

14.0 ASSESSMENT OF ACCIDENTS, MALFUNCTIONS, AND UNPLANNED EVENTS

In this section, the potential accidents, malfunctions, and unplanned events that could occur during any phase of the Project are described and assessed. The focus is specifically on credible accidents scenarios that have a reasonable possibility of occurrence, and for which the resulting environmental effects could be significant.

14.1 APPROACH

The general approach to assessing the potential environment effects of the selected accident, malfunction, or unplanned event scenarios involves:

- consideration of the potential event that could occur during the life of the Project;
- description of the Project planning and safeguards established to minimize the potential for such occurrences to happen;
- consideration of the contingency or emergency response procedures applicable to the event; and
- a determination of the significance of the potential residual environmental effects in the unlikely event that these accidents, malfunctions, or unplanned events do happen.

Criteria used for determining the significance of residual environmental effects with respect to accidents, malfunctions, and unplanned events generally relate to effects on the sustainability of biological and human environments. Where applicable, the significance definitions are the same as those for each applicable VC, presented earlier in this document.

14.2 IDENTIFICATION OF CREDIBLE ACCIDENTS, MALFUNCTIONS, OR UNPLANNED EVENTS

Based on the nature of the Project, knowledge of the environment within which the Project is located, as well as the experience of the Proponent, the following credible accidents, malfunctions, and unplanned events have been selected for consideration in this assessment and are described in greater detail in the following sections:

Electrical Hazard: The live high voltage wires and cables over land pose a risk of injury or death to individuals or wildlife through electrocution, or damage to equipment if contacted directly or indirectly. With the currently proposed mitigation to protect the cables in the marine environment (i.e., insulated with a layer of cross-linked polyethylene), and the fact that the ocean setting would dissipate any electrical current if the cables were damaged, there is virtually no potential for electrocution within the marine environment.

Vehicle or Vessel Collision: A vehicle collision (e.g., vehicle-to-object collision, vehicle-to-vehicle collision, or vehicle-to-human or animal collision) associated with land-based Project activities also has the potential to result in injury or death, or equipment damage. A vessel collision (e.g., vessel grounding,

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vessel-to-vessel collision, or vessel-to-marine mammal collision) associated with Project activities in the marine environment has the potential to result in injury or death, or equipment damage.

Hazardous Materials Spill: A spill of hazardous materials (e.g., fuel, petroleum products) have the potential to result in damage to the environment. A spill may result from equipment being used to construction the land-based components of the Project as well as to install the marine-based components. The submarine cables themselves will be insulated with a layer of cross-linked polyethylene instead of being oil-filled (as with some older marine cables like those formerly linking Prince Edward Island to New Brunswick) or nitrogen-filled (as with the existing cables linking the Fundy Isles to the mainland), and therefore there is no potential for a spill of hydrocarbons or other hazardous substances to occur as a result of a leak from the cables.

Unexploded Ordnance: Communication with the Department of National Defense and the Canadian Armed Forces has indicated there is a potential for unexploded ordnance to be present in the Bay of Fundy as a result of World War II practice and testing activities in the Pennfield area, in southwest New Brunswick. Accidental interaction with unexploded ordnance during installation or maintenance of the submarine cables has the potential to result in damage to equipment, or injury or death to individuals.

Erosion/Sediment Control Failure: Construction activities required for the Project will result in some ground disturbance on the land-based portion of the Project, and as a result there will likely be a requirement to install erosion and sediment control measures to protect adjacent surround lands and water from sedimentation. The failure of erosion and sediment control measures has the potential to result in a release of sediment into watercourses, wetlands, or the adjacent marine environment.

Fire: Equipment fire or a forest fire has the potential to result in injury to individuals and damage to equipment and infrastructure, as well as damage to adjacent terrestrial habitat and marine environment.

Accidental Release of HDD Drilling Fluids: The Project calls for the submarine cables to be installed at the shoreline portions of the proposed route via horizontal directional drilling (HDD), if feasible. The accidental release of drilling fluid during the HDD into the environment has the potential to resulting in the smothering of fish habitat (e.g., spawning grounds).

