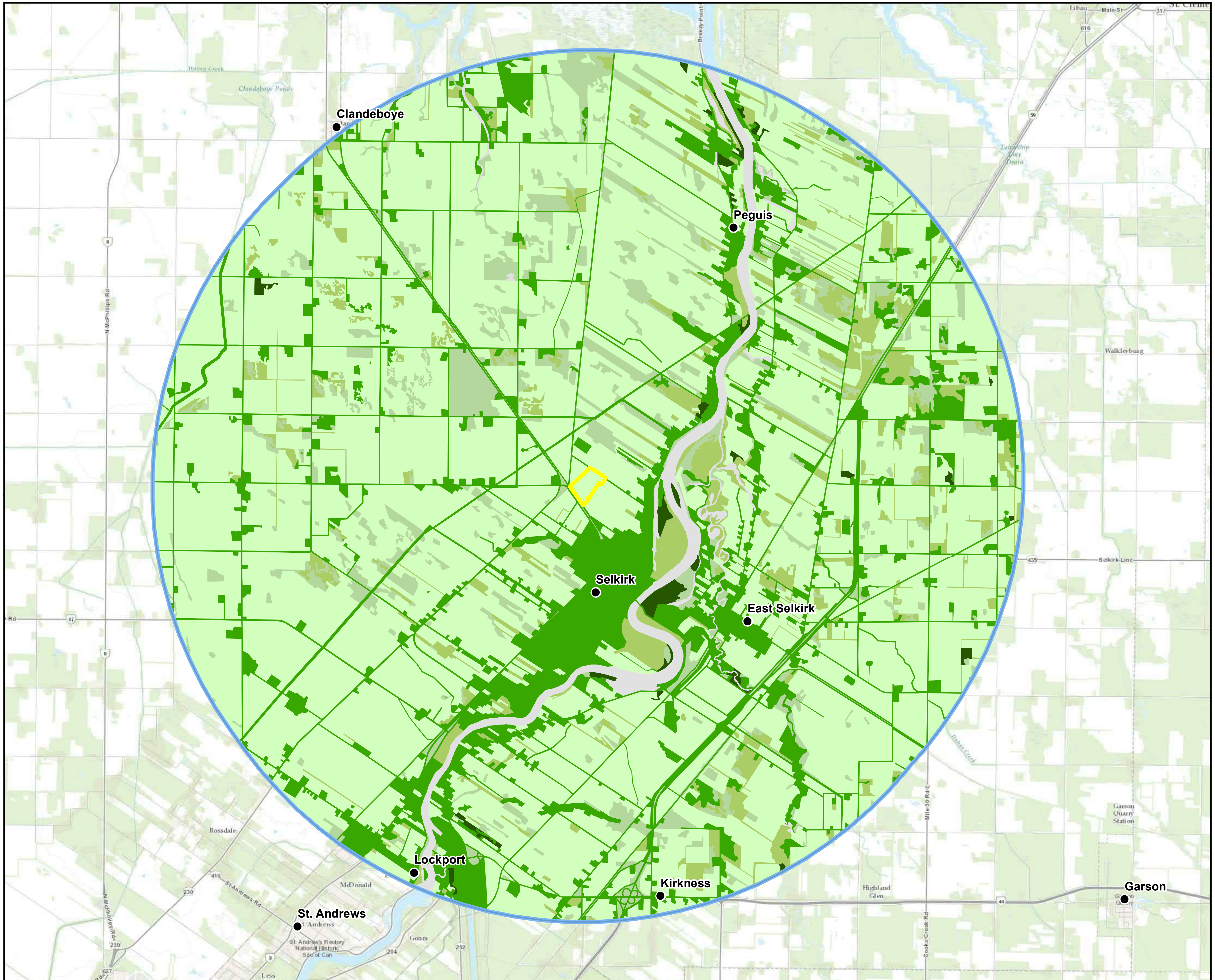

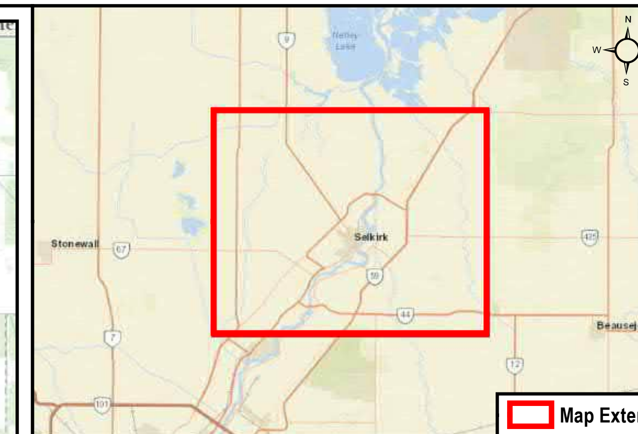

LEGEND

- PROJECT SITE AREA
- REGIONAL STUDY AREA

FOREST AGE CLASS *

- NON-FORESTED
- YOUNG (< 3m)
- YOUNG (> 3m)
- IMMATURE
- MATURE
- OVERMATURE

* FOREST AGE INFORMATION IS BASED ON THE MANITOBA FOREST RESOURCE INVENTORY DATA FOR 'CUTTING CLASS' WHICH IS BASED ON SIZE, VIGOUR, STATE OF DEVELOPMENT AND MATURITY OF A STAND FOR HARVESTING PURPOSES.

FOREST AGE CLASSES IN THE REGIONAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL CPS SOLAR GLASS FACILITY PROJECT

N W E S

0 0.5 1 2 3 4 5
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Topographic Map,Esri World Street Map, Manitoba Land Initiative

PN#: 60663147

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Figure 4-5

Map location: \\na.aecomnet.com\lfs\AMER\Winnipeg-CAWPG1\DCS\Projects\ENV\60663147_Float_Glass_Plant_Permit\900_CAD_GIS\920_929_GIS_Graphics\02_MXDs\EAP\6044E_60663147_CPSolar_EAP_ForestAgeClasses.mxd
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4.3.2 Wildlife

The Project Site provides minimal wildlife habitat considering almost the entire Project Site has been recently under cereal crop cultivation (**Section 4.3.1**). Wildlife species expected to occur throughout the adjacent Local and Regional Study Areas are those species that typically occur within the Gimli Ecodistrict (Smith et al., 1998). Ungulate species include white-tailed deer and occasionally moose. A variety of furbearer species would occur within the naturally vegetated riparian areas along the nearby Red River and other limited areas of natural landcover types within the Local Project Site, with the most common likely being grey squirrel, red squirrel, smaller rodent species (e.g., mice, voles), snowshoe hare, white-tailed jackrabbits (in open areas), red fox, coyote, American woodchuck and striped skunk.

According to the Manitoba Breeding Bird Atlas (Artuso et al. 2022), at least 60 bird species are likely to breed within the landcover types that occur within the Project Site and adjacent Local and Regional Study Areas, the majority of which are migratory birds protected under the federal *Migratory Birds Convention Act, 1994*.

The Project Site does not provide suitable habitat for amphibians or reptiles due to the Project Site being almost entirely under cultivation. The Local Study Area, which includes the nearby Red River and local slough, drainage ditches and low-lying seasonal wet areas provides habitat for some amphibian species such as wood frog, boreal chorus frog, Northern leopard frog, spring peeper, Canadian toad, and American toad. The snapping turtle is likely to occur along the Red River (unlikely to occur within the Project Site), with the plains garter snake being the reptile species most likely to occur in the Project Site (iNaturalist, n.d.).

4.3.3 Species of Conservation Concern

Manitoba Conservation Data Centre has compiled a list of Species of Conservation Concern for plant and animal species that are “rare, disjunct, or at risk throughout their range or in Manitoba and in need of further research” (Manitoba Conservation Data Centre, n.d.). A full list of Species of Conservation Concern for the Interlake Plain Ecoregion, within which the Project Site is located, is included in **Appendix E.**

During a reconnaissance visit to the Project Site on July 27, 2021, one Monarch butterfly was observed within the Project Site near the corner of Walker Avenue and PTH 4 in association with milkweed plants on which this butterfly species requires for egg laying (refer to **Appendix B** for locations of milkweed). The Monarch is not a listed species in *The Endangered Species and Ecosystems Act* of Manitoba (MBESEA). However, this species is listed as ‘Special Concern’ in Schedule 1 of the federal *Species at Risk Act* (the status of which is currently under review). The breeding status of this species is ranked as ‘S4B’ in Manitoba, meaning it is widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, but is of long-term concern (**Appendix E**).

Of the plant ‘Species at Risk[5]’ that may occur within the Interlake Plain Ecoregion, none are likely to occur at the Project Site due to the Project Site being almost entirely under current or recent cultivation.

Wildlife Species at Risk that may occur in the Interlake Plain Ecoregion within which the Project Site occurs include those listed in **Table 4-4**.

[5] *‘Species at Risk’ are defined for the purpose of this report as those species listed in The Endangered Species and Ecosystems Act of Manitoba (MBESEA) and/or those listed as ‘Endangered’ or ‘Threatened’ in Schedule 1 of the federal Species at Risk Act (SARA).*

Table 4-4: Wildlife Species at Risk in the Interlake Plain Ecoregion

Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Little Brown Bat/Myotis and Northern Long-eared Bat/Myotis	*Myotis lucifugus* and *Myotis septentrionalis*	Endangered	Endangered	**Low (maternity roosting) to Moderate (foraging)** - Summer maternity colonies are established in buildings or cavities of large diameter trees[a]. The Project Site has a very small area of mature trees some of which may have suitable diameters for potential maternity cavity roost sites. Maternity roosts are more likely to occur in riparian forest areas along the nearby Red River. - Foraging occurs over water, along waterways, forest edges, and forest gaps, in areas where insects are present[a]. Foraging would occur along the Red River and may occur over the Project Site. - Both species of bats require limestone/karst caves as winter hibernacula which do not occur at the Project Site and there are no recorded limestone/karst caves found the Regional Study Area[b].
Common Nighthawk	*Chordeiles minor*	Threatened	Threatened	**Very Low** - Very little potentially suitable nesting habitat occurs at the Project Site for this ground-nesting species, i.e., cleared areas, burned areas, rocky outcrops; and peat bogs[c] for foraging - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 10%
Eastern Whip-poor-will	*Caprimulgus vociferus*	Threatened	Threatened	**Very Low** - Very limited amount of potentially suitable habitat occurs at the Project Site for this ground-nesting species, i.e., semi-open forests or patchy forests with clearings such as forests that are regenerating following major disturbances[d] - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 10% to 20%

Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Barn Swallow	*Hirundo rustica*	Not Listed	Threatened	**Moderate** - This species builds a mud cup nest which adheres to vertical surfaces under overhangs[e] - No natural nesting habitat (e.g., cliff overhang), or man-made structures such as buildings that are preferred nesting habitat, occur within the proposed Project footprint - This species may nest on buildings immediately adjacent to the Project Site and may potentially nest on Project buildings once constructed
Bank Swallow	*Riparia riparia*	Not Listed	Threatened	**Unlikely** - No steep riparian bank habitat occurs at the Project Site that would be suitable nesting habitat for this species which burrows into banks for nesting[f] - Although the adjacent Red River may have suitable banks for nesting Bank Swallows, it is unlikely that the Project Site would attract this species due to limited to no foraging habitat within Project Site (e.g., waterbodies that produce abundant flying insects).
Golden-winged Warbler	*Vermivora chrysoptera*	Threatened	Threatened	**Very Low / Unlikely** - Suitable nesting habitat for this species is mature forest where canopy gaps create a patchy shrub layer that is comparable to the understorey of early successional sites, or the shrubby edge of wetlands[g]. The small, fragmented wooded windrows located at the southern boarder of the Project Site, as shown in **Appendix B**, do not provide suitable nesting habitat for this species. - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 10% to 20%

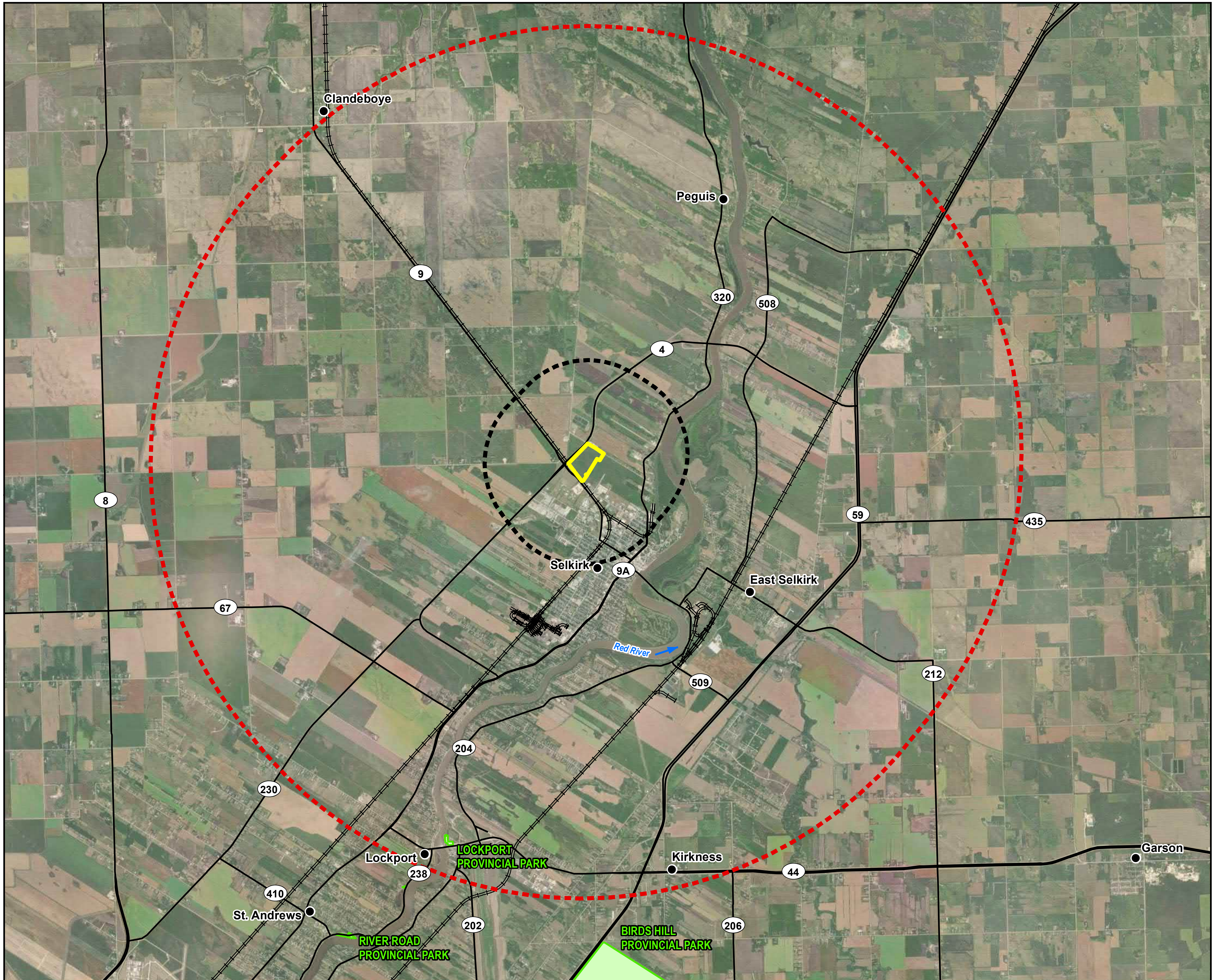
Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Canada Warbler	*Cardellina canadensis*	Endangered	Threatened	**Very Low / Unlikely** **-** This species uses a wide range of forest types (deciduous, coniferous, and mixed) with well developed shrub and forest floor, as well as in post disturbance and old-growth riparian shrub forests[h]. The small, fragmented wooded windrows located at the southern boarder of the Project Site, as shown in **Appendix B**, do not provide suitable nesting habitat for this species. - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 0% to 10% and is more likely found further east of the Regional Study Area
Olive-sided Flycatcher	*Contopus virens*	Threatened	Threatened	**Very Low / Unlikely** - This species occurs primarily in coniferous or mixed forest with tall trees and tall snags for perching along open areas such as burns, wet areas such as bogs, and post-clearcut forest harvesting areas[i]. The small, fragmented wooded windrows located at the southern boarder of the Project Site, as shown in **Appendix B**, do not provide suitable nesting habitat for this species. - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 10%.
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Threatened	Threatened	**Low** **-** This species occurs in a variety of habitat, including grasslands, forest edges, orchards, pastures, riparian forests, roadsides, and vegetated urban areas. In Manitoba, this species is strongly associated with trembling aspen forest with snags or trees with dead limbs in grazed cattle lots[j]. - The small, fragmented wooded windrows located at the southern boarder of the Project Site, as shown in **Appendix B**, do not provide suitable nesting habitat for this species. - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 20% to 40%

