



Ministry of Transportation

407 East Environmental Assessment

Alternative Methods Technical Report (Agriculture)

FINAL DRAFT

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1. Introduction

This report documents the assessment and evaluation of the short-listed alternative routes identified for the 407 East Environmental Assessment (EA) from the Agricultural perspective. Following completion of the screening phase, alternative routes were short-listed for detailed assessment and/or comparative evaluation. The short-listed routes were broken down into 5 sections:

- West Mainline
 - Brock Road to Audley Road – 1 route
 - Audley Road to Ashburn Road – 2 route alternatives
- Central Mainline
 - Ashburn Road to Simcoe Street – 1 route
 - Simcoe Street to Enfield Road – 2 route alternatives
- East Mainline
 - Enfield Road to Highway 35/115 – 12 route alternatives
- West Link
 - West Durham Link – 9 route alternatives
- East Link
 - East Durham Link – 13 route alternatives

This report is one of nine stand-alone documents that outline the evaluation of the alternative routes process from the perspective of each discipline. These reports will be used in concert with one another as supporting documents to the Alternative Methods Report. The following 9 discipline specific reports have been prepared and made available for comment:

- Natural Environment
- Noise
- Socio-economic
- Air Quality
- Agricultural
- Waste Contamination
- Archaeology
- Cultural Heritage
- Technical

The evaluation of alternative routes was a three-step process. The first step entailed a detailed field inventory of conditions associated with each alternative route. Each environmental feature was examined to determine the extent of impact and the findings of these were outlined within each of the disciplines Field Investigations Reports. The second step was to assess the findings of the field investigations against the established Criteria and Indicators listed in Table 1 (Appendix A of Alternative Methods Report) for each of the 5 Factor Areas (Natural, Social, Economic, Cultural

and Technical). After determining the initial potential effects, standard mitigation, avoidance, enhancement and compensation measures were applied in order to determine the Net Effects.

The third step was the evaluation itself. This step involved a comparative analysis of the alternative routes considered to select a preferred alternative. At this stage, the relative importance of the environmental features was determined.

1.1 Agricultural Study Team

A study team consisting of DBH Soil Services Inc. staff undertook the Agricultural assessment and evaluation of route alternatives. The actual individuals and their specific roles are provided as follows:

- **Dave Hodgson – President:** Mr. Hodgson completed a review of relevant secondary source information including but not limited to: Official Plans, Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) documentation with regard to Regional Soils, Canada Land Inventory (CLI) soils capability, agricultural land use, artificial tile drainage, Ontario Base Mapping (OBM), aerial photographic interpretation, windshield surveys and conversations with select farm operators.

2. Assessment and Evaluation of the Alternative Routes

2.1 Methodology

The assessment and evaluation of the alternative routes was conducted in three steps:

Step 1: Confirm Evaluation Criteria and Indicators/Measures

The approved 407 East EA Terms of Reference (ToR) set out the draft criteria and indicators in **Table 5.2** for evaluating the 'alternative methods' in the EA. In addition, **Supporting Document C** of the 407 East EA ToR provided proposed data sources and measures for each of the indicators. As a result, the draft criteria, indicators, and measures provided for in the ToR were reviewed and modified appropriately to suit the evaluation of the alternative routes.

Specifically, the criteria, indicators and measures were modified in consultation with review agencies and the public to ensure that an appropriate level of scrutiny and rigour was applied in evaluating the short listed routes. In doing so, the results of the evaluation phase consist of clearly defined net effects for each "short listed" route that were suitable for comparison.

Step 2: Undertake the Net Effects Analysis

With the evaluation criteria, indicators and measures confirmed through the preceding step, a net effects analysis of the short listed alternative routes was carried out consisting of the following activities:

- Identify potential effects (based on measures) on the environment;
- Develop and apply avoidance/ mitigation/ compensation/ enhancement measures; and
- Determine net effects on the environment.
- **A correlation of aerial photographic interpretation and field survey data collection were used to determine the net effects to agriculture in this section.**

Step 3: Carry Out the Comparative Evaluation

In Step 3, the net effects identified for each short listed route segment in Step 2 were compared to one another in order to identify a “recommended route segment”. The comparison of net effects was completed using a “Reasoned Argument” or “Trade-off” evaluation methodology, as provided for in the approved 407 East EA ToR.