Based on the nature of the above credible events and the study team's knowledge of their potential to interact with the environment, the VCs with a reasonable potential to interact with these accidents, malfunctions, or unplanned events that could result in residual environmental effects are identified in Table 14.1.

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Table 14.1 Potential Interactions between Project Activities and Accidents, Malfunctions, or Unplanned Events

Accident, Malfunction, or Unplanned Event	Atmospheric Environment	Terrestrial Environment	Marine Environment	Water Resources	Socioeconomic Environment	Commercial, Recreational, and Aboriginal Fisheries	Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons
Electrical Hazard	-	✓	-	-	✓	-	-
Vehicle or Vessel Collision	-	✓	✓	-	✓	✓	✓
Hazardous Materials Spill	✓	✓	✓	✓	✓	✓	✓
Unexploded Ordnance	-	-	✓	-	✓	✓	✓
Erosion/Sediment Control Failure	-	✓	✓	-	-	-	-
Fire	✓	✓	✓	-	✓	-	-
Accidental Release of HDD Drilling Fluids	-	-	✓	✓	✓	✓	✓
Notes: ✓ = Potential interaction - = No interaction							

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14.3.1 Electrical Hazard

The risk of an electrical hazard has the potential to interact with terrestrial environment and socioeconomic environment.

Live high voltage conductors pose the risk of injury or death to individuals or wildlife if contacted directly or indirectly. Mitigation measures to minimize the risk of electrical injuries to those in or proximate to a power transmission corridor are not generally a requirement for land-based transmission, given the height of conductors. Downed conductors can allow for the potential interaction of live electrical cables with personnel or wildlife in the area. Unauthorized access to secure locations can also put individuals at risk of electrocution. Avifauna can also interact with high voltage conductors by landing on and touching energized conductors and grounded hardware at the cable riser stations and can become electrocuted in certain circumstances.

14.3.1.1 Risk Management and Mitigation

The following mitigation measures will be applied to reduce the probability of an electrical hazard and associated environmental effects.

- During the operation phase of the Project, Project components will be inspected periodically and repaired as required.
- Safe operating procedures will be established for all work activities, both during the construction and operation phases of the Project.
- NB Power's safety and environmental policies will be followed.
- Proper signage and public warning will be installed around project land-based components/facilities (e.g., "High Voltage").
- Access to the work site during construction and energizing activities will be limited to NB Power and their consultants and required contractor crews.
- Physical safeguards such as security fences surrounding facilities will be implemented.
- Access to facilities will be restricted to authorized personnel only.
- The use of appropriate down lighting will be incorporated around Project components (e.g., cable riser stations) to discourage vandalism and loitering.

14.3.1.2 Potential Residual Environmental Effects and their Significance

If an electrical hazard incident were to occur, the terrestrial environment and socioeconomic environment could be affected.

As the submarine cables will be buried in the nearshore environment (i.e., between the shore and the cable riser stations) and the cable riser stations will be fenced in, the probability of an electrical hazard incident is low because there is limited opportunity for individuals or wildlife to be exposed to them. Therefore, potential environment effects arising from electrical hazards on the terrestrial or socioeconomic environments are not anticipated to be substantive.

In consideration of the buried nature of the cables in areas accessible to the public and wildlife, and in light of the mitigation to be implemented, the residual environmental effects of an electrical hazard during all Project phases are rated not significant for all potentially affected VCs. This determination is made with a high level of confidence. There is the potential that a protected species or person could be harmed or even killed were they to come in contact with the energized electrical components of the Project, and this would represent a significant residual environmental effect; however, given the safeguards in place, this is a highly unlikely scenario. Consequently, a significant environmental effect arising from this possibility is also considered to be unlikely to occur.