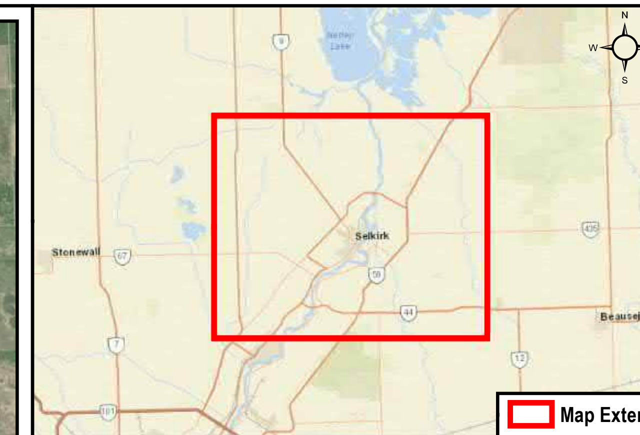
Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Short-eared Owl	*Asio flammeus*	Threatened	Special Concern	**Very Low** - This species nests on the ground in larger open grassland areas including marsh/bog and fen habitat and rarely in agriculture fields. Although some very limited marsh habitat occurs within the Regional Study Area, the area extent is likely not sufficient for nesting Short-eared Owls[k] - There is a very low potential for this species to nest at the Project Site considering it is almost entirely cultivated. - Probability of observation of this species in the Regional Study Area has been determined by the Atlas of the Breeding Birds of Manitoba to be approximately 20%

[a] *COSEWIC 2013a*
[b] *Bilecki 2003*
[c] *COSEWIC 2018a*
[d] *Environment and Climate Change Canada (ECCC) 2018*
[e] *COSEWIC 2011*
[f] *COSEWIC 2013b*
[g] *ECCC 2016a*
[h] *ECCC 2016b*
[i] *Environment Canada 2016*
[j] *ECCC 2019*
[k] *COSEWIC 200[a]*

4.3.4 Parks and Protected Areas

The nearest designated park to the Project Site is Lockport Provincial Heritage Park located approximately 10 km south of the Project Site (**Figure 4-6**). This park is 2.26 ha in size, is located on the east bank of the Red River in the community of Lockport and is one of the most important archaeological sites in Manitoba (Manitoba Conservation and Water Stewardship, 2013). The closest ecological reserve is the Libau Bog Ecological Reserve located 20 km northeast of the Project Site. The closest Wildlife Management Areas (WMAs) to the Project Site are the Oak Hammock Marsh WMA located 14 km to the west and the Mars Hill WMA located 17 km to the northeast of the Project Site.





LEGEND

- PROJECT SITE AREA
- LOCAL STUDY AREA
- REGIONAL STUDY AREA

PARKS AND PROTECTED AREAS

- PROVINCIAL PARK

GENERAL FEATURES

- HIGHWAY
- RAILWAY

PARKS AND PROTECTED AREAS

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

N, S, E, W

0 0.5 1 2 3 4 5
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Imagery, Esri World Street Map, NRCan, Manitoba Land Initiative

PN#: 60663147

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AECOM

Figure 4-6

4.4 Aquatic Environment

4.4.1 Surface Water

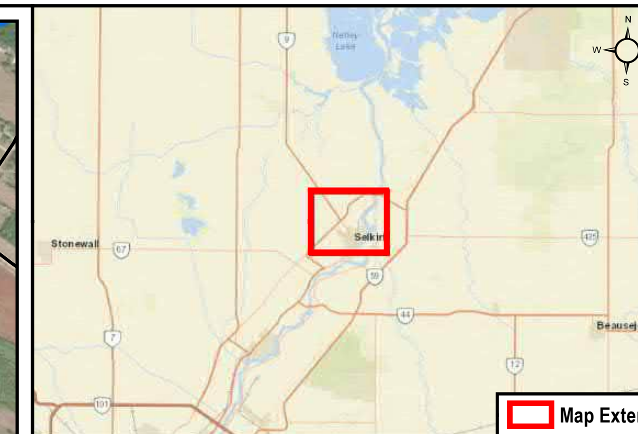
There are no permanent waterbodies such as lakes, rivers, streams, or permanent wetlands within the Project Site (**Figure 4-7**). There are some low-lying areas within the Project Site that may accumulate water during wet years in areas shown in **Figure 4-7** as 'intermittent waterbodies'. However, during a reconnaissance visit to the Project Site on July 27, 2021, there was no evidence of standing water or water-associated plants at the Project Site. Further, areas indicated as 'intermittent waterbodies' in **Figure 4-7** had been cultivated through as a cereal crop. There is a man-made fenced stormwater pond that collects land drainage water located approximately 540 m southeast of the Project Site at Greenwood Avenue which was dry during the reconnaissance site visit (**Appendix B**).

A blind channel or 'slough' of the Red River is the closest major waterbody which is located approximately 1.4 km east of the Project Site boundary.

The on-line Atlas of Canada Toporama mapping tool (Natural Resources Canada, n.d.) indicates surface water drainage within and adjacent to the Project Site occurs through ditches and low drainage areas. Surface water drainage generally flows southeast along roadside ditches before entering the slough (blind channel) area of the Red River which flows north for approximately 30 km until connecting to Lake Winnipeg via the Netley-Libau Marsh area at the sound end of Lake Winnipeg.

4.4.2 Fish and Fish Habitat

The Project Site contains no fish habitat. The nearest confirmed fish habitat to the Project Site is the Red River (including slough area connected to the Red River) as described in **Section 4.4.1**.



LEGEND

- PROJECT SITE AREA
- LOCAL STUDY AREA

GENERAL FEATURES

- HIGHWAY
- ROAD
- RAILWAY
- MUNICIPAL BOUNDARY
- PERMANENT WATERBODY
- INTERMITTENT WATERBODY

WATERBODIES IN THE LOCAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

N / W / E / S

0 0.5 1
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Imagery, Esri World Street Map, NRCan

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AECOM

Figure 4-7

4.5 Socioeconomic Environment

The proposed Project is located entirely within the City of Selkirk. Considering the proximity of Winnipeg (35 km southwest) and the rural municipalities surrounding the City of Selkirk, there are expected to be sufficient worker skills, trades, and services available to support Project construction and operation within a reasonable commuting distance. Therefore, the Regional Study Area for the Socioeconomic Environment represents the population regions that would be a potential source of employees, trades and services located within a reasonable commute time from the proposed facility.

The demographic profile, labour force and employment related statistics for the surrounding Rural Municipalities, the City of Selkirk, and the City of Winnipeg are described below in **Sections 4.5.1** and **4.5.2** to demonstrate the workforce potential availability for the life of the Project for populations within reasonable commute time from the proposed Project Site. The statistical data presented in this section reflect the most recent Statistics Canada information available and do not reflect changes to the current labour force that have resulted from the coronavirus (COVID-19) pandemic of 2020-2022.

4.5.1 Demographic Profile

Table 4-5 shows that the Regional Study Area is increasing in population, with a range in population increase from 0.3% in the RM of St. Andrews, to 10.5% in the RM of Brokenhead.

Table 4-5: Population of Regional Study Area Communities

Regional Study Area - Populations									Province
Population	**City of Selkirk**	**RM of East St. Paul**	**RM of West St. Paul**	**RM of Springfield**	**RM of St. Clements**	**RM of St. Andrews**	**RM of Brokenhead**	**City of Winnipeg**	**Manitoba**
2016 Census	10,278	9,372	5,368	15,342	10,876	11,913	5,122	705,244	1,278,365
2011 Census	9,834	9,046	4,932	14,069	10,505	11,875	4635	663,617	1,208,268
Population Change %	4.5	3.6	8.8	9.0	3.5	0.3	10.5	6.3	5.8

Source: Statistics Canada, 2017

Table 4-6 provides the population of the Regional Study Area communities by age groups. The Regional Study Area has a higher average age (41.5 years) and median age (44.4 years) in comparison to the province (39.2 years and 38.3 years respectively).

Table 4-6: Distribution of Regional Study Area Communities by Age Groups

Regional Study Area – Populations									Province
Population	City of Selkirk	RM of East St. Paul	RM of West St. Paul	RM of Springfield	RM of St. Clements	RM of St. Andrews	RM of Brokenhead	City of Winnipeg	Manitoba
0-14 (%)	15.8	16.0	17.5	18.9	15.4	15.7	19.0	16.8	19.1
15 – 64 (%)	61.2	67.4	65.0	67.3	68.2	68.9	67.3	67.5	65.4
65 and over (%)	23.1	16.7	17.6	13.9	16.4	15.5	13.5	15.6	15.6

	Regional Study Area – Populations								Province
85 and over (%)	4.5	0.7	3.7	0.9	0.8	0.7	0.9	2.4	2.3
Average age of population	43.8	42.2	42.3	39.9	42.4	42.0	39.6	39.9	39.2
Median age of population	44.7	46.2	44.1	42.1	46.5	45.5	41.0	38.8	38.3

Source: Statistics Canada, 2017

4.5.2 Labour Force and Employment

Table 4-7 presents the 2016 education levels for the Regional Study Area and the Province of Manitoba. The region has a higher percentage of the population that has not completed high school and has a higher percentage of the population that has completed an apprenticeship, trades, or completed a college or non-university certificate of diploma in comparison to the province with the exception of the RM of East St. Paul at 6.2%.

Table 4-7: Education Attainment of Regional Study Area Communities

	Regional Study Area – Populations								Province
Education (aged 25 – 64)	City of Selkirk	RM of East St. Paul	RM of West St. Paul	RM of Springfield	RM of St. Clements	RM of St. Andrews	RM of Brokenhead	City of Winnipeg	Manitoba
Total population aged 25 – 64	4,770	4,990	2,815	8,400	6,020	6,625	2,855	378,780	654,670
No certificate, diploma, or degree (%)	16.0	4.7	10.7	9.2	12.6	10.1	15.6	10.1	14.4
Secondary (high) school diploma or equivalency (%)	33.6	26.2	28.2	28.8	28.5	32.1	30.8	26.5	27.9
Apprenticeship or Trades certificate, diploma, or degree (%)	9.9	6.2	11.7	12.7	13.5	11.4	15.8	6.8	8.2
College or non-university certificate or diploma (%)	25.9	24	26.8	24.5	25.5	25.2	23.3	20.9	21.1
University certificate or diploma below bachelor level (%)	2.2	4.8	2.5	3.7	4.1	3.2	3.3	3.1	3.2

	Regional Study Area – Populations								Province
University certificate, diploma, or degree at bachelor level or above (%)	12.4	34.1	20.1	21.1	15.8	18.0	11.2	32.6	25.2

Source: Statistics Canada, 2017

Table 4-8 presents labour force indicators including the total population aged 15 years and over, population in the labour force and participation, employment and unemployment rates for the Regional Study Area and the Province of Manitoba. The 2016 participation and employment rates in the Regional Study Area are higher on average in comparison to the province, while the unemployment rates are lower, except for the City of Selkirk which has an unemployment rate of 8.7%.

Table 4-8: Labour Force Indicators of Regional Study Area Communities

	Regional Study Area – Populations								Province
Labour Force	**City of Selkirk**	**RM of East St. Paul**	**RM of West St. Paul**	**RM of Springfield**	**RM of St. Clements**	**RM of St. Andrews**	**RM of Brokenhead**	**City of Winnipeg**	**Manitoba**
Total population aged 15 and over	7,925	7,880	4,210	12,215	9,105	9,925	4,090	571,580	1,001,305
In the Labour Force	4,585	5,340	2,880	8,600	6,235	6,985	2,985	383,300	662,155
Participation Rate (%)	57.9	67.8	68.4	70.4	68.5	70.4	73.0	67.1	66.1
Employment Rate (%)	52.8	64.9	65.6	67.3	64.9	67.0	69.2	62.7	61.7
Unemployment Rate (%)	8.7	4.2	4.2	4.5	5.1	4.7	5.4	6.5	6.7

Source: Statistics Canada, 2017

4.5.3 Infrastructure and Services

4.5.3.1 Transportation

Road

The location of the Project Site is bordered by existing roadways (**Figure 1-2**). As indicated in **Section 2.1.4**, CPS will pave the section of Walker Avenue between the Project Site gated entry to PTH 4.

Air

Within the Local Study Area, the Selkirk Aerodrome/Airport and adjacent Selkirk Water Aerodrome are located within 800 m and 1 km north, respectively by air, from the Project Site boundary (**Figure 4-8**). Within the Regional Study Area, the St. Andrews Airport is located approximately 15 km southwest of the Project Site. The largest regional

airport (and largest in Manitoba) is the Winnipeg James Armstrong Richardson International Airport located in Winnipeg, approximately 36 km southwest from the Project Site.

Rail

As indicated in **Section 2.1.4** an existing railway line is located directly alongside the southwest side of the Project Site (**Figure 1-2**).

4.5.3.2 Emergency Services

Fire

The closest fire hall to the Project Site servicing the City of Selkirk is the Selkirk Fire Department located 2.7 km southeast of the Project Site by road. This fire hall is operated 24/7 (Selkirk Fire, 2021).

Medical Services, Ambulance and Hospital

Medical response and care are operated out of the Selkirk Regional Health Centre located 400 m from the Project Site.

Ambulance services are available through calling 911. Three ambulance bays are operated out of the Selkirk Regional Health Centre and are available 24/7. The ambulance services are provided by the Interlake-Eastern Regional Health Authority (City of Selkirk, 2021[a]).

Police

Police services in the vicinity of the Project Site are operated by the City of Selkirk RCMP (Royal Canadian Mounted Police) Municipal Detachment. The Detachment has a compliment of 18 Police Officers and 6 detachment service assistants. The Detachment is located 2.7 km from the Project Site by road (City of Selkirk, 2021[b]).

4.5.3.3 Community Services

Communications

The nearest cellular service tower is located directly within the City of Selkirk (Canadian Cellular Towers Map, 2021). Service providers include:

- Rogers Cellular (1.5 km from the Project Site)
- Telus Communications (2.4 km from the Project Site)
- BellMTS (2.5 km from the Project Site)

Electricity and Natural Gas

Manitoba Hydro provides electric power and natural gas to industries and residents in the Regional Study Area (Manitoba Hydro, n.d.).

Water and Wastewater

The City of Selkirk provides potable water services sourced from four wells located within the City of Selkirk and two in St. Andrews. The City of Selkirk uses approximately 25% of its available capacity[6].

The City of Selkirk sells portable bulk water to commercial and residential customers out of the Water Tower located approximately 3 km from the Project Site by road.

