

Table 5.9: Arithmetic Evaluation Results for Section 6, West Durham Link

Cultural Environment	High (15%)	3	1	2
Cultural Environment	Low (5%)	3	2	1
Technical Environment	High (25%)	3	1	2
Technical Environment	Low (5%)	3	1	2
Stakeholder Weights		3	1	2
	Overall Ranking	3	1	2

5.8 Section 7 – East Durham Link

A comparative evaluation of the mainline routes was conducted before the assessment of the link routes. As a result only half of the short-listed alternative routes for the East Link were assessed and evaluated.

The following outlines some of the main highlights under each factor area for the East Link. For additional information please refer to the Technical Specialist Reports provided in **Appendices E through M** and **Supporting Document #5**.

5.8.1 Net Effects Analysis

5.8.1.1 Route EL1

Route EL1 is illustrated in **Figure 5.29**.

Natural Environment

There are 12 surface water features that need to be crossed along route EL1. Of these crossings there are 4 high quality streams, zero moderate quality streams, 6 low quality streams, 2 ephemeral drainage features and zero ponds.

Of the 1150 m of high sensitivity streams, 1000m would be spanned and 150m would be crossed using culverts. Also, there are no anticipated affects to moderate sensitivity fish habitat streams however, there are 1630m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL1 will result in the removal of 56 ha of upland vegetation and has the potential to negatively impact 20 upland vegetation units. Encroachment into one high quality vegetation unit will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL1 removes 13 ha of PSW and 16 ha (18 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 33 ha of core habitat, 4 ha of interior habitat and no deep interior habitat (although some habitat could be considered to be deep interior). There are about 23 ha of specialized or sensitive wildlife habitat area directly affected. There are no known

Figure 5.29: Route Alternative EL1



Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL1 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity

One high quality linkage is severed by EL1.

Route EL1 covers 227 ha of low permeability soil, crosses 138 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 11 water wells within the route and associated interchange footprints, and, intersects 25 shallow water wells in low permeability soil and 35 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- Low net effects for groundwater
- Moderate net effects on surface water features
- High net effects on vegetation
- Moderate net effects on wetlands
- Impacts moderate amount of SSWH
- Crosses 1 high quality linkage between core areas

Social Environment

The EL1 route has a moderate impact on the community fabric criteria as it may have some impact on Solina and one new residential plan of subdivision.

The route results in low property impacts relative to the other route alternatives with a total of 102 properties affected including 31 residential displacements.

There are 223 noise sensitive receptors that could potentially be impacted by this route alternative and 189 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- Moderate impact on community fabric
- 102 properties affected, including 31 residential displacements
- 223 noise sensitive receptors
- 189 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are a farmers market, two manufacturing companies, one auto service, one industrial/contractors yard, and one driving range displaced with this route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Three specialty crop areas or operations were observed or affected in this area, and no livestock operations would be affected by this proposed route. Thirty-four (34) field crop operations would be affected, resulting in the loss of land and severance of property. Nineteen (19) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Fifteen (15) parcels of land greater than 20 ha and 9 parcels less than 20 ha would be created. Three high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Six businesses displaced
- Three specialty crop areas/operations affected
- No livestock operations and thirty-four field crop operations affected
- Three high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL1 will displace or disrupt twelve (12) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL1 is approximately 9 km. The route is direct.

Alternative EL1 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL1 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL1 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL1 provides moderate accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road. It precludes a full interchange at Enfield Road on the 407 East Mainline. A partial interchange to and from the west would be required at Enfield Road.

Alternative EL1 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL1 is \$325M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- Moderate accessibility to population and employment centres – precludes a full interchange at Enfield Road
- Moderate relative cost

5.8.1.2 Route EL2

Route EL2 is illustrated in **Figure 5.30**.

Natural Environment

There are 8 surface water features that need to be crossed along route EL2. Of these crossings there are 2 high quality streams, zero moderate quality streams, 4 low quality streams, 2 ephemeral drainage features and zero ponds.

This route affects 600m of high sensitivity fish habitat streams all of which would be spanned. Also, there are no anticipated affects to moderate sensitivity fish habitat streams. However, there are 1390m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL2 will result in the removal of 59 ha of upland vegetation and has the potential to negatively impact 20 upland vegetation units. Encroachment into seven high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL2 removes 33 ha of PSW and 48 ha (30 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 49 ha of core area, 6 ha of interior habitat and no deep interior habitat. There are about 22 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL2 severs and/or encroaches into six ESAs. As per CLOCA's ESA sensitivity ranking, three of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality and 2 low quality linkages are severed by EL2.

Route EL2 covers 216 ha of low permeability soil, crosses 173 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 7 water wells within the route and associated interchange footprints, and,

Figure 5.30: Route Alternative EL2



intersects 24 shallow water wells in low permeability soil and 25 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- Low groundwater net effects
- Moderate surface water net effects
- Low impact on fisheries and aquatic habitat
- High net effects for wetlands
- Crosses 1 high quality and 2 low quality linkages

Social Environment

The EL2 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in high property impacts relative to the other route alternatives with a total of 125 properties affected including 40 residential displacements.

There are 245 noise sensitive receptors that could potentially be impacted by this route alternative and 218 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- Moderate impact on community fabric
- 125 properties affected, including 40 residential displacements
- 245 noise sensitive receptors
- 218 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, one lumber mill, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and two livestock operations would be affected by this proposed route. Forty-five (45) field crop operations would be affected, resulting in the loss of land and severance of property.

Twenty-two (22) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Seventeen (17) parcels of land greater than 20 ha and 9 parcels less than 20 ha would be created. Three high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Five businesses displaced
- Two specialty crop areas/operations affected
- Two livestock operations and forty-five field crop operations affected
- Three high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL2 will displace or disrupt twelve (12) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL2 is approximately 9 km. The route is direct.