14.3.2 Vehicle or Vessel Collision

The risk of a vehicle or vessel collision has the potential to interact with: the terrestrial environment; marine environment; socioeconomic environment; commercial, recreational, and Aboriginal fisheries; and current use of land and resources for traditional purposes by Aboriginal persons.

During the construction phase of the Project, various vehicles will be in motion around the Project site or in transit to and from the Project site. As a result, there is the potential for a vehicle collision to occur,

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including a vehicle-to-vehicle collision, vehicle-to-wildlife collision, vehicle-to-pedestrian collision, or vehicle collision with surrounding private property or Project infrastructure. If a vehicle collision were to occur, loss or damage to a vehicle, equipment, or Project infrastructure could affect the socioeconomic environment. Injury to humans or wildlife, or loss of life, could also occur. There is also potential for fire and hazardous materials to be released into the environment as a result of such collisions—these latter aspects are addressed in later sections of this chapter.

Additionally, during construction (for laying the marine cables) and operation (for periodic cable maintenance) of the Project, a number of marine vessels will be working in the PDA. There is potential for a vessel grounding, vessel-to-vessel collision, or vessel-to-marine wildlife collision to occur. A potential collision with wildlife includes a collision with marine mammals and sea turtles with the underside of a vessel, or the collision of a marine bird with a vessel due to attraction to vessel lighting.

14.3.2.1 Risk Management and Mitigation

The following mitigation measures will be applied to reduce the probability of a vehicle or vessel collision, or vessel interaction with marine wildlife, and associated environmental effects.

- Vehicles traveling to and from the work site will adhere to posted speed limits, weight restrictions, and highway signage, and adjust to driving conditions (e.g., fog).
- On vessels, deck lighting will be minimized whenever it is safe and practical to do so, and the use of unnecessary lighting will be avoided, to reduce the risk of attracting marine wildlife.
- Due to the nature of the work, submarine cable vessels will move slowly. Support vessels will operate at reduced speeds when possible, to reduce the risk of vessel-to-vessel collision and vessel collisions with marine wildlife.
- Safety zones will be identified around work areas.
- High speed vessel maneuvers are not to be conducted by any Project vessel during marine-based Project activities.
- Vessel-to-vessel and vessel-to-land communication systems will be in place and functioning.
- Vessel operators will adhere to all applicable Acts and Regulations administered by or in conjunction with Transport Canada, including the *Collision Regulations*.
- Communication and liaison with commercial and Aboriginal fishers will be ongoing during construction, as necessary
- Access routes will be identified prior to construction.
- Signage identifying areas as 'high risk' will be implemented for the land-based elements of the Project.
- Signage to delineate work areas will be implemented for the land-based elements of the Project.
- A communication plan for engagement with communities affected by traffic will be developed and implemented, if necessary.
- Project-related equipment will follow traffic regulations and posted speed limits for the land-based elements of the Project.
- Speed in construction areas will be limited based on site conditions.

14.3.2.2 Potential Residual Environmental Effects and their Significance

A vehicle or vessel collision (either with other vessels or marine wildlife) has the potential to affect components of: the terrestrial environment; marine environment; socioeconomic environment;

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commercial, recreational, and Aboriginal fisheries; and current use of land and resources for traditional purposes by Aboriginal persons.

As construction and operation activities will be limited in duration, the probability of a vessel or vehicle collision is low. Therefore, potential environment effects arising from a vehicle collision on the terrestrial or socioeconomic environments are not anticipated to be substantive.

Further, due to the dispersed nature of marine wildlife populations, the short duration of the construction phase, and the limited number and slow speeds of vessels involved, the probability of a ship strike involving a marine species is considered low. For the same reasons, a vessel grounding or vessel-to-vessel collision is unlikely to occur during these Project activities. Therefore, potential environment effects arising from a vessel collision on the marine environment, commercial, recreational, and Aboriginal fisheries and current use of land and resources for traditional purposes by Aboriginal persons are not anticipated to be substantive.

