

5.7 Section 6 – West 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 West Link were assessed and evaluated.

The following outlines some of the main highlights under each factor area for the West Link. For additional information please refer to the Technical Specialist Reports provided in **Appendices E through M** and **Supporting Document #4**.

5.7.1 Net Effects Analysis

5.7.1.1 Route WL1

Route WL1 is illustrated in **Figure 5.20**.

Natural Environment

The key net effects for Route WL1 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 11 intermittent watercourse crossings
- 1603 m of high sensitivity fish habitat being crossed (West Lynde Creek and long crossing at oblique angle of Tributary D).
- 1085 m of moderate sensitivity watercourses crossed, includes a long crossing of Tributary B at the Taunton Road interchange.
- 312 m of low sensitivity fish habitat is crossed by the route alternative.
- 1600 m of unconfirmed sensitivity fish habitat is crossed
- 52.2 ha of vegetation removed
- Small patches of high quality mixed and deciduous forest removed (Tributaries A and P).
- Loss of 1.6 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex).
- Approximately 4.8 ha of unevaluated wetland vegetation in 3 communities of low to moderate quality.
- 6 new ESA crossings
- Linkage quality reduced at West Lynde Creek due to removal of vegetation under structures
- Three local linkages connecting Tributary B to unit C5HAL are crossed or removed by the route alternative

Figure 5.20: Route Alternative WL1



- Route WL1 covers 242 ha of low permeability soil, crosses 107 ha of high permeability soil, intersects 10 water wells within the route and associated interchange footprints, and, intersects 33 shallow water wells in low permeability soil and 23 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a moderate effect on planned/approved community structure with 12.6 ha of employment lands in Ajax removed and 38.3 ha of future settlement area removed from the Town of Whitby, with moderate encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on urban and rural barrier effects as the route serves to separate the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax and between living areas at Taunton Road north to Lyndebrook Road.

The route results in low property impacts relative to the other alternatives with a total of 87 properties affected including 12 residential displacements.

There are 133 noise sensitive receptors that could potentially be impacted by this route alternative and 101 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the west
- 87 properties affected, including 12 residential displacements
- 133 noise sensitive receptors
- 101 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route allows for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby and Ajax.

There is a low impact on non-farm commercial activities as there is one landscaping supply business displaced. Two golf facilities, and an industrial storage business and orchard would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area and six livestock operations would be affected by this proposed route. Thirty-three (33) field crop operations would be affected, resulting in the loss of land and severance of property. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and

potential severance of property. Twenty (20) parcels of land greater than 20 ha and 16 parcels less than 20 ha would be created. Eight high investment agricultural operations would be affected including specialty crop and livestock operations.

One (1) property with the potential for site contamination will be directly impacted by this route alternative in urban areas. The property is a soil supply company with aboveground storage tanks with a moderate potential for site contamination. In addition, a spill occurrence in an urban area is located adjacent to the alternative route, but it will not be directly impacted. One (1) property with the potential for site contamination will be directly impacted by this route alternative in a rural area. The property is a topsoil and aggregate supply company with a moderate potential for contamination. No (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- One business displaced (landscaping supply business)
- Four specialty crop areas/operations affected
- Six livestock operations and thirty-three field crop operations affected
- Eight high investment agricultural operations affected
- Two properties with potential for site contamination impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL1 will displace or disrupt nine (9) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

This alternative is moderately compatible with the existing and planned road network. For Alternative WL1, realignment of 4 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. There is less than desirable spacing between the proposed West Link interchange and the Salem Road interchange on Highway 401. Realignment of 1.6 kilometres of Halls Road is required to accommodate an interchange at the West Link/Taunton Road. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL1 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for WL1 is approximately \$254M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road
- High accessibility to population and employment centres
- High relative cost

5.7.1.2 Route WL2

Route WL2 is illustrated in **Figure 5.21**.

Natural Environment

The key net effects for Route WL2 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 11 intermittent watercourse crossings. Long reach of Tributary O in close proximity to the route alternative. Long reach of Tributary B encompassed by route alternative and Rossland Road interchange
- 1603 m of high sensitivity fish habitat are crossed in 2 locations: West Lynde Creek and a long crossing at an oblique angle of Tributary D).
- 1460 m of moderate sensitivity watercourses crossed. Long segments of Tributaries B and O are encompassed or immediately adjacent to the route alternative. There is also a long crossing of Tributary B at Rossland Road.
- 1545 m of unconfirmed sensitivity fish habitat are crossed, of which some reaches are associated with wooded riparian systems that show evidence of groundwater
- 54.6 ha of vegetation removed
- Route alternative borders large forest block C5HAL and removes approximately 1400 m of edge of RLAK vegetation units
- Loss of 1.6 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex).
- Loss of 18.2 ha of unevaluated wetland vegetation in 4 communities of low to moderate quality.
- 7 new ESA crossings
- Three local linkages from Tributary B to C5HAL crossed/removed
- Route WL2 covers 244 ha of low permeability soil, crosses 100 ha of high permeability soil, intersects 5 water wells within the route and associated interchange footprints, and, intersects 35 shallow water wells in low permeability soil and 23 shallow water wells in high permeability soil within the 500 m buffer.

Figure 5.21: Route Alternative WL2



Social Environment

The route would have a moderate effect on planned/approved community structure with 12.6 ha of employment lands in Ajax removed and 47.9 ha of future settlement area removed from the Town of Whitby, with moderate encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on urban and rural barrier effects as the route serves to separate the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax and between living areas at Taunton Road north to Lyndebrook Road.

The route results in moderate property impacts relative to the other alternatives with a total of 94 properties affected including 12 residential displacements.

