Manitoba

Memorandum

DATE: December 1, 2022

TO: Public Registry

FROM: Eshetu Beshada, Ph.D., P. Eng.
Environmental Engineer
Municipal and Industrial Section

SUBJECT: File 6137.00 – Canadian Premium Sands Inc. – Information for Public Registry

Please find attached the Public correspondence related to Canadian Premium Sands Inc. – solar glass manufacturing facility file (6137.00) for distribution to the public registries. The documents included are:

Public comments

- November 28, 2022 a letter from Heather Fast and Glen Koroluk for Manitoba eco-Network, 3 pages
- November 28, 2022 a letter from Shawn Kettner for Manitoba Energy Justice Coalition, 2 pages
- November 28, 2022 an email with attachment from Tangi Bell, 5 pages
- November 28, 2022 an email with attachment from Dennis LeNeveu, 13 pages
- November 28, 2022 a letter from MJ McCarron for Manitoba eco-Network, 2 pages

Thank you.

Eshetu Beshada, Ph.D., P. Eng.

MANITOBA ECO-NETWORK

302 - 583 Ellice Avenue, Winnipeg MB R3B 1Z7
Tel: 204-947-6511 www.mbeconetwork.org

November 28, 2022

Honourable Jeff Wharton
Minister of Environment, Climate and Parks
minecp@leg.gov.mb.ca

Eshetu Beshada, Senior Environmental Engineer
Environmental Approvals Branch
Manitoba Environment, Climate and Parks
Eshetu.Beshada@gov.mb.ca

Dear Minister Wharton and Eshetu Beshada,

Re: MbEN Comments – Canadian Premium Sand Inc. – Selkirk Solar Glass Manufacturing Facility, File No. 6137

The Manitoba Eco-Network (MbEN) appreciates the opportunity to comment on Canadian Premium Sand Inc.'s (CPS) Selkirk Solar Glass Manufacturing Facility Environment Act Proposal (EAP). We have reviewed the file, and respectfully request that you refer the assessment to the Clean Environment Commission (CEC) for a public hearing, making participant funding available. As part of this process, the department should initiate a public outreach program to get input on the terms of reference for the hearing and the funding envelope for the participant funding program.

Our request to have CPS's project referred to the CEC is based on information deficiencies in the EAP and a need for a more robust approval process. There are significant community concerns with the cumulative impacts of CPS's planned and ongoing activities in this region, including their Wanipigow Sand Extraction Project. Important issues such as impacts on traffic and local infrastructure were not adequately addressed in Environment Act License 3285 and must be considered in the approval of CPS's directly related Manufacturing Facility. There is a need for more meaningful public engagement opportunities, independent technical review of CPS's proposed project, and more information on its potential cumulative impacts.

Information requirements not met according to Manitoba EAP Report Guidelines

There are gaps in the information provided by CPS in its EAP according to the requirements set out in the Government of Manitoba's EAP Report Guidelines. More details are needed in regard to the:

- Potential environmental and cumulative effects of the proposed project, such as, but not limited to:
    - Impact of traffic, including the impact of traffic from the Wanipigow extraction site.
    - Impacts on local infrastructure such as Highway 304 and the Pine Falls Dam/Bridge.

    - Climate change considerations including, but not limited to, "the amount of greenhouse gases to be generated by the proposed development and the energy efficiency of the proposed development" (*The Environment Act*, s 12.0.2)
- Project funding, including information about "*any government agency or program (federal, provincial or otherwise) from which a grant or loan of capital funds have been requested"*.

High GHG Emissions

MbEN also has concerns about the potential GHG emissions of the manufacturing facility. The project will generate an est. 400,000 tonnes of CO_2e per year. This would make this development the second largest GHG emitter in Manitoba, the first being the Koch Fertilizer Manufacturing Facility in Brandon.[1] Legislators at both the provincial and federal level have recognized the importance of considering the climate impacts of proposed projects, such as "the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change" (*Impact Assessment Act*, s 22(1)(i)).

There is a need to consider the potential emissions of CPS's proposed project in light of the Government of Manitoba and Government of Canada's climate change commitments and allow further public scrutiny of this project's climate impacts.

The Need for a Public Hearing

MbEN has submitted numerous comments on silica sand extraction and manufacturing projects over the past few years, including CPS's Wanipigow Sand Extraction Project, Sio Silica's Vivian Sand Processing Facility, and Sio Silica's proposed Vivian Silica Sand Extraction Project. We have demonstrated that there are significant concerns with proposed and ongoing silica sand development activities from environmental organizations, and more importantly, from concerned community members living near the project sites. Local citizens are very worried about impacts to air and water quality, among other things, and how such environmental damage will impact their health and the health of their family members.

There is a need for a robust provincial assessment process that ensures all potential impacts of proposed silica sand developments, including cumulative and climate impacts, are properly considered. A public hearing held by the CEC, with sufficient participant funding, will enhance the assessment process, facilitate more opportunity for meaningful consideration of public participation, and ensure the environment is protected and local communities are able to sustain a high quality of life for this and future generations.

About MbEN

Since 1988, MbEN has promoted positive environmental action by supporting people and groups in our community. We are a public interest environmental organization seeking to promote and facilitate good environmental governance and the protection of Manitoba's environment for the benefit of current and future generations.

[1] Climate Change Connection, "Manitoba Large Final Emitters (LFE)", online: https://climatechangeconnection.org/emissions/manitoba-ghg-emissions/manitoba-large-final-emitters-lfe/

MbEN appreciates your consideration of our comments about the environmental assessment and licensing of CPS's Solar Glass Manufacturing Facility and welcomes future opportunities to engage with the Department in the assessment of projects in Manitoba to ensure the highest level of environmental protection measures are required. Under *The Environment Act*, the Department of Environment, Climate and Parks is tasked with protecting the quality of the environment and environmental health of present and future generations and providing the opportunity for all citizens to exercise influence over the quality of their living environment. We are confident you will adhere to these principles and ensure an informed decision about the proposed development and the need for a public hearing can be made.

Sincerely,

Heather Fast, B.A., J.D., LL.M.
Policy Advocacy Director

Glen Koroluk
Executive Director

November 28, 2022

Honourable Jeff Wharton
Minister of Environment, Climate and Parks
minecp@leg.gov.mb.ca

Eshetu Beshada, Senior Environmental Engineer
Environmental Approvals Branch
Manitoba Environment, Climate and Parks
Eshetu.Beshada@gov.mb.ca

Dear Minister Wharton and Eshetu Beshada,

Re: MEJC Comments – Canadian Premium Sand Inc. – Selkirk Solar Glass Manufacturing Facility, File No. 6137

Manitoba Energy Justice Coalition (MEJC) would like to take this opportunity to comment on Canadian Premium Sand Inc.'s (CPS) Selkirk Solar Glass Manufacturing Facility EAP.

