ESS Group: Water Crossing

Potential Effects:

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of floodplain

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No instream works or fending from April 1 - July 15

ESS Group: Forestry

Potential Effects:

Potential to disrupt access to fuel wood area

Specific Mitigation:

- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Avoid surface damage to and obstruction of access route
- Make fuel wood from ROW clearing available to local community where demand exists

ESS Group: Permafrost

Potential Effects:

Melting or loss of permafrost due to disturbance of the active layer

Specific Mitigation:

- Carry out construction activities on frozen ground to minimize surface damage and rutting
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confin vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan
ESS Group: Water Crossing

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-510</td>
<td>N2-510-123</td>
<td>Unnamed Tributary into Partridge Crop Lake</td>
<td>589246</td>
<td>6153895</td>
<td>14N</td>
<td>239.1m</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Potential Effects:
- Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams;
- Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of fishladder

Specific Mitigation:
- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements.
- All no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No stream works or fording from April 1 - July 15

ESS Group: Permafrost

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start</th>
<th>Stop</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-510</td>
<td>N2-Soils-127</td>
<td>Permafrost</td>
<td>Site: 169 to 170</td>
<td>E-589353</td>
<td>E-589151</td>
<td>14N</td>
<td>248m</td>
</tr>
<tr>
<td>N2-510</td>
<td>N2-Soils-127</td>
<td>Permafrost</td>
<td>Site: 171 to 172</td>
<td>E-589062</td>
<td>E-588992</td>
<td>14N</td>
<td>86m</td>
</tr>
<tr>
<td>N2-510</td>
<td>N2-Soils-127</td>
<td>Permafrost</td>
<td>Site: 173 to 174</td>
<td>E-588837</td>
<td>E-588510</td>
<td>14N</td>
<td>393m</td>
</tr>
<tr>
<td>N2-G10</td>
<td>N2-Soils-127</td>
<td>Permafrost</td>
<td>Site: 175 to 176</td>
<td>E-587333</td>
<td>E-587231</td>
<td>14N</td>
<td>125m</td>
</tr>
</tbody>
</table>

Potential Effects:
- Melting or loss of permafrost due to disturbance of the active layer

Specific Mitigation:
- Carry out construction activities on frozen ground to minimize surface damage and rutting
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan

MAP NUMBER: 77
ESS Group: Water Crossing

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S10</td>
<td>N2-Aqua-134</td>
<td>Unnamed Tributary into Partridge Crop Lake</td>
<td>583153</td>
<td>6149524</td>
<td>14N</td>
<td>N/A</td>
<td>N/A</td>
<td>Low</td>
<td>Marginal</td>
</tr>
</tbody>
</table>

Potential Effects:
Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of floodplain.

Specific Mitigation:
- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffers areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No instream works or fording from April 1 - July 15

ESS Group: Permafrost

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start</th>
<th>Stop</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S10</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 177 to 179</td>
<td>E-583200</td>
<td>E-583100</td>
<td>14N</td>
<td>125m</td>
</tr>
<tr>
<td>N2-S10</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 179 to 180</td>
<td>E-583021</td>
<td>E-582502</td>
<td>14N</td>
<td>594m</td>
</tr>
</tbody>
</table>

Potential Effects:
Melting or loss of permafrost due to disturbances of the active layer.

Specific Mitigation:
- Carry out construction activities on frozen ground to minimize surface damage and rutting.
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confinement of vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan

ESS Group: Research

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S10</td>
<td>N2-Eco-200</td>
<td>Permafrost Site</td>
<td>583249</td>
<td>6149591</td>
<td>14N</td>
</tr>
</tbody>
</table>

Potential Effects:
Permafrost monitoring site, buried thermistor is exposed 5-10cm at the surface and is susceptible to damage.

Specific Mitigation:
- Identify and flag sensor's location to protect it damage
- Notify construction crews of sensor location

MAP NUMBER: 78
### ESS Group: Water Crossing

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S10</td>
<td>N2-Aqua-135</td>
<td>Unnamed Tributary into Partridge Crop Lake</td>
<td>582777</td>
<td>6149254</td>
<td>14N</td>
<td>72.3m</td>
<td>72.3m</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
<tr>
<td>N2-S10</td>
<td>N2-Aqua-136</td>
<td>Unnamed Tributary into Partridge Crop Lake</td>
<td>581532</td>
<td>6148397</td>
<td>14N</td>
<td>32.8m</td>
<td>N/A</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of access roads.

