Interested Party:	Kivilliq Inuit Association	IR No.:	37
Re:	Addendum 9.1: Additional Community Infrastructure		

Comment made by Interested Party:

The KIA requests that the proponent discuss the additional community infrastructure that will be required in Rankin Inlet in the baseline and impacts sections of the FEIS. In particular, i) Power (both generator and fuel tanks); ii) Search & Rescue; iii) Fire department; iv) Water; v) Wastewater; vi) Solid waste; vii) Fuel storage (diesel, gasoline, etc.); viii) and Community freezer.

AEM's Response to Comment:

This addendum has been developed in response to an information request received by the Kivalliq Inuit Association (KIA) requesting additional baseline information on, update the impacts assessment to include community infrastructure including i) Power (both generator and fuel tanks); ii) Search & Rescue; iii) Fire department; iv) Water; v) Wastewater; vi) Solid waste; vii) Fuel storage (diesel, gasoline, etc.); viii) and community freezer. Collectively, these are referred to as "other community infrastructure and services".

Information was provided by the Government of Nunavut and the Municipality of Rankin Inlet on the existing capacity of infrastructure. Information included the priority areas for infrastructure investments based on identified needs; funding sources were also identified. Information is generally from the Rankin Inlet Integrated Community Infrastructure Sustainability Plan (RIICISP) Volume 1 and 2 (Aarluk Consulting, 2010a and 2010b). Where available, 2014 updated information to the RIICISP was provided by the Government of Nunavut.

9.1 Baseline Environment

9.1.1 Power Infrastructure

Power infrastructure in Rankin Inlet includes both power generation infrastructure and fuel storage of diesel, gas and jet fuel. Rankin Inlet currently has one power plant, four generators and three fuel storage facilities (Aarluk Consulting, 2010a). Table 1 presents details of power infrastructure and capacity as of 2010. Included is a description of the asset, year it was required, projected life of infrastructure, years of life remaining and any issues that are identified with the infrastructure.

Table 1: Power Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Generator Building - Portable	1980	2020	10	-
Quilliq Energy Corporation (QEC) Power Plan	1973; additions in 1986 and 1993	2013	3	Structurally OK but running out of space
950 kW Generator	1993	2015	5	-
950 kW Generator	1988	2012	2	-
1450 kW Generator	2006	2038	28	-
2150 kW Generator	2003	2029	19	-
Tank Farm – diesel	-	Capacity – 6,309,102 litres	Current usage with safety margin exceeds capacity. By 2014/15 anticipated usage will be 7,408,664	-
Tank Farm – gas	-	Capacity- 2,431,013	By 2014/15 anticipated usage will be 2,282,999	
Tank Farm – Jet A1	-	Capacity – 5,720,528	By 2014/2015 anticipated usage will be 5,601,937	-

Source: (Aarluk Consulting, 2010a)
"-": No information

Based on results from the 2010 RIICISP, a priority was identified to increase bulk fuel storage capacity in Rankin Inlet. In this regard, between 2009 and 2012 the Tank farm was upgraded and storage capacity was increased for diesel to 17,341,339 litres, gas to 2,990,757 litres and Jet A-1 fuel to 9,033,698 litres (GN, 2014). With this upgrade, community usage is well below existing capacity[1] and there are no further plans to add additional fuel storage capacity (GN, 2014).

Medium and long-term goals that have been identified in Rankin Inlet through community consultations include providing fuel storage capacity for economic development activities such as for the expansion of the mining industry and investing in renewable energy technology such as wind and hydro to reduce dependency on fossil fuels (Aarluk Consulting, 2010b).

9.1.2 Search and Rescue Infrastructure

Search and Rescue infrastructure in Rankin Inlet includes both immovable physical infrastructure such as buildings and cabins, and transportation infrastructure to conduct search and rescue activities such as boats and ATVs (Aarluk Consulting, 2010a). Table 2 presents a breakdown of Search and Rescue assets currently owned by Rankin Inlet and their capacity as of 2010 (Aarluk Consulting, 2010a).