MEJC is a community-led alliance of volunteers living in Manitoba committed to climate action and climate justice. We seek to protect and restore our environment while promoting social justice policies and community resilience.

In honour of our commitment, we stand firmly with the communities that are most likely to be detrimentally affected by the approval of the Selkirk Solar Glass Manufacturing Facility. There is a need for more meaningful public engagement on this project, so we request a Clean Environment Commission (CEC) public hearing with participant funding. The CEC should initiate a public outreach program to get input on the terms of reference for the hearing and participant funding program.

Members of MEJC have been in close contact with community members in Wanipigow who will be directly affected by the silica sand extraction that is integral to the proposal for the Selkirk Solar Glass Manufacturing Facility. There are many community concerns, including the potential for environmental damage, that must be addressed before proceeding with the licensing of this manufacturing facility.

Members of MEJC met with Glenn Leroux, President & CEO of Canadian Premium Sand and Alasdair Knox also from CPS on May 26, 2022. We raised several concerns about the proposed project that have not been adequately, if at all, addressed in the project EAP.

Our concerns include:

- The potential GHG emissions of the manufacturing facility. This facility is slated to become the second largest GHG emitter in Manitoba. It is extremely important that climate impacts are properly considered to ensure the proposed project will not prevent the Government of Manitoba and the Government of Canada from meeting their climate commitments.
- The lack of free, prior, and informed consent for CPS's proposed project from the people who live and raise their families on the land that will be impacted by the directly connected Wanipigow Sand Extraction Project.
- Missing information from the project EAP, including more details about cumulative effects related to the sand extraction activities at Wanipigow, such as, but not limited to, the infringement on treaty rights, the disregard for the health of the little green space that is left, and the preservation of the community trapline where youth train. Silica sand mining in the area will mean the loss of community trapping as all other trap lines in the region are inherited individual traplines.
- Potential impacts of increased traffic, including the impact on traffic safety through the highly populated cottage country from the Wanipigow extraction site via Highway 59 to the site in Selkirk.
- Potential impacts on local infrastructure such as Highway 304 and the Pine Falls Dam/Bridge.
- Project funding, including information about "*any government agency or program (federal, provincial or otherwise) from which a grant or loan of capital funds have been requested"*.

We respectfully submit our comments and request more meaningful public engagement opportunities, independent technical review of CPS's proposed project, and consideration of the effect of this project on Manitoba communities, infrastructure, and our environment.

Manitoba Energy Justice Coalition is grateful that under *The Environment Act*, the Department of Environment, Climate and Parks is tasked with protecting the quality of the environment and environmental health of present and future generations and providing the opportunity for all citizens to exercise influence over the quality of their living environment. MEJC is confident you will adhere to these principles and will ensure an informed decision about the proposed development and an opportunity for a public hearing will be made. We look forward to your response.

Respectfully,

Shawn Kettner, 204 798-9386
For Manitoba Energy Justice Coalition

Beshada, Eshetu

From: Tanzi Bell [redacted]
Sent: November 28, 2022 2:12 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Subject: Fw: Public Registry 6137.00

Dear Eshetu Beshada,

I do hope that I have the correct email address for the noted development.

Please accept my comments and questions on the Selkirk Solar Glass Facility.

Sincerely,
Tangi Bell

From: Tanzi Bell
Sent: Monday, November 28, 2022 2:01 PM
To: publicregistry@gov.mb.ca <publicregistry@gov.mb.ca>
Subject: Public Registry 6137.00

Public Registry,

The contact information usually found in the posted "advertisement" for a development will not open for 6137.00.

I trust that if my email has not been sent to the correct department that this error will be corrected.

Please provide receipt of my email.

Enclosed are my comments and questions on the Selkirk Solar glass Facility.

Sincerely,
Tangi Bell
[redacted]

Public Registry 6137.00
Selkirk Solar Glass Manufacturing Facility
Canadian Premium Sand Inc.

This letter is to record my opposition to the Facility.

Hot Process water

The hot process water is not assessed in the EAP. Its disposal and presumably treatment is handed over to the taxpayer / City of Selkirk. CPS/AECOM does not assess the impacts the Facility's hot effluent will have on the Selkirk sewer system and eventual release to our environment. Surely residues from the processing will be present in the water. Until such time as this is assessed and included for the public and TAC to review, the project should not receive licensing nor should it be deemed a time sensitive licensing condition. It requires assessment now; the public have every right to review what will indubitably impact their infrastructure and environment.

- Who will carry out the assessment and its costs? CPS or taxpayers?
- Will it be provided to the public and TAC for review? If not, provide reason(s).
- What is the chemical analysis of the hot processed water?
- How does hot water impact the Selkirk sewer system and our environment?

Traffic

The traffic study is based on an assumption that 50% of the finished product will be shipped by truck and 50% by rail. 198 truck trips per day could significantly increase or decrease. No other formulas are presented for the reader

…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…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. (EAP p.85) Currently our infrastructure serves the community well. Costly upgrades (widened and bypass intersection) to our infrastructure is strictly due to the Facility and operations. **Costs must not be financed by the taxpayer.**

The Facility silica feedstock is inextricably connected to their Wanipigow quarry yet no traffic study has been provided for this project.

The time of year the facility is in operation is still under consideration but could include 10 months per year to avoid spring road bans, or 7-months per year to avoid spring road bans and summer traffic. Since the 7-month per year operation results in the highest daily trip generation, this scenario was selected for analysis. (AppH p.15)

On page 22 of the EAP we are now informed *CPS may need to transport sand during nighttime to maintain glass manufacturing operations following a supply issue* due to *"Cottage season"* and spring road restrictions.

This schedule has not been evaluated in the Facility's Traffic Impact Study either has road safety and impacts to wildlife with nighttime transportation for the inbound/outbound raw sand delivery. Cottage life involves fun and relaxation. Roads are used by families and pets. Pedestrian, bike, and recreational vehicles often driven by youth and teens abound. Trucks will

be travelling through many residential and lake communities. Crossing or entering highway intersections is a risky undertaking currently; it can only get worse as per the proposed Facility sand transportation plan.