In consideration of the mitigation to be implemented, the residual environmental effects of a vehicle or vessel collision during all Project phases are rated not significant for all potentially affected VCs. This determination is made with a high level of confidence. There is the potential that a protected species or person to be harmed in the event a vehicle or vessel collision, and this would represent a significant environmental effect; however, given the proposed mitigation, this is an unlikely scenario. Consequently, a significant environmental effect arising from this possibility is also considered to be unlikely to occur.

14.3.3 Hazardous Materials Spill

The risk of a hazardous materials spill has the potential to interact with: the atmospheric environment; terrestrial environment; marine environment; water resources; socioeconomic environment; commercial, recreational, and Aboriginal fisheries; and current use of land and resources for traditional purposes by Aboriginal persons.

A hazardous material spill can occur both in the terrestrial and marine environments. These types of materials will be most commonly used throughout the construction phase. However, an accidental spill could occur during all Project phases, including maintenance activities, resulting in a release of the hazardous substance into the environment.

For Project activities occurring on land, a probable scenario for a land-based hazardous material spill would be an accidental release during a transfer (e.g., fueling a vehicle), rupture of a hydraulic line, or a vehicle accident. Most land-based spills will be relatively small (e.g., several litres or less) as a result of the relatively small number of, and small volumes of such materials in, land-based vehicles and equipment being used for the Project. Given the expected limited spill volume, spill scenarios, and anticipated effectiveness of response plans (including spill containment), it is assumed that any spill that might occur would not likely result in a release to adjacent properties. The worst probable case for a land-based hazardous material spill would likely be a rupture of a hydraulic line near a wetland or watercourse, or the death of a SARA listed species as a result of direct contact with hazardous materials.

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For Project activities carried out in the marine environment, diesel engines will be used on the cable laying vessel as well as any associated support vessels. A hazardous materials spill in the marine environment has the potential to occur primarily due one of the following scenarios:

- hydraulic spill onboard the cable laying or support vessels, or a small on deck spill;
- fuel spillage during refueling of support vessels; and/or
- a marine accident (i.e., collision, grounding of the cable laying or support vessels) involving a fuel spill.

14.3.3.1 Risk Management and Mitigation

The following mitigation measures will be applied to reduce the probability of a hazardous materials spill and associated environmental effects.

- Routine preventative maintenance and inspection of hydraulic equipment is to be undertaken to avoid a hazardous material release.
- Hazardous materials will not be stored in large quantities on vessels or onshore, and secondary containment (e.g., drip trays) will be used in areas of storage and transfer.
- Relevant Project staff will be trained in the appropriate and safe handling of hazardous materials and fuels, in the prevention of spills as well as the timely and efficient response to a hazardous material spill.
- Project vehicles are to be equipped with appropriately sized spill kits equipped to handle the quantity and type(s) of hazardous materials that are onsite.
- Vessels are to be equipped with appropriately sized spill kits equipped to handle the quantity and type(s) of hazardous materials onboard (excluding fuel). Vessel fueling stations will be equipped to handle fuel spills.
- Communication systems will be in place and functioning.
- Any spill near or in water will immediately be reported to the Canadian Coast Guard Environmental Response number (1-800-565-1633, available 24 hours). Marine incidents may be reported by contacting a Marine Communications and Traffic Services Centre (1-800-686-8676) or by calling VHF Channel 16.
- Vessel operators must adhere to applicable Acts and Regulations administered by or in conjunction with Transport Canada.
- Storage of all dangerous goods will comply with the Workplace Hazardous Materials Information System (WHMIS) requirements.
- Transportation of dangerous goods will comply with Transport Canada's *Transportation of Dangerous Goods Act*.

14.3.3.2 Potential Residual Environmental Effects and their Significance

Accidental releases of hazardous materials have the potential to affect components of: the atmospheric environment; water resources; terrestrial environment; marine environment; socioeconomic environment; commercial, recreational, and Aboriginal fisheries; and current use of land and resources for traditional purposes by Aboriginal persons.