There are 134 noise sensitive receptors that could potentially be impacted by this route alternative and 104 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the west
- 94 properties affected, including 12 residential displacements
- 134 noise sensitive receptors
- 104 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route does not allow for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby and Ajax.

There is no impact to non-farm commercial activities as there are no businesses displaced. Two golf facilities, an orchard, and an industrial storage business would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area, and six livestock operations would be affected by this proposed route. Thirty-three (33) field crop operations would be affected, resulting in the loss of land and severance of property. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Twenty-one (21) parcels of land greater than 20 ha and 15 parcels less than 20 ha would be created. Eight high investment agricultural operations would be affected including specialty crop and livestock operations.

No properties with the potential for site contamination will be directly impacted by this route alternative in rural or urban areas. A spill occurrence in an urban area is located adjacent to the alternative route, but it will not be directly impacted. In addition, no (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- No businesses displaced
- Four specialty crop areas/operations affected
- Six livestock operations and thirty-three field crop operations affected
- Eight high investment agricultural operations affected
- No properties with potential for site contamination impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL2 will displace or disrupt nine (9) cultural heritage landscapes and six (6) built heritage resources.

Technical Considerations

This alternative is moderately compatible with the existing and planned road network. For Alternative WL2, realignment of 4 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. There is less than desirable spacing between the proposed West Link interchange and the Salem Road interchange on Highway 401. Realignment of 1.2 kilometres of Halls Road is required to accommodate an interchange at the West Link/Rossland Road. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL2 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for WL2 is approximately \$254M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road

- High accessibility to population and employment centres
- High relative cost

5.7.1.3 Route WL3

Route WL3 is illustrated in **Figure 5.22**.

Natural Environment

The key net effects for Route WL3 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 12 intermittent watercourse crossings.
- 1603 m of high sensitivity fish habitat being crossed (West Lynde Creek and a long crossing at an oblique angle of Tributary D).
- 1649 m of moderate sensitivity watercourses crossed. Long segment of Tributary B crossed by the Taunton and Rossland Road interchange footprints would likely require channel realignment/relocation.
- 312 m of low sensitivity fish habitat being crossed.
- 1440 m of unconfirmed sensitivity fish habitat crossed of which certain reaches are associated with wooded riparian systems and have evidence of groundwater
- 47.8 ha of vegetation removed
- Loss of 1.6 ha of Provincially Significant Wetland vegetation in one community at Highway 401 (part of the Lynde Creek coastal wetland complex)
- Loss of 6.9 ha of unevaluated wetland vegetation in 5 communities of low to high quality
- 7 new ESA crossings
- Linkage quality reduced at West Lynde Creek due to removal of vegetation under structures
- Three local linkages connecting Tributary B to unit C5HAL are crossed or removed. Major effect to Tributary B linkage between Taunton and Rossland Roads.

Figure 5.22: Route Alternative WL3



- Route WL3 covers 247 ha of low permeability soil, crosses 97 ha of high permeability soil, intersects 6 water wells within the route and associated interchange footprints, and, intersects 36 shallow water wells in low permeability soil and 25 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a moderate effect on planned/approved community structure with 12.6 ha of employment lands in Ajax removed and 48.8 ha of future settlement area removed from the Town of Whitby, with moderate encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on urban and rural barrier effects as the route serves to separate the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax and between living areas at Taunton Road north to Lyndebrook Road.

The route results in high property impacts relative to the other alternatives with a total of 100 properties affected including 17 residential displacements.

There are 150 noise sensitive receptors that could potentially be impacted by this route alternative and 112 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the west
- 100 properties affected, including 17 residential displacements
- 150 noise sensitive receptors
- 112 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route does not allow for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby and Ajax.

There is no impact to non-farm commercial activities as there are no businesses displaced. Two golf facilities, an orchard, and an industrial storage business would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area, and six 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. Twenty-four (24) 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 6 parcels less than 20 ha

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

No properties with the potential for site contamination will be directly impacted by this route alternative in rural or urban areas. A spill occurrence in an urban area is located adjacent to the alternative route, but it will not be directly impacted. In addition, no (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

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

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL3 will displace or disrupt eight (8) cultural heritage landscapes and one (1) built heritage resource.

Technical Considerations

This alternative is moderately compatible with the existing and planned road network. For Alternative WL3, realignment of 4 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. There is less than desirable spacing between the proposed West Link interchange and the Salem Road interchange on Highway 401. Realignment of 1.6 kilometres of Halls Road is required to accommodate an interchange at West Link/Rossland Road. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL3 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for WL3 is approximately \$254M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road
- High accessibility to population and employment centres
- High relative cost

5.7.1.4 Route WL4

Route WL4 is illustrated in **Figure 5.23**.

Natural Environment

The key net effects for Route WL4 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 14 new intermittent watercourse crossings.
- Enclosure or relocation of at least 3 tributaries is anticipated. A long reach of Tributary B is located within Rossland Road interchange footprint
- 1603 m of high sensitivity fish habitat being crossed (West Lynde Creek and a long crossing at an oblique angle of Tributary D).
- 2075 m of moderate sensitivity watercourses crossed. Long oblique crossing of Tributary B crossed by the Rossland Road interchange footprint would likely require channel realignment/relocation.
- 312 m of low sensitivity fish habitat crossed.
- 1246 m of unconfirmed sensitivity fish habitat crossed, of which certain reaches are associated with wooded riparian systems and have evidence of groundwater. The Halls Road realignment is adjacent to a long reach of Tributary O
- 60.8 ha of vegetation removed
- Loss of 1.6 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex).
- Loss of 9.3 ha of unevaluated wetlands in 8 communities of low to high quality
- 7 new ESA crossings
- Linkage quality reduced at West Lynde Creek due to removal of vegetation under structures. Design measures to facilitate wildlife movement will be investigated at the design stage.
- Three local linkages from Tributary B to unit C5HAL will be crossed and/or removed