- How will CPS/AECOM improve safety at intersections at and on the full transportation route, quarry to facility, to ensure public safety?
- Is nighttime transportation in line with the mine licensing process/public consultations or will operational requirements for the Facility turn a deaf ear?
- Will CPS/AECOM provide a realistic and comprehensive traffic study for the public and TAC to review that evaluates the interconnected developments: quarry to facility/facility to quarry?
- Include impacts to wildlife occurring due to nighttime transport, human health, road collisions?

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. (EAP p. 14)

- The statement infers no discussion has been initiated by CPS/AECOM to even indicate whether approval will be granted for a critical part of the development, access to the site, why not? Provide an alternative for review

<u>Rail</u>

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. (EAP p. 8)

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). (EAP p. 16)

- Has CPR committed to develop the railway spur, please provide?
- Has Canadian Transportation Agency approved the construction of the railway?
- When are community consultations scheduled for the railway operations?
- Increase in rail traffic was not accounted for in the traffic study. Why not, please provide reasons?

<u>Noise & vibration</u>

Receiving raw materials = 3 trains per week, each with one locomotive and 16 rail cars per train. On any one 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 solar glass product. (EAP p. 17)

Outbound & Inbound transportation will occur from 7:00 to 21:00…The freight train has 45 railcars. (App D p.10) In the updated Noise assessment the 45 rail cars have been reduced to 16. *Table 5-1 Project Noise Sources* provides frequency models for 1 idling locomotive and the 2 B-trains however the Freight train pass-by with 2 locomotives and 45 or 16 railcars does not provide frequency data or usage per hour although we are provided a Total decibel reading.

- Explain omission of frequency and usage data?

Based on the planned equipment use and activities, the project is not expected to be a source of significant vibration. Therefore, a vibration assessment is not required. Accordingly, the assessment focuses on the noise impacts during the predictable worst-case facility operations at the most affected point(s) of reception. (App D p.1)

Noise impacts our environment through frequencies, low, high, length of exposure, combination with other sounds, buildings, temperature, etc. Rail operations by nature cause noise and vibration. Low frequencies can travel long distances with little attenuation or reduction in strength, can penetrate buildings and cause objects to rattle and resonate. Many citizens report homes shaking, cracked foundations, and physical effects such as increased heart rate and sleep disruption. Animals are more sensitive to noise and vibration.

The surrounding area contains a hotel, college campuses, a vet clinic, and many health care facilities. Surrounding businesses, workers, people, and pets deserve a proper and comprehensive analysis.

- Has adequate assessment for noise and vibration been undertaken to ensure no negative impacts?

<u>Sand</u>

*CPS is focused on using premium silica sand sourced from CPS' wholly-owned quarry near Seymourville, Manitoba to produce high quality, low iron glass for solar panel production. (*EAP p.4)

According to CPS's 2021 National Instrument 43-101 preliminary test showed "*the sand can be used to manufacture standard glass products such as flat glass, coloured container glass, and insulating fibres*." It was "*theoretically possible*" for the sand to be used for patterned solar glass but further testing on the bulk raw sand is needed to determine if the sand can indeed meet these standards through processing.

- Has the "further testing" referenced in the NI 43-101 been completed?
- Provide supportive evidence to show CPS sand can be used in "solar panel production" at the proposed Facility

<u>GHG</u>

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. (EAP p.1)

Developments operating beyond 2050 must comply with Bill C-12 Canadian Net Zero Emissions Accountability Act and the Strategic Assessment of Climate Change.

- Is the project in compliance with the Act?

Overall, the Project is estimated to generate approximately 398,649 tonnes of CO2e annually during operations which is 1.8% of the reported emissions in 2019 which were 26.6 Mt CO2e from Manitoba, and 0.05% of the reported 738 Mt CO2e from Canada in 2019. (EAP p.iii)

- Provide clarity, indicate where the project ranks on Manitoba's Large Final emitters(LFE)?

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. (EAP p.19)

As a new project that bases itself on reducing GHG emissions through production of a product used in renewable energy it is unreasonable that CPS has not considered producing its own energy rather than relying on fossil fuels. Yes, CPS can use an electric furnace but using electricity from Manitoba Hydro will certainly tap out our supply if we ever transition and require construction of yet another hydroelectric dam. CPS has an opportunity to show integrity and produce their own on-site energy system from the very product they propose to manufacture.

Until such time as the deficiencies contained in the EAP are provided and made available to the public and TAC for review, the project should not receive licensing. We deserve to know the truth about the impacts of proposed developments on our environment.

Sincerely,

Tangi Bell

Beshada, Eshetu

From: Dennis LENEVEU [redacted]
Sent: November 28, 2022 11:45 AM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>; Dennis LENEVEU <denmorlev@gmail.com>
Subject: Comments on the EAP for CPS Selkirk Solar Glass Manufacturing Facility File 6137.00

Dear Eshetu Beshada,

I am a resident of Selkirk and will be directly affected by the operation of the Selkirk Solar Glass Manufacturing Facility. Please find attached my comments on the Environment Act Proposal (EAP) for the facility

Sincerely,
Dennis LeNeveu
[redacted]

Public Comment on Canadian Premium Sand Inc.
Selkirk Solar Glass Manufacturing Facility
File: 6137.00
by

D.M. LeNeveu, B.Sc. (hons. physics), B.Ed., M.Sc. (biophysics)
Former Member of the Canadian Society of Safety Engineers

1.0 General

The Selkirk Solar Glass Plant Project is in a preliminary conceptual stage and should not be licensed prematurely. No details are given in the EAP on the overall Project cost and no funding has yet been secured. CPS has no demonstrated experience in glass manufacturing and has no identified partner or major shareholder with such experience.

The production feasibility of purifying the source of silica sand from Wanipigow to solar glass standards has not been established. CPS has not reported on requirements for production scale confirmation of initial bench scale tests showing Wanipigow sand could be processed to solar grade purity. The requirements for production scale testing were specified in a 2021 independent investor protection NI 43-101 technical report.[2] Aggressive acid-washing was required in the bench scale tests to achieve required purity. CPS has not specified methods of disposal for waste from acid washing.

CPS has not taken into account independent documented results of the acid generation property of the Wanipigow silica sand.[6,7] Visible discharge of red and purple coloured water into Lake Winnipeg from the abandoned Black Island silica sand quarry is observable evidence that the silica sand in the Wanipigow area is acid generating.

