Standard Working Group Comments and Recommendations for Provincial Environmental Assessments in Northern British Columbia

Prepared by the Office of Health and Resource Development
Version 2.1
April 29, 2015

northern health
the northern way of caring

Contents

Appendix

1.0 Background

1.1 Northern Health

Northern Health (NH) provides health services to approximately 300,000 people located in the northern regions of British Columbia (BC). NH is unique in that it covers a vast, natural resource rich area with a land area spanning more than half of the province. Aboriginal People comprise over 17% of the population in the NH catchment area with 54 First Nations located within Northern BC. Most northern communities are closely linked to the development of natural resources and most residents have seen benefits or impacts of resource development projects during their lifetime. Unfortunately, compared to southern counterparts, residents of Northern BC are generally not as healthy and experience poorer health outcomes.

1.2 Environmental Assessments

Provincial Environmental Assessments (EAs) in BC provide a process through which potential adverse effects of projects are identified and evaluated. These adverse effects span five pillars, as follows:

Environmental	Economic	Social	Heritage	Health

The Environmental Assessment Office (EAO) manages the assessments of proposed major projects in BC, as required under the *Environmental Assessment Act*. This includes setting the scope and procedures of the EA Process, managing issues, balancing interests and ensuring that all potential environmental, economic, social, heritage, and health effects of a project are considered[1].

NH can participate in the EA process as a working group member. The working group advises the EAO about issues related to the proposed project's assessment as it relates to each member's area of expertise and helps to assess the adequacy of any proposed mitigation measures[1]. NH's areas of expertise are based on its broad mandate to protect public health and to deliver health care services to residents in northern BC.

1.3 Purpose

This document summarizes the working group comments generally made by NH for projects in the NH region and was intended to reduce our workload to within manageable levels while continuing to allow our interests and recommendations to be incorporated into the EA process. It is meant to clarify NH's expectations as a working group member and provides recommendations within our mandate and areas of expertise.

This document is meant to be used by:

- NH staff as a support tool when actively participating as a working group member;
- EAO and the legislative decision maker(s) for projects in which NH cannot be an active working group participant (due to capacity or workload limitations). For these projects, this document is intended to act in lieu of NH's active participation so that the information provided herein can be taken into consideration by the statutory decision maker(s); and

[1] Environmental Assessment Office. 2011. Environmental Assessment Office User Guide. Available online (accessed 29 October 2014): http://www.eao.gov.bc.ca/pdf/EAO_User_Guide%20Final-Mar2011.pdf

- Industry during the development of EA documents to better understand NH's position, recommendations and expectations.

It is important to note that this document belongs to NH and is not associated with EAO. EAO makes the final determination as to the appropriate level of information required in EAs. Whether or not the recommendations contained within are carried forward are therefore ultimately decided by the proponent and the decision making authority under the *Environmental Assessment Act* (the EAO's Executive Director and the Minister of Environment).

1.4 Scope

Given NH's mandate to deliver health care services and protect public health, this information is intended for the identification, evaluation and management of adverse effects under the "health" pillar. However, since health is strongly influenced by other factors these recommendations also overlap the other four pillars.

1.5 Supporting Documents

This document is one of a series of documents being developed by the Office of Health and Resource Development. A *Health and Medical Services Plan Best Management Guide for Industrial* Camps (HMSP Guide) has also been developed which more clearly identifies our expectations for the management of health service impacts arising from temporary workforces. This document is referenced in the mitigation section and can be found on our www.northernhealth.ca website[2]. NH is also currently developing a community support tool to help identify and mitigate community health impacts associated with resource development projects. Collectively, these documents are intended to help minimize potential health impacts arising from resource development projects in the NH region in concordance with NH's commitment, statutory and ethical obligation to build and strengthen the health of the people we serve.

2.0 Candidate Valued Components for Health

In the EA process, Valued Components (VCs) are aspects of the natural and human environment that are considered to have scientific, ecological, economic, social, cultural, archaeological, historical or other importance. Those selected for a proposed project become the primary focus of its environmental assessment[3].