Figure 5.23: Route Alternative WL4



- Route WL4 covers 239 ha of low permeability soil, crosses 114 ha of high permeability soil, intersects 13 water wells within the route and associated interchange footprints, and, intersects 36 shallow water wells in low permeability soil and 24 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a high impact on planned/approved community structure with 13 ha of employment lands in Ajax removed and 58.5 ha of future settlement area removed from the Town of Whitby, with moderate encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has a moderate effect on urban and rural barrier effects as the route serves to separate the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax and between living areas at Rossland Road north to Lyndebrook Road. The route results in high property impacts relative to the other alternatives with a total of 98 properties affected including 20 residential displacements.

There are 143 noise sensitive receptors that could potentially be impacted by this route alternative and 104 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the west
- 98 properties affected, including 20 residential displacements
- 143 noise sensitive receptors
- 104 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route allows for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby and Ajax.

There is a low impact on non-farm commercial activities as there is a landscaping supply business displaced. Two golf facilities, an orchard, and an industrial storage business would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area, and six 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. Twenty-five (25) 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. Eight high investment agricultural operations would be affected including specialty crop and livestock operations.

No properties with the potential for site contamination will be directly impacted by this route alternative in the urban areas. A spill occurrence in an urban area is located adjacent to the alternative route, but it will not be directly impacted. One (1) property with the potential for site contamination will be directly impacted by the arterial road realignment associated with this route alternative in a rural area. The property is a topsoil and aggregate supply company with a moderate potential for contamination. No (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- One business displaced (landscaping supply business)
- Four specialty crop areas/operations affected
- Six livestock operations and thirty-five field crop operations affected
- Eight high investment agricultural operations affected
- One property with potential for site contamination impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL4 will displace or disrupt ten (10) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

This alternative is moderately compatible with the existing and planned road network. For Alternative WL4, realignment of 4 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. There is less than desirable spacing between the proposed West Link interchange and the Salem Road interchange on Highway 401. Realignment of 4.9 kilometres of Halls Road is required to accommodate the West Link between Dundas Street and Concession 5. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL4 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for WL4 is approximately \$258M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road
- High accessibility to population and employment centres
- High relative cost

5.7.1.5 Route WL5

Route WL5 is illustrated in **Figure 5.24**.

Natural Environment

The key net effects for Route WL5 are summarized as follows:

- 2 new permanent watercourse crossings (Tributary D) and 2 extensions of existing crossings of permanent watercourses (Carruthers Creek and Lynde Creek).
- 11 new intermittent watercourse crossings.
- Possible enclosure or relocation of at least 6 tributaries is anticipated given the long reaches and challenging crossing angles. A long reach of Tributary A is encompassed by the route alternative footprint and Rossland Road interchange. The confluences of Tributaries Q and P with Tributary A are encompassed by the route alternative footprint. Tributary C is almost entirely within the route alternative footprint and the confluence of Tributaries B and C is within the footprint
- 865 m of high sensitivity fish habitat being crossed. This includes two crossings of Tributary D by the route alternative and by the realigned Halls Road north of Winchester Road.
- 3705 m of moderate sensitivity watercourses crossed. The confluences of Tributaries Q and P with Tributary A are encompassed by the route alternative footprint. Tributary C is almost entirely within the route alternative footprint and the confluence of Tributaries B and C is within the footprint.
- 1141 m of unconfirmed sensitivity watercourses crossed some of which are associated with wooded riparian systems and evidence of groundwater (e.g. Tributary P).
- 66 ha of vegetation removed from 40 communities (includes 27.9 ha upland deciduous, conifer and mixed forest and 38.1 cultural woodland, thicket, meadow and plantation).

Figure 5.24: Route Alternative WL5



- High quality mixed and deciduous forest at the confluence of Tributaries A and P is removed
- Loss of 1.6 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex).
- Loss of 1.0 ha of unevaluated wetlands in 3 communities of low quality
- Three new ESA crossings of the Westerly Creek Valley ESA
- 1 new crossing of Kinsale Raised Shoreline ANSI
- Loss of local linkage function of Tributary A
- Route WL5 covers 34 ha of low permeability soil, crosses 84 ha of high permeability soil, intersects 21 water wells within the route and associated interchange footprints, and, intersects 52 shallow water wells in low permeability soil and 12 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a low effect on planned/approved community structure with 13.0 ha of employment lands in Ajax removed and 9.98 ha of future settlement area removed from the Town of Whitby, with low encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has low urban and rural barrier effects as it only creates a minor barrier effect for the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax. The route results in high property impacts relative to the other alternatives with a total of 119 properties affected including 23 residential displacements.

There are 137 noise sensitive receptors that could potentially be impacted by this route alternative and 96 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the west
- 119 properties affected, including 23 residential displacements
- 137 noise sensitive receptors
- 96 air quality sensitive receptors

Land Use/Economic Environment

The route has a low degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. The route negatively impacts employment lands in Ajax. The route allows for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby.

There is no impact on non-farm commercial activities as there are no businesses displaced. One landscape supply business will have its access removed. One golf facility, a dog kennel, and a retail orchard would potentially have increased business exposure.

The majority of this section of the West 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. Twenty-one (21) field crop operations would be affected, resulting in the loss of land and severance of property. Seventeen (17) 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.