The nearest wastewater treatment facility is the new Selkirk Wastewater Treatment Plant (commissioned during the summer of 2021) located 0.5 km north of the Project Site by road. The new Selkirk Wastewater Treatment Plant utilizes the latest wastewater treatment methods and has substantially increased the City's capacity to treat wastewater which is discharged to the Red River well within guideline limits (Manitoba Water Stewardship, 2011) for wastewater effluent discharge[7].

Solid and Hazardous Waste Disposal

The City of Selkirk contracts BFI Canada to manage its waste and recycling programs at the local transfer stations (City of Selkirk, 2015).

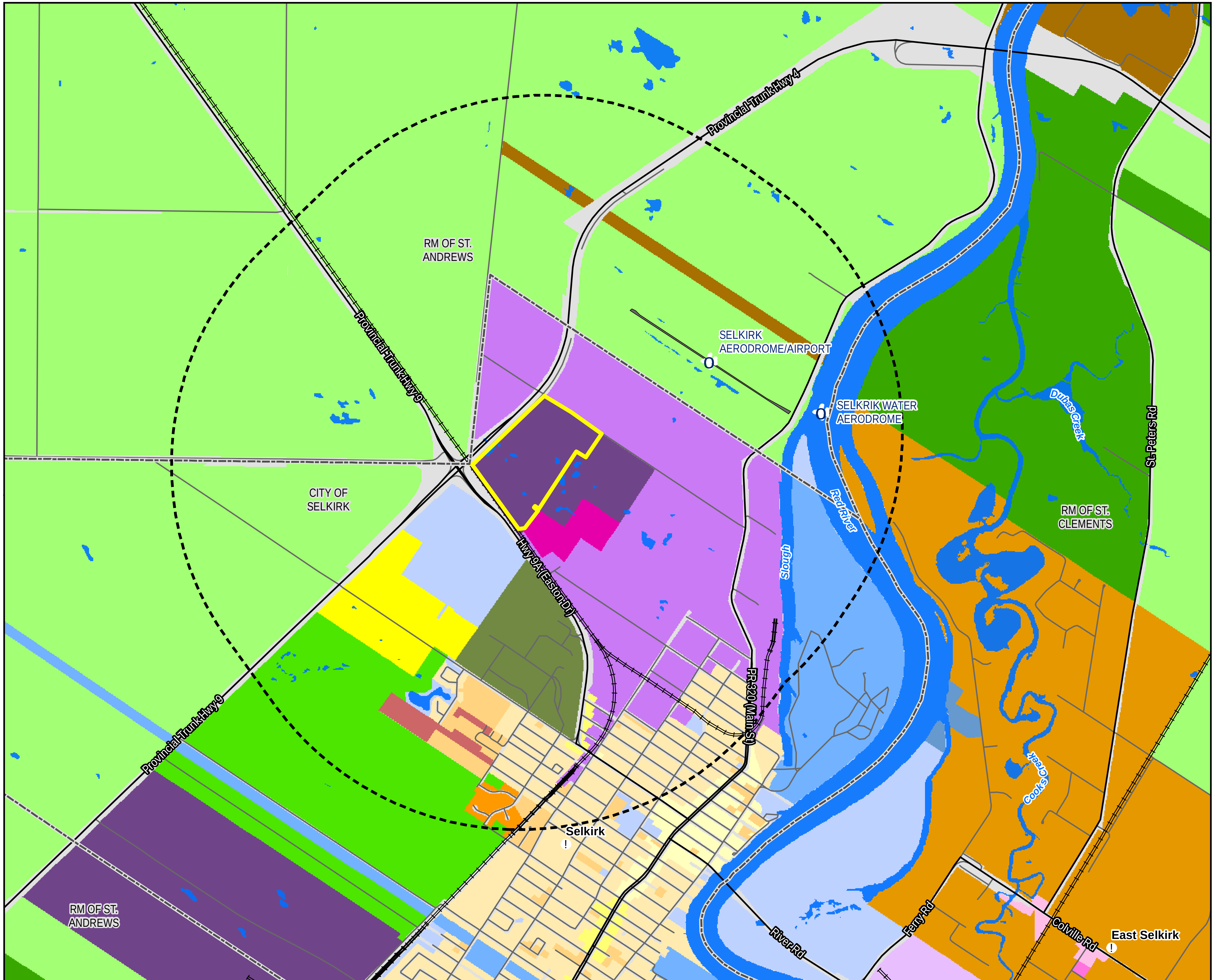
The nearest waste transfer station to the Project Site is the City of Selkirk Waste Transfer Station located approximately 3.5 km north of the Project Site by road. The nearest large-capacity landfill is the Brady Road Resource Management Facility in Winnipeg located 70 km south of the Project Site.

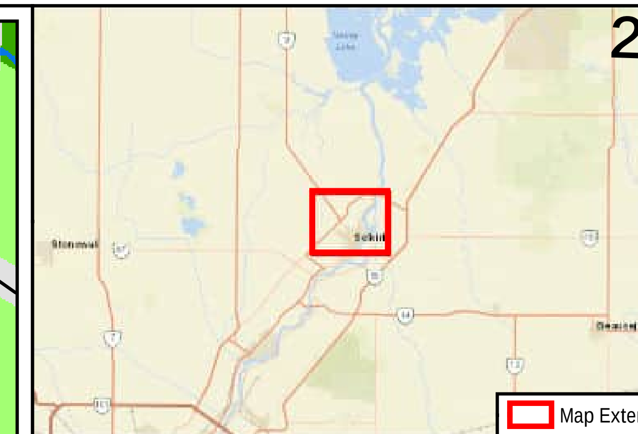
The nearest commercial hazardous waste facility, which also accepts household hazardous waste (e.g., oils and other petroleum products), is the City of Selkirk Solid Waste Transfer Station. Located at this station is the EcoCentre which acts as the used oil depot. The station is located off Walker Avenue and PTH 4, approximately 3.5 km north of the Project Site by road.

4.5.4 Land and Resource Use

A recent City of Selkirk Zoning By-law 4969 proposed amendment (#5362 dated June 9, 2022) was conditionally approved on June 13, 2022 (T. Feduniw, personal communication, August 2, 2022) indicating that land use within the Project Site is zoned as Heavy Industrial, with land use bordering the Project Site to the east zoned as Heavy Industrial and as a Business Park zone, land to the west and north zoned as Light Industrial, and land south and across PTH 9A (Easton Drive) zoned as Parks and Recreation (**Figure 4-8**). The District Development Plan, which until recently included the City of Selkirk (T. Feduniw, personal communication, August 2, 2022) categorizes land use within the Local Study Area included under the District Development Plan as 'Resource and Agriculture' and 'General Development' (**Figure 4-9**) (Red River District Development Plan, 2019).

[6] *City of Selkirk website: Selkirk's water system unaffected by Auditor General's report*
[7] *City of Selkirk website: Environmental benefits of new wastewater treatment plant are clear*





LEGEND

PROJECT SITE AREA
LOCAL STUDY AREA

ZONING AND LAND USE
- AGRICULTURAL GENERAL (AG)
- AGRICULTURAL-URBAN RESERVE (A-UR)
- AGRICULTURAL RESTRICTED (AR)
- CENTRAL COMMERCIAL (C2)
- STRIP COMMERCIAL (C3)
- HIGHWAY COMMERCIAL (C4)
- GENERAL COMMERCIAL (CG)
- HIGHWAY COMMERCIAL (CH)
- INSTITUTIONAL (I)
- GENERAL INDUSTRIAL (M)
- LIGHT INDUSTRIAL (M1)
- HEAVY INDUSTRIAL (M2)
- BUSINESS PARK ZONE (MP)
- PARKS AND RECREATION (PR)
- OPEN SPACE (OS)
- COMMERCIAL RECREATION (CR)
- RESIDENTIAL-GENERAL (R)
- RESIDENTIAL-MULTIPLE-FAMILY DWELLING (R3)
- COMPREHENSIVE RESIDENTIAL (RC)
- SUBURBAN RESIDENTIAL (RA)
- RURAL RESIDENTIAL (RR)
- RESIDENTIAL SMALL LOT (RS)
- OTHER

GENERAL FEATURES
- HIGHWAY
- ROAD
- RAILWAY
- MUNICIPAL BOUNDARY
- WATERBODY
- AERODROME/AIRPORT

ZONING AND LAND USE WITHIN THE LOCAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

2

0 0.5 1
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Street Map, NRCan, Manitoba Government
City of Selkrik Zoning By-law 4969, and conditionally approved proposed amendment #5362 (dated June 9, 2022; T. Feduniw, personal communication, August 2, 2022)

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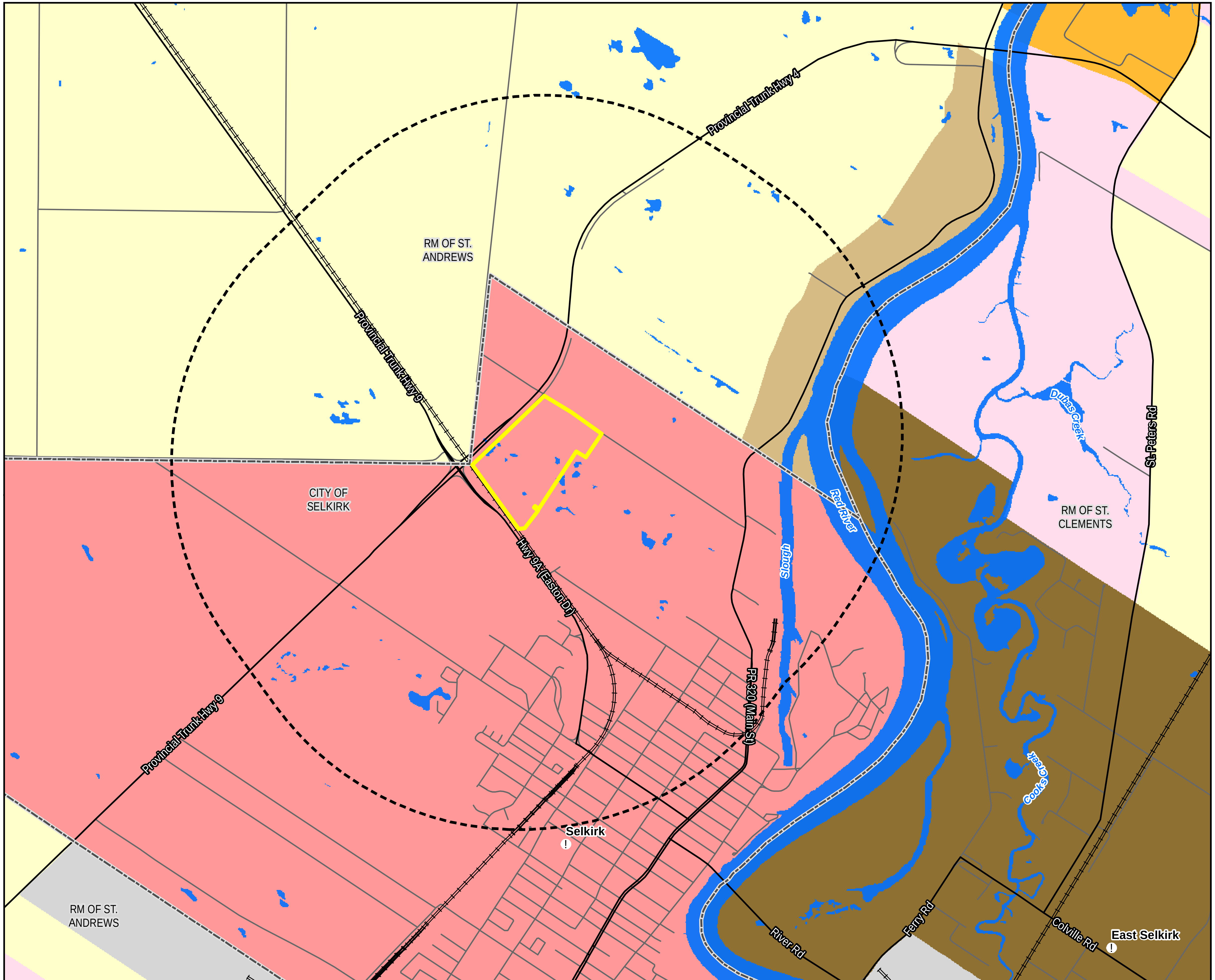
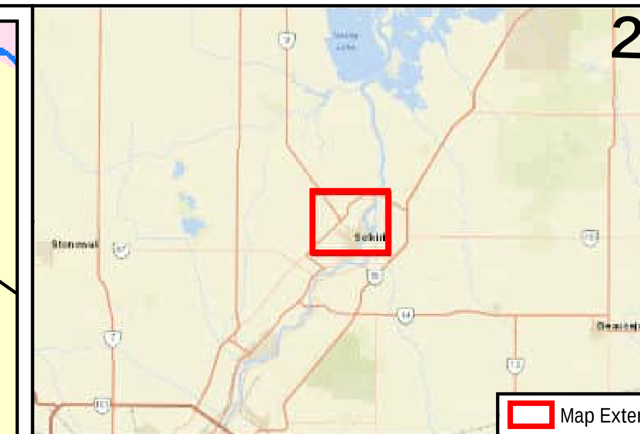
Figure 4-8





LEGEND

- PROJECT SITE AREA
- LOCAL STUDY AREA

DEVELOPMENT PLAN DESIGNATION *

- CITY OF SELKIRK **
- AGRICULTURE RESTRICTED
- GENERAL DEVELOPMENT
- INDUSTRIAL
- RESOURCE AND AGRICULTURE
- RURAL RESIDENTIAL
- SETTLEMENT CENTRE

GENERAL FEATURES

- HIGHWAY
- ROAD
- RAILWAY
- MUNICIPAL BOUNDARY
- WATERBODY

NOTES:
* THE RED RIVER PLANNING DISTRICT DEVELOPMENT PLAN WILL BE REVISED TO EXCLUDE THE CITY OF SELKIRK (T. FEDUNIW, PERSONAL COMMUNICATION, AUGUST 2, 2022)
** SEE FIGURE 4-8 FOR THE CITY OF SELKIRK ZONING DESIGNATIONS

DEVELOPMENT PLAN DESIGNATIONS WITHIN THE LOCAL PROJECT AREA

ENVIRONMENT ACT PROPOSAL
CPS SOLAR GLASS FACILITY PROJECT

2

0 0.5 1
Kilometres

Datum: NAD 1983 UTM Zone 14N

Source: Esri World Street Map, NRCan, Manitoba Government

PN#: 60663147

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Figure 4-9

AECOM

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4.5.4.1 Agriculture

Although land within the Project Site is not specifically designated by the City of Selkirk for agriculture use, the City of Selkirk is currently leasing the Project Site land for cereal crop agriculture use (photographs provided in **Appendix B**). Within the Local Study Area, there is a large designation of 'Resource and Agriculture' land use in the RM of St. Andrews north and west of the Project Site (**Figure 4-9**).

4.5.4.2 Industrial

The Project Site, and land immediately east of the Project Site, is zoned by the City of Selkirk as 'Heavy Industrial' (**Figure 4-8**). The land immediately north of the Project Site is designated as 'Light Industrial' from the north and west Project Site boundaries to the City of Selkirk limits.

4.5.4.3 Residential

No land within the Project Site is designated for residential use in the City of Selkirk zoning by-law (**Figure 4-8**). The closest land to the Project Site zoned for residential use within the Local Study Area is approximately 600 m southeast of the Project Site. However, approximately seven residences are located on the north side of Walker Avenue adjacent to the northeast boundary of the Project Site which is not currently zoned for residential use.

The CPR railway line that runs adjacent to the Project Site partially intersects the designated residential zone southeast of the Project Site (**Figure 4-8**). The railway line runs south of the Project Site and adjacent to the residential zone's western limit.