Table 3: Search and Rescue Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Search and Rescue Building	1995	2035	25	-
Search and Rescue Building #2 (cold storage)	1980	2020	10	-
1999 Search and Rescue Cabins	2004	2044	34	-
Search and Rescue Boat	2003	2010	0	Replacement
2006 Honda TRX 400 FA 5- SAR ATV	2007	2014	4	-
2006 Honda TRX 400 FA 5- SAR ATV	2007	2014	4	-
2006 Scandic 550 ATV	2007	2014	4	-

Source: (Aarluk Consulting, 2010a)
"-": No information

Priority areas for investment in search and rescue equipment were identified, such as replacing the search and rescue boat which as of 2010 had reached its useful life. In addition, there is a need to replace ATVs used for search and rescue operations (Aarluk Consulting, 2010a). As of 2014, available documentation does not indicate that the boats or ATVs have been replaced (GN, 2014). Replacement of search and rescue equipment would be a priority area for investment according to the Government of Nunavut's Capital Planning Strategy, where investments in infrastructure that benefit health and safety are the highest priority criteria for capital investments (GN, n.d.a). The Government of Nunavut also has a community search and rescue organisation support policy which outlines financial mechanisms available to ensure search and rescue capacity meets community needs (GN CGS, n.d.b).

9.1.3 Fire Infrastructure

Fire infrastructure in Rankin Inlet includes a fire hall and two fire trucks (Aarluk Consulting, 2010a). Table 3 presents a breakdown of fire infrastructure assets currently owned by Rankin Inlet and their capacity as of 2010 (Aarluk Consulting, 2010a).

[1] Note that excess fuel storage capacity is currently sold to AEM

Table 3: Fire Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Fire Hall (Municipal)	1991, renovated in 2003	2031	21	Of adequate capacity and condition Requires (O + M): working security alarm system to protect the equipment and compressor to remove truck exhaust
Ford Pumper Fire Truck (Municipal)	1992	2012	2	Of adequate capacity and condition considering age, but low usage Will require replacement (long-term: approx. 10 years)
2000 Freightliner FL80 Fire Truck (Municipal)	2001	2021	11	Of adequate capacity and condition

Source: (Aarluk Consulting, 2010a)

Existing fire infrastructure, including buildings and equipment was assessed to be of adequate capacity and no priorities were identified (Aarluk Consulting Inc, 2010a).

A need was identified to invest in operations and maintenance components at the fire hall, including the security alarm system and to install a compressor to remove truck exhaust. Non capital budgets were identified to fund these operations and maintenance projects in 2010 (Aarluk Consulting Inc, 2010b). As of 2014, security cameras have been installed around the fire hall to protect the equipment. The compressor to remove truck exhaust from the fire has not been installed to date (GN, 2014). In the longer term, it has been noted that the 1992 Ford Pumper will require replacement. Overall, fire infrastructure does not face significant capacity issues.

9.1.4 Water Infrastructure

Water Infrastructure in Rankin Inlet is owned by both the Government of Nunavut and the Municipality of Rankin Inlet. Water for community use is generally drawn from Lake Nippisar. Although the lake is in good condition, current use patterns may be exceeding capacity.

There are 2 Pumphouse's in Ranking Inlet, established in the 1970's. As of 2010, their lifespan has been exceeded by 10 years and they are in fair to poor condition. There are also two lift stations that were established in 1998 and are in good condition. Rankin Inlet also has 4 Utilidors. The Utilidor established in the 1970's is in fair condition, while the other three newer Utildors are in good condition. Finally, Rankin Inlet has two water trucks. The older water truck, purchased in 1995 is inoperable while the newer truck from 2009 is in good condition. Table 4 presents a breakdown of water infrastructure in Rankin Inlet, and its capacity as of 2010 (Aarluk Consulting Inc, 2010a).

Table 4: Water Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Lake Nippisar (GN)	-	2018	8	In good condition Use may be exceeding capacity.
Nippisar Pumphouse (GN)	1970's	2000	(-10)	In poor condition
Williamson Pumphouse (GN)	1970's	2000	(-10)	In fair condition
Johnson Cove Lift Station (GN)	1998	2023	13	None, in good condition
Nuvik Lift Station (GN)	1998	2023	13	None, in good condition
Utilidor	1970's	-	-	In fair condition
Nuvuk Utilidor 1999 (municipal)	1999	2029	19	None, in good condition

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Nuvuk Utilidor 2000 (municipal)	2000	2030	20	None, in good condition
Nuvuk Utilidor 2001 (municipal)	2001	2031	21	None in good condition
Ford F800 Water Truck (municipal)	1995	2002	(-8)	Not operable
2009 Sterling Acterra Water Truck (municipal)	2009	2016	6	None, in good condition

Source: (Aarluk Consulting, 2010a)
"-": No information

Planned investments to improve water infrastructure include water and sewer mains at the Nunavut Trade School. The Department of Community and Government Services has committed $ 1,044,000 for this project (Aarluk Consulting Inc, 2010b). As of 2014, work on water and sewer mains at the Nunavut Trade School has not commenced (GN, 2014).