During the selection of health VCs we recommend that the following be recognized:

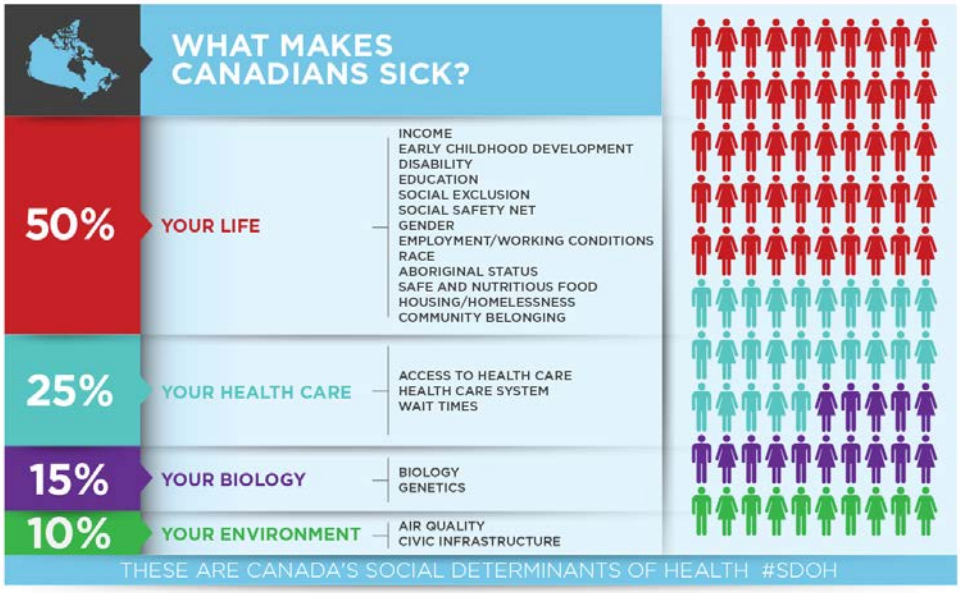
- The World Health Organization defines health as "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*"[4];
- Health outcomes are most strongly determined by the socio-economic determinants of health (50%) and access to health services (25%) and less so by biology (15%) and environmental factors (10%) (see figure below);

[2] https://www.northernhealth.ca/YourHealth/PublicHealth/OfficeofHealthandResourceDevelopment.aspx

[3] Environmental Assessment Office. 2013. Fact Sheet; Valued Component Guideline. Available online (accessed March 5, 2015): http://www.eao.gov.bc.ca/pdf/Fact_Sheet_Valued_Components_Guideline_2013_07_30.pdf

[4] Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

- One of NH's four strategic directions is to take a "Population Health Approach" which aims to elevate the health of the entire population and to reduce health inequities among population groups.



[5]

Given the above, the selected VCs should include health outcomes as well as the range of socio-economic, health service/infrastructure and environmental determinants of health that may be impacted by the project with efforts made to include VCs that identify inequities and impacts to vulnerable populations. At a minimum, VCs should capture the range of potential project impacts identified by international performance standards as well as those well known to be associated with major projects in our region, as identified in Table 1 below.

Table 1: Potential Impacts to be Captured by VCs

International Performance Standards	Other well recognized impacts
• exposure to hazardous materials • project related infrastructure • traffic • exposure to communicable diseases from the influx of workers • alterations to ecosystem services and emergency response • provision of services to workers	• housing • project induced displacement from land • impacts associated with worker accommodations • off-site worker behaviour

References to "health" in EA documentation should not only refer to a Human Health Risk Assessment.

The table provided in Appendix 1 provides a summary of suggested Candidate Valued Components (CVCs) for the assessment of human health based on our understanding of potential project impacts. This table is meant to be a guide to provide information on the type and range of VCs that Northern Health expects to have considered for inclusion in the EA.