Alternative EL2 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL2 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL2 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL2 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL2 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL2 is \$445M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- High relative cost

5.8.1.3 Route EL3

Route EL3 is illustrated in **Figure 5.31**.

Natural Environment

There are 8 surface water features that need to be crossed along route EL3. Of these crossings there are 2 high quality streams, zero moderate quality streams, 4 low quality streams, 2 ephemeral drainage features and zero ponds.

This route affects 600m of high sensitivity fish habitat streams all of which would be spanned. Also, there are no anticipated affects to moderate sensitivity fish habitat streams however, there are 1390m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL3 will result in the removal of 47 ha of upland vegetation and has the potential to negatively impact 22 upland vegetation units. Encroachment into three high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL3 removes 30 ha of PSW and 44 ha (30 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 40 ha of core area, 5 ha of interior habitat and no deep interior habitat. There are about 22 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL3 severs and/or encroaches into six ESAs. As per CLOCA's ESA sensitivity ranking, three of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity

One high quality and 2 low quality linkages are severed by EL3.

Route EL3 covers 187 ha of low permeability soil, crosses 157 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 6 water wells within the route and associated interchange footprints, and,

Figure 5.31: Route Alternative EL3



intersect 23 shallow water wells in low permeability soil and 25 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- Low impact to surface water
- Low potential impact to high sensitivity fish habitat
- Removes a small amount of upland vegetation, hits few high quality vegetation units and does not require the removal of Provincially Significant Vegetation communities
- High net effects for wetlands
- Crosses 1 high quality and 2 low quality linkages

Social Environment

The EL3 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in high property impacts relative to the other route alternatives with a total of 118 properties affected including 39 residential displacements.

There are 250 noise sensitive receptors that could potentially be impacted by this route alternative and 219 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- Moderate impact on community fabric
- 118 properties affected, including 39 residential displacements
- 250 noise sensitive receptors
- 219 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, one lumber mill, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. One specialty crop area or operation was observed or affected in this area, and no livestock operations would be affected by this proposed

route. Thirty-five (35) field crop operations would be affected, resulting in the loss of land and severance of property. Sixteen (16) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Fifteen (15) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Two high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Five businesses displaced
- One specialty crop area/operation affected
- No livestock operations and thirty-five field crop operations affected
- Two high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within the route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL3 will displace or disrupt thirteen (13) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL3 is approximately 9 km. The route is direct.

Alternative EL3 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL3 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL3 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL3 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL3 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL3 is \$485M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- High relative cost

5.8.1.4 Route EL4

Route EL4 is illustrated in **Figure 5.32**.

Natural Environment

There are 11 surface water features that need to be crossed along route EL4. Of these crossings there are 4 high quality streams, zero moderate quality streams, 5 low quality streams, 2 ephemeral drainage features and zero ponds.

Of the 1400m of high sensitivity streams, 1150m would be spanned and 250m would be crossed using culverts. There are no anticipated affects on moderate sensitivity fish habitat streams and 1590m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL4 will result in the removal of 53 ha of upland vegetation and has the potential to negatively impact 22 upland vegetation units. Encroachment into seven high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL4 removes 34 ha of PSW and 16 ha (20 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 19 ha of core area, 2 ha of interior habitat and no deep interior habitat. There are about 12 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL4 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity

One high quality and 1 low quality linkage is severed by EL4.

Route EL4 covers 194 ha of low permeability soil, crosses 158 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 9 water wells within the route and associated interchange footprints, and,

Figure 5.32: Route Alternative EL4



intersects 21 shallow water wells in low permeability soil and 13 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- Low groundwater net effects
- Moderate surface water net effects
- Requires the removal of a Species at Risk
- High wetland net effects
- Impacts a small amount of specialized or sensitive wildlife habitat (SSWH) and a small amount of core wildlife habitat and interior habitat
- Crosses 1 high quality and 1 low quality linkages

Social Environment

The EL4 route has a low impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in moderate property impacts relative to the other route alternatives with a total of 109 properties affected including 31 residential displacements.

There are 229 noise sensitive receptors that could potentially be impacted by this route alternative and 194 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- Low impact on community fabric
- 109 properties affected, including 31 residential displacements
- 229 noise sensitive receptors
- 194 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, one home occupation, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or

operations were observed or affected in this area, and two livestock operations would be affected by this proposed route. Thirty-six (36) field crop operations would be affected, resulting in the loss of land and severance of property. Eighteen (18) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirteen (13) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Four high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of the net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Five businesses displaced
- Two specialty crop areas/operations affected
- Two livestock operations and thirty-six field crop operations affected
- Four high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL4 will displace or disrupt fifteen (15) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL4 is approximately 9 km. The route is direct.

Alternative EL4 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL4 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road, Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL4 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL4 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL4 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL4 is \$335M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.5 Route EL5

Route EL5 is illustrated in **Figure 5.33**.

Natural Environment

There are 13 surface water features that need to be crossed along route EL5. Of these crossings there are 5 high quality streams, zero moderate quality streams, 5 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1800m of high sensitivity streams, 1550m would be spanned and 250m would be crossed using culverts. There are no anticipated affects on moderate sensitivity streams and 1590m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL5 will result in the removal of 52 ha of upland vegetation and has the potential to negatively impact 22 upland vegetation units. Encroachment into six high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL5 removes 16 ha of PSW and 25 ha (20 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 30 ha of core area, 4 ha of interior habitat and no deep interior habitat.

There are about 20 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL5 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity

One high quality and 2 low quality linkages are severed by EL5.