The sources of the required limestone, dolomite and feldspar glass making constituents with required very low iron and other impurity content have not been identified. Independent measurements of the iron content of limestone in southeast Manitoba near Vivian range from 4700 to 5800 parts per million (ppm) far above the 120 ppm limit for solar glass.[2,8]

The town of Selkirk has not obtained permission from Fisheries and Oceans Canada for the thermal discharge of the CPS glass plant cooling water from the Selkirk wastewater and sewer system into the fish bearing Red River.[3]

The Provincial Crown has not held constitutionally guaranteed indigenous consultation involving all indigenous groups exposed to such Project effects such as increased traffic from Wanipigow to Selkirk, harmful silica dust exposure, and effluent and emissions from sand extraction and processing at Wanipigow. CPS has not consulted with a Wanipigow indigenous spiritual group, Camp Morning Star, who opposes the Project and who is calling for comprehensive section 35 indigenous consultations. The members of Camp Morning Star are concerned about the exposure of their community to harmful silica dust from the extraction Project at Wanipigow and about the effects of acid drainage from the extracted silica sand.

Highway 304 from Wanipigow to Pine Falls is narrow with no shoulders and is not in good repair. CPS has not completed a Wanipigow Project license requirement for a traffic impact study from Wanipigow to Selkirk. CPS has not documented the future increase in injury and death from Project traffic from Wanipigow to Selkirk. CPS has not disclosed permission from Manitoba Hydro for the crossing of the Pine Falls Power Dam by Project truck traffic.

CPS has not specified any plans to measure Project emissions in Selkirk including NOx, SO2 and respirable silica dust, relying solely on computer modeling results to establish low public health hazard. CPS initial modeling results show respirable silica dust could approach allowed limits at the Plant boundary. A revised modeling study lowered the ten micron diameter (PM10) silica dust concentration at the plant boundary from 46 to 36 micrograms per litre of air demonstrating the modeling results are uncertain. The allowed limit of PM10 silica dust is 50 microns per cubic meter slightly higher than the air modeling original calculation. The concentration of silica dust within the plant boundary to which workers would be exposed is likely to be above allowed limits especially within the sand storage shed. CPS has not specified any measurement of worker exposure to silica dust. Such measurement is required to establish proper worker protection such as respirators and protective clothing to ensure that CPS employment is not a death sentence from silicosis or cancer.

The updated model did not explain the reason for the differences in predictions between the updated and initial model predictions. This illustrates the inherent uncertainty in model predictions. To protect the citizens of Selkirk and those who might work at the glass plant and to limit potential liability the City of Selkirk should ensure that emissions and worker exposure to silica dust are continuously measured and reported.

There are other potential licensed sources of high purity silica sand that are not acid generating, not within respirable silica dust reach of a vulnerable community and have better transportation routes, including Hanson Lake near Flin Flon and Minago Lake near Wabowden.[11,12,13,14] A properly funded glass plant with demonstrated solar glass experience and expertise should not rely on a locally contested, supply of acid-generating Wanipigow silica sand. Processing the Wanipigow sand to solar grade purity on a commercial scale has not been demonstrated.

2.0 Financing

The only statement about Project financing in the EAP is;

"*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*."

No overall cost is given and no sources of financing are specified. The statement on financing implies a major shareholder may participate in the Project. CPS has not identified a major shareholder or partner. CPS has no disclosed experience in glass manufacturing. This Project should not proceed until a partner with the required experience is identified or CPS documents the expertise that it has acquired for glass manufacturing.

3.0 Cooling Water

The EAP states;

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

Subsection 36(3) of the Fisheries Act specifies that;[1]

unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water."

The Fisheries Act defines deleterious as;

"any water … treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat"[1]

The discharge rate temperature and location of the cooling water must be specified. Fisheries and Oceans Canada must be notified of the discharge temperatures, rates and location and required remedial measures to be implemented.[1] Remedial measures may involve cooling ponds or water cooling towers.

According to the EAP the hot cooing water is to be discharged into the Selkirk sewer system. The City of Selkirk, not CPS, is therefore responsible for notifying Fisheries and Oceans Canada of the discharge of the hot cooling water and in implementing acceptable mitigation measures.

4.0 Acid Generation of the Wanipigow Silica Sand

Results reported in the 2014 NI 43-101 technical report for a composite silica sample from 23 boreholes in the area specified for glass making sand at Wanipigow demonstrated that the silica sand was acid-generating.[6] The chemical tests showing acid generation were corroborated by backscatter electron microscope pictures that showed marcasite and pyrite cementing sand grains and as separate grains in the sand. When exposed to air and moisture, marcasite and pyrite form acid that can leach heavy metals.[5]

Figures 1, 2 and 3 show the laboratory results for sand acid generation, backscatter electron microscope results and the location of the 23 boreholes used for the composite sand sample at Wanipigow.

Table 9: Standard Acid Base Accounting Test Results

Parameter	Unit	Master Composite A
LIMS		12782-APR14
Paste pH		6.16
Fizz Rate	---	1
Sample weight	g	2.03
HCl added	mL	20.00
HCl	Normality	0.10
NaOH	Normality	0.10
Vol NaOH to pH=7.0	mL	13.41
Final pH		2.08
NP	t $CaCO_3$/1000 t	5.3
AP	t $CaCO_3$/1000 t	7.34
Net NP	t $CaCO_3$/1000 t	-2.01
NP/AP	ratio	0.73
S	%	0.235
Sulphide1	%	0.10
SO_4	%	0.3
C	%	0.044
CO_3	%	0.035
CO_3 NP	t $CaCO_3$/1000 t	0.58
CO_3 Net NP	t $CaCO_3$/1000 t	-6.76
CO_3 NP	ratio	-0.079

Figure 1. Acid Base Accounting Results for a Wanipigow composite sand sample[6]
The table was reproduced from the 2014 NI 43-101 Report for the Wanipigow

Note that an NP/AP ratio of less than one (0.73) is universally recognized evidence of strong net acid generation.[10]