[5] 2013. Canadian Medical Association. What Makes Canadians Sick. Available online (accessed April 2nd, 2015): http://healthcaretransformation.ca/infographic-social-determinants-of-health/

Please note the following about this table:

- The information contained in the table is not exhaustive and there may be other, more appropriate VCs for specific projects;
- Not all of the CVCs identified would apply to all projects; the final determination of which VCs are required is determined by EAO;
- The suggested/potential indicators column provides examples of indicators that could potentially be used as "measurable indicators" for each VC but should not be considered as prescriptive or exhaustive;
- Data for the listed CVCs and suggested indicators may not be available or easily accessible at this time. Prior to excluding these based on this premise, we suggest that consideration be given to finding potential alternatives, identifying whether qualitative approaches to assessing these impacts may be feasible and/or whether it may be reasonable to collect primary data;
- The CVCs are divided into four Key Topic Areas (Infrastructure and Services, Socio-Economic/Community Health, Physical Environment and Health Status/Outcomes and General Well-being), and are referenced in the following sections of this document; and
- NH is interested in the identified Key Topic Areas and CVCs in the context that the results of their assessment are likely to impact health outcomes. NH does not have resources, expertise or the mandate to comment or provide feedback on many of the technical aspects of their assessment or mitigation. NH's focus would be the assessment results and their implications to health outcomes and would berelying on other ministries, community representatives, and the proponent's experts to provide the expertise for the technical review.

3.0 Temporal Boundaries

Temporal boundaries are generally expressed in the context of the stages of a project (e.g. exploration/planning, feasibility, construction, operation, reclamation and post-reclamation). We have noted that this approach often precludes the assessment of health, social and economic impacts over the entire life cycle of the project including the economic downturn following construction, potential market recessions and the closure of the project. Given that the health impacts of the project "bust" can be as (or more) significant than those associated with the project "boom", we recommend that the temporal boundaries encompass the entire life cycle of the project so that the full array of impacts associated with the proposed development can be identified and mitigated, where possible.

4.0 Spatial Boundaries

The study area for the health VCs should include all areas where there is a potential project impact on the identified VCs. Given human mobility, the Study Areas for the "socio-economic" and "services and infrastructure impacts" Key Topic Areas should include larger service centre(s) as well as smaller surrounding communities that may be impacted (either directly or indirectly) by the project, recognizing that many Northern communities are interconnected and frequently share services. For instance, for health services, larger service centres, such as Terrace, Prince George and Fort St. John offer specialty services, higher acuity care and/or regional services and should generally be included in the spatial boundary.

Based on international best practices, we also recommend that the spatial boundaries include not only the project impacts but also impacts of project related infrastructure (e.g. ports, transmission lines) and traffic corridors.

5.0 Baseline Studies

Baseline studies should provide a true representation of VC conditions within the spatial boundaries including, where available, information on historic conditions /factors that have led to current conditions. To promote trust, transparency and partnerships with communities, the collection of baseline health data should ideally be collected in partnership with communities. Community specific baseline data should adhere to OCAP™ principles (ownership, control, access and possession)[6] and ethical standards for health data collection.

Northern Health's recommendations for Key Topic area specific baseline information are outlined in Table 2.

Table 2: Baseline Recommendations – Considerations Specific to Health Services

Key Topic Area Determinant of Health	Recommendation for Specific Baseline Information
Infrastructure and Services	Should focus primarily on **current capacity and capacity challenges.** If the project is expected to have a non-resident workforce, special focus should be placed on existing capacity for and impacts from temporary workers or shadow populations in the study area. Consider: o Health care (including mental and public health) is generally at capacity across Northern Health; o Northern Health is resourced to provide services to the resident population. As a result, current services and infrastructure are not designed or resourced to provide services to a temporary workforce and baseline non-urgent care services available to the temporary workforce can be assumed to be zero; o While general service information is useful to identify the types of services available to residents in the study area, detailed hospital bed and general practice physician and specialist counts should be avoided as they can change rapidly, are not easily summarized (and therefore open to interpretation) and do not provide meaningful information that would be useful to the assessment of impacts. To ensure consistency and accuracy, information about Northern Health services and capacity should be coordinated through Northern Health's Office of Health and Resource Development (resource.development@northernhealth.ca), not directly from community/economic development representatives or local Northern Health staff.
Socio-Economic Determinants of Health/Community Health	Should include an **evidence-based summary of the current socio-economic DOH in the study area.** This information should be obtained from publicly available data, service provider and community-level reports and studies, peer reviewed literature and community-based local knowledge obtained through focus groups, workshops or similar. The baseline information provided should provide a clear picture of the existing socio-economic conditions in the study area, with specific focus on existing vulnerabilities, legacies and inequities within the community that could potentially be impacted by direct, indirect or cumulative impacts of the project. In this or the cumulative effects assessment, it should be recognized if/where these existing vulnerabilities, legacies and inequities may have arisen from past or current resource development projects. For resource development projects in the North, we expect that this will likely require an evidence-based discussion on the boom-bust cycles and impacts that have been experienced in the region and the legacy vulnerabilities and impacts that may exist and arise in the affected community as a result of these. For projects that are expected to have a temporary workforce, we would expect that baseline conditions or the cumulative effects assessment also include a discussion on the shadow/temporary workforce population in the study area.
Physical Environment	Should provide information on the **existing environmental impacts/exposures experienced by the population and vulnerable sub populations** in the study area.
Health Status and Outcomes and General well-being	Should provide information on **existing health outcomes and status** based on publicly available data, service provider/community reports (e.g. health status reports) and other available locally sourced information.