4.5.4.4 Other Land Uses

There are no other designated land use zones within the Project Site. Adjacent City of Selkirk zoning designations for land adjacent to the Project Site, and Red River Planning District Development Plan designations for those lands in the Local Study Area beyond the City of Selkirk are provided in **Figure 4-8** and **Figure 4-9**.

4.5.4.4.1 Airports and Aerodromes

As indicated in **Section 4.5.3.1** under 'Air' transportation, there are two airports/aerodromes within the Local Study Area. The Selkirk Aerodrome/Airport and adjacent Selkirk Water Aerodrome are located within 800 m and 1 km north, respectively by air, from the Project Site boundary (**Figure 4-8**).

4.5.5 Indigenous Communities

In the 2016 Census, 3,315 people in the City of Selkirk identified as either First Nations, Métis, or Inuit which is approximately 32% of the City of Selkirk's population (Statistics Canada, 2017). The Project Site falls under Treaty One Territory.

The other closest Indigenous communities to the Project Site are:

- Brokenhead Ojibway First Nation (37.3 km northeast of the Project Site by road)
- Sagkeeng First Nation (88.4 km northeast of the Project Site by road)

The closest reserve land designations to the Project Site are:

- Peguis 1I (5.4 km northeast of the Project Site)
- Peguis 1H (6.8 km northeast of the Project Site)
- Peguis 1G (11.1 km north of the Project Site)

- Peguis 1F (12.6 km north of the Project Site)
- Peguis 1E (13.3 km north of the Project Site)
- Peguis 1D (14.3 km north of the Project Site)
- Brokenhead 4 (28.7 km northeast of the Project Site)
- Peguis 1075 Portage Avenue Indian Reserve (38 km south of the Project Site Area – Winnipeg)
- Long Plain Madison Indian Reserve No. 1 (38.7 km south of the Project Site Area – Winnipeg)

Peguis First Nation, Chief Peguis Investment Corporation and the Manitoba Metis Federation also hold land within the City of Selkirk that is not federally designated reserve land. As shown in 'Zone 6' in **Appendix F**, the closest of these land holdings to the Project Site are by Peguis First Nation (6223291 Manitoba Ltd.) along Wersch Street approximately 300 m east of the Project Site (City of Selkirk, pers. comm. 2021[8]).

4.5.6 Heritage Resources

A screening request to Historic Resources Branch (HRB) was submitted on August 3, 2021, for the proposed Project to determine if there are any potential heritage resources that may be affected by the proposed development and if a Heritage Resources Impact Assessment (HRIA) is required. The Archaeological Unit of the HRB responded on August 11, 2021, to advise that the potential for the Project to impact significant heritage resources is believed to be low and a HRIA was not requested. A copy of the correspondence received from Historic Resources Branch is included in **Appendix G.**

[8] *Peguis First Nation, Chief Peguis Investment Corporation and Manitoba Metis Federation Properties, Selkirk, Manitoba, 2021 map information provided by City of Selkirk to Marlene Gifford, AECOM, via email on Aug. 28, 2021.*

5. Engagement Program

CPS will be holding a Public Information Session in Selkirk, Manitoba on October 19, 2022. This Public Information Session will therefore occur soon after this Environment Act Proposal (EAP) has been submitted to the Manitoba Environmental Assessment Branch (EAB) and the EAP has been available for public review in the Public Registry. The proposed timing of the CPS Public Information Session regarding this proposed Project is intended to allow time for the public and interested stakeholders to review the Project information and environmental impact assessment within the EAP document. The purpose of the CPS Public Information Session will be to present a summary of the information provided in the EAP, obtain feedback from Public Information Session attendees, and for CPS and their consultants to respond in-person to any questions regarding the proposed Project. A report summarizing the CPS Public Information Session including communication materials provided and public input received (such as comments and questions) will be submitted to the EAB as a supplementary filing which the EAB will post in the Public Registry.

As part of the Manitoba EAB public review period for the EAP, the EAB will also provide CPS with any questions and comments submitted by the public to the EAB regarding the Project. CPS will provide formal written responses to those questions and comments from the public, and also from the government Technical Advisory Committee's review of the EAP, which will be posted by the EAB in the Public Registry.

6. Environmental Assessment and Mitigation Measures

This section identifies the potential Project effects on the biophysical and socioeconomic environmental components, describes mitigation measures included in the design of the Project to avoid or minimize potential Project effects and determines the residual adverse impacts remaining, if any, after the application of mitigation measures.

The scope of this environmental assessment regarding spatial and temporal boundaries and the environmental components to be assessed has been described in **Section 3**.

6.1 Effects Assessment Methods

Table 6-1 identifies the biophysical and socioeconomic components that may be potentially affected by the Project due to the potential for interactions with the Project activities and components. Potential interactions were identified based on:

- Professional judgement;
- An understanding of Project components, construction methods, operation processes and the assumption that standard environmentally responsible construction techniques and operating procedures that will be applied during Project construction, operation and decommissioning; and
- Existing environment information (**Section 4**).

Table 6-1: Environmental Component Potential Interaction with the Project

ACTIVITY	BIOPHYSICAL COMPONENTS										SOCIO-ECONOMIC COMPONENTS				
	Physical			Atmospheric		Terrestrial			Aquatic						
	Geology/ Topography	Soil	Groundwater	Air Quality (emissions, dust, noise)	Climate / Greenhouse Gases	Vegetation	Wildlife	Species of Conservation Concern	Surface Water Quality	Fish and Fish Habitat*	Land and Resource Use	Human Health	Indigenous Communities**	Heritage Resources	Aesthetics
CONSTRUCTION															
Mobilizing construction equipment, materials and crew to and from Project Site	X	X		X	X	X	X	X	X		X	X		X	X
Vegetation clearing, grubbing and leveling as needed	X	X		X	X	X	X	X	X		X	X		X	X
Stockpiling cleared organics/soil	X	X		X	X	X	X	X	X		X	X		X	X
Construction of facility including railway spurs	X	X		X	X	X	X	X	X		X	X		X	X
Disposing and recycling of miscellaneous construction wastes (e.g. hazardous wastes [e.g. used oil); parts packaging)		X		X	X		X	X				X			X
OPERATION and MAINTENANCE															
Mobilizing operations and maintenance equipment, materials, product and staff to and from Project Site				X	X		X	X				X			X
All other activities related to facility operation.			X	X	X		X	X			X	X			X
Disposing and recycling of miscellaneous operations-related wastes (e.g. hazardous wastes [e.g. used oil); parts packaging)		X		X	X		X	X				X			X
DECOMISSIONING															
Mobilizing decommissioning equipment, materials and crew to and from Project site				X	X		X	X				X			X
Dismantling / decommissioning of Project components		X		X	X		X	X				X			X
Spreading organics/soil and revegetating previously disturbed areas	X	X		X	X	X	X	X				X			X
Disposing and recycling of miscellaneous wastes (e.g. hazardous wastes [e.g. used oil); parts packaging)		X		X	X		X	X				X			X

* No fish habitat exists within the Project Site. Project activities will apply appropriate erosion and sedimentation mitigation practices. Therefore, Project related activities are not anticipated to interact with surface waterbodies.

** Project activities are not anticipated to adversely impact Indigenous and Treaty Rights (**Section 6.6.5)**.

The framework for determining environmental impacts of the Project on environmental components includes the following:

- Determine potential adverse effects of the Project on environmental components;
- Apply mitigation measures to avoid or minimize potential adverse effects;
- Determine the residual environmental impacts, which are those adverse environmental effects that remain after the application of mitigation measures; and
- Evaluate the residual environmental impacts based on defined effects evaluation criteria.

The criteria used to evaluate residual environmental impacts are defined in **Table 6-2**, noting that the defined criteria are used as a general guide and may be modified to more appropriately evaluate impacts to specific environmental components.

Table 6-2: Environmental Effects Assessment Criteria

Criteria Term	Definition			
Magnitude of Effect:	Refers to the estimated percentage of population or resource that may be affected by activities associated with the construction, operation and decommissioning of the Project. Where possible and practical, the population or resource base has been defined in quantitative or ordinal terms (e.g. hectares of soil types, units of habitat). Magnitude of effect has been classified as less than (<) 1%, 1% to 10%, or greater than (>) 10% of the population or resource base. Where the magnitude of an effect was determined as virtually immeasurable or represented a potential change that was within the natural variation of population or resource levels, the effect was considered Negligible. An exception to this is regarding human health effects where, for example adverse health issues due to the Project and affecting 1% of the population would still be considered major.			
	Negligible (immeasurable)	Minor (<1%)	Moderate (1 to 10%)	Major (>10%)
Direction of Effect:	Refers to whether an effect on a population or a resource is considered to have a positive, adverse or neutral effect			
	Positive	Adverse	Neutral	
Duration of Effect:	Refers to the time it takes a population or resource to recover from the effect. If quantitative information was lacking, duration was identified as short term (<1 year), Moderate term (1 to 10 years) and long term (>10 years)			
	Short term (<1 year)	Moderate (1 to 10 years)	Long term (>10 years)	
Frequency:	Refers to the number of times an activity occurs over the Project phase and is identified as once, rare, intermittent or continuous			
	Once	Rare	Intermittent	Continuous
Scope of Effect:	Refers to the spatial area potentially affected by the effect and categorized as Project Site, Local Study Area or Regional Study Area as defined in **Section 3.2**. Where possible, quantitative estimates of the resource affected are provided			
	Project Site	Local Study Area	Regional Study Area	
Reversibility:	Refers to if an adverse effect is likely to be reversed after completion of the activity or Project decommissioning/closure			
	Reversible	Irreversible		

The significance of residual environmental impacts is commented on where applicable regulatory criteria exist such as a regulatory threshold (e.g., air quality guidelines are exceeded due to Project activities). In the absence of such regulatory thresholds, an overall characterization of the impact is provided, taking into consideration the assessment criteria as described above in **Table 6-2**.

Environmental effects that may be caused as a result of accidents and malfunctions are discussed separately in **Section 6.8**.

6.2 Physical Environment

6.2.1 Geology/Topography

Magnitude of Effect: Minor to negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Project Site
Reversibility: Reversible

Project construction activities including clearing, levelling, preparation of laydown areas, and construction of the facility and ancillary permanent components (**Figure 2-2**) will have a very limited effect on the Project Site topography. The Project Site has been previously disturbed by agriculture and mowing activities, and the area is relatively level (**Section 4.1.2**). Therefore, the existing topographic condition and geology will not be appreciably altered by the Project during either Project construction or future decommissioning activities.

The following measures will be implemented to avoid or minimize Project effects on topography:

- Where applicable, existing previously disturbed areas will be utilized to minimize disturbance to the natural topography.
- Levelling and grading will occur upon Project decommissioning to return the landscape to elevations typical to the surrounding area.

With the application of the above-described mitigation measures, impacts on topography have been assessed as being minor to negligible.

6.2.2 Soils

Magnitude of Effect: Minor
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Project Site
Reversibility: Reversible

Construction activities have the potential to cause soil erosion resulting from clearing, levelling, and construction of the facility and associated Project components. Soil erosion can potentially increase during high wind and precipitation events, which are expected to be most frequent during the months of May to September. Soil erosion may affect other environmental components, such as air quality (e.g., dust from soil disturbance), water quality, and vegetation.

To mitigate the effects of soil erosion, the following measures will be incorporated:

- An Erosion and Sediment Control Plan will be implemented for the construction and decommission phases of the Project.
- Areas disturbed during the construction phase that are not required for the Project operation phase (e.g., equipment laydown areas) will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion.
- During the Project decommissioning phase, after Project components have been removed, the landscape will be leveled and graded, and disturbed areas will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion.

With the application of the above measures, the potential for soil erosion and associated adverse impacts to the surrounding environment are anticipated to be minor and restricted to the Project Site.

6.2.3 Groundwater

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Project Site
Reversibility: Reversible

CPS will not be establishing new groundwater wells for Project operations. As indicated in **Section 2.4**, facility process water will be sourced from water supplied from the Selkirk Wastewater Treatment Facility. Only a nominal amount of groundwater will be sourced from the City of Selkirk for potable water (e.g., for washing; kitchen; washrooms). According to the City of Selkirk[9], approximately 25% of its available supply sourced from groundwater was being used in 2020, and when full fire protection is factored in, there is approximately 50% of reservoir capacity still available.

Mitigation measures described in **Section 6.8** to prevent accidents and malfunctions that may impact groundwater quality (e.g., spills of hazardous materials) will be applied. Therefore, Project effects on groundwater are assessed as negligible.

6.3 Atmospheric Environment

6.3.1 Air Quality

Magnitude of Effect: Negligible to Minor
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Local to Regional Study Area
Reversibility: Reversible

Local and regional air quality may be potentially affected by Project components and activities that generate greenhouse gas emissions (e.g., from the facility stack and equipment; vehicles used during all phases of the Project) and from dust/particulate matter generation (e.g., from raw materials transfer points; glass production and finishing process).

A detailed Air Quality Impact Assessment report was prepared for an earlier version of the Project description and is provided in **Appendix A**. The air quality assessment report considered the full Phase 2 Project of the maximum 1,200 tonnes per day of solar glass product production per year, which is consistent with the maximum annual production as indicated in **Section 2**. Since the completion of the Air Quality Impact Assessment report provided in **Appendix A,** there have since been some adjustments to the Project components and activities as described in **Section 2** (including adjustments to truck traffic frequency, raw materials storage [now fully enclosed in the batch plant] and final product transportation mode). These Project description updates have resulted in a total percentage decreases in estimate Project emissions for SO_2 (-17%), NOx (-18%), CO (-5%) and particulate matter ($PM_{2.5}$ -16%; PM_{10} -16%; TSP -15%), and no change to NH_3, fluorides (HF) and hydrogen chloride (HCl) emissions. Therefore, it is our

[9] *Blog: Selkirk's water system unaffected by Auditor General's report (2020): https://www.myselkirk.ca/blog/2020/10/30/selkirks-water-system-unaffected-by-auditor-generals-report/*

professional opinion that the adjustments in the Project description are expected to decrease most compounds emitted from the Project and are not of a magnitude that would change the overall conclusions in the Air Quality Impact Assessment report (**Appendix A**) which will be updated and reissued to MECP as a supplementary submission. In summary, no exceedances of the Manitoba Ambient Air Quality Criteria (MAAQC) are predicted for Project emissions, and the Project contribution to annual GHG emissions will not substantially change from the minor percentage estimates of the contribution to annual GHG emissions for Manitoba and Canada as presented in **Section 6.3.2**.

6.3.1.1 Air Dispersion Modelling Results

The dispersion modelling assessment (**Appendix A**) predicted no exceedances of the MAAQC for particulate matter (TSP, PM_{10}, and $PM_{2.5}$) or gases from combustion (HCl, HF, NH_3, CO, NO_2 and SO_2) at any location. It is concluded that the operations phase of the Project is likely to have minimal impacts on the air quality of the region, for the following reasons:

- The model used in the assessment is generally considered to be conservative
- Emission rates used in modelling were typically very conservative, over-estimating transportation emissions in winter months and from all sources for averaging periods greater than one hour
- The effects of precipitation to reduce particulate emissions were not considered

6.3.1.2 Emissions Management

As described in **Section 2.1.2 'Emission Control'**, emissions generated by the furnace used in the glass production process will pass through a specialized chemical conversion and filter system for glass furnace off-gas treatment to minimize particulate matter (PM), nitrogen oxides (NOx) and sulfur oxides (SOx) to emission control guidelines and/or requirements. This emissions control system will convert SOx vapour to a CaSO4 particulate. A ceramic filter baghouse is included in the emissions control system, which will capture the original particulate emissions and the newly converted CaSO4 particulate. The ceramic filters also contain a catalyst which facilitates the conversion of NOx to nitrogen and water vapor by way of injecting ammonia. The automated emission control system is designed to regulate the ammonia injection to prevent excess 'slippage' into the atmosphere. Post-filter system residual emissions from the two furnaces will be released to the ambient atmosphere via two approximately 70 m high stacks for the Project (Phase 1 and Phase 2 combined).