Figure 5.33: Route Alternative EL5



Route EL5 covers 207 ha of low permeability soil, crosses 156 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 7 water wells within the route and associated interchange footprints, and, intersects 23 shallow water wells in low permeability soil and 27 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- Low net effects for groundwater
- Moderate net effects on surface water quality and quantity
- Moderate net effects on high sensitivity fish habitat
- Requires the removal of a Species at Risk (vegetation)
- Moderate net effects on Wetlands
- Affect moderate amounts of SSWH and moderate to occasionally high amounts of core wildlife habitat
- Crosses 1 high quality and 2 low quality linkages

Social Environment

The EL5 route has a high impact on the community fabric criteria as the route may have some impact on Solina and two new residential plans of subdivision.

The route results in high property impacts relative to the other route alternatives with a total of 121 properties affected including 34 residential displacements.

There are 255 noise sensitive receptors that could potentially be impacted by this route alternative and 226 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- High impact on community fabric
- 121 properties affected, including 34 residential displacements
- 255 noise sensitive receptors
- 226 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, one home occupation, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and two livestock operations would be affected by this proposed route. Thirty-two (32) field crop operations would be affected, resulting in the loss of land and severance of property. Twenty-one (21) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Fourteen (14) parcels of land greater than 20 ha and 6 parcels less than 20 ha would be created. Four high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of the net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Five businesses displaced
- Two specialty crop areas/operations affected
- Two livestock operations and thirty-two field crop operations affected
- Four high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL5 will displace or disrupt twelve (12) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL5 is approximately 9 km. The route is direct.

Alternative EL5 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL5 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road, Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL5 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL5 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL5 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL5 is \$350M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.6 Route EL6

Route EL6 is illustrated in **Figure 5.34**.

Natural Environment

There are 13 surface water features that need to be crossed along route EL6. Of these crossings there are 5 high quality streams, zero moderate quality streams, 5 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1600m of high sensitivity streams, 1350m would be spanned and 250m would be crossed using culverts. There are no anticipated affects on moderate sensitivity streams and 1590m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL6 will result in the removal of 52 ha of upland vegetation and has the potential to negatively impact 23 upland vegetation units. Encroachment into four high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL6 removes 14 ha of PSW and 27 ha (20 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 31 ha of core area, 4 ha of interior habitat and no deep interior habitat.

There are about 20 ha of specialized or sensitive wildlife habitat areas directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL6 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality and 2 low quality linkages are severed by EL6.

Figure 5.34: Route Alternative EL6



Route EL6 covers 218 ha of low permeability soil, crosses 157 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 6 water wells within the route and associated interchange footprints, and, intersects 24 shallow water wells in low permeability soil and 30 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects on Shallow water supply wells
- Moderate net effects on surface water quality and quantity
- Moderate risk to high sensitivity fish habitat
- Requires the removal of a Species at Risk
- Moderate net effects on wetlands
- Crosses 1 high quality and 2 low quality linkages

Social Environment

The EL6 route has a high impact on the community fabric criteria as the route may have some impact on Solina and two new residential plans of subdivision.

The route results in moderate property impacts relative to the other route alternatives with a total of 119 properties affected including 33 residential displacements.

There are 257 noise sensitive receptors that could potentially be impacted by this route alternative and 226 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- High impact on community fabric
- 119 properties affected, including 33 residential displacements
- 257 noise sensitive receptors
- 226 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and one livestock operations would be affected by this proposed route. Thirty (30) field crop operations would be affected, resulting in the loss of land and severance of property. Twenty-one (21) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Seventeen (17) parcels of land greater than 20 ha and 8 parcels less than 20 ha would be created. Three high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites will be disturbed by this route alternative, and each has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Four businesses displaced
- Two specialty crop areas/operations affected
- One livestock operation and thirty field crop operations affected
- Three high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL6 will displace or disrupt fourteen (14) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL6 is approximately 9 km. The route is less direct than other alternatives.

Alternative EL6 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL6 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road, Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL6 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL6 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road

Alternative EL6 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL6 is \$350M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.7 Route EL7

Route EL7 is illustrated in **Figure 5.35**.

Natural Environment

There are 14 surface water features that need to be crossed along route EL7. Of these crossings there are 6 high quality streams, zero moderate quality streams, 5 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1940m of high sensitivity streams, 1750m would be spanned and 190m would be crossed using culverts. There are no anticipated effects on moderate sensitivity fish habitat streams and 1620m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL7 will result in the removal of 52 ha of upland vegetation and has the potential to negatively impact 18 upland vegetation units. Encroachment into three high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL7 removes 9 ha of PSW and 16 ha (20 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 24 ha of core area, 3 ha of interior habitat (3 ha) and no deep interior habitat.

There are about 12 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL7 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality and 1 low quality linkage is severed by EL7.

Figure 5.35: Route Alternative EL7



Route EL7 covers 208 ha of low permeability soil, crosses 168 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 8 water wells within the route and associated interchange footprints, and, intersects 39 shallow water wells in low permeability soil and 31 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects on shallow water supply wells
- Moderate net effects on surface Water Quality and Quantity
- Moderate risk to high sensitivity fish habitat
- Low net effects for vegetation
- Moderate net effects on Wetlands
- Low net effects on Wildlife
- Crosses 1 high quality and 1 low quality linkage between core areas

Social Environment

The EL7 route has a high impact on the community fabric criteria as the route may have some impact on Solina and two new residential plans of subdivision.

The route results in moderate property impacts relative to the other route alternatives with a total of 115 properties affected including 39 residential displacements.

There are 246 noise sensitive receptors that could potentially be impacted by this route alternative and 199 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- High impact on community fabric
- 115 properties affected, including 39 residential displacements
- 246 noise sensitive receptors
- 199 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and two livestock operations would be affected by this proposed route. Thirty-six (36) field crop operations would be affected, resulting in the loss of land and severance of property. Eighteen (18) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Sixteen (16) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Four high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites and one (1) active waste disposal site (automotive junkyard) will be disturbed by this route alternative, and each have a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Four businesses displaced
- Two specialty crop areas/operations affected
- Two livestock operations and thirty-six field crop operations affected
- Four high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Alternative EL7 will displace or disrupt eleven (11) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL7 is approximately 9 km. The route is direct.