[6] First Nations Information Governance Centre. The First Nations Principles of OCAP™. Available online (accessed 2 April 2015): http://fnigc.ca/ocap.html

6.0 Effects Assessment

Where available, the effects assessment should rely on national and international recognized methodologies and guidance documents to assess health impacts. This may include (but not limited to):

- Health Canada's *Canadian Handbook on Health Impact Assessment*;
- International Finance Corporation's (IFC) *Performance Standards on Environmental and Social Responsibility*;
- National Collaborating Centre for Healthy Public Policy's *Health Impact Assessment (HIA): Guides and Tools;*
- The International Association for Impact Assessment (IAIA) Best Practice Principles and Guidance Documents;
- International Petroleum Industry Environmental Conservation Association (IPIECA) and International Association of Oil and Gas Producer's *A Guide to Health Impact Assessments*; and
- International Council on Mining and Metals *Good Practice Guidance on Health Impact Assessment*

The effects assessment should rely on best-available evidence, including data, research, professional expertise, local knowledge and where applicable, original investigations. Where available, these assessments should rely on evidence from well designed, systematic reviews of published evidence. There should also be a rationale provided for the inclusion or exclusion of particular methodologies and data sources. Data gaps, limitations, uncertainties, assumption and inferences should be clearly identified. The assessment should only be conducted by qualified health impact assessors and/or professionals with extensive education, experience and (when available) professional designation(s) for the specific VC under assessment.

The assessment should identify the direct, indirect and cumulative impacts from the project to health determinants and health outcomes. Particular focus should be applied to potential impacts on vulnerable populations. When a quantitative estimate of impacts is not possible, likely or plausible impacts should be identified through qualitative means using best available evidence.

Table 3 provides additional recommendations for each Key Topic Area:

Table 3: Effects Assessment Recommendations

Key Topic Area Determinant of Health	Recommendation for Effects Assessment

Infrastructure and Services	Should provide information on the following:
	• What is the **number of workers** expected to work on the project during the different phases of the project?
	  ▪ What is the location they are expected to originate from (e.g. within or outside of Northern Health)?
	  ▪ Where will they be housed and over what time period?
	  ▪ What percentage of (or whether) workers' families will also be relocating?
	  ▪ What is the expected demographic and health care status?
	• What is the **level of non-urgent health care services** to be provided at the site and worker accommodations?