Each short-listed route segment was assessed based on the evaluation criteria, indicators and measures.

Ten criteria were evaluated for each segment (including number and significance) to support the reasoned argument in the comparative rankings:

- Removal or sterilization of Class 1-3 agricultural land(s)
- Specialty crops/cropland affected
- Dairy/livestock operations affected
- Field crop operations affected
- Farm properties greater than 20 ha affected
- Severed parcels greater than 20 ha created
- Severed parcels less than 20 ha created
- High investment operations affected
- Farm equipment transportation routes affected
- Division of agricultural community areas

2.2 West Mainline – Brock Road to Audley Road

2.2.1 Net Effects Analysis

As there was only one alternative for this section of the West Mainline, the following commentary provides a description of the potential effects based on the evaluation criteria/indicators.

The majority of this section of the West Mainline crosses Class 1 – 3 lands; 122.7 ha will be removed by this route segment. Smaller areas of Class 4 – 7 lands (27.7 ha) and marsh land are also crossed and are located within the lower elevation areas and stream channels.

One (1) specialty crop area (nursery stock) is affected in this area. The nursery is located on the northwest corner of Highway 7 and Sideline 16. The proposed route would result in the removal of a portion of the cropland and a further severance of a portion of the cropland from the main farm on the north side.

Twenty (20) field crop operations would be affected, resulting in the loss of land and severance of property. One (1) dairy/livestock operation affected. Eighteen (18) 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 eight (8) parcels less than 20 ha would be created.

Two (2) high investment agricultural operations would be affected. These operations include the nursery identified above and a beef operation located north of the West Mainline and east of Westney Road.

Farm equipment transportation routes affected would include: Highway 7; Sideline 16; Sideline 14; Paddock Road and Sideline 4. It is assumed that the division of the agricultural community area will be similar across the study area and will be classed as having the same net effect for all route alternatives in all areas of the Study Area. The division of the agricultural community area is considered a moderate impact.

2.3 West Mainline – Audley Road to Ashburn Road

2.3.1 Net Effects Analysis

WM1

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WM1.

The evaluation criteria document refers to the removal or sterilization of Class 1 – 3 agricultural lands. The majority of this section of the West Mainline crosses Class 1 – 3 lands 126.0 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (14.1 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One specialty crop area (nursery stock) is affected in this area. The nursery is located on a small parcel of land on the east side of Country Lane. A portion of this parcel will be consumed by this route alternative while the remaining portion would be considered a severance.

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Two (2) livestock operations would be affected on this proposed route. The proposed route would sever a portion of the field crop operations from the main farm buildings, but not affect the buildings directly.

Fourteen (14) field crop operations would be affected, resulting in the loss of land and severance of property. Twelve (12) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Ten (10) parcels of land greater than 20 ha and thirteen (13) parcels less than 20 ha would be created.

Two (2) high investment agricultural operations would be affected. One is a livestock operation located west of Cochrane Street and north of Highway 7. This route would result in a severance of a portion of the field operations from the main farm buildings. The other operation is a large livestock complex including numerous concrete silos, metal grain bins, large barns and machine sheds located north of Highway 7 and west of Ashburn Road.

Farm equipment transportation routes affected would include: Halls Road; Coronation Road; Country Lane; Ashburn Road; Cochrane Street; and Kinsale Road.

WM2

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WM2.

The majority of this section of the West Mainline crosses Class 1 – 3 lands 139.4 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (25.8 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One specialty crop area (orchard) is affected in this area. The orchard area is located on a small parcel of land on the north side of Highway 7 east of Coronation Road. This parcel will be consumed by this proposed route. Three (3) livestock operations would be affected on this proposed route.

Twelve (12) 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. Six (6) parcels of land greater than 20 ha and thirteen (13) parcels less than 20 ha would be created.