Other priority projects that have been identified, but have yet to have financial resources committed to them, include:

- Improvements to the Nippisar Pumphouse;
- Improvements to the Water Pump House;
- Investing in a new Utilidor in Area 6; and
- Investing in new Water and Sewer Infrastructure in Area 1 (Aarluk Consulting Inc, 2010b)

Drivers for investments in water infrastructure are projected population growth estimates in Rankin Inlet over the next decade by the Government of Nunavut. Priorities have been established particularly with respect to water supply and to expand the water distribution system to meet new and anticipated residential, commercial and potentially industrial demand (Aarluk Consulting Inc, 2010b).

The Government of Nunavut, through the department of Community and Government Services has developed a Water and Sewage Services Subsidy Policy to provide funding for water and sewage services to subside the costs of these services for users throughout Nunavut. The policy was established in 2007 and was operational until the end of 2012 (GN CGS, 2007).

As outlined above, there are water infrastructure capacity issues in Rankin Inlet.

9.1.5 Wastewater and Sewage Infrastructure

Wastewater and sewage infrastructure in Ranking Inlet is owned by both the Government of Nunavut and the Municipality of Rankin Inlet. Assets include two sewage trucks, a sewage treatment plant, a wastewater treatment plant, utilidor, sewage screener and a drainage system. All wastewater and sewage assets are currently operating above capacity, although in many cases their useful life is not over. In particular, there is a concern that the sewage treatment plant, if not upgraded or replaced, has the potential to cause environmental contamination (Aarluk Consulting Inc, 2010a). Table 5 presents wastewater and sewage assets in Rankin Inlet and their capacity as of 2010.

Table 5: Wastewater and Sewage Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Ford F700 Sewage Truck	1998	2005	(-5)	Use exceeds capacity
Sterling Acterra Sewage Truck (Municipal)	2009	2016	6	Use exceeds capacity
Sewage Treatment Plant (GN)	-	-	-	Use exceeds capacity; Potential for environmental contamination if treatment facility is not enhanced
Wastewater Treatment (GN)	-	-	-	Use exceeds capacity
Utilidor System	-	-	-	Use exceeds capacity
Sewage Screener (GN)	1998	2028	18	Use exceeds capacity
Drainage (GN)	2001	2031	21	Use exceeds capacity

Source: (Aarluk Consulting, 2010a)
"-": No information

Planned infrastructure investments to improve wastewater and sewage infrastructure include water and sewer mains at the Nunavut Trade School. The Department of Community and Government Services has committed $ 1,044,000 for this project (Aarluk Consulting Inc, 2010b). As of 2014, work on water and sewer mains at the Nunavut Trade School has not commenced (GN, 2014).

Other priority projects that have been identified, but have yet to have financial resources committed to them, include:

- Sewage Treatment Plant; and
- Water and Sewer Infrastructure in Area 1 (Aarluk Consulting Inc, 2010b)

Consultations with the municipality of Rankin Inlet identified that capacity of the sewage collection, treatment and storage system is not keeping pace with the growth of the community. In particular, the sewage treatment plant is operating over capacity and there are concerns about potential contamination to the environment if the treatment facility is not enhanced (Aarluk Consulting Inc, 2010b).

Other wastewater infrastructure that has been identified for upgrades in the longer term is the replacement and expansion of the utilidor. The driver for this investment is projected levels of population growth in Rankin Inlet over the next decade which will require an increase in wastewater and sewage infrastructure (Aarluk Consulting Inc, 2010b).

The Government of Nunavut, through the department of Community and Government Services has developed a Water and Sewage Services Subsidy Policy to provide funding for water and sewage services to subside the costs of these services for users throughout Nunavut. The policy was established in 2007 and was operational until the end of 2012 (GN CGS, 2007).

As described above, there is a need to invest in wastewater and sewage infrastructure in Rankin Inlet. In particular the sewage treatment plant needs to be upgraded or replaced as it is currently operating above capacity and a potential for environmental contamination has been identified.