Other emissions generated from the annealing lehr and post processing steps such as cullet conveying for recycling, edge trimming, drilling, and coating processes will be appropriately filtered (as required) before venting to the outside.

All raw material storage and conveyors will be within fully covered enclosures. The unloading system for raw materials required to produce solar glass will be equipped with a dust control system (baghouse) that will remove dust particles (e.g., silica dust) from the air via a dust bag. Dust bags will be replaced as needed and in accordance with manufacturer specifications. Used filters and dust bags will either be reconditioned for reuse by the supplier or disposed of at a licenced waste disposal facility.

Emissions associated with truck and rail transportation of raw materials and the final solar glass product will be minimized by maximizing efficiencies in delivery scheduling and transportation equipment (e.g., use of fewer, higher load capacity trucks) to minimize transportation trips and utilize fuel-efficient technologies as available. Motorized vehicle idling will be minimized to the extent feasible.

6.3.1.3 Summary of Impacts on Air Quality

Based on the above air dispersion modeling results, assumptions as outlined in the detailed report (**Appendix A**), and application of the above mitigation measures, the impacts of the Project on air quality are assessed as negligible to minor. The results of the modeling predict no exceedances of air quality guidelines at the nearest residences under

the worst-case scenario conditions for any of the parameters that were modeled (e.g., dust; **Appendix A**). Impact assessment information for greenhouse gas (GHG) emissions is summarized in **Section 6.3.2**.

6.3.2 Climate/Greenhouse Gases

Magnitude of Effect: Minor
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Beyond the Regional Study Area
Reversibility: Irreversible

The Air Quality Impact Assessment report (**Appendix A**) provides methods used to estimate the annual emissions of greenhouse gases (GHG), emissions (i.e., total annual CO_{2eq} emissions). Power use for the long-term operation of the project will be obtained from hydropower via a planned power line and planned installation of a natural gas line which will minimize the need for power from GHG-emitting diesel generators except under cases where electricity and/or natural gas supply is temporarily unavailable.

Results of the annual GHGs estimated to be discharged as a result of Project operations are summarized below and have been updated compared to the estimate provided in **Appendix A** which used earlier project description update information.

Overall, the Project is estimated to generate approximately 389,385 tonnes of CO_2e annually during operations which is 1.7% of the reported emissions in 2019 which were 26.6 Mt CO_2e from Manitoba, and 0.05% of the reported 738 Mt CO_2e from Canada in 2019.

6.3.3 Noise

Magnitude of Effect: Minor
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Local Study Area
Reversibility: Reversible

Noise generated by Project activities could potentially result in nuisance noise to people living within the Local Study Area and has the potential to adversely affect wildlife (**Section 6.4.2**). A Noise Impact Assessment report was completed for this Project to predict the potential noise level generated by Project components and activities at the nearest points of reception. These locations are representative of the most exposed noise sensitive residential dwellings surrounding the Project Site in each direction which range in distance from 668 m to 1,265 m from the centre of the processing area (**Appendix D**). Examples of distances of other buildings nearest to the centre of the Project processing area, other than the nearest sensitive residential dwellings, include the Easton Place Medical Centre at 15 Wersch Street (approximately 550 m distance south) and the Selkirk Recreation Complex at 180 Easton Drive (approximately 700 m distance south). Project components expected to generate noise that may contribute to noise levels at the nearest points of reception are described in **Appendix D**. Noise-generating components modeled include the primary sources of noise associated with the Project operations (e.g., furnace exhaust stack; outdoor ancillary equipment and heavy machinery). Sources of noise associated with the railway spur component of the Project (e.g., train car loading/unloading and movements) were also included in the noise modeling predictions.

A detailed noise assessment report was prepared for an earlier version of the Project description and is provided in **Appendix D**. The noise assessment report considered the full Phase 2 Project of the maximum 1,200 tonnes per

day of solar glass product production per year, which is consistent with the maximum annual production as indicated in **Section 2**. Since the completion of the noise impact assessment report provided in **Appendix D,** there have since been some adjustments to the Project components and activities described in **Section 2** (including adjustments to truck traffic frequency, raw materials storage [now fully enclosed in the batch plant] and final product transportation mode). Therefore, it is our professional opinion that the adjustments in the Project description are expected to decrease noise emitted from the Project overall and would not change the overall conclusions in the noise impact assessment report (**Appendix D**) which will be updated and reissued to MECP as a supplementary submission. In summary, no exceedances of noise guidelines are predicted for the Project.

The Noise Impact Assessment report (**Appendix D**) evaluated the worst-case scenarios that may occur during one hour of operation (daytime and nighttime) to determine the maximum potential noise impact at the nearest most exposed points of reception (sensitive residential dwellings). The Noise Impact Assessment report concluded that Project operation activities are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the nearest residences to the Project which range in distance from 686 m south of the facility to 1265 m east of the facility (see Table 3-1 and Figure 3-1 in **Appendix D**).

The following measures will be implemented to reduce noise generated from Project operation activities:

- The railway spur design will allow the locomotive to pull the train right through the rail loadout area without the need to regularly decouple or couple individual cars which would be a source of noise.
- Inbound and outbound road transportation traffic will be spread over 16 hours per day, with most traffic occurring from 7:00 to 21:00.
- Inbound and outbound rail transportation traffic will occur from 7:00 to 21:00.
- Construction equipment and vehicles will be kept well maintained and will be fitted with mufflers, and other noise mitigation equipment as required.
- Unnecessary idling and revving of engines will be avoided.

In consideration of the above measures to minimize noise levels due to Project operations and predicted results of the Noise Impact Assessment (**Appendix D**), it is anticipated that potential noise levels at the nearest residences will be adequately attenuated. Noise disturbances to wildlife are anticipated to occur in the vicinity of Project construction and operation activities but are not expected to measurably impact wildlife populations within the Interlake Plain Ecoregion within which the Project is located. Based on the results of the Noise Impact Assessment (**Appendix D**), expected noise levels at receptors within the Local Study Area are assessed as minor.

6.4 Terrestrial Environment

6.4.1 Vegetation

Magnitude of Effect: Minor (Project Site) to Negligible (Local Study Area)
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Project Site (vegetation clearing) to Local Study Area (dust deposition)
Reversibility: Reversible

The footprint of the Project, which will be located almost entirely on recently cultivated land (**Section 4.3.1**), is approximately 13.5 times smaller than a section of farmland which is 260 ha. The estimated Project footprint area is provided in **Table 6-3**.

Table 6-3: Estimated Area of the Project Footprint

Project Components	
Permanent Components	**Area (ha)**
Solar Glass Manufacturing Facility including ancillary components (e.g., associated buildings; parking lot and driveway) Section 2.1	17
Railway spur (approximately 1150 m length x 11 m width at grade)	1.3
Total Project Footprint Area (almost entirely on recently cultivated land)	18.3
Total Maximum Area of Naturally Vegetated Area that may require clearing to construct the Project or accommodate the Project Footprint Area	1.1

Only approximately 3.1% of the Project Site (36 ha) consists of natural vegetation that may require clearing to accommodate the construction and operation of the Project. The types of naturally vegetated land cover that will be cleared (primarily sparsely treed areas; see **Appendix B**) are common within the Regional Study Area (**Section 4.4.1**). Two small areas of scattered milkweed plants observed during a Project Site visit in July 2021 (**Appendix B**) that may be used by Monarch butterflies to lay eggs and compete their life cycle will require clearing.

The following mitigation measures will be implemented to avoid or minimize potential effects of clearing on vegetation:

- Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required.
- Trees/wood will be cut and disposed of in accordance with applicable regulations.
- Areas disturbed during Project construction, not required for Project operations, will be re-seeded and will be maintained (e.g., mowed) in accordance with applicable provincial regulations and City of Selkirk by-laws.
    - CPS will discuss with MECP and the City of Selkirk on the feasibility of seeding a portion of the Project Site not required for Project operations with milkweed plants[10] to offset and potentially augment Monarch butterfly breeding habitat.

Clearing impacts on vegetation are limited to the Project Site and are assessed as minor due to the very limited amount of naturally vegetated areas that will require clearing to accommodate the Project footprint.

Vegetation within the Local Study Area can also be harmed by dust deposition on the surface of plants which may prevent adequate photosynthesis and other life functions of vegetation (Farmer, 1993). Dust will be generated during the construction, operation and closure phases of the Project as follows:

- During the construction phase, dust generation will result from the construction of the facility and associated infrastructure primarily due to ground disturbance and levelling activities; and
- During the operation phase of the Project due to handling of raw components for solar glass manufacturing and emissions during the manufacturing process; and
- During the decommissioning phase, dust deposition will be generated during removal of the facility and associated Project components and site clean-up activities.

Effects of dust deposition on plants are assessed to be minor due to the application of the mitigation measures listed in the air quality **Section 6.3.1** to control dust.

With the application of the above mitigation measures, the overall Project impacts to vegetation are assessed as minor within the Project Site and negligible within the Local Study Area.

[10] *Noting that Common Milkweed (Asclepias syriaca) and Showy Milkweed (A. speciosa) are two species of milkweed found in Manitoba that are listed as a Tier 3 'noxious weed' in The Noxious Weeds Regulation under The Noxious Weeds Act. Tier 3 weeds have to be controlled if the weed's uncontrolled growth or spread would have a negative impact on the economy, the environment or the well-being of residents near-by.*

6.4.2 Wildlife

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Regional Study Area
Reversibility: Reversible

Project activities that disrupt the natural environment (e.g., site clearing; noise) are the primary contributors to potential effects on wildlife. Wildlife management focuses on regional wildlife populations because wildlife populations (e.g., deer) are typically not measurably affected if only an individual or small number of individuals are affected within a relatively small spatial area (e.g., the home range of a deer). Therefore, the spatial scope of the assessment of the Project impacts on wildlife has been conducted in consideration of the Regional Study Area. The availability of nearby alternative habitat for wildlife is also taken into consideration when assessing the potential effects of a development on wildlife.

The limited amount of natural vegetation clearing that may be needed within the Project Site for Project construction (1.1 ha; **Section 6.4.1**) is unlikely to have a measurable effect on wildlife populations within the Regional Study Area because:

- The Project Site currently provides minimal and sub-optimal wildlife habitat (generally) due to existing disturbances from past clearing and agriculture activities, and the current adjacent developed land use activities and adjacent roadways and railway (**Appendix B**); and
- The amount of naturally vegetated area (scatterer clusters of trees, grasses and forbs) that may need to be cleared for the Project (1.1 ha) is negligible compared to the naturally vegetated area that remains within the Regional Study Area which consists of approximately 81% previously disturbed landcover due to human development such as agriculture, residential and commercial development areas (**Section 4.3.1**; **Table 4-1**).

Noise generated during Project construction, operation and decommissioning phases is expected to influence wildlife behaviour (e.g., area avoidance) to varying degrees within the Local Study Area depending on the type of wildlife (U.S. National Parks Service, 2018). Noise generated within the Project Site is not expected to be of a magnitude that would substantially affect wildlife populations within the Regional Study Area because:

- Project-generated noise is not expected to be substantial beyond the Project Site (**Appendix D**);
- Existing wildlife habitat at the Project site is minimal and sub-optimal; and
- Wildlife species present in the vicinity of the Project are anticipated to be accustomed (habituated) to some level of noise (U.S. National Parks Service, 2018) due to the presence of existing developments (e.g., roads; railway; surrounding commercial, agricultural, and residential developed areas).

Additional potential effects of the Project on wildlife include the following:

- Light pollution emanating from the facility within the Project Site can also disturb wildlife and alter natural wildlife behaviour for wildlife that may be present within the zone of influence of site lighting (e.g., Dominoni, 2017).
- The minor increase in vehicle traffic in the Regional Study Area as a result of Project construction and operation activities (**Section 6.7**) is anticipated to result in a minor increase the risk of vehicle collisions with wildlife given the relatively small spatial scale of the Project Site and overall minor increase in Regional Area traffic.

The following measures will be applied to minimize potential adverse effects to wildlife resulting from Project activities:

- Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required.
- Vegetation clearing will take place outside of the spring and summer months to the maximum extent feasible to avoid disturbance to breeding birds and other spring breeding wildlife species.
- Vegetation clearing will not take place during the breeding bird season for this 'Zone B4' area: April 14 – August 24 (Government of Canada, 2022).
- Noise mitigation as proposed in **Section 6.3.3** will be applied.
- Measures to control dust generation will be applied as described in **Section 6.3.1**.
- Fully shielded directional lighting fixtures will be used to focus light specifically to work areas, parking lot and the facility to minimize the dispersal of light to the surrounding Project Site and Local Study Area.

With the application of the above mitigation measures, Project impacts to the Regional Study Area wildlife populations are assessed as negligible. The Project is also not anticipated to have a measurable effect on wildlife populations within the Interlake Plain Ecoregion.

6.4.3 Species of Conservation Concern

Magnitude of Effect: Minor to Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Regional Study Area
Reversibility: Reversible

Species of conservation concern that potentially occur in the Regional Study Area (**Section 4.3.3**; **Appendix E**) are not expected to experience a detectable decrease in regional populations as a result of Project activities due to:

- General lack of natural vegetation/habitat cover types that maybe used by species of conservation concern that may be affected by Project construction and operation activities;
- The minimal amount of cleared vegetation/habitat that will be required for the Project (**Section 6.4.1**);
- Prevalence of similar cover types within the Regional Study Area, and
- The application of measures indicated in **Sections 6.4.1** and **6.4.2** to mitigate adverse effects of the Project on vegetation and wildlife in general.

Therefore, Project impacts to regional populations of species of conservation concern that may potentially be present at the Project Site and adjacent areas (**Section 4.3.3**) are assessed as minor to negligible, depending on the species of conservation concern and their habitat preferences.

6.5 Aquatic Environment

6.5.1 Surface Water

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Intermittent
Scope of Effect: Local and Regional Study Area
Reversibility: Reversible

Due to the absence of surface water at the Project Site (**Section 4.4.1**), Project construction and operation activities are not expected to directly affect surface water (i.e., no existing waterbody will be removed/filled to accommodate the Project).

Where required, erosion and sediment control measures as outlined in an Erosion and Sediment Control Plan (**Section 8**) will be in place during all Project phases to avoid introduction of sediment-laden runoff water into the existing ditching system adjacent to existing roads such as PTH 4. Prior to Project construction, a Drainage Study (**Section 8**) will be conducted to manage post-development Project Site surface water runoff (as needed) so that the pre-Project development flow to the existing ditching system is not exceeded to a level that would compromise existing road infrastructure, adjacent land uses and local/regional waterbodies.

6.5.2 Fish and Fish Habitat

Project related impacts on fish and fish habitat are not anticipated due to the absence of fish habitat within the Project Site (**Section 4.4.2**), and application of an Erosion and Sediment Control Plan as indicated in **Section 8**.

6.6 Socioeconomic Environment

6.6.1 Labour Force and Employment

Magnitude of Effect: Moderate
Direction of Effect: Positive
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Regional Study Area
Reversibility: Reversible

According to the labour force and education/training statistics provided in **Section 4.5.2**, there will be potentially employable people in the Local and Regional Study Areas having the skills, training and experience required for Project employment positions. Other supply and services contracts associated with the construction and operation of the Project will provide additional long-term economic opportunities.

As indicated in **Section 2.9.1**, approximately 700 people will be employed under contract for site clearing and Project construction for Phase 1, with the need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people. Employment opportunities for Phase 2 are expected to be similar to Phase 1. Once construction is complete, there will be approximately 300 people for Phase 1, with an additional 150 to 200 staff required for Phase 2, employed for facility operations (**Section 2.9.2**). Employment opportunities associated with the Project will be advertised as needed within the Regional Study Area and will be a positive, long term and continuous benefit for the Regional Study Area.