Three (3) high investment agricultural operations would be affected. One is a livestock operation located west of Cochrane Street and north of Highway 7. This route would result in the consumption of a portion of the field operations and the main farm buildings. The second operation is a large livestock complex including numerous concrete silos, metal grain bins, large barns and machine sheds located north of Highway 7 and west of Ashburn Road. This route would result in a consumption of a portion of the field operations. The third operation is a livestock operation with large barns, concrete silos and ancillary buildings located south of Highway 7 and west of Ashburn

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Road. This route would result in a severance of a portion of the field operations from the main farm buildings.

Farm equipment transportation routes affected would include: Halls Road; Coronation Road; Country Lane; Ashburn Road; Cochrane Street; and Kinsale Road. It is assumed that the division of the agricultural community area will be similar across the study area.

2.3.2 Evaluation Results

An analysis of the specific criteria of the two proposed routes illustrated that both of the routes had high impacts to agriculture. Each of the respective routes consumed Class 1 – 3 lands. Each route would consume portions of special crops and small portions of specialty cropland. The northern route would affect two livestock operations, while the southern route would affect three operations. The northern route would consume portions of land and result in severances to the land base for the two operations. The southern route would result in the consumption of land, the creation of severances and the consumption of one set of buildings on a livestock operation.

The northern route affects 14 field crop operations, while the southern route affects twelve (12) operations. This is considered a high impact for both routes. The northern route affects twelve (12) farm properties greater than 20 ha, while the southern route affects nine (9) properties. It is considered a high impact to the northern route and a medium impact on the southern route. The northern route would result in the creation of ten (10) parcels greater than 20 ha while the southern route would result in the creation of six (6) parcels. It is considered a high impact on the northern route and a medium impact on the southern route. Both routes would create thirteen (13) severed parcels less than 20 ha. This is considered a high impact on both route alternatives. Two (2) high investment operations would be affected on the northern route while three (3) high investment operations would be affected on the southern route. This is again, considered a high impact on both route alternatives. Both routes would have similar farm transportation routes affected and would have similar affects on the division of agricultural community areas. These are considered medium impacts to both routes.

The North and South Routes are ranked similarly with both routes comprising high and medium impacts to agriculture. Soil series and capability are similar in this area; both routes impact specialty crop operations, dairy/livestock operations and field crop operations. The South Route affects fewer farm properties greater than 20 ha (nine (9) vs twelve (12)) and creates fewer severed parcels greater than 20 ha (six (6) vs ten (10)). Similar impacts would be noted with regard to farm equipment transportation routes and division of the agricultural community.

Based on this assessment, it was determined that the northern route is more preferable than the southern route, though both routes have significant impacts to agriculture.

2.4 Central Mainline – Ashburn Road to Simcoe Street

2.4.1 Net Effects Analysis

As there was only one alternative for this section of the Central Mainline, the following commentary provides a description of the potential effects based on the evaluation criteria/indicators.

The majority of this section of the Central Mainline crosses Class 1 – 3 lands; 86.4 ha will be removed by this route segment. Smaller areas of Class 4 – 7 lands (17.5 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas were affected in this area. Two (2) dairy/livestock operations affected, Seventeen (17) field crop operations would be affected, resulting in the loss of land and severance of property. Seven (7) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Seven (7) parcels of land greater than 20 ha and three (3) parcels less than 20 ha would be created.

Two (2) high investment agricultural operations would be affected. These operations included two livestock operations located west of County Road 12 south of Highway 7 and east of County Road 12 south of Highway 7. Both operations comprise large barns, concrete silos and ancillary buildings. The proposed route will sever the farm buildings from portions of the land base for the farm operation on the west side of County Road 12. The farm on the east side of County Road 12 will be severed and portions of the farm buildings will be consumed.

Farm equipment transportation routes affected would include: St. Thomas Street; Anderson Street; and Garrard Road. It is assumed that the division of the agricultural community area will be similar across the study area.

2.5 Central Mainline – Simcoe Street to Enfield Road

2.5.1 Net Effects Analysis

CM1

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative CM1.

The majority of this section of the Central Mainline crosses Class 1 – 3 lands 232.8 ha will be consumed by this alternative. Smaller areas of Class 4 – 7 lands (17.0 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were observed or affected in this area. One (1) livestock operation 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 four (24) 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 twenty one (21) parcels less than 20 ha would be created.