Three (3) properties with the potential for site contamination will be directly impacted by this route alternative in the urban areas. These properties include a construction company (moderate potential for site contamination), a soil supply company with aboveground storage tanks (moderate potential for site contamination), and a fuel service station (high potential for site contamination). A spill occurrence in an urban area is located adjacent to the alternative route, but will not be directly impacted. Six (6) properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. The properties include two spill locations (low/moderate potential for contamination), a construction company (moderate potential for site contamination), a resource extraction topsoil and aggregate supply company (moderate potential for site contamination), a home-based re-fuelling company (high potential for site contamination), and a hydro sub-station (low potential for site contamination). One (1) waste disposal site/automotive wrecking facility will be disturbed by an arterial road realignment associated with 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:

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

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL5 will displace or disrupt eight (8) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

There is low potential for diversion of longer distance travel to and from local roadways parallel to the West Link. North/south local roads in the area include Lakeridge Road, Halls Road and Audley Road.

For Alternative WL5, an interchange at Lakeridge Road is precluded by the Highway 407E/West Link interchange at that location. Therefore, traffic in that area will infiltrate local roads to gain access to Highway 407E via the nearest interchange at Salem Road to the west and Cochrane Street to the east.

This alternative is moderately compatible with the existing and planned road network. For Alternative WL5, realignment of 4 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. There is less than desirable spacing between the proposed West Link interchange and the Salem Road interchange on Highway 401. Approximately 11 kilometres of regional and local road reconstruction is required between Dundas Street and Highway 7. Lakeridge Road will be realigned along the existing Halls Road alignment between Dundas Street and Highway 407E to accommodate the West Link. The right-of-way for realigned Lakeridge Road will be the same as existing, to maintain the regional arterial roadway function of Lakeridge Road.

Alternative WL5 has moderate accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street and West Link/Highway 7. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. This alternative does not provide for a partial interchange at Lakeridge Road to/from Highway 407E.

The preliminary construction cost for WL5 is approximately \$259M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Lakeridge Road
- Moderate accessibility to population and employment centres – cannot accommodate an interchange at Lakeridge Road
- High relative cost

5.7.1.6 Route WL6

Route WL6 is illustrated in **Figure 5.25**.

Natural Environment

The key net effects for Route WL6 are summarized as follows:

- 1 permanent watercourse crossing (Tributary D of Lynde Creek) and 2 extensions of existing crossings of permanent watercourses (Carruthers Creek and Lynde Creek).
- 10 crossings of intermittent watercourses.
- 1 offline pond removed/infilled.
- 263 m of high sensitivity fish habitat being crossed. Presence of Brook Trout and spawning habitat for salmonids and potential Redside Dace habitat in the lower reaches of Tributary D. Pike spawning habitat confirmed in Lynde Creek.
- 2305 m of moderately sensitive fish habitat being crossed. The tributaries crossed are intermittent. A significant area of Tributary B is crossed by the Rossland Road interchange footprint.
- 515 m of watercourses being crossed with unconfirmed potential to support fish and fish habitat.
- 56.2 ha of vegetation removed (includes 14.5 ha of upland deciduous, conifer and mixed forest and 41.7 ha of cultural woodland, thicket, meadow and plantation).
- Potential to affect six regionally rare species in 6 vegetation units.
- No known flora Species At Risk within 50 m of the route alternative
- Loss of 1.8 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex)
- Loss of 7.6 ha of unevaluated wetland vegetation in 9 communities ranging from low to high quality
- 1 new ANSI crossing
- 4 new ESA crossings
- 1 extension of an existing ESA crossing at the Lynde Creek Coastal Wetland Complex
- Bisects a large, but discontinuous east-west mosaic of forest patches extending from west of Lake Ridge Road to the Heber Downs wetland complex
- The route alternative will impact several north-south linkages along Tributaries A and B
- The realignment of Halls Road crosses/2 local linkage features
- Route WL6 covers 256 ha of low permeability soil, crosses 84 ha of high permeability soil, is near to a Provincially Significant Wetland (south of node 10a), intersects 9 water wells within the route and associated

Figure 5.25: Route Alternative WL6



interchange footprints, and, intersects 44 shallow water wells in low permeability soil and 14 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a high impact on planned/approved community structure with 2.5 ha of employment lands in Ajax removed and 84.5 ha of future settlement area removed from the Town of Whitby, with a high impact with respect to encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has a high effect on urban and rural barrier effects as it separates the Almond Village residential plan of subdivision from residential development within the Town of Whitby and Town of Ajax, and with Kinsale in the north. There would be a barrier between proposed Living Areas and proposed employment lands north of Dundas. The north portion of the route would be sterilized to the west because the lands left would be too narrow to accommodate a residential community.

The route results in low property impacts relative to the other alternatives with a total of 75 property impacts including 18 residential displacements.

There are 183 noise sensitive receptors that could potentially be impacted by this route alternative and 123 sensitive receptors that could potentially be impacted from an air quality perspective. There is one critical receptor, a daycare facility, within the area of influence.

Summary of net effects:

- High effect on planned/approved community structure
- Route separates Almond Village from residential developments to the east
- 75 properties affected, including 18 residential displacements
- 183 noise sensitive receptors, including one critical receptor
- 123 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 of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route does not allow for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby.

There is high impact on non-farm commercial activities as there is a hydro sub-station, wrecking yard and a landscaping supply business displaced. A dog kennel would have potentially increased visibility with this route alternative.

The majority of this section of the West 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 operation would be affected by this proposed route. Thirty-three (33) field crop operations would be affected, resulting in the loss of land and severance of property. Fifteen (15) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Nineteen (19) parcels of land greater than 20 ha and 13 parcels less than 20 ha would be created. One high investment agricultural operations would be affected including specialty crop and livestock operations.