9.1.6 Solid Waste Infrastructure

Solid waste infrastructure in Rankin Inlet consists of 2 garbage trucks and 2 land fill sites. One garbage truck is in good condition and is regularly used for collection. The second truck is in fair condition and is used as a spare truck. The old landfill site has exceeded its useful life and is planned to be decommissioned and the land reclaimed upon closure.

The new replacement land fill site that was developed in 2009 is in good condition, however there are some problems associated with its design that have limited its usefulness. In particular, the road leading to the site needs to be upgraded and its location may interact with the community watershed and flight path for the airport (Aarluk Consulting Inc, 2010a). Table 6 outlines solid waste infrastructure in Rankin Inlet, its capacity, and any issues identified with the infrastructure as of 2010.

Table 6: Solid Waste Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
2006 Ford F750 Chassis Cab (Garbage Truck)	2007	2014	4	In good condition
Ford F800 Garbage Compactor	1995	2002	(-8)	In fair condition Used a spare truck
New Land Fill Site	2009	2030	20	In good condition, but not open as of 2009; Access road was built too low and it is difficult to prevent snow loading in winter; Built inside the watershed for the community; Snow loading along fence makes it difficult to contain windblown garbage in the winter; Location of dump in airport flight path may cause issues with blowing garbage and birds.
Old Land Fill Site	1960's	-	-	Exceeded capacity; To be reclaimed on closure

Source: (Aarluk Consulting, 2010a)
"-": No information

A priority identified for solid waste infrastructure is to decommission and reclaim the old landfill site. The Department of Community and Government Services has committed $ 700,000 to decommission the old solid waste site (Aarluk Consulting Inc, 2010b). As of 2014, this site has not been reclaimed (GN, 2014).

Other priority investment areas that have been identified for solid waste infrastructure but have yet to have financial resources committed to them include:

- Garbage compactor bin system (lift system to empty bin directly into garbage truck)
- Upgrade road to new solid waste site (Aarluk Consulting Inc, 2010b)

Community consultations identified that the construction of a new recycling centre was also a priority as it would contribute to achieving environmental and sustainability goals (Aarluk Consulting Inc, 2010b).

Solid waste infrastructure in Rankin Inlet is in the process of being upgraded and overall there are no significant capacity issues.

9.1.7 Community Freezer Infrastructure

The community freezer is a municipal asset that enables harvesters of country foods to store country foods. This infrastructure supports harvester's ability to share country foods with community members and is important for the promotion of traditional economic activities in Rankin Inlet.

The community freezer was acquired in 1980 and had a useful lifespan of 20 years. As of 2010, the community capacity had exceeded its capacity and its lifespan by 10 years (Aarluk Consulting Inc, 2010a). Table 7 provides information about the community freezer and its capacity as of 2010.

Table 7: Community Freezer Infrastructure in Rankin Inlet (2010)

Asset	Acquired (Year)	Projected Useful Life (Year)	Years of Remaining Life (as of 2010)	Issues Identified
Community Freezer	1980	2000	(-10)	Exceeded capacity, requires additional space; In poor condition

Source: (Aarluk Consulting, 2010a)

The Nunavut Community Infrastructure Advisory Committee (NCIAC) identified that a new community freezer was a priority for Rankin Inlet in 2008 (Aarluk Consulting Inc., 2010b). As of 2014, the community freezer has not been replaced. It is not possible to increase or expand the current freezer due to the location of the existing freezer (it is at the border of the road variance). The Rankin Inlet HTO has commissioned a feasibility study for the construction of a new community freezer over the period of 2014 to 2016. The new freezer is planned to include space for processing country foods (GN, 2014).

The Government of Nunavut has identified that funding for the technical and professional services related to the assessment and design of the community freezer is available (up to a maximum of $27,000) through the Country Food Distribution Program's Community Freezer Capital Fund (GN, 2014). Funding is also available through the capital fund for the purchase and installation of a new community freezer to a maximum of $275,000 (GN, 2014).

The current community freezer infrastructure is operating above capacity and needs to be replaced.

9.1.8 Summary of Capacity Issues Associated with Other Existing Infrastructure

A review of baseline information on infrastructure in Rankin Inlet indicates that water, wastewater and sewage, and the community freezer infrastructure are in the most need of additional capacity to serve the existing population of Rankin Inlet and/or to meet requirements based on the Government of Nunavut's population projections for the upcoming decade.