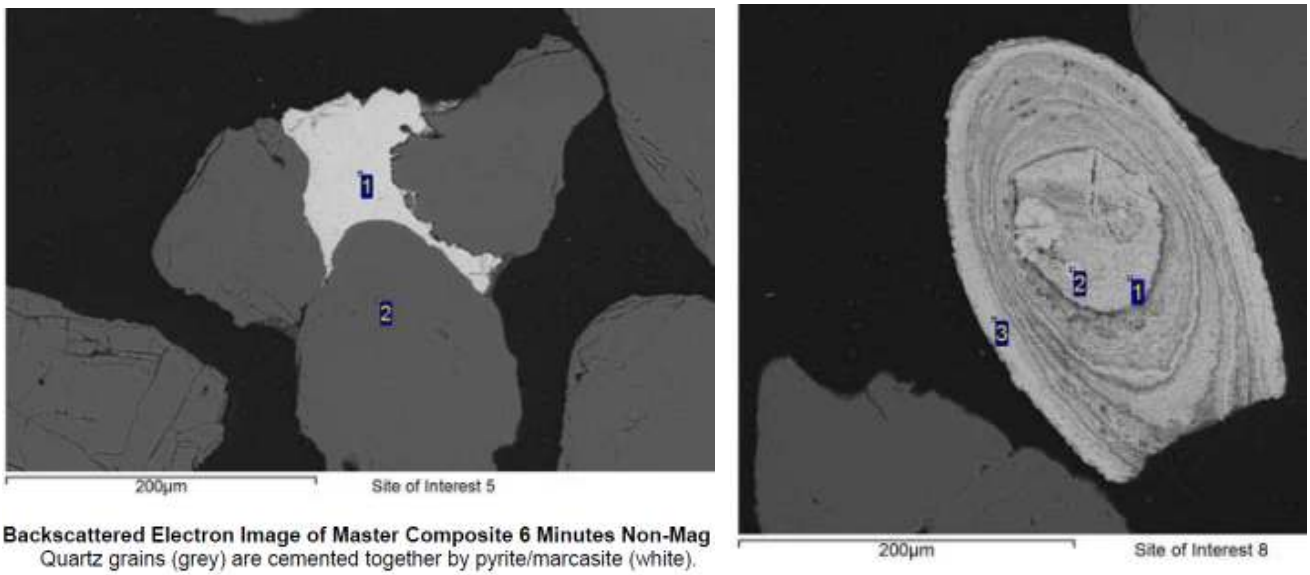

Figure 2. Backscatter Electron images of Wanipigow composite silica sand sample containing marcasite and pyrite. *Images were reproduced from the 2014 NI 43-101 technical report for Wanipigow*[6]

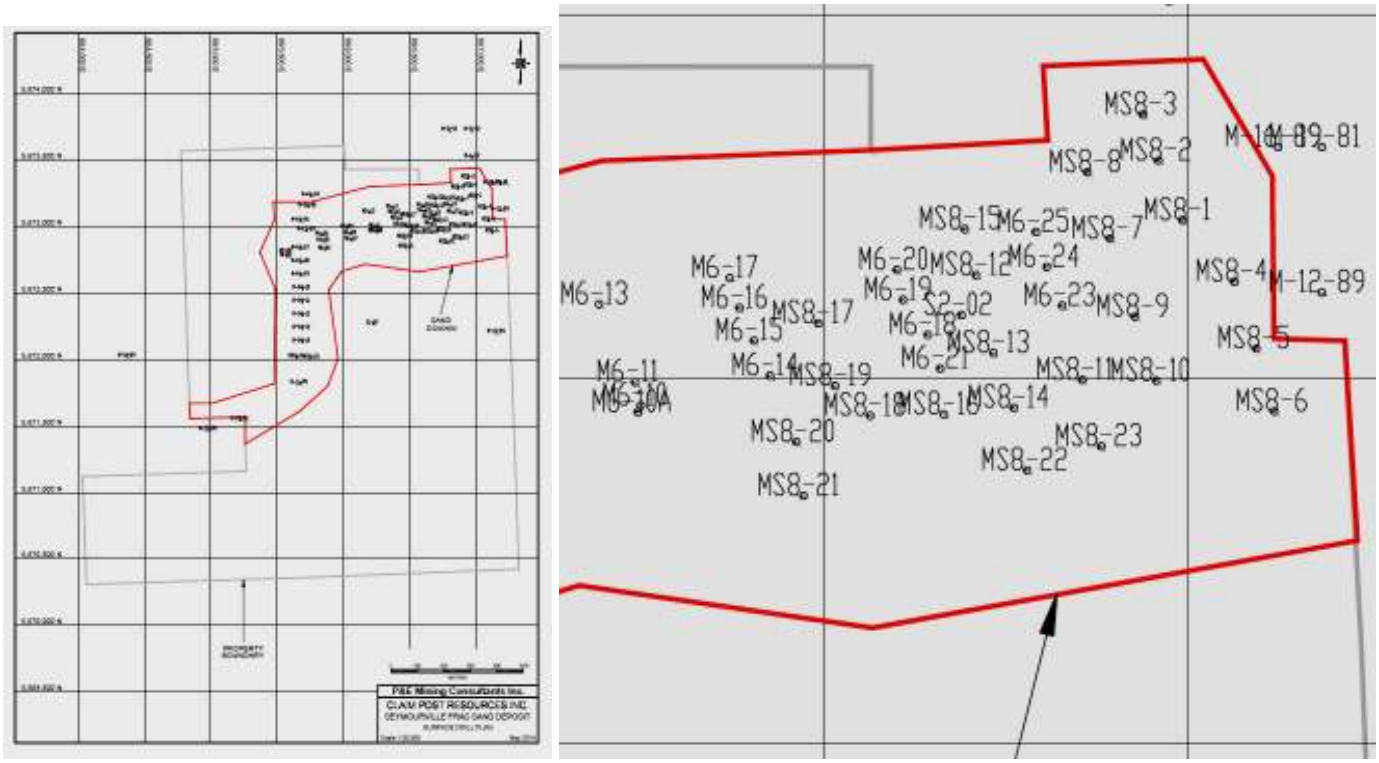

Figure 3. Borehole locations for master composite silica sand sample (MS) at Wanipigow. The area suitable for solar glass is shown enlarged on the right where most of the samples for the MS composite were taken. *Images were taken from 2014 NI 43-101 technical report for Wanipigo.*[6]

The acid generation of the silica sand in the Wanipigow area is clearly visible at the abandoned quarry on Black Island. Red coloured water leaching into Lake Winnipeg from the oxidation of pyrite and marcasite in the silica sand is shown in figure 4 along with a pH measurement of the water. The acid will mobilize toxic heavy metals into the water.

