

5.0 Summary of Proposed Mitigation

Highlighted below is an overview for those ecosystem components identified in the previous section as having potential interaction with the proposed Project.

5.1 Bird Habitat, Migratory Birds and Bird Species at Risk

Suitable breeding habitat is present on site; however, this is similar to habitat present abundantly throughout New Brunswick. The bird species within the study area are quite variable. One COSEWIC listed species, the Canada Warbler (*Cardellina canadensis*) was identified during the breeding bird survey completed at the Project site; however, no species of provincial concern were identified. Suitable breeding habitat for the Canada Warbler is present on the Project site. Additionally migratory birds returning to Canada for the breeding season (typically May 1 - August 31 for most species) may utilize habitat present on-site. Migratory birds and their nests and habitat are protected under the federal *Migratory Birds Convention Act*. The clearing of vegetation during construction may damage habitat resulting in habitat fragmentation or disruption of breeding birds and species at risk.

Although suitable breeding habitat for the Canada Warbler is present on Project site, this is similar to habitat present in abundance in New Brunswick. As well, the Canada Warbler is a relatively widespread breeder across New Brunswick. Potential Canada Warbler habitat will remain on site as each lot will be a minimum of 4,000 m², of which only a portion will be cleared. The remaining portions of the lots will remain as green space and potential bird habitat.

Thirty-nine additional bird species were observed during the breeding bird survey (Appendix G). All other bird species have an NBDNR Rank of Secure. The proposed development is not expected to negatively affect the other bird species as abundant suitable habitat is present in adjoining and nearby areas.

The mapped wetland to the northeast of PID 75516740 was identified as a shallow water wetland being particularly important for waterfowl and wetland bird species.

Birds can potentially be affected by the following activities that would be completed on for the Project area: habitat removal, noise from construction activities in the Project area and in the surrounding undeveloped land, attraction to cleared areas of stockpiled areas and accidental spills.

5.1.1 Construction Phase

To ensure that breeding birds are not disrupted, vegetation clearing will be completed outside of the typical bird-breeding season (May 1 to August 31). The areas to be cleared will be clearly marked to prevent unnecessary clearing. In the event that vegetation clearing must take place within the bird-breeding season (May 1 to August 31), a non-intrusive nesting survey of the Project area will be conducted by a bird expert. If a nesting bird species is encountered, contact

with and disturbance of the species and its habitat will be avoided. A vegetated buffer will be established around any nests encountered to protect them from disturbance and work in that area will be avoided until after the birds have fledged or vacated.

Additionally, some bird species will nest in unattended / un-vegetated soil piles. If soil piles are to be left unattended / un-vegetated, the piles will be covered to avoid potential nesting. If a nesting bird is discovered, the nest site will be protected with silt fencing and a buffer until the bird has vacated the nest, as determined by a bird expert.

It is also possible that food scraps and / or garbage left on-site during the construction phase could increase predation on eggs and chicks. Food wastes and other garbage will be stored in large containers to prevent scattering and potential attraction of predatory species and other wildlife.

To mitigate noise impacts during construction all equipment will be kept in good working order and maintained regularly. Additionally, machinery will be muffled, if possible, to further reduce noise impacts.

As the shallow water wetland is important habitat for waterfowl and wetland bird species and the wetland is provincially mapped, a 30 m buffer will be applied to mitigate the impacts to this area from the development in the Project area.

5.1.2 Operational Phase

Based on minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered low. Although the above mitigation ensures that breeding and nesting birds will not be disturbed during construction, development of the area will result in permanent habitat loss that could affect migratory birds and bird species at risk. However, habitat identified within the Project area is also present within currently undeveloped surrounding areas. Additionally, each lot will be a minimum of 4,000 m² of which only a portion will be developed. The remaining portions of the lots will remain as green space and will remain as potential bird habitat. Furthermore, the mapped regulated wetlands and their 30 metre buffers as well as the hydro-line Easement will remain undeveloped. These undeveloped areas provide similar habitat that could be used by returning migratory and breeding birds.

5.2 Terrestrial Wildlife

The clearing of vegetation and site work during construction will damage / destroy wildlife habitat that could result in habitat fragmentation or disruption of wildlife. However, based on observations made during the site visit completed by a GEMTEC Environmental Biologist, the Project site does not appear to provide a corridor for wildlife as minimal signs of wildlife were observed on the site, with the exception of beavers. In addition, similar habitat types are present in the surrounding undeveloped areas to the north, south and west of the Project.