Table 3: Effects Assessment Recommendations

Key Topic Area Determinant of Health	Recommendation for Effects Assessment
	• What **off-site (Northern Health) health care services** would likely be accessed by workers (and their families if applicable): ▪ which health centres and services, estimated frequency and timing? • What are the **potential indirect impacts to health services** resulting from impacts to the DoH?
Socio-Economic Determinants of Health/Community Health	Should: • be **evidence-based** and should **identify likely impacts** based on findings from similar scale projects and peer reviewed studies, summary papers, experts, local/regional reports and other reputable sources of information. • be augmented by **local knowledge and data** obtained at the community level (through focus groups, gatherings, interviews, etc.). While important, local knowledge should not form the only/primary assessment method. • clearly **identify impacted and benefitted groups** and should place particular focus on impacts to susceptible populations. The assessment of significance of impacts, when applicable, should reflect evidence as well as community values.
Physical Environment	Within an Environmental Assessment, the assessment of adverse health effects in humans arising from exposures to contaminants in environmental media, now or in the future, should: • be quantified **using a Human Health Risk Assessment (HHRA) approach**. • follow **Health Canada's Guidance Documents on HHRAs** which provide clear and detailed guidance on HHRA methodologies including the following key steps: problem formulation, exposure assessment, hazards assessment, risk characterization, risk mitigation, monitoring and/or management. o HHRA must estimate the **potential human health risks** from short-term (acute) or long-term (chronic) exposures to environmental contaminants that may result from a proposed project alone and in combination with other past, present or future projects. The potential for risk to human health requires the presence of: (1) a stressor (health hazard), (2) a human receptor, and (3) an exposure pathway through which a human receptor can be exposed to the hazard. If all three components are present, the exposure pathway is considered complete or operative. The assessment should always **include a qualitative screening level risk assessment** that describes the potential hazards (contaminants), human receptors, and exposure pathways and determines the presence of complete exposure pathways that will require further assessment in a quantitative HHRA. Pathways deemed incomplete do not need to be carried forward, but rationale for exclusion should be provided. Public Health impacts from the physical environment can also arise from potential accidents and technological failures or malfunctions (generally presented in a separate chapter of the Application): • For all projects for which there are potential for accidents and malfunctions to impact public health, the **worst case scenario public health impacts** should be identified. • The **Medical Health Officer's role** in an emergency public health situation under the *Public Health Act* (PHA) should also be noted.
Health Status and Outcomes and General well-being	In this section, we recommend that the **findings of the assessments for the Determinant of Health VCs** (e.g. Socio-economic, Physical Environment and Infrastructure and Services Topic Areas) **be linked to health outcomes**. • If a quantitative assessment is not feasible, a qualitative assessment should be included to associate probable health outcomes to the findings of the Determinant of Health VC Assessments using **best available evidence**. • In addition or alternatively, this section should provide an **evidence-based summary on the likely health status and health outcome impacts** that might (or are likely) to arise from a project of this size and nature based on available literature on this topic and experiences and documentation available from similar sized projects (locally, nationally and globally).

7.0 Mitigation

Mitigation for health impacts should consider (and discuss) all technically and economically feasible mitigation options to minimize impact to as low as reasonably achievable. Mitigation should include prevention, monitoring, mitigation and corrective actions to address adverse health impacts and should ideally contribute to positive community development. The proponent should identify and commit to mitigation options that are expected to be successful (based on evidence, previous knowledge and standard practices).

Table 4: Mitigation recommendations

Key Topic Area Determinant of Health	Recommendation for Mitigation
Infrastructure and Services	For projects that include a sizeable temporary workforce, mitigation should include: • the **development of a Health and Medical Services Plan (HMSP)** that conforms to Northern Health's "Health and Medical Services Plan Best Management Guide for Industrial Camps" (the HMSP Guide, available on our website[2]). • the development of a HMSP should also be considered for projects that will employ smaller numbers of (or no) temporary workers, recognizing that not all components of the HMSP Guide (e.g. on-site non-urgent care services) would be applicable. Regardless of size, mitigation for health services should **ensure that the project does not result in undue pressure on the health care system**, and include: • strategies for minimizing impacts to non-urgent care services; • consideration for the management and prevention of disease; • a focus on promoting wellness; • an effective communication strategy between the project and health service providers for the delivery of trauma care and medical escalations; • a process through which impacts to the health care system can be adaptively managed, if warranted.
Socio-Economic Determinants of Health/Community Health	Northern Health supports the development of **Social Economic Effects Management Plans (SEEMPs)** to minimize socio-economic impacts, which should serve to manage the array of potential socio-economic impacts and uncertainties identified in the effects assessment including management plans for specific VCs (e.g. community health and safety management plan, traffic management plans, housing/accommodation management plans, influx management plans, etc.). SEEMPS should be: • developed/implemented through an open and transparent, multi-stakeholder process which includes public engagement and public grievance mechanisms and collaboration with local communities and agencies; • able to manage for changing and unforeseen circumstances and/or impacts; • actionable (including the identification of roles and responsibilities, mitigation measures, resources, budget, schedules and information on monitoring and reporting); • place special emphasis on managing for inequities and minimizing impacts to vulnerable groups/populations; and should • reduce impacts to as low as reasonably achievable and preferably, move away from a "do no harm approach" to one that focuses on leaving behind positive socio-economic legacies.
Physical Environment	We recommend that mitigation be based on **industry best practice**, use **best achievable technology**, and be effective at meeting all relevant **health-based thresholds and applicable guidelines, objectives and standards**. For non-threshold pollutants, focus should be on **minimizing impacts** to as low as reasonably achievable, keeping clean areas clean and practice of continuous improvement. An Emergency Response Management Plan should also be included to **manage potential impacts arising from accidents and malfunctions**. Northern Health's emergency response roles and responsibilities are located on our website[2].
Health Status and Outcomes and General Well-being	Should include **health surveillance and monitoring**. The health surveillance and monitoring program should be two-fold: 1. a company-led internal worker health monitoring program whose results are shared with external stakeholders. 2. a population-based surveillance system in collaboration with local stakeholders and relevant agencies. Additional recommendations for the mitigation of health outcomes have not been provided as mitigating the determinants of health should be effective at mitigating health outcomes.

