Addendum

To: Qikiqtaaluk Corporation

Date: 2 August 2022

Re: **Addendum to Biophysical Impact Assessment – High Displacement Renewable Energy Project: Aquatic and Wetland Habitat Surveys**

1.0 Background and Scope

The Sanikiluaq High Displacement Renewable Energy Demonstration Project (the 'Project') is a wind energy and storage platform tailored for deployment in the remote Hamlet of Sanikiluaq. The project aims to provide clean, affordable, and reliable energy to the community and to reduce diesel reliance for electricity production in the community by at least 50%. The Project will integrate up to ten turbines, e+ micro controller and a containerized Battery Energy Storage System (BESS) within Sanikiluaq's diesel grid to achieve high diesel displacement. The preliminary design is based on 1,000 kW (1 MW) wind energy combined with 500 kWh of battery energy storage. The proposed turbine design has a 50 – 60 meter (m) hub height with a 24 – 36 m rotor diameter.

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by the Qikiqtaaluk Corporation (QC) to provide environmental consulting services to complete a Biophysical Impact Assessment (BIA).

In June 2022, a supplementary environmental survey of aquatic and wetland resources was conducted. This memo summarizes additional baseline data collected to support the existing aquatic and wetland data found in the BIA (Sections 4.2.3 and 4.2.5).

2.0 Field Surveys

Additional baseline information was collected during field surveys conducted from 15-18 June 2022. Professional opinions and perspectives were obtained regarding fish and fish habitat from local hunters and the Sanikiluaq Hunters and Trappers Association (HTA).

3.0 Wetland Identification and Delineation

Wetland resources and applicable regulations are outlined in Section 4.2.3 of the BIA (Wood, 2022). An additional wetland (WL6) was delineated and assessed along the new access road and transmission line (Figure 1, Attachment 1) by an experienced field biologist on 17 June 2022. A representative 1 x 1 m vegetation plot was established in accordance with the August 2021 wetland survey methodologies (Wood, 2022). All identifiable species within the quadrat were noted. The wetland boundary was partially delineated in the field and then extended based on a desktop assessment of aerial imagery (Figure 1, Attachment 1).

The wetland type determination was based on the presence of vegetation and hydrology indicators. Shallow soil layers above the permafrost limits the use of soil as a viable wetland indicator. WL6 was predominantly characterized by ground shrubs and graminoids (mostly Carex sp.) with lesser amounts of forbs, moss, and lichen.

The following table summarizes the wetland characteristics.

Table 1 Wetland Summary

Wetland	Coordinates		Type	Survey Area Size (ha)	Landscape Position	Water Flow Path	Landform
	Easting	Northing					
WL6	608140	6263223	Lowland Polygon Fen	1.86	Terrene Riparian	Throughflow	Peatland

Wetland 6 is a flat, lowland polygon fen surrounding a braided watercourse (Photo 16, Attachment 2). Patterns of small pools were present throughout the fen. The dominant vegetation species (Photo 17, Attachment 2) included Net-Veined Willow (*Salix reticulata*), Arctic Willow (*Salix arctica*), Alpine blueberry (*Vaccinium uliginosum*), Bog rosemary (*Andromeda polifolia*), Northern Lousewort (*Pedicularis lapponica*), Curly Sedge (*Carex rupestris*), and an unidentified *Carex* sp.

No plant species at risk (SAR) were observed during the delineation of WL6.

4.0 Aquatic Resources

An additional watercourse crossing (WC6) was identified at the new access road and the new transmission line (Figure 1, Attachment 1). Wood field staff conducted an aquatic habitat assessment at this new location and revisited all previously assessed watercourse crossings within the project footprint. Water quality parameters were collected at representative crossings as well as selected upstream and downstream locations. Characteristics are provided in Table 2. Photos of watercourse crossings are included in Attachment 2, Photos 1 to 15. Fish community assessments were not conducted but interviews were carried out with local hunters and the HTA office to document recreational or commercial use of the aquatic habitat at the site.

The main watercourse within the Project area generally flows north towards Sanikiluaq Lake, with established access roads/trails along either side of the stream channel. The majority of stream substrate was observed as gravel and cobble bottom, with some fines and sediments. Undercut banks and overhanging and submerged vegetation was limited, and depths were shallow at the time of sampling. Flows may vary throughout the year with greatest variation occurring in late spring and early summer as ice melts.

Discussions with local hunters were conducted between 15-17 June 2022. Sanikiluaq Lake (water source lake) is not used for recreational fishing by the Hamlet. The HTA indicated there is no commercial or recreational fishing within the project footprint. No fish spawning has been observed within the project area, although there is connectivity to the ocean. There is a lack of connectivity of this watercourse to other significant fishing lakes in the area. The existing trail is mainly used for berry picking.

Local personnel had not heard of or seen people fishing in the main watercourse and waterbodies running through the site. It was noted that fishing for Arctic Char (*Salvelinus alpinus*), Lake Trout (*Salvelinus namaycush*), and sometimes Lake Whitefish (*Coregonus clupeaformis*) occurs in nearby lake habitat, outside the project footprint. The aquatic habitat within the site footprint is large enough to support these species but spawning has not been observed. It was noted that children use the nearby ponds within the site for fishing small Arctic Char. Although culturally and economically significant species are present in areas surrounding the Project site, no aquatic SAR are expected to use the watercourses within the Project area.