No properties with the potential for site contamination will be directly impacted by this route alternative in the urban areas. A spill occurrence in an urban area is located adjacent to the alternative route, but will not be directly impacted. However, three (3) properties with the potential for site contamination will be directly impacted by this route alternative in rural areas. The properties include a topsoil and aggregate supply company (moderate potential for site contamination), a home-based refuelling company (high potential for site contamination), and a hydro sub-station (low potential for site contamination). One (1) waste disposal site/automotive wrecking facility 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
- One livestock operation and thirty-three field crop operations affected
- One high investment agricultural operation affected
- Three properties with potential for site contamination and one former waste disposal site impacted

Cultural Environment

Two archaeological sites identified along this route. One site is an Archaic/Early Woodlands scatter (AIGs-90) the other is an Aboriginal undetermined findspot (AIGr-46). As well, over 50 % of the route segment is identified as having high archaeological potential. The potential for adverse effects to known significant archaeological sites and areas of archaeological potential are high albeit should this site be affected by construction activities, there may be opportunities for mitigation (protection and/or avoidance).

Route WL6 will displace or disrupt seven (7) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

There is low potential for diversion of longer distance travel to and from local roadways parallel to the West Link. North/south local roads in the area include Lakeridge Road, Halls Road and Audley Road.

For Alternative WL6, an interchange at Lakeridge Road is precluded by the Highway 407E/West Link interchange near that location. Therefore, traffic in that area will infiltrate local roads to gain access to Highway 407E via the

nearest interchange at Salem Road to the west and Cochrane Street to the east, and a moderate net effect is realized.

This alternative is highly compatible with the existing and planned road network. For Alternative WL6, realignment of 3.2 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. Realignment of 6.4 kilometres of Halls Road is required to accommodate the West Link between Dundas Street and Highway 7.

Alternative WL6 has moderate accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street and West Link/Highway 7. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. This alternative does not provide for a partial interchange at Lakeridge Road to/from Highway 407E.

The preliminary construction cost for WL6 is approximately \$252M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Highly compatibility with existing and planned road network
- Requires realignment of Highway 401 and Halls Road
- Moderate accessibility to population and employment centres – cannot accommodate an interchange at Lakeridge Road
- High relative cost

5.7.1.7 Route WL7

Route WL7 is illustrated in **Figure 5.26**.

Natural Environment

The key net effects for Route WL7 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 12 crossings of an intermittent watercourse with moderate, low and unconfirmed sensitivity
- 1501 m of high sensitivity fish habitat being crossed. Presence of Brook Trout and spawning habitat for salmonids and potential Redside Dace habitat in Tributary D; Pike spawning habitat confirmed in reaches of Lynde Creek.
- 1655 m of moderately sensitive fish habitat being crossed. The tributaries crossed are intermittent. A significant area of Tributary B is crossed by the Rossland Road interchange footprint.
- 312 m of low sensitivity fish habitat being crossed.
- 690 m of watercourses being crossed with unconfirmed potential to support fish and fish habitat.
- 56.3 ha of vegetation removed
- Route alternative borders or removes the edges of large forest blocks
- A total of seven Butternut trees observed in two surrounding vegetation units however, at least five appear to be outside of the route alternative footprint
- Loss of 1.8 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex)
- Loss of 10 ha of unevaluated wetland vegetation in 9 communities of low to high quality
- 6 new ESA crossings
- 1 extension of an existing ESA crossing
- 1 new crossing of regional wildlife movement zone associated with West Lynde Creek
- The route alternative will directly remove several north-south linkages along Tributaries A and B
- The route alternative removes much of the Tributary B linkage feature south of Taunton Road
- Route WL7 covers 216 ha of low permeability soil, crosses 112 ha of high permeability soil, is near to a Provincially Significant Wetland (south of node 10a), intersects 11 water wells within the route and associated interchange footprints, and, intersects 37 shallow water wells in low permeability soil and 24 shallow water wells in high permeability soil within the 500 m buffer.

Figure 5.26: Route Alternative WL7



Social Environment

The route would have a high impact on planned/approved community structure with 2.5 ha of employment lands in Ajax removed and 83.8 ha of future settlement area removed from the Town of Whitby, with a moderate impact with respect to encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has a moderate urban and rural barrier effect as it creates a minor barrier between the Almond Village residential plan of subdivision and residential development within the Town of Whitby. A barrier is also created between growth areas and proposed employment lands north of Dundas and between the proposed growth area at Rossland Rd north to Lyndebrook Rd.

The route results in low property impacts relative to the other alternatives with a total of 85 property impacts including 17 residential displacements.

There are 157 noise sensitive receptors that could potentially be impacted by this route alternative and 118 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 planned/approved community structure
- Route separates Almond Village from residential developments to the east
- 85 properties affected, including 17 residential displacements
- 157 noise sensitive receptors
- 118 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route allows for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby.

There is low impact on non-farm commercial activities as there is one landscaping supply business displaced. A golf facility and an industrial storage business would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area, and seven livestock operations would be affected by this proposed route. Forty-four (44) field crop operations would be affected, resulting in the loss of land and severance of property. Twenty-four (24) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Twenty (20) parcels of land greater than 20 ha and 8 parcels less than 20 ha

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

No properties with the potential for site contamination will be directly impacted by this route alternative in the urban areas. A spill occurrence in an urban area is located adjacent to the alternative route, but will not be directly impacted. However, one (1) property with the potential for site contamination will be directly impacted by this route alternative in a rural area. The property is a topsoil and aggregate supply company with a moderate potential for site contamination. No (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

- Moderate compatibility with the provincial/municipal and private land use development strategies
- One business displaced (landscaping supply business)
- Four specialty crop areas/operations affected
- Seven livestock operations and forty-four field crop operations affected
- Nine high investment agricultural operations affected
- One property with potential for site contamination impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL7 will displace or disrupt seven (7) cultural heritage landscapes and three (3) built heritage resources.