Extensive beaver activity was present across the Project area. It is likely that the proposed development will result in the draining of beaver ponds and the relocation of beaver animals. Beaver habitat is present throughout New Brunswick and in the surrounding areas of the Project. The beaver ponds / wetlands will be drained in accordance with a permit to be obtained by the Proponent from NBDNR to ensure neighbouring areas are not flooded. It is the responsibility of the Proponent to apply for required NBDNR permits.

5.2.1 Construction Phase

The construction area will be clearly marked to prevent impacts on wildlife in adjacent areas / properties. No person will approach wildlife encountered on the site. Garbage and / or food scraps left on site that could attract wildlife increasing the chance of a wildlife encounter will be stored in large containers to prevent scattering and attracting wildlife.

To mitigate noise impacts during construction all equipment will be kept in good working order and maintained regularly. Additionally, machinery will be muffled, if possible, to further reduce noise impacts.

5.2.2 Operational Phase

Habitat identified within the Project area is also present within currently undeveloped surrounding areas. Additionally, two large Crown Land areas (zoned Resource and Conservation, Regional Service Commission 11) are located approximately 0.75 km to the north and 6 km to the south (Appendix C). Furthermore green space has been incorporated in the subdivision layout. Each lot will be a minimum of 4,000 m² of which only a portion will be developed. The remaining portions of the lots will remain as green space and potential habitat. These undeveloped areas provide similar habitat that could be used by terrestrial wildlife.

Based on the minimal presence of wildlife on-site and the proposed mitigation measures detailed above as well as the limited extent, duration and magnitude, the potential residual effects are considered not likely significant.

5.3 Natural Vegetation Cover and Vegetation Communities

5.3.1 Construction Phase

The proposed Project activities will result in the clearing of vegetation as the Project area is wooded mixed forest. Additional road access as well as the portions of lots that will be developed will need to be cleared in the future. This will happen in phases as construction proceeds. The vegetation clearing areas will be clearly marked to prevent unnecessary clearing and only those areas necessary for road construction and lot development will be cleared and grubbed. Stabilization and landscaping of the disturbed areas will be done concurrently with construction as appropriate.

Two species of conservation concern, Floating Crystalwort (*Riccia fluitans*) and Large Purple Fringed Orchis (*Platanthera grandiflora*) were observed during the rare plant survey. Floating Crystalwort is ranked S2S4 (Rare in province / Widespread, common and apparently secure in province). Large Purple Fringed Orchis is ranked S3 (Uncommon in province). The Floating Crystalwort was found in the large, mapped wetlands in the eastern portion of PID 75516740, this area is to remain unaltered as green space. Thirty-five stems of Large Purple-fringe Orchis were observed on Project PIDs 75064287 and 75254433, and the field botanist (Mr. Gart Bishop) anticipated that there are more specimens throughout this area of the Project. It is anticipated that the clearing may decrease the population, but may not completely eliminate it allowing for possible regeneration following the construction disturbance.

Revegetation and landscaping activities will take place post- construction. It will be ensured that plants species used in revegetation are not invasive. Ideally a mix of plants species native to the area will be used. Construction equipment should be inspected prior to, during and immediately following construction in areas known to support Purple Loosestrife in order to detect plant matter attached to the machinery. Washing of equipment with a pressure washer prior to transport to another construction site will be performed.

At the present time the Proponent anticipates that land and home packages will be sold (i.e., all land disturbance will be completed prior to the sale) as well as un-cleared, vacant lots (i.e., land disturbance will be completed following the sale of the property).

5.3.2 Operational Phase

The loss of natural vegetation cover is unavoidable with development and will occur within the Project area. The vegetation community present within the Project area extends beyond the proposed development and these areas will remain undisturbed. Based on the extensiveness of the vegetation community present within the Project area and surrounding areas and the proposed mitigation measures detailed above, the potential residual effects are considered not likely significant.

5.4 Species at Risk – Wood Turtle

In addition to the bird and plant species at risk addressed in Sections 5.1 and 5.2, ACCDC predictive range mapping (2016) indicates that the Wood Turtle (*Glyptemys insculpta*), which is protected under the federal *Species at Risk Act*, could be present in the area. The Wood Turtle utilizes stream and river habitats and although no watercourses are present within the Project area to be developed, an unnamed tributary to the Little Waasis Stream is located within the designated green space on the northeastern portion of the Project area on PID 75516740. Wood Turtles can wander up to 300 metres from their stream habitat during summer months (COSEWIC 2011). Therefore, if Wood Turtles are present within the neighbouring stream habitat, they could be present within the Project area during the summer months. However, it is unlikely as the Wood Turtle prefers rivers and streams with sand to gravel bottoms and the

substrate of unnamed tributary of the Little Waasis Stream within the green space is a wetland and is vegetated and mucky.