8.0 Questions/Comments/Feedback

This "Expectation Document" was developed by the Office of Health and Resource Development. For questions or comments, please contact us at resource.development@northernhealth.ca

Appendix A: Suggested Candidate Valued Components for Assessing Health Impacts

Key Topic Area	Valued Component	Sub component	Rationale	Suggested/Potential indicators for baseline data collection and impact assessment	Determinant of Health (DoH) or Health Outcome
Infrastructure and Services	**Health and Social Services and Infrastructure**	**Acute Care** (emergency and in-patient services and mental health)	Large projects, especially those with large temporary workforces, have the ability to place significant strains on health services, including but not limited to emergency rooms, non-urgent care, specialty, lab, mental health and addiction, environmental health and public health nursing services. Government and non-government social services that support individuals and families can also feel significant impacts from direct and/or indirect impacts associated with the development of large projects	- General health and social service levels - General capacity (to meet current population's health needs) - Capacity to meet the needs of a temporary industrial workforce - Utilization of specific health and social services (if available)	DoH: "Health Services" and "socio-economic/ community health"
		Primary Care (General Physicians/ Medical Specialists)			
		Public Health			
		Community Social Services (e.g. transition houses, family support, substance use supports, food banks, etc.)			
	Community Infrastructure and Services		Projects can place increasing demand on community infrastructure and services, at times impacting the service levels (quality and quantity) available to local residents.	- Local government utilities (e.g. water, sewage, etc.) - Recreation and leisure facilities - Traffic (incl. routes, conditions, capacity and identification of community safety risks) - Public Transportation	DOH: "Physical Environment"
Socio-Economic/ Community Health	**Education**	**Early Childhood Education**	Projects can often bring with them a rapid demographic change that can place strains on available daycare and preschool availabilities for local residents.	- Licensed daycare capacity - Children receiving early childhood education (split out by sub populations if possible)	DOH: "socio-economic/ community health"
		General Education including Post-Secondary	Demographic changes that may be associated with large projects can lead to changes to classroom sizes/composition and access to education for worker families and residences. Industry policies can encourage or discourage high school completion and higher level training opportunities, especially for vulnerable individuals.	- Education attainment (general and by sub populations) - Post-secondary education opportunities (general and by sub populations)	