Technical Considerations

This alternative is highly compatible with the existing and planned road network. For Alternative WL7, realignment of 3.2 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. Realignment of 5.2 kilometres of Halls Road is required to accommodate the West Link between Dundas Street and Concession 5. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL7 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for WL7 is approximately \$250M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- High compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road
- High accessibility to population and employment centres
- High relative cost

5.7.1.8 Route WL8

Route WL8 is illustrated in **Figure 5.27**.

Natural Environment

The key net effects for Route WL8 are summarized as follows:

- 2 new permanent watercourse crossings (West Lynde Creek and Tributary D) and 3 extensions of existing crossings on permanent watercourses (Carruthers Creek, Lynde Creek and Tributary D).
- 12 crossings of intermittent watercourses with moderate, low and unconfirmed sensitivity
- 1501 m of high sensitivity fish habitat being crossed. Presence of Brook Trout and spawning habitat for salmonids and potential Redside Dace habitat in downstream reaches of Tributary D; Pike spawning habitat confirmed in Lynde Creek.
- 1387 m of moderately sensitive fish habitat being crossed. The tributaries crossed are intermittent. A long parallel reach of Tributary B is crossed by the route alternative between the Rossland Road and Taunton interchanges.
- 312 m of low sensitivity fish habitat crossed.
- 878 m of watercourses being crossed with unconfirmed potential to support fish and fish habitat. These watercourses are drainage features or agricultural swales that likely do not support fish or fish habitat
- 53.5 ha of vegetation removed
- Potential removal of one Butternut however, the exact location of the Butternut relative to the route alternative must be confirmed to determine impact
- Loss of 1.8 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex)
- Loss of 6.4 ha of unevaluated wetland vegetation in 6 communities of low to high quality

Figure 5.27: Route Alternative WL8



- 7 new ESA crossings
- 1 extension of an existing ESA crossing (Lynde Creek Coastal Wetland Complex)
- 1 new crossing of regional wildlife movement zone associated with West Lynde Creek
- The route alternative will directly remove several north-south linkages along Tributaries A and B
- The route alternative removes much of the Tributary B linkage feature south of Taunton Road
- Route WL8 covers 221 ha of low permeability soil, crosses 93 ha of high permeability soil, is near to a Provincially Significant Wetland (south of node 10a), intersects 5 water wells within the route and associated interchange footprints, and, intersects 37 shallow water wells in low permeability soil and 24 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a high impact on planned/approved community structure with 2.5 ha of employment lands in Ajax removed and 82.4 ha of future settlement area removed from the Town of Whitby, with a high impact with respect to encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has a moderate effect on urban and rural barrier effects as the route serves to separate the Almond Village residential plan of subdivision from the residential developments to the west in the Town of Ajax and between living areas north of Dundas to Lyndebrook Road.

The route results in low property impacts relative to other alternatives with a total of 76 property impacts including 13 residential displacements.

There are 152 noise sensitive receptors that could potentially be impacted by this route alternative and 123 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the east
- 76 properties affected, including 13 residential displacements
- 152 noise sensitive receptors
- 123 air quality sensitive receptors

Land Use/Economic Environment

The route has a high degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. The route was the preferred route previously in the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route does not allow for contiguous development potential in growth areas. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby.

There is no impact on non-farm commercial activities as there are no businesses displaced. A golf facility and an industrial storage business would potentially have increased business exposure.

The majority of this section of the West 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. Four specialty crop areas or operations were observed or affected in this area, and eight 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-five (25) 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 4 parcels less than 20 ha would be created. Ten high investment agricultural operations would be affected including specialty crop and livestock operations.

No properties with the potential for site contamination will be directly impacted by this route alternative in urban or rural areas. A spill occurrence in an urban area is located adjacent to the alternative route, but will not be directly impacted. No (known) operating or closed waste management facilities will be disturbed.

Summary of net effects:

- High compatibility with the provincial/municipal and private land use development strategies
- No businesses displaced
- Four specialty crop areas/operations affected
- Eight livestock operations and forty-five field crop operations affected
- Ten high investment agricultural operations affected
- No properties with potential for site contamination impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL8 will displace or disrupt five (5) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

This alternative is highly compatible with the existing and planned road network. For Alternative WL8, realignment of 3.2 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. Realignment of 1.3 kilometres of Halls Road is required to accommodate the West Link/Rossland interchange. Realignment of 1.6 kilometres of Coronation Road is required to accommodate the Highway 407E/West Link interchange.

Alternative WL8 has high accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street, West Link/Highway 7 and Highway 407E/Lakeridge Road. The partial interchange at Dundas Street would allow traffic movements from east

and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. The partial interchange at Lakeridge Road would allow traffic movements from west to north and south and from north and south to west.

The preliminary construction cost for Alternative WL8 is approximately \$240M. Fewer structures and shorter road realignments result in a lower cost.

Summary of net effects:

- High compatibility with existing and planned road network
- Requires realignment of Highway 401, Halls Road and Coronation Road
- High accessibility to population and employment centres
- Low relative cost

5.7.1.9 Route WL9

Route WL9 is illustrated in **Figure 5.28**.