Depending on the quantity and type of material released and the location of the spill, a hazardous material spill could potentially seep into groundwater system, runoff into surrounding environments and affect water resources, and the terrestrial and marine environments. Remediation efforts may affect the

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socioeconomic environment (e.g., demand for emergency services), as well as the current use of land and resources for traditional purposes by Aboriginal persons. Given the expected limited spill volume, the low likelihood of large spill scenarios, and anticipated effectiveness of response plans (including spill containment), it is not likely that these spills would result in a release to adjacent properties.

In the unlikely scenario of a hazardous material being spilled and then reaching a watercourse or the marine environment, and/or resulting in a protected species being harmed, that could represent a significant environmental effect. A significant environmental effect arising from these possibilities, however, is considered highly unlikely as immediate measures will be taken to stop the spill and isolate/contain the affected area as soon as possible. An assessment of the affected area will be completed and remediation will be undertaken as required.

The Project will be developed with careful planning and execution to avoid a hazardous materials spill. Equipment will be maintained according to manufacturers' specifications, material transfers will be executed in safe areas with suitable spill prevention and response materials, and spills that might occur will be quickly responded to and reported in such a manner as to prevent off-site movement of the spilled material and associated environmental effects. Therefore, potential environment effects arising from a hazardous material spill on the terrestrial, marine, or socioeconomic environments are not anticipated to be substantive. With such measures, environmental effects to commercial, recreational, and Aboriginal fisheries and current use of land and resources for traditional purposes by Aboriginal persons are also unlikely to occur.

In consideration of the mitigation to be implemented and the small volumes of hazardous materials potentially used during the Project, the residual environmental effects of a hazardous material spill during all Project phases are rated not significant for all potentially affected VCs, with a high level of confidence. If a large spill of hazardous materials were to occur, it could potentially result in temporary changes to marine wildlife, which could be considered a significant environmental effect; however, in light of the nature of the construction activities and the safeguards and mitigation to be in place for the Project, this is an extremely unlikely scenario. Therefore, a significant environmental effect arising from this possibility is considered to be unlikely to occur.

14.3.4 Unexploded Ordnance

Interaction with an unexploded ordnance has the potential to affect: the marine environment; socioeconomic environment; commercial, recreational, and Aboriginal fisheries; and current use of land and resources for traditional purposes by Aboriginal persons.

During geophysical surveys conducted in the area, Canadian Seabed Research detected 31 magnetic anomalies within and adjacent to the corridor (CSR 2017). These anomalies have the potential to be unexploded ordnance, and the Bay of Fundy is a confirmed dumping area by the Department of National Defence (DND). Unexploded ordnance (UXOs) includes explosive weapons (e.g., bombs, bullets, shells, grenades, land mines, naval mines) which have been primed, but did not explode when they were deployed and still pose a risk of detonation. The major issue with UXOs is that their detonators degrade over time, making them more sensitive to disturbance and more dangerous to handle. UXOs can be found in both the terrestrial and marine environments and thus can pose a risk to many aspects of the

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Project during the construction phase, particularly in the marine environment where ordnance has historically been disposed. Accidents involving UXOs could result in the damage to a vessel resulting in loss of life, death of wildlife species, damage to the submarine cable, or the damage/loss of a remote operated vehicle ROV and cable laying equipment during the submarine cable installation process.

14.3.4.1 Risk Management and Mitigation

The following mitigation measures will be applied to reduce the probability of interactions with UXOs and associated environmental effects:

- Pre-construction surveys by the cable installation contractor will provide detailed information about the cable route.
- The DND UXO database will be consulted when the cable route has been finalized; DND will advise if a site-specific risk assessment is required.
- The PSEMP will include emergency response protocols and worker training requirements.

14.3.4.2 Potential Residual Environmental Effects and their Significance

An explosion resulting from a detonation of an UXO has the potential to affect components of the marine environment, socioeconomic environment, commercial, recreational, and Aboriginal fisheries, and current use of land and resources for traditional purposes by Aboriginal persons.