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work.
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No in-stream works or fording from April 1 - July 15

### ESS Group: Permafrost

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start</th>
<th>Stop</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S10</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 179 to 180</td>
<td>E-580021</td>
<td>E-580024</td>
<td>N-6148721</td>
<td>14N 594m</td>
</tr>
<tr>
<td>N2-S10</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 181 to 182</td>
<td>E-582092</td>
<td>E-582094</td>
<td>N-6148721</td>
<td>14N 71m</td>
</tr>
<tr>
<td>N2-S11</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 183 to 184</td>
<td>E-582054</td>
<td>E-580465</td>
<td>N-6147725</td>
<td>14N 1876m</td>
</tr>
<tr>
<td>N2-S11</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 185 to 186</td>
<td>E-590106</td>
<td>E-599927</td>
<td>N-6147374</td>
<td>14N 214m</td>
</tr>
<tr>
<td>N2-S11</td>
<td>N2-Soils-128</td>
<td>Permafrost</td>
<td>Site: 187 to 188</td>
<td>E-579760</td>
<td>E-579669</td>
<td>N-6147749</td>
<td>14N 108m</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Melting or loss of permafrost due to disturbance of the active layer

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage and rutting.
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confining vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan
### ESS Group: Water Crossing

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start Location</th>
<th>Stop Location</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S11</td>
<td>N2-S2-Aqua-138</td>
<td>unnamed tributary into Grass River</td>
<td>Site: 187 to 188</td>
<td>E-579760</td>
<td>N-6147229</td>
<td>14N</td>
<td>2.8m</td>
<td>2.8m</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
<tr>
<td>N2-S11</td>
<td>N2-S2-Aqua-139</td>
<td>Unnamed Tributary into Grass River</td>
<td>Site: 189 to 190</td>
<td>E-579002</td>
<td>N-6146730</td>
<td>14N</td>
<td>47.7m</td>
<td>47.7m</td>
<td>Moderate</td>
<td>Important</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Habitat loss and contamination from erosion/flooding; fish interactions increased; increased erosion; sedimentation of streamside;
- Damage to stream banks; loss of riparian vegetation; fish habitat disturbances and impeded fish movement; rutting of roadsides.

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion.
- Use existing trails, roads or cut lines whenever possible as access routes.
- Identify and flag buffer areas prior to start of work;
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffer zones shrub and herbaceous understory vegetation will be maintained along with trees that do not violate MVR Clearing Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No in-stream works or fording from April 1 - July 15

### ESS Group: Permafrost

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start Location</th>
<th>Stop Location</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S11</td>
<td>N2-S2-Sol-129</td>
<td>Permafrost</td>
<td>Site: 191 to 192</td>
<td>E-576333</td>
<td>N-6146132</td>
<td>14N</td>
<td>155 m</td>
</tr>
<tr>
<td>N2-S11</td>
<td>N2-S2-Sol-129</td>
<td>Permafrost</td>
<td>Site: 193 to 194</td>
<td>E-577033</td>
<td>N-6146545</td>
<td>14N</td>
<td>162 m</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Melting or loss of permafrost due to disturbance of the active layer.

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage and rutting.
- Use existing trails, roads or cut lines whenever possible as access routes.
- Maintain shrub and herbaceous vegetation to the extent possible.
- Remove trees by low-impact methods.
- Confining vehicle traffic to established trails to the extent possible.
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan.
**ESS Group: Water Crossing**

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-511</td>
<td>N2-511-140</td>
<td>Unnamed Tributary into Partridge Crop Lake</td>
<td>574800</td>
<td>6143963</td>
<td>14N</td>
<td>1.86m</td>
<td>1.86m</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
</tbody>
</table>

**Potential Effects:**

Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impeded fish movement; Rutting of floodplain

**Specific Mitigation:**

- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate MH Veg Clearance Requirements.
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No instream works or fording from April 1 - July 15

**ESS Group: Permafrost**

<table>
<thead>
<tr>
<th>Sec-Seg ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start</th>
<th>Stop</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-511</td>
<td>N2-Soils-129</td>
<td>Permafrost</td>
<td>Site: 195 to 196</td>
<td>E-575852 N-6144656</td>
<td>E-575766 N-6144098</td>
<td>14N</td>
<td>102 m</td>
</tr>
<tr>
<td>N2-511</td>
<td>N2-Soils-130</td>
<td>Permafrost</td>
<td>Site: 197 to 198</td>
<td>E-575118 N-614173</td>
<td>E-574649 N-614364</td>
<td>14N</td>
<td>561 m</td>
</tr>
<tr>
<td>N2-511</td>
<td>N2-Soils-130</td>
<td>Permafrost</td>
<td>Site: 199 to 200</td>
<td>E-573939 N-6143937</td>
<td>E-573645 N-6143203</td>
<td>14N</td>
<td>352 m</td>
</tr>
</tbody>
</table>

**Potential Effects:**

Melting or loss of permafrost due to disturbance of the active layer

**Specific Mitigation:**

- Carry out construction activities on frozen ground to minimize surface damage and rutting.
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confine vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan
### ESS Group: Archaeological