Figure 4. Acid drainage[5] at the abandoned Black Island Quarry and pH measurement of the water (2021). *Photographs are reproduced with previous permission of the photographer, Don Sullivan (decd.)*

The formation of the pyrite and marcasite in the Winnipeg formation sandstone during the Ordovician age is described in a peer reviewed technical report by Schieber and Riciputi (2005).[7] Five independent sources of evidence for acid generation of the silica sand in the Wanipigow area have been cited, the acid base accounting results, the backscatter electron image results of the 2014 NI 43-101 technical report for Wanipigow/Seymourville, photographs of acid drainage at the abandoned Black Island silica sand quarry, pH measurements of the acid drainage water at the Back Island, and a peer reviewed theoretical paper on he formation of acid-generating marcasite and pyrite in the Winnipeg formation sandstone. There can be no doubt that the silica sand at Wanipigow is acid-generating when exposed to air and moisture.

On May 16, 2019 CPS was granted a licence for a silica sand processing and extraction facility at Wanipigow. The licence requires that acid generating shale covering the some areas of the sand deposit must be placed in clay lined pits covered with limestone.

In the response to Wanipigow Project public comments about the 2014 NI 43-101 evidence for acid generation of the sand CPS stated,

"*Based on geotechnical laboratory results in 2018, pyritic oolite and pyrites do not occur in the raw sand resource*."

This statement contradicts the evidence in the 2014 NI 43-101 report of the images pyrite and marcasite in the sand, the acid-base accounting results, and the other aforementioned evidence that establish definitive acid-generation potential. CPS has not disclosed the 2018 laboratory results referred to in the statement. Through this unsupported statement that contradicts the evidence in the 2014 NI 43-101 technical report and all the other evidence, CPS was able to avert any required mitigation measures in the licence for processing acid generating sand. The licence issued to CPS for the Wanipigow Sand Processing Plant did not address the acid-generation capabilities of the sand.[9] Mitigation measures for the acid generation of the raw sand resource could be prohibitive rendering the Project unfeasible.

Sand extraction at Wanipigow must not proceed until the adequate methods are specified for mitigating acid drainage from the sand. The EAP depends on the silica sand resource from Wanipigow.

5.0 Purity of Glass Making Components

The NI 43-101 Technical Report for the CPS Wanipigow Sand Extraction project on the Sedar.com site specifies the iron content (Fe2O3) of the silica sand must be less than 120 ppm for solar glass making.[2]

The 2021 NI 43-101 technical report for CPS states;[2]

"*Formation silica sand from within the glass sand resource area will fulfil the specifications required to manufacture specialty solar glass products based on a sand glass feed iron market value of ≤0.012% Fe2O3 (120 ppm Fe2O3). CMP noted that the batch calculation result is preliminary and additional test sets are required on a bulk sand sample (e.g., 500 kg) with the actual raw materials*."

The tests to achieve the required purity were bench scale tests done in Germany, Australia and Saskatoon. The tests used mechanical separation means such as screening, gravitational and magnetic separation and chemical treatment with oxalic, phosphoric, sulphuric and hydrofluoric acid to purify the sand. In a meeting On May 26, 2022, between CPS and Manitoba Energy Justice Coalition, CPS stated that there was no means to dispose of acid wash at Wanipigow. CPS stated if acid wash was necessary it would be done in Selkirk. CPS was confident that further bulk sample testing with actual raw materials as specified in the 2021 technical report, would show acid wash was not required and that glass purity could be maintained. There is to date, no updating in the sedar.com site of the results of the bulk sample testing. A licence should not be granted on the basis of an unsupported assertion by CPS of the ability to achieve solar grade sand purity during production.

The 2021 NI 43-101 report states;[2]

"*Additional furnace batch raw materials included dolomite, limestone, and aragonite as varying sources of oxides (e.g., dolomite for MgO). The chemical composition of these materials was derived from third-party suppliers known to CMP. Several separate batch calculations were conducted utilizing the Wanipigow sand together with the furnace batch feed materials*."

The production scale resource for the limestone, dolomite and aragonite of sufficient purity for solar glass manufacturing has not been identified by CPS.

Not only the sand but all the inputs for the solar glass including dolomite, limestone, soda ash, aragonite, and feldspar must be low in iron content. Drinking water from the Red River carbonate aquifer in southeast Manitoba is known to have a relatively high iron content.[4] The Sio Silica Corporation EAP Hydrogeological Report gives the iron content of three samples of the carbonate (limestone) formation near Vivian Manitoba as ranging from 0.47% to 0.58% (4700 to 5800 ppm)[8], far above the required solar glass content of less that 120 ppm.

Until CPS has verification of the solar glass feasibility for the bulk sand samples, has identified and quantified the high purity required for all other glass components including limestone, dolomite, feldspar and aragonite and has demonstrated methods to deal with the acid-generation properties of the silica sand, the raw material resources for glass manufacturing must be considered as compromised. The licence must not be issued until the raw material resource issues are resolved.

6.0 Crown led indigenous consultation under Section 35 of the Canadian Constitution

Section 6.6.6 of the CPS EAP for the Wanipigow Sand Project documented consultations that have occurred with the Hollow Water First Nation Band, elders and with other local communities.[9] CPS entered into an Economic Participation Agreement with Hollow Water First Nation, on November 22, 2018. However a local spiritual group Camp Morning Star opposes the Project. Camp Morning Star claims no adequate community based Crown led indigenous consolation as required under Section 35 of the Constitution has taken place.

The Wanipigow licence condition 95 states;

"*The Licencee shall establish a monitoring advisory group with representation from local Indigenous communities, to be meaningfully involved in project monitoring on along-term basis. The group, at a minimum, is required to establish a terms of reference, acceptable to the Director, to guide the membership, provide advisory group meeting minutes and reports, reports of monitoring and assessment of mitigation and other material relevant to the Development to be available to local Indigenous community members*."

CPS has not disclosed the formation of any advisory group. Given the opposition of Camp Morning Star, an all encompassing advisory group does not seem possible. The issues of concern expressed by Camp Morning Star should be resolved before the Project including the Selkirk Glass Plant can be licensed since the CPS Project depends on sand from Wanipigow.

CPS has claimed the Project has no effect on other indigenous communities in the area such as Black River, Sagkeeng, Brokenhead and nearby Métis communities however the extensive increase in truck traffic could adversely affect wildlife migration in the area between Wanipigow and Selkirk. Increased truck traffic would increase the risk of death and injury to indigenous communities near the route from Wanipigow to Selkirk and could adversely affect businesses such as the Casino at Brokenhead. A formal provincial crown led section 35 consultation is required that includes all potentially affected indigenous groups.