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Key Topic Area	Valued Component	Sub component	Rationale	Suggested/Potential indicators for baseline data collection and impact assessment	Determinant of Health (DoH) or Health Outcome
	Housing	**Property Values**	Large projects can increase demand and cost of housing, accommodations and land, especially during construction phase of the project. Workforce reductions can rapidly and sometimes unexpectedly reduce demand and associated house and property values impacting family finances, living conditions and health outcomes.	- Average house prices - Home ownership and occupancy - Housing affordability, esp. for vulnerable groups	
		Rental Housing and Accommodation		- Vacancy rates - % of renters paying > 30% income on shelter - Average rental costs - Rental cost for lower income - Supportive housing availability - Housing affordability and security - Homelessness - Crowding	
	Economy	**Economic Conditions and Patterns**	While industry can bring many positive economic benefits, it can also create income inequity, changes in cost of living, economic diversification and food security and changes in employment demand and supply. If present, negative impacts are experienced by already vulnerable populations.	- Income and social status (incl. inequities) - Cost of living measures - Food security/insecurity - Economic diversification	
		Employment		- Unemployment rates - Skilled employment - Professional employment - Labour demand and supply	
	Recorded Crime		A large influx of workers and money into a community has the ability to influence gang and sex trade activities and access to illegal substances in a community. A project's impact on things such as stress, community cohesion, financial pressures, etc. can also influence personal choices.	- Specific crime rates (e.g. property crime, sex trade and drug seizures) that may be associated with project - General/all crime rates	
	Demographics	**Change and Composition**	Projects with a large construction or operation workforce can change the composition of a community.	- Age and gender distribution - Culture and ethnicity	
	Family health		Potential impacts on housing, the economy, demographics, crime, community cohesion, etc. can place stress on families.	- Divorce rates - % parents working away from home - Youth at risk - Children at risk	

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Key Topic Area	Valued Component	Sub component	Rationale	Suggested/Potential indicators for baseline data collection and impact assessment	Determinant of Health (DoH) or Health Outcome
				- Children in care rates - Juvenile crime rates - Access and use of family support services	
	Community Cohesion	**Engagement, Volunteerism and Participation**	Large projects, especially those with large workforces can change demographics, composition and feel of a community which can impact the cohesion of the community.	- Volunteer rates	
		Population mobility/turnover		- Population mobility	
		Social Discomfort		- Conflict between community members (e.g. between benefitted and impacted groups, between host community and temporary workforce, etc.)	
	Personal Health Practices		Project impacts to economic and social VCs can directly or indirectly impact individual's personal health practices.	- Substance abuse (e.g. drug & alcohol) - Obesity rates - Tobacco use - Physical activity levels	
	Culture		Project can alter cultural components and practices which, especially for First Nation groups, can impact health outcomes.	- Wellness indicators as determined by the community	
Physical Environment	**Environmental Health**	**Drinking Water Quality**	Projects may increase human contaminant exposures through environmental media, such as air, water, soil and sediment.	- Concentration ratios - Hazard Quotients - Incremental lifetime cancer risk	DOH: "Physical Environment
		Air Quality			
		Sediment/Soil			
		Country Foods and Food Security		- Arable land - Country and local food consumption - Concentration ratios - Hazard Quotients - Incremental lifetime cancer risk	
		Other: e.g. Light, noise, vibration, EMF, odour, etc.	Changes to light, noise, vibration, EMF, odour, etc. can result in changes to the quality of life, physical, mental and psychosomatic health impacts.	- Impacts to quality of life (e.g. % annoyed, level of satisfaction, etc.)	
	Accidents and Malfunctions	**Incidence rates**	Accidents and malfunctions can result in worker and public health morbidities and mortalities.	- Accident rates, injuries and exposures - Kinds of emergency to be anticipated and worst case scenarios	

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Key Topic Area	Valued Component	Sub component	Rationale	Suggested/Potential indicators for baseline data collection and impact assessment	Determinant of Health (DoH) or Health Outcome
Health Status and Outcomes and General Well-being	**Health Outcomes**	**General Population**	Major projects, especially considering cumulative and long-term impacts, can result in changes to health outcomes and indicators of well-being, especially among vulnerable populations.	- All-cause morbidity and mortality rates - Disease specific morbidity and mortality rates - Chronic disease rates - Life expectancy - Quality Adjusted Life Years - Disability Adjusted Life Years - Communicable disease and STI rates - Hospital admissions - Mental health conditions	Health Outcome
		Vulnerable populations		- All-cause morbidity and mortality rates, disease specific mortality rates - Chronic disease rates - Life expectancy - Suicide rates - Communicable disease and STI incidence rates - Hospital admissions - Mental health conditions	
	Well being			- Canadian Index of Wellbeing - Community Well Being Index - Community specific indices of well-being	