Alternative EL7 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL7 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL7 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL7 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL7 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL7 is \$350M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Low relative cost

5.8.1.8 Route EL8

Route EL8 is illustrated in **Figure 5.36**.

Natural Environment

There are 14 surface water features that need to be crossed along route EL8. Of these crossings there are 6 high quality streams, zero moderate quality streams, 5 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1940m of high sensitivity streams, 1750m would be spanned and 190m would be crossed using culverts. There are no anticipated effects on moderate sensitivity fish habitat streams and 1620m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL8 will result in the removal of 49 ha of upland vegetation and has the potential to negatively impact 17 upland vegetation units. Encroachment into two high quality vegetation units will occur. No significant vegetation communities will be affected by the alternative. One species at risk specimen (Butternut) will be removed by the alternative.

EL8 removes 8 ha of PSW and 17 ha (19 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 23 ha of core area, 2 ha of interior habitat and no deep interior habitat.

There are about 12 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL8 severs and/or encroaches into seven ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality and 1 low quality linkage is severed by EL8.

Figure 5.36: Route Alternative EL8



Route EL8 covers 216 ha of low permeability soil, crosses 164 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 8 water wells within the route and associated interchange footprints, and, intersects 23 shallow water wells in low permeability soil and 29 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects on shallow water supply wells
- Moderate net effects on Surface Water Quality and Quantity
- Moderate risk to high sensitivity fish habitat
- Low net effects for vegetation
- Moderate net effects on Wetlands
- Low net effects for Wildlife
- Crosses 1 high quality and 1 low quality linkage between core areas

Social Environment

The EL8 route has a high impact on the community fabric criteria as the route may have some impact on Solina and two new residential plans of subdivision.

The route results in moderate property impacts relative to the other route alternatives with a total of 113 properties affected including 38 residential displacements.

There are 245 noise sensitive receptors that could potentially be impacted by this route alternative and 198 sensitive receptors that could potentially be impacted from an air quality perspective. No critical receptors are affected by this route.

Summary of net effects:

- High impact on community fabric
- 113 properties affected, including 38 residential displacements
- 245 noise sensitive receptors
- 198 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is moderate opportunity to stimulate transportation services and development in adjacent employment lands.

There is high impact on non-farm commercial activities as there are two manufacturing companies, one auto service, and one driving range displaced by the route alternative. There are four home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and three livestock operations would be affected by this proposed route. Thirty-six (36) field crop operations would be affected, resulting in the loss of land and severance of property. Eighteen (18) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Sixteen (16) parcels of land greater than 20 ha and 7 parcels less than 20 ha would be created. Five high investment agricultural operations would be affected including specialty crop and livestock operations.

Ten (10) properties with the potential for site contamination will be directly impacted by this route alternative in urban areas. The properties include a former fuel service station (high potential for site contamination), two spill occurrences (low/moderate potential for site contamination), a contracting company (moderate potential for site contamination), a machine and robotics manufacturing company (moderate potential for site contamination), a waste management facility (high potential for site contamination), a steel rolling and drawing company (moderate potential for site contamination), a metal valve manufacturing company (moderate potential for site contamination), a search and rescue training facility (moderate potential for site contamination), and an automotive dealer exchange facility (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. Two (2) former waste disposal sites and one (1) active waste disposal site (automotive junkyard) will be disturbed by this route alternative, and each have a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Four businesses displaced
- Two specialty crop areas/operations affected
- Three livestock operations and thirty-six field crop operations affected
- Five high investment agricultural operations affected
- Ten properties with potential for site contamination and two former waste disposal sites impacted

Cultural Environment

There are no known archaeological sites within the route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL8 will displace or disrupt twelve (12) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL8 is approximately 9 km. The route is direct.

Alternative EL8 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL8 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road, Hancock Road and Solina Road are required. Additionally, reconfiguration of the Highway 401/Courtice Road interchange is required.

Alternative EL8 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL8 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL8 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL8 is \$285M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Low relative cost

5.8.1.9 Route EL9

Route EL9 is illustrated in **Figure 5.37**.

Natural Environment

There are 11 surface water features that need to be crossed along route EL9. Of these crossings there are 5 high quality streams, 1 moderate quality stream, 3 low quality streams, 2 ephemeral drainage features and zero ponds.

Of the 1740m of high sensitivity streams, 1550m would be spanned and 190m would be crossed using culverts. There are 170m of moderate sensitivity fish habitat streams to cross using culverts and 875m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL9 will result in the removal of 82 ha of upland vegetation and has the potential to negatively impact 19 upland vegetation units. Encroachment into six high quality vegetation units will occur. No significant vegetation communities, species at risk or conservation concern will be removed by the alternative.

EL9 removes 20 ha of PSW and 19 ha (31 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 38 ha of core area, 9 ha of interior habitat and 2 ha of deep interior habitat.

There are about 18 ha of specialized or sensitive wildlife habitat area directly affected. The patch with deep interior habitat is completely fragmented, resulting in the removal of deep interior habitat. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL9 severs and/or encroaches into five ESAs. As per CLOCA's ESA sensitivity ranking, three of these ESAs are highly sensitive, one has moderately high sensitivity and one is moderately sensitive.

One high quality linkage is severed by EL9.