In the case of the detonation of UXO, a worker injury or fatality or the death of marine wildlife could result, and if so, this could be a significant environmental effect; however, in light of the mitigation to be put in place as well as the relatively remote potential for the Project to encounter UXO, this scenario is extremely unlikely. Consultation with DND to determine the location of known UXOs in relation to the submarine cable routes will assist in carrying out construction activities in a manner that does not interact with UXOs, thereby limiting environmental effects on the marine environment, socioeconomic environment, commercial, recreational, and Aboriginal fisheries, and current use of land and resources for traditional purposes by Aboriginal persons. Therefore, a significant environmental effect arising from this possibility is considered to be unlikely to occur.

In consideration of the mitigation to be implemented, the residual environmental effects of an unexploded ordnance during all Project phases are rated not significant for all potentially affected VCs. It is expected that an encounter with an UXO is not likely to occur, given the implementation of proposed mitigation.

14.3.5 Erosion/Sediment Control Failure

A failure of erosion or sediment control measures has the potential to interact with the terrestrial and marine environments.

A failure of Project-related erosion and sedimentation control devices can occur during construction activities due to the exposure of soil from clearing or excavation of land and failure of planned controls. Failure of control measures could result in the unintended erosion of land and/or the release of silt into the surrounding environment. An accidental release of sediment or sediment-laden water may affect fish, wildlife, and vegetation both within and outside the PDA.

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No erosion or sediment controls are required during operation.

14.3.5.1 Risk Management and Mitigation

For the implementation of erosion and sediment control measures, the focus is on proper installation, maintenance, and inspection to avoid the potential for failure. Erosion prevention measures are to be implemented during construction, if necessary, to reduce or eliminate the likelihood of land erosion and resulting sedimentation of the surrounding environment.

The following mitigation measures will be applied to reduce the probability of interactions with erosion/sediment control failure and associated environmental effects.

- Develop and implement an erosion and sediment control plan for all land-based areas where construction activities may expose erodible soils.
- Minimize areas of exposed soils on site to only those absolutely necessary to facilitate construction activities.
- Re-vegetate or re-seed exposed areas with native seed mixes following the completion of construction activities in each location.
- Implement appropriate erosion and sediment control measures in all exposed areas until vegetation is established.
- Install silt fencing along contours of exposed land to capture sediment contained in runoff.
- Erosion and sediment structures will be monitored, inspected periodically, maintained, and repaired as warranted until disturbed areas have been re-vegetated and stabilized.

14.3.5.2 Potential Residual Environmental Effects and their Significance

If a failure of an erosion prevention and/or sediment control measure were to occur, the terrestrial and marine environments may be affected as a failure could result in the unintended erosion of land or the release of silt into the surrounding environment.

The implementation of erosion and sediment control structures is a standard and mature practice that has been demonstrated to result in effective environmental protection as long as such structures are properly designed, installed, and maintained. NB Power has extensive experience in the proper design, implementation, and maintenance of such structures. Effective implementation of such measures with its contractors and suppliers is achieved through contractual provisions, training, and inspection and monitoring during construction activities. While it is possible that a failure of such structures could occur, particularly during or after extreme rainfall events, inspection and maintenance activities in place following such events would quickly detect any failures so that corrective measures can be implemented upon discovery with little environmental effect.

In consideration of the mitigation to be implemented and the monitoring, inspection, and repairs measures to be undertaken, the residual environmental effects of an erosion or sediment control failure on the marine environment or the terrestrial environment during all Project phases are rated not significant. This determination is made with a high level of confidence given the known and proven techniques and response procedures to be implemented to prevent or respond to an erosion and sediment control failure. While there is potential that a protected aquatic species could be harmed and potentially represent a

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significant environmental effect, given the safe guards in place, this is an unlikely scenario and a significant environmental effect arising from this possibility is considered to be unlikely to occur.