Table 2 Watercourse Crossings

Watercourse	Date	Coordinates		Wetted Width (m)	Left Bank Height (cm)	Right Bank Height (cm)	pH	Conductivity (µS)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (mg/L)	Temperature (°C)	Oxidation Reduction Potential (mV)	Flow (m/s)	Avg Depth (cm)
		Easting	Northing											
WC1 Crossing	18 August 2021	608484	6267369	7.05	30	8	8.81	1061	--	--	9.3	--	0.56	6
	15 June 2022			6.80	30	8	7.90	1181	10.68	767	16.0	137.0	--	10
WC1 U/S (Upstream)	18 August 2021	608492	6267268	5.56	35	75	--	--	--	--	--	--	--	9
	15 June 2022			6	35	75	8.01	1105	--	--	16.1	--	0.35	10
WC1 D/S (Downstream)	18 August 2021	608548	6267445	40	--	--	--	--	--	--	--	--	--	11
	15 June 2022			40	30	30	7.75	1205	10.35	780	16.1	188.5	0.36	15
WC2 Crossing	20 August 2021	608617	6267159	6.2	--	--	8.88	956	--	--	8.7	--	--	12
	17 June 2022			6	--	--	8.31	1182	52.47	767	9.6	83.2	--	10
WC3 Crossing	18 August 2021	607864	6264348	0.6	12	10	8.65	1195	--	--	9.2	--	--	3
	17 June 2022			0.5	10	10	8.53	363	13.69	235.90	10	92.3	--	5
WC3 U/S	18 August 2021	607820	6264338	--	--	--	--	--	--	--	--	--	--	--
	17 June 2022			--	--	--	8.21	1477	20.38	962	7.9	30.5	--	--
WC3 D/S1	18 August 2021	607952	6264392	0.7	--	--	--	--	--	--	--	--	--	8
WC3 D/S2	18 August 2021	--		--[*]	--	--	--	--	--	--	--	--	--	--
WC4A	18 August 2021	608029	6262532	1.25	15	20	8.83	1430	--	--	10.3	--	0.27	37
	15 June 2022			1.2	15	20	7.73	837	8.26	546	22.6	32.9	--	20
WC4A U/S	18 August 2021	608009	6262433	1.02	30	20	--	--	--	--	--	--	0.38	16
	15 June 2022			0.9	30	20	7.84	854	11.48	552.50	22.4	26.3	0.13	20
WC4A D/S	18 August 2021	608057	6262629	4.25	25	20	--	--	--	--	--	--	--	8
	15 June 2022			1.5	25	25	7.76	835	9.61	539.5	22.5	28.0	0.15	10
WC4B	18 August 2021	608095	6262517	0.45	10	5	8.78	242	--	--	11.9	--	--	30
	15 June 2022			0.50	5	5	7.64	180.7	11.72	117.00	17.5	0.5	0.08	30
WC4B U/S	18 August 2021	608085	6262417	--	--	--	8.87	350			15.3		--	--
	15 June 2022			1.5	15	20	7.70	854	8.74	552.5	24.3	12.1	0.20	20
WC4B D/S	18 August 2021	608122	6262612	15	--	--	--	--			--		--	--
	15 June 2022			15	--	--	7.71	193.4	10.43	125.45	21.9	17.7	--	15
WC5**	20 August 2021	608456	6266692	--	--	--	--	--	--	--	--	--	--	--
	17 June 2022			--	--	--	8.35	2340	16.39	15.21	8.2	86.3	--	--
WC6 Crossing	17 June 2022	608120	6263226	1	5	5	8.27	571.3	15.21	368.50	8.8	97.8	--	17
WC6 U/S	17 June 2022	608143	6263163	1.5	5	5	8.16	551.0	16.60	358.15	8.9	88.7	--	15
WC6 D/S	17 June 2022	608149	6263262	1.5	10	15	8.07	533.0	13.14	346.45	9.0	88.5	--	30

5.0 Conclusion

This Addendum addresses gaps identified in the BIA for the Project by summarizing the additional aquatic and wetland surveys conducted at the Site. A review of the updated survey results supports the BIA's conclusion that the level of residual impact of the Project on the aquatic environment and wetlands is expected to be low (Wood, 2022). The mitigation measures summarized in Tables 6.1 and 6.2 of the BIA (Wood, 2022) are sufficient to minimize Project impacts on aquatic and wetland resources.

6.0 List of Supporting Documents

Wood. 2022. Biophysical Impact Assessment: High Displacement Renewable Energy Project (Final Report), Sanikiluaq, NU. Wood Environment and Infrastructure Solutions. 31-35, pp.

Attachment 1
Figure

LEGEND:

- Watercourse Crossing
- Survey Point
- MET Tower
- Proposed Wind Turbine Locations
- Qulliq Power Station
- Survey Track
- Alternative Road and Transmission Line Route
- Existing Trail
- Existing Trail Upgraded to Access Road
- New Access Road
- New Transmission Line
- Watercourse
- Waterbody
- Wetlands
- Watershed Divide

U/S = UPSTREAM
D/S = DOWNSTREAM

KEYMAP

CLIENT:

QIKIQTAALUK BUSINESS DEVELOPMENT CORPORATION

wood.

TITLE:

ENVIRONMENTAL SETTING

PROJECT:

SANIKILUAQ WIND PROJECT

PROJECT NO:	DATE:
TAV1989301	JULY 2022
REV NO: 5	DWN BY: CM
DATUM: NAD83 CSRS 2010	PROJECTION: UTM ZONE 17 N

FIGURE:

FIGURE 4.1

SCALE: 1:8,500

0 100 200 400
Metres