Figure 5.37: Route Alternative EL9



Route EL9 covers 172 ha of low permeability soil, crosses 177 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 14 water wells within the route and associated interchange footprints, and, intersects 15 shallow water wells in low permeability soil and 18 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects on shallow water supply wells
- Moderate net effects on Surface Water Quality and Quantity
- Moderate risk to high sensitivity fish habitat
- Requires the removal of greater than 80 ha of upland vegetation and many high quality vegetation units
- Moderate net effects on Wetlands
- High net effect on core wildlife habitat
- Low net effects on linkages between core natural areas

Social Environment

The EL9 route has a high impact on the community fabric criteria as the route may have some impact on Solina and two new residential plans of subdivision.

The route results in low property impacts relative to the other route alternatives with a total of 87 properties affected including 35 residential displacements.

There are 296 noise sensitive receptors that could potentially be impacted by this route alternative and 224 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a school, within the area of influence.

Summary of net effects:

- High impact on community fabric
- 87 properties affected, including 35 residential displacements
- 296 noise sensitive receptors, including one critical receptor
- 224 air quality sensitive receptors, including one critical receptor

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is low opportunity to stimulate transportation services and development in adjacent employment lands because of the distance from planned employment areas.

There is moderate impact on non-farm commercial activities as there is a truss manufacturer, a home occupation and a retail nursery displaced. There are two equestrian centres and six home occupations which will have potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Two specialty crop areas or operations were observed or affected in this area, and four livestock operations would be affected by this proposed route. Thirty-one (31) field crop operations would be affected, resulting in the loss of land and severance of property. Eleven (11) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirteen (13) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Six high investment agricultural operations would be affected including specialty crop and livestock operations.

Four (4) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include three spill occurrences (low to moderate potential for site contamination) and one home-based automotive garage (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. One (1) former waste disposal site will be disturbed by this route alternative, and has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Three businesses displaced
- Two specialty crop areas/operations affected
- Four livestock operations and thirty-one field crop operations affected
- Six high investment agricultural operations affected
- Four properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Alternative EL9 will displace or disrupt ten (10) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL9 is approximately 9 km. The route is direct.

Alternative EL9 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL9 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignment of Rundle Road is required. Additionally, reconfiguration of the Highway 401/Holt Road interchange is required.

Alternative EL9 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL9 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL9 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL9 is \$380M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.10 Route EL10

Route EL10 is illustrated in **Figure 5.38**.

Natural Environment

There are 13 surface water features that need to be crossed along route EL10. Of these crossings there are 6 high quality streams, 1 moderate quality stream, 3 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1940m of high sensitivity streams, 1750m would be spanned and 190m would be crossed using culverts. There are 170m of moderate sensitivity fish habitat streams to cross using culverts and 875m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL10 will result in the removal of 78 ha of upland vegetation and has the potential to negatively impact 17 upland vegetation units. Encroachment into two high quality vegetation units will occur. No significant vegetation communities, species at risk or conservation concern will be removed by the alternative.

EL10 removes 15 ha of PSW and 18 ha (26 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 40 ha of core area, 9 ha of interior habitat and 2 ha of deep interior habitat.

There are about 18 ha of specialized or sensitive wildlife habitat area directly affected. The patch with deep interior habitat is completely fragmented, resulting in the removal of all deep interior habitat. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL10 severs and/or encroaches into six ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity and one is moderately sensitive.

One high quality linkage is severed by EL10.

Figure 5.38: Route Alternative EL10



Route EL10 covers 178 ha of low permeability soil, crosses 182 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 13 water wells within the route and associated interchange footprints, and, intersects 16 shallow water wells in low permeability soil and 21 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects regarding changes to groundwater quality
- Moderate net effects for surface Water Quality and Quantity
- Moderate risk to high sensitivity fish habitat
- High net effects on core wildlife habitat
- Crosses 1 high quality linkage between core areas

Social Environment

The EL10 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in low property impacts relative to the other route alternatives with a total of 83 properties affected including 33 residential displacements.

There are 289 noise sensitive receptors that could potentially be impacted by this route alternative and 226 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a school, within the area of influence.

Summary of net effects:

- Moderate impact on community fabric
- 83 properties affected, including 33 residential displacements
- 289 noise sensitive receptors, including one critical receptor
- 226 air quality sensitive receptors, including one critical receptor

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is low opportunity to stimulate transportation services and development in adjacent employment lands because of the distance from planned employment areas.

There is moderate impact on non-farm commercial activities as there is a truss manufacturer, a home occupation, and a retail nursery displaced. There are two equestrian centres and six home occupations with potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Three specialty crop areas or operations were observed or affected in this area, and four livestock operations would be affected by this proposed route. Twenty-seven (27) field crop operations would be affected, resulting in the loss of land and severance of property. Nine (9) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirteen (13) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Six high investment agricultural operations would be affected including specialty crop and livestock operations.

Four (4) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include three spill occurrences (low to moderate potential for site contamination) and one home-based automotive garage (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. One (1) former waste disposal site will be disturbed by this route alternative, and has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Three businesses displaced
- Three specialty crop areas/operations affected
- Four livestock operations and twenty-seven field crop operations affected
- Six high investment agricultural operations affected
- Four properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL10 will displace or disrupt thirteen (13) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL10 is approximately 9 km. The route is direct.

Alternative EL10 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL10 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignment of Rundle Road is required. Additionally, reconfiguration of the Highway 401/Holt Road interchange is required.

Alternative EL10 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL10 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road

Alternative EL10 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL10 is \$335M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.11 Route EL11

Route EL11 is illustrated in **Figure 5.39**.

Natural Environment

There are 13 surface water features that need to be crossed along route EL11. Of these crossings there are 6 high quality streams, 1 moderate quality stream, 3 low quality streams, 3 ephemeral drainage features and zero ponds.

Of the 1940m of high sensitivity streams, 1750m would be spanned and 190m would be crossed using culverts. There are 170m of moderate sensitivity fish habitat streams to cross using culverts and 875m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL11 will result in the removal of 80 ha of upland vegetation and has the potential to negatively impact 17 upland vegetation units. Encroachment into six high quality vegetation units will occur. No significant vegetation communities, species at risk or conservation concern will be removed by the alternative.