5.4.1 Construction Phase

Vegetation clearing will not occur within the 30 metre buffer of the mapped wetland and will be conducted outside of the nesting season. In the event that a Wood Turtle is encountered, the proponent will follow the protection and mitigation measures outlined below.

- Install silt fencing for work areas within the vicinity of the 30 metre buffer of the mapped wetland / watercourse to minimize the risk of a Wood Turtle entering the work area.
- If a Wood Turtle is encountered in the Project area, relocate the turtle in the same direction of travel outside of the construction area. Turtles that are nesting **cannot** be moved.
- Report potential Wood Turtle nesting activity to the NBDNR, Species at Risk Program (506-453-3826), and suspend work in these areas until a method to proceed has been approved by the NBDNR.

5.4.2 Operational Phase

Based on minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered low. Additionally, the presence of human activity in the area upon development will likely deter wildlife frequenting the area.

5.5 Soils and Geology

5.5.1 Construction Phase

The Project will involve the grading of existing soil. In addition, the removal of soil from the Project area and the placement of clean fill soil in the Project area, may be required. It will be the Proponents responsibility to hire a contractor to supply clean fill as required.

5.5.2 Operational Phase

Potential residual effects are considered not likely significant due to the limited extent, duration, magnitude and reversibility of the proposed work.

5.6 Erosion

5.6.1 Construction Phase

Erosion could occur in disturbed areas and from stockpiles during the construction phase. To mitigate this potential effect, clearing of existing vegetation will be kept to a minimum. Any disturbed areas with the potential to erode will be stabilized using standard construction measures. These measures may include, but are not limited to, straw bales, check dams, silt

fencing and sand bagging. Erosion control measures will be inspected daily, especially prior to and following a heavy precipitation event to ensure that they are functioning properly and are maintained and/or replaced as required. Once construction is completed, the area disturbed by the construction activities will be stabilized. Erosion control measures will be left in place until all disturbed areas have been stabilized. Banks will be stabilized and revegetated after construction. It will be ensured that plants species used in revegetation are not invasive. Ideally a mix of plants species native to the area will be used.

5.6.2 Operational Phase

Based on the proposed mitigation measures, the potential residual effects are considered not likely significant.

5.7 Air Quality

5.7.1 Construction Phase

The proposed Project could temporarily impact local air quality during the construction phase. The amount of particulates and dust in the air in the vicinity of the proposed Project area may be increased during the construction phase. This increase will be due to the equipment used during construction for road grading and disturbance of overburden materials. The amount of greenhouse gases and other air emissions will also be increased as a result of the construction equipment and the increased truck traffic.

To mitigate air quality impacts, standard dust control measures will be taken. These measures may include minimizing activities that generate fugitive dust during periods of high winds and using water as a dust suppressant. Dry materials and rubbish will be covered or wetted down to prevent blowing dust or debris. Should the use of other dust suppressants such as calcium chloride or magnesium chloride be required, they will be used in accordance with guidance offered in the Environment Canada report entitled, *Best Practices for the Use and Storage of Chloride- Based Dust Suppressants*.

Additionally, equipment will be kept in good working condition and equipment idling time will be minimized where possible to decrease greenhouse gas emissions. The proponent will comply with all applicable air quality regulations and pollution control devices will be implemented when possible. Furthermore, increased dust and air emissions will be temporary and will return to normal levels once construction has been completed.

5.7.2 Operational Phase

Based on the minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered not likely significant.

5.8 Soil and Water Quality

5.8.1 Construction Phase

There will be no fuel storage tanks present on-site during construction; however, contaminants may be released into water and soil through spills of fuels and lubricants from equipment during the construction phase. To minimize potential impacts, all equipment will be kept in good working condition and inspected daily for leaks. Vehicles and equipment found to be leaking will be removed from the site until they are properly repaired. Maintenance and fueling of equipment, if required, will be performed at appropriate locations off-site.