6.6.2 Infrastructure and Services

6.6.2.1 Emergency Services

Magnitude of Effect: Minor
Direction of Effect: Neutral/Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Regional Study Area
Reversibility: Reversible

Emergency services (i.e., fire, policing and ambulance) in the Regional Study Area have the potential to be utilized more often potentially resulting in limitations to the current availability and response times for these regional services. To mitigate potential adverse effects of the Project on Regional Study Area emergency services, CPS will incorporate the following measures:

- An Emergency Response Plan will be available on site during Project construction, operation and decommissioning that will clearly outline appropriate emergency response protocol.
- An on-site process water tank (concrete) will be sized to feed all industrial uses and will have the capacity for emergency fire suppression.
- CPS will notify the City of Selkirk when Project construction and operation will begin.
- Measures to avoid accidents and malfunctions as described in **Section 6.8** will be applied.

With the application of the above measures, the Project impacts on regional emergency services are anticipated to be minor.

6.6.2.2 Community Services

Magnitude of Effect: Minor (benefit)
Direction of Effect: Neutral to Positive
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Local and Regional Study Area
Reversibility: Reversible

Water requirements for the facility will be sustainably sourced from the City of Selkirk Wastewater Treatment Facility (for production processes) and from the City of Selkirk municipal supply (for potable water) as described in **Section 2.4**. Water for production processes will be recycled to the extent feasible as described in **Section 2.4**. Un-recycled process water and sewage from on-site personnel will be treated/filtered as required and disposed of via the City of Selkirk municipal sewerage system which is not expected to compromise the capacity of the City of Selkirk's new (in 2021) Wastewater Treatment Facility[11] (**Section 2.8**).

Solid waste will be transported by a licensed local contractor to be disposed at a local licenced waste disposal facility to an amount that would be sustainable for the local waste disposal facility. Otherwise, solid waste will be transported 70 km to the Brady Road Landfill managed by the City of Winnipeg.

CPS may initiate agreements for local / regional community services that would be beneficial for the City of Selkirk, surrounding municipalities and the Project. Examples of services and supplies that would be needed for the Project that could be supplied by local and/or regional community services include uniform and laundry services; shop supplies; janitorial services; fuel, oil and grease supply; grounds keeping and snow removal; small tools and equipment supply; garbage removal; office supplies; Project road maintenance; catering; health, safety supplies; shipping and expediting.

The City of Selkirk community services (e.g., water system upgrades) would potentially benefit from the additional tax revenue realized from the Project being located within the City of Selkirk.

In consideration of the benefits to the Local and Regional Study Area from the opportunity for local business to supply required goods and services, there is anticipated to be an overall moderate positive impact to community services.

[11] *Expanded capacity of the new City of Selkirk Wastewater Treatment Facility is described in a City of Selkirk on-line blog (July 21, 2021) at: Environmental benefits of new wastewater treatment plant are clear - City of Selkirk (myselkirk.ca)*

6.6.3 Land and Resource Use

Magnitude of Effect: Minor
Direction of Effect: Positive to Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Project Site to Local Study Area
Reversibility: Reversible

As indicated in **Figure 4-8**, the Project Site is currently designated for industrial use and will continue to be used for industrial purposes. Recent rezoning of the Project Site and some adjacent land to 'Heavy Industrial' from 'Light Industrial' (**Figure 4-8**) to accommodate the Project may facilitate opportunities for additional future industrial opportunities on the adjacent re-zoned land. Although the Project Site land and adjacent land has been leased by the City of Selkirk for agriculture use (**Section 4.5.4.1**), CPS purchase of the Project Site land for siting of the Project will preclude future use of the Project Site land for agriculture purposes.

In consideration of the proximity of the Project Site to the two airports/aerodromes within the Local Study Area (**Section 4.5.4.4.1**), CPS will discuss with Transport Canada appropriate air safety measures to incorporate in the facility stack design (e.g., lighting).

6.6.4 Human Health

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long Term
Frequency: Continuous
Scope of Effect: Local and Regional Study Areas
Reversibility: Reversible

Project activities have the potential to adversely affect human health through:

- Increased traffic due to employees and contractors accessing the Project Site
  - Emissions from the facility and vehicles affecting air quality
  - Higher potential for traffic accidents
- Dust and noise generated by Project activities

Mitigation measures that will avoid or minimize potential adverse effects on human health are the following:

- Measures to avoid or minimize adverse effects on air quality (**Section 6.3.1**) and effects on climate (**Section 6.3.2**) will be applied.
- Measures to control noise will be applied (**Section 6.3.3**).
- All CPS employees will abide by the standards, procedures and training required under *The Workplace Safety and Health Act* as well as CPS's internal Health and Safety Program and Emergency Response Plan.
- Employee Orientation and Safety training will be mandated for all new hires in addition to required yearly safety reviews for existing staff.
- In accordance with Part 12 of Hearing Conservation and Noise Control Regulation, an initial noise exposure assessment will be undertaken prior to commissioning of the facility, and appropriate measures implemented (such as hearing protection), depending on the results of the assessment. During operation and closure, a reassessment will be done if any alterations, renovations or repairs of the workplace are undertaken.
- Applicable PPE will be provided to employees. Where required, visitor orientation and PPE will be provided when visitors enter employee only areas.

Through the implementation of the measures referenced above, impacts to human health are assessed as negligible.

6.6.5 Indigenous Communities

Magnitude of Effect: Negligible to Minor
Direction of Effect: Adverse (regarding Human Health) to Positive (regarding Labour Force and Employment)
Duration of Effect: Long Term
Frequency: Continuous
Scope of Effect: Local and Regional Study Areas
Reversibility: Reversible

The Project is expected to be an overall benefit to nearby Indigenous communities within commuting distance to the Project Site (as described in **Section 4.5.5**) as there will be increased employment opportunities associated with the Project (as described in **Section 2.9**). Potential human health effects as assessed in **Section 6.6.4**, would be applicable to the nearest Indigenous peoples to the Project site.

The Project is not expected to adversely impact the exercise of Indigenous or Treaty rights because:

- No fish or fish habitat will be affected by the Project (**Section 6.5.2**);
- The Project is located on private land accessible only for the purposes of the Project;
- The residual environmental impact of the Project on vegetation beyond the Project Site is assessed to be negligible (**Section 6.4.1**); and
- The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible (**Section 6.4.2**).

6.6.6 Heritage Resources

Magnitude of Effect: Minor
Direction of Effect: Adverse
Duration of Effect: Long Term
Frequency: Continuous
Scope of Effect: Project Site
Reversibility: Irreversible

Activities related to Project construction and operations that disturb the land may have the potential to disturb or destroy heritage resources (e.g., unknown archaeological sites). Project activities that disturb the land include clearing and grubbing to prepare the site for Project construction.

As indicated in **Section 4.5.6**, the Archaeological Unit of the HRB advised that the potential for the Project to impact significant heritage resources is believed to be low. As recommended by HRB, CPS will have a Heritage Resources Protection Plan in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources if accidentally encountered (**Section 8**). If heritage resources are discovered within the Project Site, work will be stopped, HRB will be advised, and the discovered historic resources will be recorded by an archaeologist and adequately protected as required.

With the application of a Heritage Resources Protection Plan, the potential impacts on heritage resources are assessed as minor.

6.7 Traffic

Magnitude of Effect: Minor

Direction of Effect: Adverse
Duration of Effect: Long Term
Frequency: Continuous
Scope of Effect: Local Study Area
Reversibility: Reversible

Impacts to Local Study Area traffic will be not substantial for the following reasons:

- Traffic Impact Study (**Appendix H**) concluded that no geometric or traffic control improvements are required at the Easton Dr (PTH 9A) at Wersch Street intersection or the Easton Drive (PTH 9A) at PTH 9 / PTH 4 intersection to accommodate traffic related to Project operations. However, based on Manitoba Transportation and Infrastructure (MTI) rural intersection improvement warrants (standards), some improvements as described in the Traffic Impact Study are recommended for the PTH 4 at Walker Avenue intersection. These include widening PTH 4 to provide separate left and right turn lanes. Once these improvements are constructed, Project related traffic will not result in substantial impacts to traffic flow in the study area considered in the Traffic Impact Study.
- Staff arrivals and departures will be staggered daily to accommodate the 24 hours, seven days/week operation schedule. Additional minor traffic will be related to weekly supply/parts deliveries and contractors for services such as waste disposal.
- Project-related traffic will be directed to travel along a short segment of Walker Avenue (less than 350 m in length), west to PTH 4. Therefore, the use of local roads beyond the short (<150 m) facility access roads (for transport trucks and facility staff) will be minor.

Final design of the improvements at the PTH 4 at Walker Avenue intersection will be discussed with CPS, MTI, and the City of Selkirk.

6.8 Accidents and Malfunctions

6.8.1 Worker Health and Safety

Worker protection in Manitoba is regulated through standards, procedures and training under *The Workplace Safety and Health Act,* Workplace Safety and Health Regulation M.R. 217/2006. Safety equipment and personal protective equipment will be supplied to employees commensurate with the duties and potential hazards each employee may encounter for each employment position.

Contractors and visitors will be subject to site specific environmental health and safety orientation for all phases of the Project as needed.

6.8.2 Fires and Explosions

The presence of mechanical equipment, fuels and other hazardous materials creates a potential for fires and explosions. Such incidents can harm on-site personnel, cause equipment damage and lead to a release of contaminants, resulting in consequent effects to other environmental components (air, surface water, groundwater, plants, wildlife, aquatic resources).

Necessary precautions will be taken to prevent fire hazards at the Project Site; including but not limited to:

- Removal of flammable waste on a regular basis and disposal at a licenced hazardous waste disposal facility;
- Workers will be provided with appropriate fire prevention training and specially trained operations staff will be on site to function as a dedicated ‘fire brigade’ team;
- An on-site fire water system (e.g., tankage) will be designed to ensure an adequate amount of fire-fighting water will be available;

- Appropriate fire extinguishers will be available on the Project Site. Such equipment will comply with and be maintained to the manufacturers' standards and employees will be appropriately trained in their use;
- Storage, transportation and use of hazardous materials, including flammable waste, will comply with regulatory requirements;
- On-site fire prevention/response equipment will be checked on a routine basis and in accordance with local fire safety regulations to maintain proper working order;
- Greasy or oily rags or materials subject to spontaneous combustion will be deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at licenced waste disposal facility; and
- Smoking will be restricted to designated areas.

With the measures outlined above, and assuming implementation of safe work practices, the risk of fires and explosions is assessed to be appropriately mitigated.

6.8.3 Spills and Leaks

Environmental effects may occur due to spills from diesel fuel, lubricants, oils, hydraulic fluids, and other hazardous materials. An accidental release of hazardous materials and/or equipment fluids could occur from improper storage and handling procedures. Accidental releases have the potential to affect air, surface water, groundwater, and soils, with consequential effects on vegetation, aquatic resources and possibly human health and safety.

The following standard procedures will be implemented to prevent spills from occurring during Project activities:

- Diesel tanks used on site will be self-contained aboveground storage tank(s);
- When servicing requires drainage or pumping of lubricating oils or other fuels from equipment, a groundsheet of suitable material and size will be spread on the ground to catch all fluid in the event of a leak or spill. An adequate supply of suitable absorbent material and any other supplies and equipment necessary to immediately clean up spills will also be available;
- Storage and disposal of liquid wastes and filters from equipment maintenance, and residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with existing regulations;
- Waste oils, fuels, and other hazardous wastes will be handled in a safe manner. Staff will be required to transport, store and handle all such substances as recommended by the suppliers and/or manufacturers and in compliance with applicable federal, provincial and municipal regulations. MECP will be notified immediately if a reportable spill occurs;
- Fuels, oils or other hazardous materials will be stored in designated areas;
- Storage sites will be inspected regularly for compliance;
- Personnel on site will be trained in how to deal with spills, including knowledge of how to properly deploy site spill kit materials which will be available on site;
- Spill kits will be stationed and readily available for easy access;
- Service and repairs of equipment will be performed by trained personnel;
- Vehicles and equipment will have pre-shift inspections and walk arounds to detect fluid leaks, primarily from the fuel system and/or hydraulics. Any detected leak will result in the unit being pulled from service until repaired. All service and repairs will be logged and tracked in the units operating and maintenance logs. A manufacturer defined maintenance and preventative care will be practiced by CPS and its employees; and
- Fuel and chemical handlers will be trained and qualified, and appropriate emergency response measures will be in place and readily available.

Taking into account application of the above mitigation measures as necessary, and assuming the implementation of safe work practices, the risk of spills and leaks is considered to be appropriately mitigated.

6.8.4 Transportation Accidents

An increase in traffic due to employee and contractor traffic to and from the Project Site has the potential to increase the likelihood for transportation accidents. Transportation accidents can consequently result in the release of pollutants to the environment such as fuel and oils, or materials that the vehicles colliding are transporting (e.g., silica sand; construction wastes). Such accidental releases to the environment could potentially result in adverse effects on groundwater (contamination through seepage) and surface water quality (through contaminated runoff), and other environmental components such as vegetation (e.g., decline of growth potential due to soil contamination), wildlife, aquatic resources and human health.

The following measures will be employed to reduce the risk of transportation accidents:

- Appropriate traffic control signage at the ingress and egress points to/from the Project Site will be posted.
- Improvements for the PTH 4 at Walker Avenue intersection will be discussed with CPS, MTI and the City of Selkirk and will be implemented as required.
- The rail spur component of the Project will be constructed in accordance with the most recent applicable engineering specifications.
- Personnel retained to drive and operate vehicles and construction equipment will have a valid appropriate-Class Manitoba Driver's License with a copy provided to CPS.
- Appropriate speed controls (e.g., speed limit signage) and lighting on Project access roads and Project property will be installed where needed.

The above noted measures are assessed to appropriately mitigate the potential risk of transportation accidents during all phases of the Project.

6.8.5 Power Failure

The Manitoba Hydro natural gas supply is extremely robust, reliable and is a well-interconnected system (Manitoba Hydro, 2019). The Project site will be connected to a looped natural gas system meaning that outages would be very unlikely or of short duration. Additionally, the gas-fired furnaces will have electrical back-up to prevent premature hardening of molten glass.

Like Manitoba Hydro's natural gas supply system, Manitoba Hydro's electricity supply system is robust with a well-interconnected system (Manitoba Hydro, 2021). If the Project site loses electrical supply from Manitoba Hydro, the 1,500 kVA emergency diesel generators will keep critical loads operating until power is restored, or safe and effective shutdown can occur.

Internally, CPS has planned redundancy and alternate supply for the Project design to ensure staff and equipment safety during an unplanned internal power outage.

6.9 Summary of Environmental Effects and Mitigation Measures

Table 6-4 summarizes potential environmental effects of the proposed Project and the design features, standard operating procedures and other mitigation measures that will be implemented.

Table 6-5 summarizes potential accidents and malfunctions and measures to reduce the risk of such occurrences.

With the application of proposed mitigation measures listed in **Table 6-4** and **Table 6-5**, adverse environmental effects of the Project are expected to be sufficiently mitigated.