The license must not be granted until formal provincial crown led section 35 indigenous consultation open to all potentially affected indigenous groups is completed.

7.0 Transportation

The silica sand is to be transported by truck from Wanipigow to Selkirk. Highway 304 from Wanipigow to Pine Falls is two lanes with no shoulders and not in good repair. There is a serious safety and security of supply issue especially along this stretch of road. A busy two lane section of Highway 59 with considerable beach and cottage traffic especially in summer will be impacted. Road deaths and injuries are certain to increase.

The peak plant truck volume is given in Appendix H of the EAP, as 7 inbound and 7 outbound trucks per hour for 16 hours per day. However the EAP states traffic may increase to 8 trucks per hour. Appendix H states that truck traffic might occur only 7 months a year to avoid spring road restrictions and summer traffic. However the EAP states only reduced truck traffic and loads might occur during spring road restrictions and weekends in summer to accommodate cottage traffic. At 16 trucks per hour, including inbound and out bound, a stationary point on the road would see a truck every 3 minutes, 45 seconds on average. Passing a truck on the two lane portion from Brokenhead to Wanipigow would be very dangerous especially during winter. Highway 302 would require increased maintenance due to the increased volume of truck traffic. Accidents and required repairs may make the road impassable or cause significant delays. Such disruption would compromise the security of supply of the sand to the manufacturing plant. Even more critical is the crossing of the Manitoba Hydro Dam at Pine Falls. CPS has not documented approval from Manitoba Hydro to cross the dam.

The existing licence for the Wanipigow sand facility requires CPS to complete a traffic impact study for the truck transportation from Wanipigow to Selkirk to be assessed by Manitoba Infrastructure.[9] Until CPS completes and obtains approval for traffic impact study and CPS obtains permission from Manitoba Hydro to cross the Pine Falls Dam, the licence for the glass plant at Selkirk must not be issued.

CPS has ignored the uncertainties in the transportation from Wanipigow and completed a traffic impact study for Selkirk only. The traffic impact study does not assess the increase in injury and death from Selkirk to Wanipigow from the increase in glass plant traffic. The traffic disruption and delay of emergency vehicles from increased rail traffic on road crossings is not assessed.

The license for the Selkirk Solar Glass Plant for CPS is predicated on a supply of acid generating sand, on sand processing that has not been demonstrated to achieve solar glass purity on a production scale, and on a dangerous and unreliable road route from Wanipigow. Other sources of supply of high purity silica sand for the solar glass plant such as from the licensed deposits at Hanson Lake near Flin Flon and Minago Lake near Norway House may be more viable and should be investigated. [11,12,13,14]

8.0 Emissions and Silica Dust

The modeled emission airborne concentrations given in the Air Quality Report of the EAP are below acceptable limits beyond the plant boundary. However no air monitoring is specified to ensure that the public is not exposed to harmful concentrations of nitrous oxide, sulphur dioxide and respirable silica dust from plant emissions.

On Nov. 7, 2022 CPS posted an updated air quality assessment on the Project Registry 6137.00. The updated modeled concentration of respirable PM10 silica dust of 36 μ/m^3 is below the allowed limit of 50 μ/m^3 and the PM2.5 concentration of 21 μ/m^3 is below the allowed limit of 30 μ/m^3 at the edge of the plant boundary. However the initial concentrations of the air quality study gave 46 μ/m^3 PM10 and 26 μ/m^3 PM2.5 at the plant boundary. The updated model predictions for concentrations of other airborne contaminants also

decreased. The documentation of the updated results does not explain why emission rates decreased. Table 1 shows summary of the total initial and updated source emission rates for NOx, PM2.5 and PM10 as the modeled concentrations for these contaminants were closest to allowed limits.

Table 1. Comparison of updated and initial total emissions for various sources

Source	NOx new (kg/d)	NOx initial (kg/d)	PM2.5 new (kg/d)	PM2.5 initial (kg/d)	PM10 new (kg/d)	PM10 initial (kg/d)
Two Stacks Point sources	1800	2155	156	187	204	244
Vent and Loading Volume Sources	28.6	30.2	3.22	3.24	6.54	6.45
Road Line Sources	1.1	28.5	0.65	0.908	2.79	3.26
Railway Line Sources	31.4	59.2	0.08	0.145	0.71	1.34
Conveyor Volume Sources	0	0	0.37	0.400	2.41	2.64

The stack point sources, road line sources, railway line sources and conveyor line sources emission rates were all decreased in the updated modeling without explanation. This illustrates there is considerable uncertainty and modeller judgement in the source values that determine emissions. It would appear that the model can be adjusted by modifying to give whatever values desired by simply changing source parameter values without justification.

No modeled results are given for exposure of workers to silica dust within the plant boundaries. The silica dust levels inside the plant would be higher nearer the emission sources with the possible exception of the furnace stacks. The initial results for PM10 and PM2.5 concentrations of silica dust are very close to allowed limits suggesting that workers inside the plant may be exposed to harmful levels. The sand stockpiles are to be enclosed in a sand storage shed. The exposure of workers inside the storage sheds to respirable silica dust has been ignored. The EAP states that required Workplace Health and Safety regulations will be met for worker protection. However no personnel or area monitoring of silica dust within the plant boundary is specified in the EAP. Without measurement, required safety protection measures such as type of required respiratory protection and protective clothing cannot be determined. Without adequate protection, a job at the plant could be a death sentence from silicosis and cancer.

The EAP states;

"*The furnace emissions are modelled as maximum levels guaranteed by furnace manufacturer (e.g., 1.5 kg of NOX per 1 t of glass). The stacks parameters and emissions were provided by CPS. NOx, SO2, and particulate emissions reflect the net emissions downstream of the emissions control equipment that CPS expects the use for the Air-fired glass melting furnace currently considered in design*."

The furnace manufacturer has a vested interest in reporting acceptable emission values. CPS does not specify the emission control equipment to be used and by how much the emission would be reduced by such equipment. Emission control equipment would require maintenance and be subject to uncertain performance.

The EAP states;

"*AERMOD does not have the ability to model calm winds. As such, these events were not assessed as part of the dispersion modelling analysis. Conversely, AERMOD is conservative (over-predicts) during very low non-calm periods*"

A manual on the use of AERMOD states;[15]

"The boundary layer can be capped by an inversion, which is a shallow layer in which the potential temperature increases by several degrees. This capping inversion usually marks the height at which vertical mixing ceases."