14.3.6 Fire

A fire has the potential to interact with the atmospheric environment, terrestrial environment, marine environment, and socioeconomic environment. A fire could result in damage to equipment and property, damage to land and vegetation, injury or mortality to humans or wildlife, release of chemical laden water into the surrounding environment, and smoke emissions.

There is potential that fire could occur during construction or operation of Project components; however, the probability is considered low. A fire affecting Project components would likely involve Project infrastructure (e.g., cable riser stations) or a vehicle, a vessel or other heavy equipment used during construction activities.

14.3.6.1 Risk Management and Mitigation

The following mitigation measures will be applied to reduce the probability of interactions with an accidental fire and associated environmental effects.

- Project-related marine vessels will be equipped with fire detection and suppression equipment in accordance with the *Transport Canada Fire Detection and Extinguishing Equipment Regulations (2007)* made under the *Canada Shipping Act (2001)*.
- Project staff working on vessels will be trained in marine fire suppression.
- Vessel-to-vessel and vessel-to-land communication systems will be in place and functioning.
- Vessel operators will be required to provide appropriate certification to operate including fire suppression plans.
- Vessel operators must adhere to applicable Acts and Regulations administered by or in conjunction with Transport Canada.
- Land-based vehicles and equipment on-site will be equipped with fire extinguishers sized and rated as appropriate.
- Project staff will be trained in the use of fire extinguishers and will be familiar with the location of the nearest extinguisher.
- Vehicles are to avoid parking in areas with long grass to minimize the risk of fire caused by the heated vehicle undercarriage, and vehicles will not be allowed to idle when not in use (except for periods of extreme cold weather).
- Waste that may be soaked with flammable materials (i.e., oily rags) will be stored in appropriate containers, kept away from flammable materials, and disposed of in an appropriate and timely manner.
- NB Power will monitor forest fire conditions during construction and implement additional measures as warranted, if conditions become excessively dry.

14.3.6.2 Potential Residual Environmental Effects and their Significance

As the majority of the construction and maintenance equipment within the marine environment will be submerged, the primary risk of fire is on-board a support vessel and for the land-based components of the Project. If fire were to occur, there is potential for an environmental effect on the atmospheric environment, terrestrial environment, marine environment, and socioeconomic environment through smoke and destruction of habitats and resulting runoff, and any loss of infrastructure or equipment may affect the socioeconomic environment.

On land, as the land-based portion of the PDA is relatively small and will be cleared of vegetation, and since there are no large wooded areas located in the vicinity, if a fire were to occur it is expected to be small and easily extinguished, resulting in minimal smoke generation and damage to infrastructure.

In the unlikely event that a land-based fire was widespread, there is potential to result in wildlife mortality or destruction of wildlife habitats, which could be considered a significant environmental effect if a species at risk were to be affected. However, with planned mitigation and response procedures, the occurrence of a widespread fire that affects species at risk is unlikely.

In consideration of planned mitigation and response procedures, the residual environmental effects of a fire during all phases of the Project are rated not significant for all potentially affected VCs. This determination is made with a high level of confidence given the known and proven techniques and response procedures to be implemented to respond to a fire. There is the potential for wildlife mortality or destruction of sensitive habitats to occur in the event of a fire that could represent a significant environmental effect, but given the safeguards in place this is an unlikely scenario and a significant environmental effect arising from this possibility is considered to be unlikely to occur.

14.3.7 Accidental Release of HDD Drilling Fluid

The accidental release of HDD drilling fluid has the potential to interact with the marine environment, water resources, socioeconomic environment, commercial, recreational, and Aboriginal fisheries, and current use of land and resources for traditional purposes by Aboriginal persons.