Table 6-4: Summary of Environmental Assessment and Mitigation Measures

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
PHYSICAL ENVIRONMENT				
Geology / Topography	Construction	Clearing, levelling, construction of laydown areas, and construction of the facility, associated infrastructure.	Where applicable, existing roads and trails and other previously disturbed areas will be utilized to minimize disturbance to the natural topography.	Minor to Negligible
	Decommissioning	Removal of Project infrastructure and rehabilitation of disturbed areas to accommodate future land use.	Levelling and grading will occur upon Project decommissioning to return the landscape to elevations typical to the surrounding area to prepare the site for future land use.	
Soil (Erosion)	Construction	Clearing, levelling, construction of laydown areas, and construction of the Project including access road improvements as needed.	An Erosion and Sediment Control Plan will be implemented for the construction and decommission phases of the Project.	Minor
			Areas disturbed during the construction phase that are not required for the Project operation phase (e.g., equipment laydown areas) will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion.	
	Decommissioning	Removal of Project infrastructure and rehabilitation of disturbed areas.	During the Project decommissioning phase, after Project components have been removed, the landscape will be leveled and graded, and disturbed areas will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion.	
Groundwater	Operation	Not applicable as CPS will not be establishing new groundwater wells for Project operations. Refer to **Table 6-5** and **Section 6.8** for measures to avoid potential contamination of groundwater due to accidents and malfunctions.	CPS will not be establishing new groundwater wells for Project operations. Mitigation measures described in **Section 6.8** to prevent accidents and malfunctions that may impact groundwater quality (e.g., spills of hazardous materials) will be applied.	Negligible
ATMOSPHERIC ENVIRONMENT				
Air Quality	Construction, Operation and Decommissioning	Generation of dust/particulate matter	Emissions generated by the furnace used in the glass production process will pass through a specialized chemical conversion and filter system for glass furnace off-gas treatment to minimize particulate matter (PM), nitrogen	Minor

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
		and emissions from during all Project phases.	oxides (NOx) and sulfur oxides (SOx) to emission control guidelines and/or requirements.	
			Other emissions generated from the annealing lehr and post processing steps such as cullet conveying for recycling, edge trimming, drilling, and coating processes will be appropriately filtered (as required) before venting to the outside.	
			All raw material storage and conveyors will be within fully covered enclosures. The unloading system for raw materials required to produce solar glass will be equipped with a dust control system (baghouse) that will remove dust particles (e.g., silica dust) from the air via a dust bag. Dust bags will be replaced as needed and in accordance with manufacturer specifications. Used filters and dust bags will either be reconditioned for reuse by the supplier or disposed of at a licenced waste disposal facility.	
			Sand will be stockpiled in an enclosed sand storage shed with air filtration.	
			Applicable PPE will be provided to employees (e.g., appropriate face masks). Where required, visitor orientation and PPE will be provided when visitors enter employee only areas.	
			Emissions associated with truck and rail transportation of raw materials and the final solar glass product will be minimized by maximizing efficiencies in delivery scheduling and transportation equipment (e.g., use of fewer, higher load capacity trucks) to minimize transportation trips and utilize fuel-efficient technologies as available.	
			Vehicle emissions will be minimized by regularly maintaining vehicles and minimizing idling of vehicles.	
			The section of Walker Avenue west of the Project Site driveway gates to PTH 4 will be paved to reduce road dust generated by heavy transport trucks. The access road into the Project site and associated parking lot will also be paved.	
Climate / Greenhouse Gases	Construction, Operation, and Decommissioning	Project operations including use of natural gas and diesel fuel sources; use of heavy machinery, equipment, vehicles, railway locomotive and tools or equipment that consumes fuel.	Power use for the long-term operation of the project will be obtained from hydropower via a planned power line and planned installation of a natural gas line which will minimize the need for power from GHG-emitting diesel generators except under cases where electricity and/or natural gas supply is temporarily unavailable.	Minor
			Emissions will be minimized by regularly maintaining equipment and vehicles and minimizing idling of vehicles.	
			Vehicles and equipment will meet required emission standards.	

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
Noise	Construction, Operation and Decommissioning	Noise from Project operations (e.g., furnace exhaust stack; outdoor ancillary equipment and heavy machinery; train car loading/unloading and movements) and sources of noise from heavy equipment during Project construction and decommissioning such as bulldozers and excavators.	The facility will be an enclosed building which will minimize noise generated from solar glass production activities.	Minor
			The railway spur design will allow the locomotive to pull the train right through the rail loadout area without the need to regularly decouple or couple individual cars which would be a source of noise.	
			Inbound and outbound road transportation traffic will be spread over 16 hours per day, with most traffic occurring from 7:00 to 21:00.	
			Inbound and outbound rail transportation traffic will occur from 7:00 to 21:00.	
			Construction equipment and vehicles will be kept well maintained and will be fitted with mufflers, and other noise mitigation equipment as required.	
			Unnecessary idling and revving of engines will be avoided.	
TERRESTRIAL ENVIRONMENT				
Vegetation	Construction, Operation and Decommissioning	Clearing, leveling, compacting, ditching for water drainage as required; operation of machinery and activities that produce dust; removal of Project infrastructure and rehabilitation of disturbed areas.	Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required.	Minor (Project Site) to Negligible (Local Study Area)
			Trees/wood will be cut and disposed of in accordance with applicable regulations.	
			Areas disturbed during Project construction, not required for Project operations, will be re-seeded and will be maintained (e.g., mowed) in accordance with applicable provincial regulations and City of Selkirk by-laws.	
			Mitigation measures to control dust (see **Air Quality** component in this table) will be applied to minimize accumulation of dust on vegetation.	
Wildlife	Construction, Operation, and Decommissioning	Vegetation clearing; human presence and noise related to Project construction, operation and decommissioning activities such as operation of machinery; increased human presence at the Project Site and increased traffic at the Project Site and adjacent Local Study Area.	Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required.	Negligible
			Vegetation clearing will take place outside of the spring and summer months to the maximum extent feasible to avoid disturbance to breeding birds and other spring breeding wildlife species.	
			Vegetation clearing will not take place during the breeding bird season for this 'Zone B4' area: April 14 – August 24 (Government of Canada, 2022).	
			Mitigation measures to control noise (see **Noise** component in this table) and dust (see **Air Quality** component in this table) will be applied.	
			Fully shielded directional lighting fixtures will be used to focus light specifically to work areas, parking lot and the facility to minimize the dispersal of light to the surrounding Project Site and Local Study Area.	

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
Species of Conservation Concern	Construction, Operation, and Decommissioning	As above for the **Vegetation** and **Wildlife** components.	Mitigation measures as listed for the **Vegetation** and **Wildlife** components above will be applied.	Minor to Negligible
AQUATIC ENVIRONMENT				
Surface Water Quality	Construction, Operation, and Decommissioning	Project Site clearing, leveling, compacting; ditching for water drainage as required; removal of Project infrastructure and rehabilitation of disturbed areas.	Where required, erosion and sediment control measures as outlined in an Erosion and Sediment Control Plan will be in place during all Project phases to avoid introduction of sediment-laden runoff water into the existing ditching system adjacent to existing roads such as PTH 4. Prior to Project construction, a Drainage Study will be conducted to manage post-development Project Site surface water runoff (as needed) so that the pre-Project development flow to the existing ditching system is not exceeded to a level that would compromise existing road infrastructure, adjacent land uses and local/regional waterbodies.	Negligible
Fish and Fish Habitat	Construction, Operation and Decommissioning	Not applicable.	Due to the absence of fish habitat within the Project Site and Local Study Area, and application of an Erosion and Sediment Control Plan, Project related impacts on fish and fish habitat are not anticipated.	None
SOCIOECONOMIC ENVIRONMENT				
Labour Force and Employment	Construction, Operation and Decommissioning	Employment and contract services required for Project construction, operation and decommissioning phases.	Employment opportunities associated with the Project will be advertised as needed within the Regional Study Area.	None (adverse) Moderate (positive)
Emergency Services	Construction, Operation, and Decommissioning	Accidents, malfunctions and extreme natural events such as storms.	An Emergency Response Plan will be available on site during Project construction and operation that will clearly outline appropriate emergency response protocol. An on-site process water tank (concrete) will be sized to feed all industrial uses and will have the capacity for emergency fire suppression. CPS will notify the City of Selkirk when Project construction and operation will begin. Measures to avoid accidents and malfunctions as described in **Section 6.8** will be applied.	Minor
Community Services	Construction, Operation, and Decommissioning	Requirement for use of Local and Regional Study Area goods and services (contractor services); utility services (electricity; natural gas; cellular services).	the City of Selkirk Wastewater Treatment Facility (for production processes) and from the City of Selkirk municipal supply (for potable water). Water for production processes will be recycled to the extent feasible. Un recycled process water and sewage from on-site personnel will be treated/filtered as required and disposed of via the City of Selkirk municipal sewerage system which is not expected to compromise the capacity of the City of Selkirk's new (in 2021) Wastewater Treatment Facility.	None (adverse) to Minor (positive)

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
			Solid waste will be transported by a licensed local contractor to be disposed at a local licenced waste disposal facility to an amount that would be sustainable for the local waste disposal facility. Otherwise, solid waste will be transported 70 km to the Brady Road Landfill managed by the City of Winnipeg.	
			The City of Selkirk community services (e.g., water system upgrades) would potentially benefit from the additional tax revenue realized from the Project being located within the City of Selkirk.	
Land and Resource Use	Construction, Operation, and Decommissioning	Use of the Project Site for the construction and operation of the Project.	Recent rezoning of the Project Site and some adjacent land to 'heavy industrial' from 'light industrial' (**Figure 4-8**) to accommodate the Project may facilitate opportunities for additional future industrial opportunities on the adjacent re-zoned land.	Minor (positive to adverse)
			Although the Project Site land and adjacent land has been leased by the City of Selkirk for agriculture use (**Section 4.5.4.1**), CPS purchase of the Project Site land for siting of the Project will preclude future use of the Project Site land for agriculture purposes.	
			In consideration of the proximity of the Project Site to the two airports/aerodromes within the Local Study Area (**Section 4.5.4.4.1**), CPS will discuss with Transport Canada appropriate air safety measures to incorporate in the facility stack design (e.g., lighting).	
Human Health	Construction, Operation, and Decommissioning	Increased traffic due to employees and contractors accessing the Project Site; higher potential for traffic accidents; emissions from the facility and vehicles affecting air quality; dust and noise generated by Project activities.	Measures to avoid or minimize adverse effects on air quality and effects on climate will be applied (see **Air Quality** and **Climate/Greenhouse Gasses** components in this table).	Negligible
			Measures to control noise will be applied (See **Noise** component in this table).	
			All CPS employees will abide by the standards, procedures and training required under *The Workplace Safety and Health Act* as well as CPS's internal Health and Safety Program and Emergency Response Plan.	
			Employee Orientation and Safety training will be mandated for all new hires in addition to required yearly safety reviews for existing staff.	
			In accordance with Part 12 of Hearing Conservation and Noise Control Regulation, an initial noise exposure assessment will be undertaken prior to commissioning of the facility, and appropriate measures implemented (such as hearing protection), depending on the results of the assessment. During operation and closure, a reassessment will be done if any alterations, renovations or repairs of the workplace are undertaken.	

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
			Applicable PPE will be provided to employees. Where required, visitor orientation and PPE will be provided when visitors enter employee only areas.	
Indigenous Communities	Construction, Operation, and Decommissioning	Potential effects as above regarding **Labour Force and Employment**, **Land and Resource Use** and **Human Health** components.	The Project is not expected to adversely impact the exercise of Indigenous or Treaty rights because: • No fish or fish habitat will be affected by the Project (**Section 6.5.2**); • The Project is located on private land accessible only for the purposes of the Project; • The residual environmental impact of the Project on vegetation beyond the Project Site is assessed to be negligible (**Section 6.4.1**); and • The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible (**Section 6.4.2**). Also refer to **Human Health** and **Labour Force and Employment** components in this table.	None anticipated regarding Indigenous or Treaty Rights. Negligible (regarding **Human Health**, as assessed above) None (adverse) Moderate (positive) regarding **Labour Force and Employment** (as assessed above)
Heritage Resources	Construction and Decommissioning	Clearing, leveling, compacting, ditching for water drainage as required; removal of Project infrastructure and rehabilitation of disturbed areas	As recommended by HRB, CPS will have a Heritage Resources Protection Plan in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources if accidentally encountered.	Minor

Table 6-5: Summary of Potential Accidents and Malfunctions and Measures to Mitigate Risk of Occurrence

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
Worker Health and Safety	Construction, Operation and Decommissioning	Risk of workplace accidents affecting worker health.	Worker protection in Manitoba is regulated through standards, procedures, and training under the Workplace Safety and Health Regulation, M.R. 217/2006.	Risk is assessed to be appropriately mitigated
			Safety equipment and personal protective equipment will be supplied to employees and workers.	
			Contractors and visitors will be subject to site specific environmental health and safety orientation for all phases of the Project as needed.	
Fires and Explosions	Construction, Operation and Closure	The presence of mechanical equipment, fuels and other hazardous materials creates a potential for fires and explosions. Such incidents can harm on-site personnel, cause equipment damage and lead to a release of contaminants, resulting in consequent effects to other environmental components (air, surface water, groundwater, plants, wildlife, aquatic resources).	Removal of flammable waste on a regular basis and disposal at a licenced disposal facility.	Risk is assessed to be appropriately mitigated
			Workers will be provided with appropriate fire prevention training and specially trained operations staff will be on site to function as a dedicated 'fire brigade' team.	
			An on-site fire water system (e.g., tankage) will be designed to ensure an adequate amount of fire-fighting water will be available.	
			Appropriate fire extinguishers will be available on the Project Site. Such equipment will comply with and be maintained to the manufacturers' standards, and employees will be appropriately trained in their use.	
			Storage, transportation and use of hazardous materials, including flammable waste, will comply with regulatory requirements.	
			On-site fire prevention/response equipment will be checked on a routine basis and in accordance with local fire safety regulations to maintain proper working order.	
			Greasy or oily rags or materials subject to spontaneous combustion will be deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at licenced waste disposal facility.	
			Smoking will be restricted to designated areas.	
Spills and Leaks	Construction, Operation and Decommissioning	Spills and leaks from diesel fuel, lubricants, oils, hydraulic fluids, and other hazardous materials can have	Diesel tanks used on site will be self-contained aboveground storage tank(s).	Risk is assessed to be appropriately mitigated

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
		adverse effects air, surface water, groundwater and soils, with consequential effects on vegetation, aquatic resources and possibly human health and safety.	When servicing requires drainage or pumping of lubricating oils or other fuels from equipment, a groundsheet of suitable material and size will be spread on the ground to catch all fluid in the event of a leak or spill. An adequate supply of suitable absorbent material and any other supplies and equipment necessary to immediately clean up spills will also be available.	
			Storage and disposal of liquid wastes and filters from equipment maintenance, and residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with existing regulations.	
			Waste oils, fuels, and other hazardous wastes will be handled in a safe manner. Staff will be required to transport, store, and handle all such substances as recommended by the suppliers and/or manufacturers and in compliance with applicable federal, provincial, and municipal regulations. MECP will be notified immediately if a reportable spill occurs.	
			Fuels, oils, or other hazardous materials will be stored only in designated areas.	
			Storage sites will be inspected regularly for compliance.	
			Personnel on site will be trained in how to deal with spills, including knowledge of how to properly deploy site spill kit materials which will be available on site.	
			Spill kits will be stationed and readily available for easy access.	
			Service and repairs of equipment will only be performed by trained personnel.	
			Vehicles and Equipment will have pre shift inspections and walk arounds to ensure no fluid leaks, primarily from the fuel system and/or hydraulics. Any detected leak will result in the unit being pulled from service until repaired. All service and repairs will be logged and tracked in the units operating and maintenance logs. A manufacturer defined maintenance and preventative care will be practiced by CPS and its employees.	
			Fuel and chemical handlers will be trained and qualified, and appropriate emergency response measures will be in place and readily available.	
Transportation Accidents	Construction, Operation and Decommissioning	Release of pollutants to the environment such as fuel and oils, or materials that the vehicles colliding are transporting (e.g., silica sand; construction	Appropriate traffic control signage at the ingress and egress points to/from the Project Site will be posted.	Risk is assessed to be appropriately mitigated
			Improvements for the PTH 4 at Walker Avenue intersection will be discussed with CPS, MTI and the City of Selkirk and will be implemented as required.	
			The rail spur component of the Project will be constructed in accordance with the most recent applicable engineering specifications.	
			Personnel retained to drive and operate vehicles and construction equipment will have a valid appropriate-Class Manitoba Driver's License with a copy provided to CPS.	