The air quality model description states that worst-case emission scenario days and meteorological conditions were used in the modeling. However the use of capping for temperature inversion is not mentioned. It is well known that temperature inversions can increase the ground level concentrations of stack emissions.[16]

Air modeling studies were also conducted by CPS for the sand extraction and processing plant at Wanipigow.[9] Figure A-9 from these studies showed concentrations of PM10 silica dust above allowed limits beyond the processing pant boundary but not extending as far as the settled areas of Seymourville and Wanipigow. Exceedances around and within the plant boundary demonstrate that workers would be exposed to harmful levels of silica dust at Wanipigow. The air modeling did at Wanipigow not include emissions from silica sand stockpiles presumably because the licence requires that CPS "*shall not temporarily or permanently stockpile any silica sand in the outdoor environment at the Development*." The website for the CPS Project Update for Solar Glass states in the Frequently Asked Questions section;[19]

"It's *unlikely the stockpiles will ever be higher than the tree line, and they will be out of sight*."

Thus in the revised plans for the CPS extraction of sand for glass making, stockpiles are specified. The air modeling studies at Wanipigow have not been revised for airborne silica release from sand stockpiles or for the location of sand extraction for glass making that is nearer to the residences. The concern of Camp Morning Star that nearby residents could be exposed to harmful levels of silica dust has therefore not been properly addressed. The licence for the Wanipigow Sand Extraction project does not require measurement of PM10 or PM2.5 airborne levels for the workers or for nearby residents.

It is clear that there are major uncertainties associated with the air quality modeling. Given the uncertainties in the modeling in order to protect its citizens who may work at the glass plant and to protect the public and to limit liability, the City of Selkirk should introduce bylaws for the measurement of the Project emissions and worker exposure to silica dust.

9.0 GHG emissions

CPS is planning to use natural gas for glass melting rather than an electric furnace. This demonstrates a lack of commitment to reduction in GHG. Section 6.3.2 of the EAP states;

"*Overall, the Project is estimated to generate approximately 389,385 tonnes of CO2e annually during operations which is 1.7% of the reported emissions in 2019 which were 26.6 Mt CO2e from Manitoba, and 0.05% of the reported 738 Mt CO2e from Canada in 2019*"

Why did not CPS quote the fraction of global emissions for this Project to further attempt to minimize the GHG impact? The predicted emission of 389 kilo-tonnes (kt) is far above the 50 kt GHG emission designation for large final emitters in Manitoba. The CPS glass plant would be the second or third highest emitter in the province behind the Koch fertilizer plant, depending on the mitigation of GHG being implemented for the Brady landfill site.[17,18] CPS is attempting to disguise the serious magnitude of the GHG emissions by comparing the predicted glass plant emissions to the total provincial GHG emissions from all

sources. Any emitter can minimize their GHG contribution by simply quoting the fraction of emission over a large jurisdiction. We are in a global climate crisis where all new sources of avoidable emissions must be stopped even if they are used for renewable energy. If CPS were fully committed to reduction in GHG emissions an electric glass making furnace would have been specified in the EAP.

10. Conclusion

The license process for the Selkirk Solar Glass Plant is premature. Too many uncertainties remain unaddressed especially concerning the viability and transportation of the silica sand resource at Wanipigow, emissions modeling, section 35 indigenous consultations, worker, public and fisheries protection, solar glass manufacturing expertise, and adequate Project funding. The license should not be granted until all outstanding issues and uncertainties documented here and by other commenters are resolved. Alternate sources of supply for the silica sand such as the deposits at Hanson Lake and Minago Lake should be investigated.

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November 28, 2022

Honourable Jeff Wharton
Minister of Environment, Climate and Parks
minecp@leg.gov.mb.ca

Eshetu Beshada, Senior Environmental Engineer
Environmental Approvals Branch
Manitoba Environment, Climate and Parks
Eshetu.Beshada@gov.mb.ca

Dear Minister Wharton and Eshetu Beshada,

Re: MbEN Comments – Canadian Premium Sand Inc. – Selkirk Solar Glass Manufacturing Facility, File No. 6137

I welcome the opportunity to comment on Canadian Premium Sand Inc.'s (CPS) Selkirk Solar Glass Manufacturing Facility EAP.

Given the potential environmental and socioeconomic consequences, information deficiencies (e.g. impacts of traffic), and lack of information about project financing, I request you require a Clean Environment Commission (CEC) public hearing with participant funding. The CEC should initiate a public outreach program to get input on the terms of reference for the hearing and participant funding program.

There are significant community concerns with the cumulative impacts of Canadian Premium Sand's planned and ongoing activities in this region, including their Wanipigow Sand Extraction Project. There is a need for more meaningful public engagement opportunities, independent technical review of CPS's proposed project, and consideration of its potential cumulative impacts.

Information requirements not met according to Manitoba EAP Report Guidelines

There are gaps in the information provided by CPS in its EAP according to the requirements set out in the Government of Manitoba's EAP Report Guidelines. More details are needed in regard to the:

- Potential impact of traffic, including the impact of traffic from the Wanipigow extraction site. I noticed the turnoff from Highway 59 is not included in the traffic studies. Since there is only a stop sign to regulate left turns heading north, this is a huge gap in information that will affect not only Selkirk, but cottage and Northern traffic who access Selkirk as a hub. Traffic studies are required as a condition of the Wanipigow Sand 5991 license. It doesn't make sense to divide the traffic analysis into two licenses. The Wanipigow license allows for 4 trucks per hour. The alteration to this license needs to be completed first. How does that work when the licenses contradict each other?

- Potential impacts on local infrastructure such as Highway 304 and the Pine Falls Dam/Bridge. Highway 304 is crumbling at the edges, has dangerous slopes and lacks shoulders. Who will pay for the millions in repairs? More and more northern communities have access and updated traffic studies are required as outlined in the conditions.
- Project funding, including information about "*any government agency or program (federal, provincial or otherwise) from which a grant or loan of capital funds have been requested"*.

<u>High GHG Emissions</u>
I also have concerns about the potential GHG emissions of the manufacturing facility. The project will generate an est. 400,000 tonnes of CO_2e per year. This would make this development the second largest GHG emitter in Manitoba, the first being the Koch Fertilizer Manufacturing Facility in Brandon. There is a need to consider these potential emissions in light of the Government of Manitoba and Government of Canada's climate change commitments and allow further public scrutiny of this project's climate impacts.

Water discharged from this plant needs further study to determine environmental impacts.
I appreciate the opportunity to share concerns regarding the EAP.

Sincerely,

MJ McCarron