EL11 removes 13 ha of PSW and 19 ha (26 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 41 ha of core area, 9 ha of interior habitat and 2 ha of deep interior habitat.

There are about 18 ha of specialized or sensitive wildlife habitat area directly affected. The patch with deep interior habitat is completely fragmented, resulting in the removal of all deep interior habitat. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL11 severs and/or encroaches into six ESAs. As per CLOCA's ESA sensitivity ranking, four of these ESAs are highly sensitive, one has moderately high sensitivity and one is moderately sensitive.

One high quality linkage is severed by EL11.

Figure 5.39: Route Alternative EL11



Route EL11 covers 191 ha of low permeability soil, crosses 181 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 13 water wells within the route and associated interchange footprints, and, intersects 17 shallow water wells in low permeability soil and 25 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects regarding changes to groundwater quality
- Moderate net effects on surface Water Quality and Quantity
- Moderate risk to high sensitivity fish habitat
- Removes substantial upland vegetation, including a large number of high quality vegetation units
- Moderate net effects on wetlands
- High net effects on core wildlife habitat
- Crosses 1 high quality linkage between core areas

Social Environment

The EL11 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in high property impacts relative to the other route alternatives with a total of 107 properties affected including 42 residential displacements.

There are 288 noise sensitive receptors that could potentially be impacted by this route alternative and 225 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a school, within the area of influence.

Summary of net effects:

- Moderate impact on community fabric
- 107 properties affected, including 42 residential displacements
- 288 noise sensitive receptors, including one critical receptor
- 225 air quality sensitive receptors, including one critical receptor

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is low opportunity to stimulate transportation services and development in adjacent employment lands because of the distance from planned employment areas.

There is moderate impact on non-farm commercial activities as there are a truss manufacturer, a home occupation, and a retail nursery displaced. Two equestrian centres and six home occupations have potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. Three specialty crop areas or operations were observed or affected in this area. Five livestock operations would be affected by this proposed route. Twenty-seven (27) field crop operations would be affected, resulting in the loss of land and severance of property. Nine (9) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirteen (13) parcels of land greater than 20 ha and 5 parcels less than 20 ha would be created. Six high investment agricultural operations would be affected including specialty crop and livestock operations.

Four (4) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include three spill occurrences (low to moderate potential for site contamination) and one home-based automotive garage (high potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. One (1) former waste disposal site will be disturbed by this route alternative, and has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Three businesses displaced
- Three specialty crop areas/operations affected
- Five livestock operations and twenty-seven field crop operations affected
- Six high investment agricultural operations affected
- Four properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL11 will displace or disrupt fourteen (14) cultural heritage landscapes and four (4) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL11 is approximately 9 km. The route is direct.

Alternative EL11 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL11 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignment of Rundle Road is required. Additionally, reconfiguration of the Highway 401/Holt Road interchange is required.

Alternative EL11 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL11 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL11 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL11 is \$330M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- Moderate relative cost

5.8.1.12 Route EL12

Route EL12 is illustrated in **Figure 5.40**.

Natural Environment

There are 14 surface water features that need to be crossed along route EL12. Of these crossings there are 5 high quality streams, 1 moderate quality stream, 6 low quality streams, 2 ephemeral drainage features and zero ponds.

Of the 1650m of high sensitivity streams, all would be spanned. There are 275m of moderate sensitivity fish habitat streams to cross using culverts and 1850m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL12 will result in the removal of 72 ha of upland vegetation and has the potential to negatively impact 14 upland vegetation units. Encroachment into two high quality vegetation units will occur. No significant vegetation communities, species at risk or conservation concern will be removed by the alternative.

EL12 removes 30 ha of PSW and 31 ha (38 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 43 ha of core area and 5 ha of interior habitat and no deep interior habitat is removed.

There are 41 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL12 severs and/or encroaches into eight ESAs. As per CLOCA's ESA sensitivity ranking, five of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality linkage is severed by EL12.

Route EL12 covers 197 ha of low permeability soil, crosses 159 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 12 water wells within the route and associated interchange footprints, and, intersects 14 shallow water wells in low permeability soil and 29 shallow water wells in high permeability soil within the 500 m buffer.

Figure 5.40: Route Alternative EL12



Summary of net effects:

- Moderate net effects regarding changes to groundwater quality
- Moderate net effects on surface Water Quality and Quantity
- High net effects on Wetlands
- Affects a large amount of SSWH and a high amount of core wildlife area
- Crosses 1 high quality linkage between core areas

Social Environment

The EL12 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in low property impacts relative to the other route alternatives with a total of 66 properties affected including 29 residential displacements.

There are 285 noise sensitive receptors that could potentially be impacted by this route alternative and 232 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a school, within the area of influence.

Summary of net effects:

- Moderate impact on community fabric
- 66 properties affected, including 29 residential displacements
- 285 noise sensitive receptors, including one critical receptor
- 232 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is low opportunity to stimulate transportation services and development in adjacent employment lands because of the distance from planned employment areas.

There is moderate impact on non-farm commercial activities as there is an equestrian centre and a home occupation displaced. Two equestrian centres and three home occupations have potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. No specialty crop areas or operations were observed or affected in this area, and five livestock operations would be affected by this proposed route. Twenty-six (26) field crop operations would be affected, resulting in the loss of land and severance of property. Nine (9) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Eleven (11) parcels of land greater than 20 ha and 4 parcels less than 20 ha would be

created. Four high investment agricultural operations would be affected including specialty crop and livestock operations.