<table>
<thead>
<tr>
<th>Sec-SEG ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S12</td>
<td>ATK</td>
<td>ATK - Route 39w Thicket Portage &amp; Paint Lk</td>
<td>572587</td>
<td>6142490</td>
<td>14N</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- potential disturbance to heritage Resources

**Specific Mitigation:**
- Carry out construction activities on frozen or dry ground to minimize surface damage, rutting and erosion
- Identify and flag prior to start of work
- Conduct site investigation with Archaeologist post clearing and prior to construction
- Minimize surface disturbance around the site to the extent possible
- Inspect excavated materials or surface disturbance for heritage resources and report any finds to Environmental Inspector
- Implement additional mitigation from site investigation

### ESS Group: Intersection

<table>
<thead>
<tr>
<th>Sec-SEG ID</th>
<th>ESS ID</th>
<th>Location</th>
<th>ESS Name</th>
<th>Crossing Coordinates</th>
<th>UTM Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S12</td>
<td>N2-RecUse-101</td>
<td>C2</td>
<td>Winter Route</td>
<td>E-572578 N-4147689</td>
<td>14N</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Loss of cultural and heritage resources. Fragmentation of access routes due to access road construction and ROW activities.

**Specific Mitigation:**
- Identify and flag prior to start of work
- Notify Manitoba Infrastructure and Transportation (MFT)/winter road operator and local authorities regarding construction activities and schedule, and address concerns prior to construction
- Avoid surface damage to and obstruction of access route
- Ensure that access road/trail are visible from ROW
- Promote warning signage for remote traffic and pedestrian safety

### ESS Group: Water Crossing

<table>
<thead>
<tr>
<th>Sec-SEG ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM Zone</th>
<th>Channel Width</th>
<th>Wet Width</th>
<th>Fish Habitat Class</th>
<th>Habitat Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S12</td>
<td>N2-Aqua-141</td>
<td>Unnamed Tributary Into Teendrop Lake</td>
<td>571950</td>
<td>6141913</td>
<td>14N</td>
<td>4.74m</td>
<td>4.74m</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
<tr>
<td>N2-S12</td>
<td>N2-Aqua-142</td>
<td>Unnamed Tributary Connecting Gordon Brown Lake and Wintering Lake</td>
<td>570109</td>
<td>6140220</td>
<td>14N</td>
<td>120m</td>
<td>60m</td>
<td>Moderate</td>
<td>Marginal</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Habitat loss and contamination from structure foundations & installations; increased erosion & sedimentation of streams; Damage to stream banks; Loss of riparian vegetation; Fish habitat disturbances and impaired fish movement; Rutting of floodplain

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage, rutting and erosion
- Use existing trails, roads or cut lines whenever possible as access routes
- Identify and flag buffer areas prior to start of work
- Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory veg will be maintained along with trees that do not violate NH Veg Cleanning Requirements
- 7m no machine zone will restrict equipment in close proximity to the waterbody except at the trail crossing.
- No instream works or fording from April 1 - July 15

### ESS Group: Permafrost

<table>
<thead>
<tr>
<th>Sec-SEG ID</th>
<th>ESS ID</th>
<th>ESS Name</th>
<th>Location</th>
<th>Start</th>
<th>Stop</th>
<th>UTM Zone</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2-S12</td>
<td>N2-Sols-131</td>
<td>Permafrost</td>
<td>Site: 201 to 202</td>
<td>E-571983 N-6141943</td>
<td>E-571971 N-6141882</td>
<td>14N</td>
<td>89 m</td>
</tr>
<tr>
<td>N2-S12</td>
<td>N2-Sols-132</td>
<td>Permafrost</td>
<td>Site: 203 to 204</td>
<td>E-570363 N-6140453</td>
<td>E-570136 N-6140244</td>
<td>14N</td>
<td>419 m</td>
</tr>
<tr>
<td>N2-S12</td>
<td>N2-Sols-132</td>
<td>Permafrost</td>
<td>Site: 205 to 206</td>
<td>E-570363 N-6140453</td>
<td>E-570136 N-6140244</td>
<td>14N</td>
<td>307 m</td>
</tr>
</tbody>
</table>

**Potential Effects:**
- Melting or loss of permafrost due to disturbance of the active layer

**Specific Mitigation:**
- Carry out construction activities on frozen ground to minimize surface damage and rutting.
- Use existing trails, roads or cut lines whenever possible as access routes
- Maintain shrub and herbaceous vegetation to the extent possible
- Remove trees by low-disturbance methods
- Confining vehicle traffic to established trails to the extent possible
- Implement erosion protection before commencing construction in accordance with Erosion/Sediment Control Plan