

8.0 Accidents, malfunctions, and unplanned events

8.1 Overview

Accidents, malfunctions, and unplanned events are accidents or upset events or conditions that are not planned as a part of routine Project activities during any Project phase. Even with the planning and application of mitigation, accidents, malfunctions, and unplanned events could occur during any phase of the Project. These could occur as a result of abnormal operating conditions, wear and tear, human error, equipment failure, and other possible causes. Many accidents, malfunctions, and unplanned events are preventable and can be readily addressed or prevented by good planning, design, equipment selection, hazards analysis and corrective action, emergency response planning, and mitigation.

In this section, the potential accidents, malfunctions, and unplanned events that could occur during any phase of the Project and potentially result in significant adverse environmental effects are described, discussed, and assessed. The focus is on credible accidents that have a reasonable probability of occurrence, and for which the resulting residual environmental effects could be major without careful management.

It is noted that accidents, malfunctions, and unplanned events are evaluated individually, in isolation of each other, as the probability of a series of accidental events occurring in combination with each other is very minimal. These possible events, on their own, generally have a very low probability of occurrence and thus their environmental effects are of low likelihood. They have an even lower probability or likelihood of occurring together – thus their combination is not considered credible, nor of any measurable likelihood of occurrence.

Accidents, malfunctions, and unplanned event scenarios have been conservatively selected that represent higher consequence events that would also address the consequences of less likely or lower consequence scenarios. The accidents, malfunctions, and unplanned events that have been selected based on experience and professional judgment are as follows:

- Worker accident: worker accidents may occur during either construction or operation, and may result in harm, injury, or death to one or more Project workers;
- Fire: consists of a fire in a Project component. The focus is on the consequence, and not the mechanism by which it occurs;
- Hazardous materials spill: spills of fuel, petroleum products, and/or other chemicals used on site or in Project components; and
- Vehicle accident: Project-related vehicle accidents that could occur on the road transportation network.

8.2 Effects analysis

8.2.1 Worker accident

A worker accident has the potential to interact with communities as it may result in harm, injury, or death to workers. All workers will be properly trained in practices to prevent workplace accidents including Workplace Hazardous Materials Information System (WHMIS), first aid, and other applicable training programs. These procedures are designed to prevent serious injury to staff and the general public as well as to minimize the occurrence of unplanned events and minimize any potential damage to the environment.

Interactions between a worker accident and communities will be mitigated by compliance with health and safety legislation, safety by design, and implementation of environmental management measures aimed at protecting human health. Safety risks to workers will be reduced by complying with the requirements of various governing standards including the federal Canada Labour Code, the federal *Transportation of Dangerous Goods Act*, the *Manitoba Workplace Health and Safety Act* and all associated regulations. Adherence to public safety codes and regulations will help the Project to be carried out in a safe manner to protect workers and the public.

With the application of, and compliance with, these acts, regulations, and standards, including the application of safety and security measures that are known to effectively mitigate the potential environmental effects, the potential environmental effects of a worker accident on communities during construction and operation and maintenance of the Project are assessed as minor.

8.2.2 Fire

A fire at the Project location could interact with the atmospheric environment (smoke emissions), infrastructure and services (stress on services) communities (potential safety risks to workers), land use and property (potential for substantive loss or damage to property of resources), and the aquatic, wildlife and natural vegetation environments (potential contamination with sediment-laden water used in extinguishing the fire).

A fire may arise from Project heavy equipment or from natural causes such as a lightning strike. In the unlikely event that a fire occurred, the immediate concern for a fire would be for human health and safety. Local air quality conditions may deteriorate through the duration of the fire. Personnel will take the necessary precautions to prevent fire hazards when at the work site and will keep the site free of all flammable waste. Manitoba Hydro will ensure that personnel are trained in the use of fire-extinguishing equipment. In the unlikely event of a fire, local emergency response will be able to reduce the severity and extent of damage.

The emissions from a fire would likely consist mainly of smoke (particulate matter) and CO₂ but could also include CO, NO₂, SO₂, and other products of incomplete combustion. A large fire could create particulate matter levels greater than the ambient air quality standard over

distances of several kilometers, but such situations would be of short duration, infrequent, and are not expected to occur because of planned mitigation and prevention measures. The potential residual environmental effects of a fire are therefore assessed as minor.

8.2.3 Hazardous materials spill

A hazardous material spill may interact with the atmospheric environment, groundwater resources, aquatic resources, wildlife, vegetation and agricultural land use. Hazardous materials could potentially be released into the air, soils, surface water or groundwater as a result of an accidental spill of solvents, fuels, herbicides etc., during construction or operation and maintenance activities. Project activities including marshalling yard development and use, the presence of material and equipment and vegetation and infrastructure maintenance have the potential to contaminate surface-water quality through the release of deleterious substances (e.g., fuel spills, releases of other potentially toxic materials).