Three (3) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include three spill occurrences (low to moderate potential for site contamination). No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. One (1) former waste disposal site will be disturbed by this route alternative, and has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- Two businesses displaced
- No specialty crop areas/operations affected
- Five livestock operations and twenty-six field crop operations affected
- Four high investment agricultural operations affected
- Three properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

One archaeological site (AIGq-41) was identified within this route segment and more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL12 will displace or disrupt fifteen (15) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL12 is approximately 9 km. The route is direct.

Alternative EL12 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL12 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road and Holt Road are required. Additionally, reconfiguration of the Highway 401/Holt Road interchange is required.

Alternative EL12 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL12 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL12 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL12 is \$420M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- High relative cost

5.8.1.13 Route EL13

Route EL13 is illustrated in **Figure 5.41**.

Natural Environment

There are 13 surface water features that need to be crossed along route EL13. Of these crossings there are 5 high quality streams, 1 moderate quality stream, 5 low quality streams, 2 ephemeral drainage features and zero ponds.

Of the 1650m of high sensitivity streams, all would be spanned. There are 275m of moderate sensitivity fish habitat streams to cross using culverts and 1650m of low sensitivity fish habitat streams to cross using culverts. There are no known Species-at-risk found within any of the aquatic features along the route.

EL13 will result in the removal of 82 ha of upland vegetation and has the potential to negatively impact 16 upland vegetation units. Encroachment into four high quality vegetation units will occur. No significant vegetation communities, species at risk or conservation concern will be removed by the alternative.

EL13 removes 32 ha of PSW and 34 ha (41 units) of unevaluated wetland. The unevaluated wetlands affected are primarily swamp units.

This route affects 49 ha of core area and 6 ha of interior habitat. No deep interior habitat is removed.

There are 41 ha of specialized or sensitive wildlife habitat area directly affected. There are no known Species-at-risk habitats along the route, and there is either no or one patch of potential habitat for avian species on Schedule 1, Species At Risk Act.

EL13 severs and/or encroaches into eight ESAs. As per CLOCA's ESA sensitivity ranking, five of these ESAs are highly sensitive, one has moderately high sensitivity, one is moderately sensitive and one has moderately low sensitivity.

One high quality linkage is severed by EL13.

Route EL13 covers 203 ha of low permeability soil, crosses 180 ha of high permeability soil, intersects the Black-Farewell Wetland Complex, intersects 10 water wells within the route and associated interchange footprints, and,

Figure 5.41: Route Alternative EL13



intersects 15 shallow water wells in low permeability soil and 36 shallow water wells in high permeability soil within the 500 m buffer.

Summary of net effects:

- High net effects on shallow water supply wells
- High net effects on changes to groundwater quality
- Moderate net effects on surface Water Quality and Quantity
- Requires the removal of greater than 80 ha of upland vegetation and many high quality vegetation units
- High net effects for Wetlands
- Crosses 1 high quality linkage between core areas

Social Environment

The EL13 route has a moderate impact on the community fabric criteria as the route may have some impact on Solina and one new residential plan of subdivision.

The route results in low property impacts relative to the other route alternatives with a total of 64 properties affected including 31 residential displacements.

There are 289 noise sensitive receptors that could potentially be impacted by this route alternative and 234 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a school, within the area of influence.

Summary of net effects:

- Moderate impact on community fabric
- 64 properties affected, including 31 residential displacements
- 289 noise sensitive receptors, including one critical receptor
- 234 air quality sensitive receptors, including one critical receptor

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives. A portion of the link has been identified in the Durham ROP. The route is partially compatible with the Clarington Official Plan because the route would assist in attaining the goals and objectives of the OP. There is low opportunity to stimulate transportation services and development in adjacent employment lands because of the distance from planned employment areas.

There is moderate impact on non-farm commercial activities as there is an equestrian centre displaced. Two equestrian centres and six home occupations have potentially increased visibility with this route alternative.

The majority of this section of the East Link crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands are crossed in this section and are located within the lower areas and stream channels. No specialty crop areas or operations were observed or affected in this area, and five livestock operations would be affected by this proposed

route. Twenty-six (26) field crop operations would be affected, resulting in the loss of land and severance of property. Nine (9) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Eleven (11) parcels of land greater than 20 ha and 3 parcels less than 20 ha would be created. Four high investment agricultural operations would be affected including specialty crop and livestock operations.

Three (3) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include three spill occurrences with a low to moderate potential for site contamination. No properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. One (1) waste disposal site will be disturbed by this route alternative, and has a high potential for site contamination. Under the EPA, no land used for the disposal of waste may be used for any other purpose, if the waste disposal site has been closed for less than 25 years, without a Minister's Order.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- One business displaced
- No specialty crop areas/operations affected
- Five livestock operations and twenty-six field crop operations affected
- Four high investment agricultural operations affected
- Three properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

There are no known archaeological sites within this route segment but more than 50% of the segment is identified as having archaeological potential. The potential for adverse effects to known significant archaeological sites is low while there is a potentially high net effect for areas of archaeological potential.

Route EL13 will displace or disrupt thirteen (13) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

There is low potential for traffic diversion to neighbouring communities.

The route length for Alternative EL13 is approximately 9 km. The route is direct.

Alternative EL13 has high potential to support or attract transit ridership through a dedicated transitway and transit stations. This route alternative is situated close to existing urban centres at the south end.

EL13 is highly compatible with the existing and planned road network. Realignment of the South Service Road is required and minor realignments of Rundle Road and Holt Road are required. Additionally, reconfiguration of the Highway 401/Holt Road interchange is required.

Alternative EL13 can accommodate transit stations at key interchange locations. Transit stations have been designated at Highway 407E/Bloor Street, Highway 407E/Highway 2, and Taunton Road.

EL13 provides high potential to improve accessibility to population and employment centres. A full interchange is provided at Highway 2 and a partial interchange (to and from the south) is provided at Taunton Road.