Natural Environment

The key net effects for Route WL9 are summarized as follows:

- 2 new crossings of a permanent watercourse (Lynde Creek and Tributary D) and 1 extension of an existing crossing of Carruthers Creek.
- At least 13 crossings of an intermittent watercourse
- Route alternative encompasses the confluence of Tributaries B and C. Tributary C is almost entirely within the route alternative footprint. Route alternative encompasses confluence of Tributaries A and P
- 723 m of high sensitivity fish habitat being crossed. Presence of Brook Trout and spawning habitat for salmonids and potential Redside Dace habitat in the downstream reaches of Tributary D; Pike spawning habitat confirmed in Lynde Creek.
- 3745 m of moderately sensitive fish habitat being crossed. The tributaries crossed are intermittent. A long and highly meandering segment of Tributary A is encompassed by the route alternative footprint and Rossland Road interchange footprint, in addition to the confluence of Tributary A and P. Tributary B is crossed in multiple locations, and a long reach of this tributary is enclosed by the Rossland Road interchange. A long reach of Tributary C is enclosed by the interchange footprint. Groundwater seepage was noted in this watercourse.
- No low sensitivity fish habitat being crossed.
- 318 m of unconfirmed sensitivity fish habitat being crossed. The route alternative crosses Tributary P at its confluence with Tributary A in a small, mixed forest. Evidence of groundwater (iron staining) was noted immediately upstream of the confluence.
- 65.8 ha of vegetation removed
- Potential removal of one Butternut however, the exact location of the Butternut relative to the route alternative must be confirmed to determine impact
- Loss of 1.8 ha of Provincially Significant Wetland vegetation in 1 community at Highway 401 (part of the Lynde Creek coastal wetland complex).
- Loss of 1.3 ha of unevaluated wetland vegetation in 6 communities of low to moderate quality
- 6 new ESA crossings
- 1 extension of an existing ESA crossing
- Route alternative abuts the eastern edge of the Kinsale Raised Shoreline ANSI

Figure 5.28: Route Alternative WL9



- Several north-south linkages along Tributaries A and B will be affected by the route alternative
- The route alternative and interchange at Rossland Road encompasses portions of the Tributary A and B linkages
- Route WL9 covers 279 ha of low permeability soil, crosses 80 ha of high permeability soil, is near to a Provincially Significant Wetland (south of node 10a), intersects 10 water wells within the route and associated interchange footprints, and, intersects 54 shallow water wells in low permeability soil and 12 shallow water wells in high permeability soil within the 500 m buffer.

Social Environment

The route would have a moderate impact on planned/approved community structure with 2.5 ha of employment lands in Ajax removed and 50.5 ha of future settlement area removed from the Town of Whitby, with a moderate impact with respect to encroachment on the proposed future growth area in Whitby.

The route has a moderate effect on the delivery of community services caused by increased bussing times and emergency services response times because of interchange locations and barrier effects.

The route has a low effect on urban and rural barrier effects as the route only creates a minor barrier between the Almond Village residential plan of subdivision and Whitby. A barrier will be created between the proposed growth area and proposed employment lands north of Dundas.

The route results in moderate property impacts relative to other alternatives with a total of 97 property impacts including 19 residential displacements.

There are 162 noise sensitive receptors that could potentially be impacted by this route alternative and 115 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 effect on planned/approved community structure
- Route separates Almond Village from residential developments to the east
- 97 properties affected, including 19 residential displacements
- 162 noise sensitive receptors
- 115 air quality sensitive receptors

Land Use/Economic Environment

The route has a moderate degree of compatibility with municipal and regional development goals and objectives of the Durham ROP. However, the route negatively impacts employment lands in Ajax. The route allows for contiguous development potential in growth area. There is a moderate ability to stimulate major transportation services and development initiatives in Whitby.

There is no impact on non-farm commercial activities as are no businesses displaced. One landscape supply business would have its access removed. A dog kennel would have potentially increased visibility with this route alternative.

The majority of this section of the West 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. Twenty-three (23) field crop operations would be affected, resulting in the loss of land and severance of property. Fifteen (15) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Twenty (20) parcels of land greater than 20 ha and 11 parcels less than 20 ha would be created. Three high investment agricultural operations would be affected including specialty crop and livestock operations.

Two (2) properties with the potential for site contamination will be directly impacted by this route alternative in the urban area. The properties include a soil supply company with aboveground storage tanks (moderate potential for site contamination) and a fuel service station (high potential for site contamination). A spill occurrence in an urban area is located adjacent to the alternative route, but will not be directly impacted. Six (6) properties with the potential for site contamination will be directly impacted by this route alternative in the rural areas. The properties include two spill locations (low/moderate potential for site contamination), a construction company (moderate potential for site contamination), a home-based refuelling company (high potential for site contamination), a topsoil and aggregate supply company (moderate potential for site contamination), and a hydro sub-station (low potential for site contamination). One (1) waste disposal site/automotive wrecking facility 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
- No businesses displaced
- Two specialty crop areas/operations affected
- Two livestock operations and twenty-three field crop operations affected
- Three high investment agricultural operations affected
- Eight properties with potential for site contamination and one waste disposal site impacted

Cultural Environment

One Aboriginal isolated find (AIGr-46) 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 WL9 will displace or disrupt eight (8) cultural heritage landscapes and two (2) built heritage resources.

Technical Considerations

For Alternative WL9, an interchange at Lakeridge Road is precluded by the Highway 407E/West Link interchange at that location. Therefore, traffic in that area will infiltrate local roads to gain access to Highway 407E via the nearest interchange at Salem Road to the west and Cochrane Street to the east.