A spill contingency plan will be put in place to respond to an emergency situation and will be detailed in an Environmental Protection Plan to be prepared by the Proponent. It will include at a minimum:

- Information related to refueling and maintenance activities. That is, these activities will take place on level terrain and at least 30 meters from environmentally sensitive areas (i.e., regulated wetlands and the Little Waasis Stream).
- Identifying the material involved and refer to the Material Safety Data Sheet (MSDS).
- Stopping the flow of the product being spilled, if safe to do so, taking precautions to avoid personal injury.
- Controlling and containing the spilled product promptly using a spill kit. Contaminated materials and soils shall be disposed of at an approved facility. Spill kits will be placed on each piece of machinery to mitigate potential petroleum hydrocarbon spills.
- Recording the details of the spill in a spill form including: (a) Name and contact information of the person reporting the spill; (b) Date and time of spill; (c) Type and approximate amount of product spilled; (d) Location of spill or leak; (e) Source of spill or leak; (f) Type of accident; (g) Weather conditions; and (h) Status of the spill (ongoing or contained, cleanup efforts).
- Contact the Construction Manager, who will report the spill to the New Brunswick Department of Environment and Local Government at the 24 hour environmental emergencies reporting system and/or the Coast Guard Environmental Emergency number.
- The contaminated soil will be removed for disposal at an approved disposal facility. Solid waste (including oil containers and packaging from construction materials) and construction waste (e.g., concrete, wood and steel) will be disposed of at an approved site.
- The requirement for Water Course and Wetland Alteration permits (WAWA) will be required for work conducted within 30 m of watercourses and mapped regulated wetlands.

Additionally, spill kits will be kept on site. Any stationary equipment such as generators will have pads to capture and prevent the leakage of fluids into the environment. All spills will be cleaned up at the time of the spill and will not be left unattended. The Contractor(s) will report the spill in accordance with applicable permits. Emergency response plans will be put into place and implemented in the event of a chemical release to the environment. Remediation will be carried out to meet provincial and federal clean-up requirements. All contractors and site operators will be required to take precautions to prevent leaks from equipment at all times.

Water quality of the mapped wetlands and the unnamed tributary of the Little Waasis Stream located on the site could also be impacted by erosion and / or sedimentation. Soil / sediment erosion could occur in the disturbed areas and from fill stockpiles during the construction phase or due to lack of stabilization of soil once construction is complete. A site-specific sediment and erosion control plan will be developed prior to commencement of work.

Any disturbed areas with the potential to erode will be stabilized using standard construction measures. These measures may include, but are not limited to, rip rap, filter fabric, gravel, wood chips, mulch, straw bales, check dams, silt fencing, and sand bagging. Erosion/sediment control measures will be inspected daily, especially following a heavy precipitation event to ensure that they are functioning properly and are maintained and/or replaced as required. Once construction is completed, the area disturbed by the construction activities will be stabilized. Erosion control measures will be left in place until all disturbed areas have been stabilized. It is the Proponent's responsibility to ensure a stormwater management is submitted to NBDELG for approval prior to construction. Stormwater will be dealt with on the Site.

To prevent runoff of sediments and soil into nearby mapped, regulated wetlands and the Little Waasis Stream, wherever possible construction activities such as clearing, grubbing and excavation will be completed to avoid heavy rainfall events. In addition, the amount of time and the area of exposed soil will be minimized to avoid runoff of sediments and soil. In the event that disturbed areas must be left for longer periods of time, they will be covered with a thin layer of brush or slash to prevent erosion.

A portion of the mapped wetland on PID 75064287 and 75254433 will be infilled to construct a roadway. Destruction of this wetland is unavoidable as it is located along Wilsey Road and is the only Site access to the properties in this area. It is therefore not possible to avoid the wetland in this area. If the wetland was avoided, the Proponent would not be able to develop these PIDs.

A Watercourse and Wetland Alteration (WAWA) permit will be obtained prior to work being completed. Additionally, a 2:1 compensation plan (consistent with those proposed for other projects in Atlantic Canada) for the wetland habitat will be developed and approved by NBDELG prior to construction.

5.8.2 Operational Phase

Based on the minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered not likely significant. All regulated watercourse and wetland areas will be the responsibility of the homeowner and all future alterations will be subject to provincial and / or federal approval.