Alternative EL13 has a high potential to improve emergency access/routing, with interchanges provided at Highway 2 and Taunton Road. Overall, response time will be shortened for emergency service vehicles using the East Link. Response times for most non-East Link trips will remain the same since there are no significant changes proposed for the local road network.

The preliminary construction cost for Alternative EL13 is \$420M.

Summary of net effects:

- Direct route
- High compatibility with existing and planned road network
- High accessibility to population and employment centres
- High relative cost

5.8.2 Comparative Evaluation

5.8.2.1 Reasoned Argument Results

The reasoned argument evaluation results for Section 7, the east Durham Link, are summarized below, with the details provided in the Technical Specialist Reports in **Appendices E through M** and **Supporting Document #5**.

Natural Environment

Routes EL7 and EL8 were ranked 1ST in the Natural Environment factor area as they had the lowest net effects for groundwater, vegetation, wetlands, wildlife, ESA's and landscape connectivity.

Social Environment

Route EL1 was ranked first from a Social Environment Factor perspective because it ranked 1ST or 2ND in the majority of its criteria, including most notably its first place ranking for property impacts. Route EL4 ranked second because it ranked 1ST or 2ND in the majority of its criteria, including a second place ranking for property impacts. Routes EL2, EL3, EL7, EL8 and EL10 tied for third.

Land Use/Economic Environment

Routes EL12 and EL13 ranked 1ST in the Economic Factor area as they are relatively compatible with Municipal Development Strategies and have the lowest net effects within the Agriculture, Non-Farm Commercial Activities and Property Contamination and Waste criteria. In relation to Businesses affected and Agriculture, the routes ranked within the top three of each of these criteria as well. Routes EL3, EL4 and EL7 tied for second.

Cultural Environment

The net effects for routes EL8 and EL11 are the lowest among all routes. They are the only two routes that have no archaeological sites, a low number of built heritage resources, and a low number of cultural landscape resources. Routes EL1, EL3, EL4, EL5, EL7, EL9, EL10, EL12 and EL13 follow as the next set of preferred routes. These routes have a moderate effect in that they have a moderate number of built heritage and cultural landscape resources. While route EL12 has a low number for built heritage and cultural landscape resources, it contains an archaeological findspot. Routes EL2 and EL6 are ranked lower because of their high numbers of built heritage and cultural landscape resources.

Technical Considerations

Routes EL7 and EL8 were ranked first in Technical Considerations, as they received first-place rankings in all criteria. Routes EL7 and EL8 were preferred over other routes because of their advantage in the Cost criterion. Routes EL4-EL6, EL10 and EL11 were ranked second because of their second-place rankings in cost, and first-place rankings in all other criteria. Route EL1 was ranked third overall because of its second-place rankings in both Cost and Accessibility (this was the only route without a first-place rank in Accessibility). Route EL9 was also ranked third overall, owing to its third-place ranking in cost. Routes EL2, EL12 and EL13 were ranked fourth because of their fourth-place Cost rankings, and Route EL3 was ranked fifth and last, because of its very low ranking in Cost.

Overall Ranking and Rationale for the East Durham Link

In summary, Route EL 8 is recommended for the following primary reasons:

- Least impact to the natural environment features, wetlands, core wildlife habitat areas, groundwater, vegetation and ESA's
- Fewer residential and business properties impacted
- Impacts no known archaeological sites

Table 5.10 provides a visual representation of the evaluation results.

Table 5.10: Visual Representation of Reasoned Argument Evaluation Results for Section 7, East Durham Link

Factor Area	Alternative	EL 1	EL 2	EL 3	EL 4	EL 5	EL 6	EL 7	EL 8	EL 9	EL 10	EL 11	EL 12	EL 13
Natural		•	•	•	•	•	•	•	•	•	•	•	•	•
Social		•	•	•	•	•	•	•	•	•	•	•	•	•
Land Use /Economic		•	•	•	•	•	•	•	•	•	•	•	•	•
Cultural		•	•	•	•	•	•	•	•	•	•	•	•	•
Technical		•	•	•	•	•	•	•	•	•	•	•	•	•
Rec'd = Recommended Not Rec'd = Not Recommended		Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd	Not Rec'd

Grade of Preference



5.8.2.2 Arithmetic Results

The arithmetic evaluation results for Section 7 confirmed that Route EL8 is the Technically Recommended Route for the East Link. Route EL8 tied for first overall based on the initial weightings and ranked first overall based on the various alternate weightings considered as part of the sensitivity testing. The arithmetic evaluation results are summarized in **Table 5.11**, with the details provided in **Supporting Document #5**.

Table 5.11: Arithmetic Evaluation Results for Section 7, East Durham Link

Factor		Rankings Based on Initial Weights		
		Alternative EL4	Alternative EL7	Alternative EL8
Natural Environment (40%)		3	2	1
Social Environment (25%)		1	3	2
Land Use/Economic Environment (20%)		1	1	3
Cultural Environment (5%)		2	2	1
Technical Considerations (10%)		3	1	1
Overall Ranking		3	2	1
Sensitivity Analysis				
Factor		Rankings Based on Alternate Weights		
		Alternative EL4	Alternative EL7	Alternative EL8
Natural Environment	High (50%)	3	2	1
Natural Environment	Low (20%)	3	2	1
Social Environment	High (40%)	3	2	1
Social Environment	Low (10%)	3	2	1
Economic Environment	High (40%)	3	2	1
Economic Environment	Low (10%)	3	2	1
Cultural Environment	High (10%)	3	2	1
Cultural Environment	Low (5%)	3	2	1
Technical Environment	High (10%)	3	2	1
Technical Environment	Low (5%)	3	2	1
Stakeholder Weights		3	2	1
Overall Ranking		3	2	1