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
		wastes) potentially resulting in adverse effects on groundwater (contamination through seepage); surface water quality (through contaminated runoff), and other environmental components such as vegetation (e.g., decline of growth potential due to soil contamination), wildlife, aquatic resources and human health	Appropriate speed controls (e.g., speed limit signage) and lighting on Project access roads and Project property will be installed where needed.	
Power Failure	Construction, Operation and Decommissioning	Loss of power potentially leading to equipment malfunctions and accidents.	If the Project site loses electrical supply from Manitoba Hydro, the two 1,500 kVA emergency diesel generators will keep critical loads operating until power is restored, or safe and effective shutdown can occur. Internally, CPS has planned redundancy and alternate supply for the Project design to ensure staff and equipment safety during an unplanned internal power outage.	Risk is assessed to be appropriately mitigated

7. Decommissioning

Decommissioning of the Project will occur at the end of the life of the Project (scheduled to be 30 years) and will generally include the following activities:

- Removal of buildings, and foundations as applicable;
- Removal and disposal of miscellaneous infrastructure (e.g., stacks, access roads, parking lot, power lines and other power equipment/infrastructure);
- Removal of fuel and oil tanks, as applicable;
- Testing and remediation of contaminated soils, as required;
- Decommissioning natural gas supply lines, as required;
- Re-grading and contouring of previously disturbed areas; and
- Restoring the landscape to a condition suitable for potential future land sale and as agreed-on by a potential land purchaser and/or the City of Selkirk.

8. Follow-Up Plans

Follow-up programs verify the accuracy of the environmental assessment of a project and determine the effectiveness of measures taken to mitigate the potential adverse environmental effects of a project. The following programs will be implemented during the construction, operation, and decommissioning phase of the Project:

- An Erosion and Sediment Control Plan will be implemented for the construction and decommissioning phases of the Project.
  - An environmental monitor will be included in the construction team to monitor activities for compliance with the Erosion and Sediment Control Plan.
- A Drainage Study will be completed and submitted to Manitoba Transportation and Infrastructure prior to Project construction to assess the existing ditching infrastructure ability to manage the developed condition land drainage design flows and to propose onsite stormwater storage solutions to mitigate increased flows due to development (as needed).
- A Heritage Resources Protection Plan will be in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources that may be accidentally encountered.
- An Emergency Response Plan will be available on site during all Project phases that will clearly outline appropriate emergency response protocol.
- Diesel fuel, oil, lubricant, chemical and hazardous wastes storage areas will be inspected in accordance with applicable legislation and associated regulations and guidelines, including *The Dangerous Goods Handling and Transportation Act* of Manitoba and applicable regulations.

9. Conclusion

Overall, the adverse residual effects of the proposed Project are expected to be negligible to minor in magnitude and mitigable with the measures incorporated into the Project design and recommended herein. The results of the effects assessment are summarized as follows:

Geology/Topography

Impacts on topography have been assessed as being minor to negligible.

The Project Site has been previously disturbed by agriculture and mowing activities, and the area is relatively level. Therefore, the existing topographic condition and geology will not be appreciably altered by the Project during either Project construction or future decommissioning activities. Effects on topography will be minimized by using existing previously disturbed areas to the extent feasible to minimize disturbance to the natural topography. Levelling and grading will occur upon Project decommissioning to return the landscape to elevations typical to the surrounding area.

Soils

The potential for soil erosion and associated adverse impacts to the surrounding environment are anticipated to be minor and restricted to the Project Site.

Areas disturbed during the construction phase that are not required for the Project operation phase (e.g., equipment laydown areas) will be revegetated as quickly as feasible to stabilize the soil and minimize soil erosion. An Erosion and Sediment Control Plan will be implemented for the construction and decommission phases of the Project.

Groundwater

Project effects on groundwater are assessed as negligible.

CPS will not be establishing new groundwater wells for Project operations. Facility process water will be sourced from water supplied from the Selkirk Wastewater Treatment Facility. Only a nominal amount of groundwater will be sourced from the City of Selkirk municipal groundwater supply for potable water (e.g., for washing; kitchen; washrooms). Mitigation measures to prevent accidents and malfunctions that may impact groundwater quality (e.g., spills of hazardous materials) will be applied.

Air Quality

Air dispersion modeling was performed to estimate air quality at sensitive receptors under the worst-case scenario conditions that could occur for this Project. The results of the modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g., dust).

Emissions generated by the furnace used in the glass production process will pass through a specialized chemical conversion and filter system for glass furnace off-gas treatment to minimize particulate matter (PM), nitrogen oxides (NOx) and sulfur oxides (SOx) to emission control guidelines and/or requirements. Other emissions generated from the annealing lehr and post processing steps such as cullet (broken glass) conveying for recycling, edge trimming, drilling and coating processes will be appropriately filtered (as required) before venting to the outside.

All raw material storage and conveyors will be within fully covered enclosures. The unloading system for raw materials required to produce solar glass will be equipped with a dust control system (baghouse) that will remove dust particles

(e.g., silica dust) from the air via a dust bag. Dust bags will be replaced as needed and in accordance with manufacturer specifications.

Climate/Greenhouse Gases (GHGs)

The impact of the Project on GHG contributions to the atmosphere is assessed as minor.

Overall, the Project is estimated to generate approximately 398,649 tonnes of CO_2e annually during operations which is 1.8% of the reported emissions in 2019 which were 26.6 Mt CO_2e from Manitoba, and 0.05% of the reported 738 Mt CO_2e from Canada in 2019.

Noise

The facility will be an enclosed building which will minimize noise generated from solar glass production activities. Results of a Noise Impact Assessment concluded that Project operation activities are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the nearest residences to the facility.

Protected and other Vegetation

The overall Project impacts to vegetation are assessed as minor within the Project Site and negligible within the local area.

Only approximately 3.1% of the Project Site (36 ha) consists of natural vegetation that may require clearing to accommodate the construction and operation of the Project. The types of naturally vegetated land cover that will be cleared (primarily sparsely treed areas) are common within the regional area. Of the plant Species at Risk that may occur within the ecoregion, none are likely to occur at the Project Site due to the Project Site being almost entirely under current or recent cultivation.

Areas to be cleared of vegetation will be minimized to the extent feasible and will be clearly marked to avoid clearing more than required. Trees/wood will be cut and disposed of in accordance with applicable regulations. Areas disturbed during Project construction, not required for Project operations, will be left fallow and will be maintained (e.g., mowed) in accordance with applicable provincial regulations and City of Selkirk by-laws.

Protected and other Wildlife

Project impacts on the regional wildlife populations are assessed as negligible. The Project Site currently provides minimal and sub-optimal wildlife habitat (generally) due to existing disturbances from past clearing and agriculture activities, and the current adjacent developed land use activities and adjacent roadways and railway. The amount of naturally vegetated area (scatterer clusters of trees, grasses and forbs) that may need to be cleared for the Project (1.1 ha) is negligible compared to the naturally vegetated area that remains within the regional area which consists of approximately 81% previously disturbed landcover due to human development such as agriculture, residential and commercial development areas.

Minimizing vegetation clearing to the extent feasible will limit adverse effects to the existing minimal sub-optimal wildlife habitat. Noise generated within the Project Site is not expected to be of a magnitude that would substantially affect regional wildlife populations which are anticipated to be accustomed (habituated) to some level of noise due to the presence of existing developments in the regional area (e.g., roads; railway; surrounding commercial, agricultural, and residential developed areas).

The increase in vehicle traffic in the regional area as a result of Project construction and operation activities is anticipated to result in a minor increase the risk of vehicle collisions with wildlife given the relatively small spatial scale of the Project Site and overall minor increase in regional area traffic.

Surface Water

The impacts on surface water are assessed as negligible. Due to the absence of surface water at the Project Site, Project construction and operation activities are not expected to directly affect surface water (i.e., no existing waterbody will be removed/filled to accommodate the Project).

Where required, erosion and sediment control measures as outlined in an Erosion and Sediment Control Plan will be in place during all Project phases to avoid introduction of sediment-laden runoff water into the existing ditching system adjacent to existing roads such as PTH 4. Prior to Project construction, a Drainage Study will be conducted to manage post-development Project Site surface water runoff (as needed) so that the pre-Project development flow to the existing ditching system is not exceeded to a level that would compromise existing road infrastructure, adjacent land uses and local/regional waterbodies.

Fish and Fish Habitat

Project related impacts on fish and fish habitat are not anticipated due to the absence of fish habitat within the Project site, and application of an Erosion and Sediment Control Plan.

Labour Force and Employment

Employment opportunities associated with the Project will be a positive, long term and continuous benefit for the regional area within a reasonable commute time to the facility.

Approximately 700 people will be employed under contract for site clearing and Project construction for Phase 1, with the need for local suppliers and other business to support the construction phase is likely to provide indirect employment for up to 60 additional people. Employment opportunities for Phase 2 are expected to be similar to Phase 1.

Once construction is complete, there will be approximately 300 employees for Phase 1, with an additional 150 to 200 staff required for Phase 2, employed for facility operations. At the end of the Project life (approximately 30 years), the decommissioning phase is expected to require approximately 250 staff.

Infrastructure and Services

The Project is expected to have minor impacts on regional emergency services because on-site process water tanks will have the capacity for emergency fire suppression, and an Emergency Response Plan will be available on site during Project construction and operation that will clearly outline appropriate emergency response protocol. Standard mitigation measures to avoid accidents and malfunctions will also be applied.

Community Services

Water requirements for the facility will be sustainably sourced from the City of Selkirk Wastewater Treatment Facility (for production processes) and from the City of Selkirk municipal supply (for potable water). Water for production processes will be recycled to the extent feasible. Un-recycled process water and sewage from on-site personnel will be treated/filtered as required and disposed of via the City of Selkirk municipal sewerage system which is not expected to compromise the capacity of the City of Selkirk's new (in 2021) Wastewater Treatment Facility. The City

of Selkirk community services (e.g., water system upgrades) would potentially benefit from the additional tax revenue realized from the Project being located within the City of Selkirk.

Land and Resource Use

The Project Site is currently designated for industrial use and will continue to be used for industrial purposes. Recent rezoning of the Project Site and some adjacent land to 'heavy industrial' from 'light industrial' to accommodate the Project may facilitate opportunities for additional future industrial opportunities on the adjacent re-zoned land. Although land within the Project Site is not specifically designated by the City of Selkirk for agriculture use, the City of Selkirk is currently leasing the Project Site land for cereal crop agriculture use.

In consideration of the proximity of two airports/aerodromes to the Project Site, CPS will discuss with Transport Canada appropriate air safety measures to incorporate in the facility stack design (e.g., lighting).

Human Health

The measures that will be applied to minimize adverse effects on air quality (e.g., dust) and noise (as summarized above) are expected to adequately mitigate adverse effects on human health both on and off the Project Site. The results of air dispersion modeling predict no exceedances of air quality guidelines at the nearest residences for any of the parameters that were modeled (e.g., dust, including silica dust). Results of a Noise Impact Assessment concluded that Project operation activities are predicted to not exceed the Manitoba Guidelines for Sound Pollution limits at the nearest residences to the facility.

All CPS employees will abide by the standards, procedures and training required under *The Workplace Safety and Health Act* as well as with CPS's internal Health and Safety Program and Emergency Response Plan. Employee Orientation and Safety training will be mandated for all new hires in addition to required yearly safety reviews for existing staff. Applicable personal protective equipment (PPE) will be provided to employees. Where required, visitor orientation and PPE will be provided when visitors enter employee only areas. Therefore, the risk of adverse impacts on human health is determined to be negligible.

Indigenous Communities

The Project is expected to be an overall benefit to nearby Indigenous communities within commuting distance to the Project Site as there will be increased employment opportunities associated with the Project. Potential human health effects as described above, would be applicable to the nearest Indigenous peoples to the Project Site.

The Project is not expected to adversely impact the exercise of Indigenous or Treaty rights because:

- No fish or fish habitat will be affected by the Project;
- The Project will be located on private land accessible only for the purposes of the Project;
- The residual environmental impact of the Project on vegetation beyond the Project Site is assessed to be negligible; and
- The residual environmental impact of the Project on regional wildlife populations is assessed to be negligible.

Heritage Resources

The Archaeological Unit of the Historic Resources Branch (HRB) advised that the potential for the Project to impact significant heritage resources is believed to be low. As recommended by HRB, CPS will have a Heritage Resources Protection Plan in place prior to the initiation of Project construction activities which will provide guidance to construction contractors to protect heritage resources if accidentally encountered. If heritage resources are discovered within the Project Site, work will be stopped, HRB will be advised, and the discovered historic resources will be recorded by an archaeologist and adequately protected as required.

Traffic

Impacts to Local Study Area traffic will be not substantial because staff arrivals and departures will be staggered daily to accommodate the 24 hours, seven days/week operation schedule. Additional minor traffic will be related to weekly supply/parts deliveries and contractors for services such as waste disposal. Project-related traffic will be directed to travel along a short segment of Walker Avenue (less than 350 m in length), west to PTH 4. Therefore, the use of local roads beyond the short (<150 m) facility access roads (for transport trucks and facility staff) will be minor.

Results of a Traffic Impact Study concluded that no geometric or traffic control improvements are required at the Easton Dr (PTH 9A) at Wersch Street intersection or the Easton Drive (PTH 9A) at PTH 9 / PTH 4 intersection to accommodate traffic related to Project operations. However, based on MTI rural intersection improvement warrants (standards), some improvements as described in the Traffic Impact Study are recommended for the PTH 4 at Walker Avenue intersection. These include widening PTH 4 to provide separate left and right turn lanes. Once these improvements are constructed, Project related traffic will not result in substantial impacts to traffic flow in the study area considered in the Traffic Impact Study.

Final design of the improvements at the PTH 4 at Walker Avenue intersection will be discussed with CPS, MTI, and the City of Selkirk.

Follow-up Plans and Overall Assessment

The follow-up plans that will be implemented include, but are not limited to, the following: Erosion and Sediment Control Plan; Drainage Study; Heritage Resources Protection Plan; and Emergency Response Plan.

It is recommended that mitigation measures and follow-up plans described in this report be implemented to avoid or minimize potential environmental effects and/or identify any unanticipated adverse effects early so that appropriate adaptive management action can be undertaken.

Summary

In summary, based on the proposed Project description and with the application of the proposed mitigation measures and follow-up plans outlined in this Environment Act Proposal, adverse residual environmental impacts resulting from the Project are expected to be sufficiently mitigated. The success of the Project is anticipated to provide substantial benefit to the City of Selkirk and local and regional area communities. Direct employment and potential business opportunities related to the services required for operating the Project are substantial. Further, the City of Selkirk and province of Manitoba will realize future tax revenue from the project and associated service supply.

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Appendix A

Air Quality Impact Assessment Report (INITIAL ASSESSMENT to be REFINED)

Appendix B

Representative Landcover Photographs

Appendix C

Soil Characteristics of the Project Site

Appendix D

Noise Impact Assessment Report (INITIAL ASSESSMENT to be REFINED)

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Appendix E

Species of Conservation Concern in the Interlake Plain Ecoregion

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Appendix F

Peguis First Nation and Manitoba Metis Federation Owned Properties in Selkirk, Manitoba

Appendix G

Historic Resources Branch Correspondence

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Appendix H

Traffic Impact Study

Insert Main Contact Name (and title) from AECOM – LINKS TO BACK PAGE

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