The most common potential deleterious chemical substances entering watercourses from Project activities tend to be hydrocarbons and herbicides. In general, spilled hydrocarbons have the potential to affect freshwater organisms both directly (through physical and toxicological processes), and indirectly, (through habitat effects, nutrient-cycling disruptions, and alterations in community and trophic relationships). Direct biological effects to fish include damage to fish gill membranes, fish mortality, irregular behavior, and impaired reproduction from contact with spilled hydrocarbons while indirect effects include substantial decreases in invertebrate populations. Effects to fish habitat include the loss/alteration of riparian vegetation (resulting from post-spill macrophyte cutting and oil-induced effects on vegetation stands) and the loss/alteration of spawning habitat and food sources by sinking particulates clogging substrate interstitial spaces. The only watercourse is an ephemeral stream with very limited fisheries value. Implementation of a detailed spill response plan and a well-designed EnvPP will ensure minimal potential effects to aquatic resources through accidental releases to watercourses.

Fuel and oil leakage or other debris from equipment staging may cause soil contamination, which can cause direct mortality of natural vegetation. If soil contaminants flow to wetlands in the area, there may be direct mortality of wetland plants.

A spill of fuel, oil, lubricants, or other hazardous materials may occur during construction or operation and maintenance activities, through damage to vehicles, and leaks from Project components. Any spill is usually highly localized and easily cleaned up by on-site crews using standard equipment. Large quantities of hazardous materials will not be used by or stored as part of the Project, therefore a large spill is not considered to be a possibility.

The contractor will be required to provide environmental training, as well as training in spill prevention and response to Construction personnel. Prior to the commencement of construction activities, Manitoba Hydro will ensure that spill response equipment is readily available. All spills will immediately be contained, cleaned, and reported to applicable authorities as per the following guidelines:

- All contaminated material or potentially hazardous material will be contained;
- Proper safety precautions (e.g., protective clothing and footwear) will be taken;
- The Proponent will follow their Spill Response Policy and will ensure that Manitoba Sustainable development's spill reporting line (204-944-4888) is notified for reportable spills;
- Contaminated wastes, such as used cleaning cloths, absorbents, and pads, will be stored in proper waste containers; and
- Waste material will be disposed of at approved disposal facilities.

Construction equipment will be cleaned and maintained in good working condition, with visual inspections of equipment performed on a regular basis. Petroleum products such as gasoline, diesel fuel, and oil will be properly labeled in accordance with the appropriate legislation and regulations. Refueling, oiling, and maintenance of equipment, as well as storage of hazardous materials, will be conducted in a designated and contained area(s). Servicing of equipment (e.g., oil changes and hydraulic repairs) will be completed off-site when possible. Vehicles will be equipped with spill containment and cleanup materials.

Personnel handling fuels and hazardous wastes will have WHMIS training and will be qualified to handle these materials in accordance with the manufacturer's instructions and applicable regulations. Hazardous waste and storage area(s) will be clearly marked and secured. Industrial waste will be reused or recycled on a priority basis. Where reuse or recycling opportunities are not available, industrial waste will be collected and disposed of at an approved facility. Garbage receptacles for solid non-hazardous wastes will be available. These wastes will be collected on a regular basis or as they are generated and will be disposed of at approved locations. With these mitigation measures and emergency response procedures implemented, and because of the low likelihood of such events, the potential residual environmental effects of a hazardous material spill on groundwater resources, aquatic environment, and terrestrial environment during construction and operation and maintenance of the Project are assessed as minor.

8.2.4 Vehicle accidents

A vehicle accident arising from Project-related activities may interact with atmospheric environment, infrastructure and services and communities. Note that the potential for a fire or hazardous material spill which could be associated with a vehicle accident or other means has been addressed above.

The potential for a vehicle accident to occur exists during construction and operation and maintenance phase of the Project. Worker traffic and truck traffic to and from the site, and the operation of heavy equipment on-site during construction have the potential to result in a vehicle accident during construction. The Project-related vehicles will observe all traffic rules and provincial and federal highway regulations. Trucking activity will observe speed limits and weight restrictions. Because the Project will comply with all applicable traffic rules and regulations, the nominal increase in traffic volumes as a result of the Project, and because safety measures will

be implemented during construction, the potential residual environmental effects of a vehicle accident are assessed as minor.

8.3 Assessment conclusion

The Project is being designed, and will be constructed and operated with the utmost regard for health, safety, and environmental protection to minimize its potential environmental effects that could result during the normal course of construction and operation and maintenance as well as those that could result from accidents, malfunctions, and unplanned events.

The careful planning of the Project and the implementation of proven and effective mitigation will minimize the potential for accidents, malfunctions, and unplanned events to occur. The effects of an individual accident or unplanned event could have significant effects on a localized extent. For example, a fire could negatively affect nesting birds or a spill could affect surface or groundwater quality. However, the potential for these events to occur, given the measures that will be undertaken to prevent their occurrence, is low. In the very unlikely and improbable event that an accidents, malfunctions, and unplanned events of any considerable magnitude were to occur, it would be of a short duration, low frequency, or limited geographic extent such that major residual adverse environmental effects would be unlikely to occur.

Overall, given the nature of the Project and credible accidents, malfunctions, and unplanned events considered, and in light of the nature of the Project and proposed mitigation, the potential residual environmental effects of all Project-related accidents, malfunctions, and unplanned events on all biophysical and socioeconomic components during all phases of the Project, are assessed as minor.