This alternative is moderately compatible with the existing and planned road network. For Alternative WL9, realignment of 3.2 kilometres of Highway 401 is required to accommodate the Highway 401/West Link interchange. Approximately 11.5 kilometres of regional and local road reconstruction is required between Dundas Street and Highway 7. Lakeridge Road will be realigned along the existing Halls Road alignment between Dundas Street and Highway 407E to accommodate the West Link. The right-of-way for realigned Lakeridge Road will be the same as existing, to maintain the regional arterial roadway function of Lakeridge Road.

Alternative WL9 has moderate accessibility to population and employment centres. Full interchanges can be accommodated at Highway 401/West Link, West Link/Rossland Road, West Link/Taunton Road and Highway 407E/West Link. Partial interchanges can be accommodated at West Link/Dundas Street and West Link/Highway 7. The partial interchange at Dundas Street would allow traffic movements from east and west to north and from north to east and west. The partial interchange at Highway 7 would allow traffic movements from south to east and west and from east and west to south. This alternative does not allow for a partial interchange at Lakeridge Road to/from Highway 407E.

The preliminary construction cost for WL9 is approximately \$255M. Additional structures and longer road realignments result in higher costs.

Summary of net effects:

- Moderate compatibility with existing and planned road network
- Requires realignment of Highway 401 and Lakeridge Road
- Moderate accessibility to population and employment centres – cannot accommodate an interchange at Lakeridge Road
- High relative cost

5.7.2 Comparative Evaluation

5.7.2.1 Reasoned Argument Results

The reasoned argument evaluation results for Section 6, the West Durham Link, are summarized below, with the details provided in the Technical Specialist Reports in **Appendices E through M** and **Supporting Document #4**.

Natural Environment

Route WL6 was ranked first from a Natural Environment Factor perspective because it is ranked 1ST or 2ND in all criteria. More specifically, it has lower footprint impacts on watercourses, the lowest fisheries and aquatic habitat, vegetation, and wetland net effects, relatively lower wildlife net effects, and does not cross any regional linkages. Route WL7 was ranked second based on its second place rankings for the Fisheries and Aquatic Habitat, Vegetation and Wetlands criteria.

Social Environment

Routes WL1 and WL7 are ranked first from a Social Environment Factor perspective because it is ranked 1ST in the majority of its criteria and resulted in relatively low net effects for the Property criterion. Routes WL1 and WL8 tied for second while the remainder of the routes tied for third primarily due to the high net effects for the Property criterion.

Land Use/Economic Environment

Route WL5 was ranked first in the Economic Factor area as it is compatible with Provincial/Municipal Development Strategies and has low net effects within the Non-Farm Commercial Activities and the Agriculture criteria. Routes WL4, WL7 and WL9 ranked marginally second, with no discernable differences between the routes for this factor area.

Cultural Environment

Route WL8 was ranked as first in the Cultural Environment Factor Area as this route affects one known archaeological significant site and the least number of built heritage and cultural landscape resources. Route WL1, WL3, WL4, WL5, WL6, WL7 and WL9 ranked second or third while WL2 ranked fourth.

Technical Considerations

WL7 and WL8 are preferred for Overall Transportation System Performance, Transportation System Compatibility, Transportation System Connectivity, Accessibility and Emergency Access. Overall, WL8 is slightly preferred over WL7, since it is slightly less costly to construct (5 percent less).

Overall Ranking and Rationale for the West Durham Link

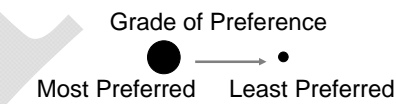
In summary, Route WL 7 is recommended for the following primary reasons:

- Avoids fragmentation of large habitat areas, retains small good quality terrestrial features
- Avoids key watercourse confluence zones and forested riparian areas
- Fewer residential, business and agricultural properties impacted
- Increased compatibility with provincial, regional and municipal approved and planned development strategies
- Allows for Lakeridge Road interchange north of Highway 7/Winchester Road
- An interchange alternative on Highway 401 east of Lakeridge Road reduces property impacts, improves spacing on Highway 401 and allows for a better geometric design

Table 5.8 provides a visual representation of the evaluation results.

Table 5.8: Visual Representation of Reasoned Argument Evaluation Results for Section 6, West Durham Link

Factor Area	Alternative	WL 1	WL 2	WL 3	WL 4	WL 5	WL 6	WL 7	WL 8	WL 9
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	Rec'd	Not Rec'd	Not Rec'd



5.7.2.2 Arithmetic Results

The arithmetic evaluation results for Section 6 confirmed that Route WL7 is the Technically Recommended Route for the West Link. Route WL7 ranked first overall based on the initial weightings, recognizing the importance of the natural and social environments and the comparable effects for the other factor areas. Furthermore, Route WL7 ranked first overall based on the various alternate weightings considered as part of the sensitivity testing. The arithmetic evaluation results are summarized in Table 5.9, with the details provided in Supporting Document #4.

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

Factor	Rankings Based on Initial Weights			
	Alternative WL6	Alternative WL7	Alternative WL8	
Natural Environment (25%)	1	2	3	
Social Environment (30%)	3	1	2	
Land Use/Economic Environment (25%)	3	1	2	
Cultural Environment (5%)	3	2	1	
Technical Considerations (15%)	3	2	1	
Overall Ranking	3	1	2	
Sensitivity Analysis				
Factor		Rankings Based on Alternate Weights		
		Alternative WL6	Alternative WL7	Alternative WL8
Natural Environment	High (40%)	3	1	2
Natural Environment	Low (10%)	3	1	2
Social Environment	High (45%)	3	1	2
Social Environment	Low (15%)	3	1	2
Economic Environment	High (40%)	3	1	2
Economic Environment	Low (10%)	3	1	2

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