The contractor believes that drilling fluid will not be necessary to conduct the drilling process, however, in the event that drilling fluids are used, the drilling fluid will be water-based with bentonite added to create the desired level of viscosity for drill cuttings suspension and removal. If drilling fluids are required for the HDD, it is anticipated that a small release will occur in the marine environment when the drill head emerges through the seabed. This release is anticipated to be relatively small and not expected to have widespread environmental effects within the marine environment. In addition, accidental release is not expected to result in adverse environmental effects to drinking water wells in the vicinity of the Project; however, there will be a homeowner incident reporting procedure in place for complaints regarding private wells. This assessment of an accidental release of HDD drilling fluid is for a large release of drilling fluid as a result of a release of drilling fluid along the drill route as a result of a fissure or crack in subsurface soils or rock.

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One of the risks associated with HDD is the accidental escape of drilling fluid into the environment as a result of a spill, tunnel collapse, or a release of drilling fluid. A release of a significant quantity of drilling fluid into the marine environment could result in the smothering of spawning grounds.

14.3.7.1 Risk Management and Mitigation

The following Project design and mitigation measures will be applied to reduce the probability of interactions with an accidental release of HDD drilling fluid and associated environmental effects.

- Geotechnical assessments will be conducted to inform HDD borehole design.
- Specialized trucks will be used at the entry borehole to vacuum the drilling fluid from the drilled hole, thereby preventing a release of drilling fluid into the marine environment.
- An emergency response plan will be part of the PSEMP, and will outline the protocol to monitor, contain, and clean-up HDD drilling fluid releases.
- The conditions laid out in the DFO Statement 'High-Pressure Directional Drilling' (DFO 2007) to protect fish and fish habitat, will be followed.
- Drilling fluid returns will be monitored during drilling to detect for leaks and mitigation will be implemented to manage this, such as increasing the viscosity of the drilling fluid as warranted.

14.3.7.2 Potential Residual Environmental Effects and their Significance

If a significant release of HDD fluid was released due to an accidental release of drilling fluid, there is potential for an environmental effect on the marine environment, socioeconomic environment, commercial, recreational, and Aboriginal fisheries, and current use of land and resources for traditional purposes by Aboriginal persons.

While a release of a significant amount of drilling fluid into the marine setting, potentially smothering benthic organisms (including fish eggs and larvae), could occur, such a scenario would be localized and temporary and would not affect fish on a population level or substantially interfere with commercial fishing activities. Further, in light of the mitigation including the monitoring of drilling fluid returns, this scenario is extremely unlikely. Therefore, a significant environmental effect arising from this possibility is considered to be unlikely.

In consideration of planned design and response procedures, the residual environmental effects of an accidental release of HDD drilling fluid during all Project phases are considered unlikely and therefore, are rated not significant for all potentially affected VCs. This determination is made with a high level of confidence given the known and proven techniques and response procedures to be implemented to respond to an accidental event. While there is the potential for the destruction of sensitive habitats, which could affect a species at risk and thus represent a significant environmental effect, given the mitigation and safeguards in place this is an unlikely scenario and a significant environmental effect arising from this possibility is considered to be unlikely to occur.

14.4 SUMMARY AND DETERMINATION OF SIGNIFICANCE

The potential for accidents, malfunctions, or unplanned events to occur will be considered during planning for the Project. These potential events will be taken into account during Project planning and measures will be developed and implemented such that their potential is reduced. Contingency and emergency response plans will also be developed in order to minimize environmental effects. Compliance with design codes and standards and implementation of mitigation measures summarized in this report will greatly reduce the potential for accidents, malfunctions, and unplanned events.

NB Power will also develop a PSEMP and Health and Safety Plan for the management and prevention of such accidents, as well as develop effective response mechanisms for accidents, malfunctions, or unplanned events.

Given the nature of the Project and the credible accident and malfunction scenarios, their low likelihood of occurrence, and proposed mitigation and response planning, the residual environmental effects of all identified Project-related accidents, malfunctions, and unplanned events on the atmospheric environment, terrestrial environment, marine environment, water resources, socioeconomic environment, commercial, recreational, and Aboriginal fisheries, and current use of land and resources for traditional purposes by Aboriginal persons during all phases of the Project are rated not significant, with a high degree of confidence.