Based on the Government of Nunavut's Capital Planning Strategy, investments in water and waste water infrastructure fall into the highest priority category for infrastructure funding. Forty percent infrastructure investments are targeted towards projects that will alleviate health and safety hazards (GN, n.d.). The strategy also notes mandated programs and services, such as the water and wastewater infrastructure are priority areas that will receive funding based on identified needs due to "growth in demographics or demonstrated growth in demand for services" (GN, n.d.).

Priority funding is also available for community infrastructure that will help to achieve sustainability and economic objectives (GN, n.d.). The community freezer supports traditional economic activities and facilitates the sustainability of traditional cultural activities. In addition, the Country Food Distribution Program's Community Freezer Capital Fund has resources available to purchase a new community freezer (GN, 2014).

The Government of Nunavut has projected population growth in Rankin Inlet over the next decade as it is a regional economic centre (Aarluk Consulting Inc, 2010b). Economic growth associated with the Project may also lead to induced population growth as job seekers and their families move to Rankin Inlet in response to an increase in economic activity (FEIS Section 9.2.4). Existing levels of population growth projected by the Government of Nunavut, along with the potential for induced population growth associated with Project activities may increase the demand and pressure on infrastructure in Rankin Inlet. The Government of Nunavut and the Municipality of Rankin Inlet may need to evaluate the capacity of infrastructure with regard to natural population growth, existing population projections and induced population growth due to Project related activities.

9.2 Pathway Analysis

Project construction and operations has the potential to affect the other community infrastructure and services currently experiencing capacity issues[2] through Project-induced in-migration. Table 8 breaks down the effect pathway and associated environmental design or mitigations that may remove or lessen the Project effect. Despite mitigations, the pathway between the Project and other community infrastructure and services is still assessed as being primary.

Table 8: Pathway Analysis

Valued Socio-economic Component	Project Activity	Effects Pathways	Environmental Design Features and Mitigation	Pathway Analysis
Other Community Infrastructure and Services	Construction and operations	Project-induced in-migration may increase strain on other community infrastructure and services currently experiencing capacity issues	Recruitment and hiring practices will be communicated clearly to discourage people from moving to Rankin Inlet without secure employment Revenues paid to municipal, territorial and federal governments by the Project are expected to more than offset the additional costs associated with increased service use	Primary

9.3 Effects Analysis

Given the already overburdened water, sewage treatment and community freezer services and infrastructure in the LSA, Project-induced population growth could increase demand for and pressure on other community infrastructure and services. Given their existing capacity, power (both generator and fuel tanks), search and rescue, fire protection, solid waste, and fuel storage (diesel, gasoline, etc.) are not expected to be affected by the Project.

9.4 Residual Impact Classification

The effect of the Project on other community infrastructure and services in the LSA is considered to be negative due to the increased demand for and pressure on existing services that are already experiencing capacity issues, particularly water and sewage services and the community freezer. However, given that the Project will pay taxes to the Municipality that could be used to improve this infrastructure, the magnitude of the effect, or issue, will be reduced and thus the effect is negative but low. The effect will persist throughout Project construction, operations and closure, and has thus been assessed as long-term in duration. Due to the low negative impact of this effect, the Project's effect on other community infrastructure and services is considered significant.

[2] As noted in the baseline, these include water, sewage and the community freezer.

Table 9: Residual Impact Classification Summary

VSEC	Effect Pathway	Direction	Magnitude	Geographic Extent	Duration	Significance
Other Community Infrastructure and Services	Project-induced in-migration may increase demand on Other Community Infrastructure and Services	Negative	Low	Local	Long-term	Significant

9.5 Cumulative Effects

Cumulative effects to infrastructure and services (including other community infrastructure and services) are discussed in Volume 9, Section 9.7.5. The discussion therein is applicable to other community infrastructure and services.

9.6 References

Aarluk Consulting Inc. 2010a. Infrastructure for a Sustainable Rankin Inlet Volume One: Community Priorities. Rankin Inlet Integrated Community Infrastructure Sustainability Plan. Available from: http://toolkit.buildingnunavut.com/ICSP/Rankin%20Inlet/Rankin%20Inlet%20ICISP%20Volume%201%20Final%20(2011-08-10).pdf [Provided by Government of Nunavut]

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