5.9 Archaeological Sites

5.9.1 Construction Phase

Earthwork and associated activities have the potential to disturb archaeological resources. Mitigation measures recommended include placing a buffer around each provincially mapped wetland to avoid potential negative impacts to potentially buried cultural resources in this area. The Proponent should discuss the size of the required buffer with the Provincial Heritage Branch. Alternately, the absence / presence of buried cultural resources within these buffer zones can be determined through an intrusive archeological assessment completed by a permitted archeologist. Nonetheless, if the discovery of remains of archaeological significance are suspected all work will cease and the Archaeological Services Unit, Heritage Branch will be contacted at (506) 453-3014.

5.9.2 Operational Phase

Potential residual effects are not likely significant due to the small potential for encountering archaeological resources within the development area.

5.10 Community

The proposed Project is expected to have a net benefit to community lifestyle and structure, as it will expand the residential community and provide connectivity between existing residential, commercial and institutional areas located in the immediate Project area and the City of Fredericton and Town of Oromocto. The proposed development will increase housing availability and property values in the area. The proposed development will also provide an increase in employment opportunities for: truck drivers and heavy equipment operators during the construction phase of the Project; as well as engineers and technicians involved in the road design and lot development.

5.11 Drinking Water

5.11.1 Construction Phase

Municipal potable water infrastructure is not present in the Project area. A private potable well will be installed on each lot of the proposed development. A Water Source and Supply Assessment (WSSA) will be conducted and the results submitted to the NBDELG prior to the start of construction.

No chemical or petroleum storage will occur within 100-m of a private supply well. Refuelling and maintenance of equipment should take place on an impermeable surface with an appropriate collection system. As well equipment will be kept in good working order and Emergency Response procedures will be in place prior to construction. Purchasers of individual lots will be provided information regarding the New Brunswick guidelines for well construction and set back distances from structures and potential contamination sources (e.g., septic system) and water well testing, and will be followed.

5.11.2 Operational Phase

Potential residual effects are not likely significant provided mitigation measures are implemented and applicable regulations followed. Following the sale of the land parcel, each landowner will be responsible for maintaining their potable water well.

5.12 Visual Aesthetics and Land Use

The proposed Project area is currently undeveloped wooded land. Upon completion, the Project area will be occupied by three residential subdivisions, thus changing the visual landscape and land use within the Project area. The Project area is zoned for residential land use and adjoining areas are currently occupied by residential homes and vacant, wooded land. Although the Project will change the visual aesthetics and land use in the area, the change is consistent with the zoning plan for the area. Increased noise and traffic during construction would impact the adjoining land use; however, mitigation measures covered under section 5.13 will be employed.

Potential residual effects are not likely significant due to limited duration and magnitude of construction and the land use will be consistent with surrounding lots.

5.13 Noise and Vibration

5.13.1 Construction Phase

An increase in truck traffic and construction equipment will result in a temporary increase in noise and vibration levels in the area during the construction phase of the proposed Project. To help mitigate these potential impacts, equipment will be maintained in good working order and construction activities will be restricted to daylight hours. In addition, truck / construction equipment idling will be minimized (i.e., where possible, shall not idle for a period of greater than 15 minutes, unless required to operate defrosters, heaters or air conditions to prevent a health and safety emergency and / or avoid equipment issues). In addition, if possible, equipment and machinery will be muffled to reduce noise impacts.

5.13.2 Operation Phase

Based on the minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered not likely significant. Some increased vehicle traffic is expected for commuters.

5.14 Safety

Workers have the potential for accidents on the job. Contractors will be responsible for maintaining a safe working environment and complying with provincial health and safety requirements during construction. Workers are expected to follow the *Procedures and Policies* and work in compliance with the provisions of the *New Brunswick Occupational Health and Safety Act* and its regulations. They are to use or wear the equipment, protective devices or clothing as the employer directs. They are to report to the supervisor, any contravention to the *Act*, including any equipment defect or other unsafe situations.

5.15 Climate Change/Extreme Weather Events

Weather could negatively impact the proposed Project through interruptions and delays in the construction schedule. Storm events could also lead to accidental releases of sediment. The contractor will submit an erosion and sediment control plan for the construction period. All sediment and erosion control structures will be checked and re-secured prior to and after all major storm events. Unforeseen fires or extreme weather events in the adjacent wooded area or residences may threaten the development while heavy ice and snow loads may damage property. To help mitigate these potential impacts, all structures will be constructed to the applicable building codes.

Based on the minimization of impacts and the proposed mitigation measures detailed above, the potential residual effects are considered not likely significant.