Two (2) high investment agricultural operations would be affected. One operation is a grain drying operation located west of County Road 2 (Simcoe Street) north of County Road 3. This route would result in a severance of a portion of the field operations from the main farm buildings and the total consumption of the farm buildings. The second is a livestock operation located north of Concession 6 and west of Langmaid Road.

Farm equipment transportation routes affected would include: County Road; Ritson Road (County Road 16); and County Road 3. It is assumed that the division of the agricultural community area will be similar across the study area.

CM2

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative CM2.

The majority of this section of the Central Mainline crosses Class 1 – 3 lands; 220.5 ha will be consumed by this alternative. Smaller areas of Class 4 – 7 lands (9.4 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were observed or affected in this area. Two (2) 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-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Twenty-two (22) parcels of land greater than 20 ha and twenty (20) parcels less than 20 ha would be created.

Two (2) high investment agricultural operations would be affected. One is a grain drying operation located west of County Road 2 (Simcoe Street) north of County Road 3. This route would result in a severance of a portion of the field operations from the main farm buildings and the total consumption of the farm buildings. The other operation is a large livestock complex located south of County Road 3 and east of County Road 2.

Farm equipment transportation routes affected would include: County Road; Ritson Road; and County Road 3. It is assumed that the division of the agricultural community area will be similar across the study area.

2.5.2 Evaluation Results

An analysis of the specific criteria of the two proposed routes illustrated that both of the routes had high impacts to agriculture. Each of the respective routes consumed Class 1 – 3 lands. Neither route would consume portions of special crops or portions of specialty cropland. There is no impact as a result. Both the northern and southern routes would affect one (1) highvalue investment livestock operation. Furthermore, a large grain handling and drying operation would be consumed with either proposed route. This is a high impact.

The northern route affects thirty-two (32) field crop operations, while the southern route affects thirty-five (35) operations. This is considered a moderate impact to both routes. The northern route affects twenty-three (23) farm properties greater than 20 ha, while the southern route affects twenty-four (24) properties. It is considered a moderate impact to both routes. The northern route would result in the creation of twenty-two (22) parcels greater than 20 ha while the southern route would result in the creation of sixteen (16) parcels. It is considered a moderate impact to both routes. The northern route would create twenty (20) parcels less than 20 ha, while the southern route would create twenty-one (21) parcels less than 20 ha. It is considered a moderate impact to both routes.

Two high investment operations would be affected on both routes. This is considered a high impact for both routes. Both routes would have similar farm transportation routes affected and would have similar affects on the division of agricultural community areas. These are considered moderate impacts to both routes.

The net effects for both routes are comparable across all indicators with both having significant agricultural impacts. Both routes are therefore equally preferred.

2.6 East Mainline – Enfield Road to Hwy 35/115

2.6.1 Net Effects Analysis

EM1

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM1.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 260.8 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (122.3 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation is affected in this area; and three (3) livestock operations would be affected by this proposed route. Forty-nine (49) field crop operations would be affected, resulting in the loss of land and severance of property. Thirty-four (34) farm properties greater than

20 ha would be impacted due to the loss of land and potential severance of property. Thirty-seven (37) parcels of land greater than 20 ha and forty-three (43) parcels less than 20 ha would be created. Two (2) high investment agricultural operations (specialty crop and livestock) would be affected..

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM2

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM2.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 235.8 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (142.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation is affected in this area, and one livestock operation 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. Thirty-three (33) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirty-eight (38) parcels of land greater than 20 ha and thirty-three (33) parcels less than 20 ha would be created. Two (2) high investment agricultural operation (specialty crop and livestock) would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM3

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM3.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 258.8 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (134.2 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation was observed or affected in this area, and one livestock operation would be affected by this proposed route. Forty-six (46) field crop operations would be affected, resulting in the loss of land and severance of property. Thirty-four (34) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-three (43) parcels of land greater than 20 ha and twenty-four (24) parcels less than 20 ha

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would be created. Two (2) high investment agricultural operation (specialty crop and livestock) would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community is similar across the study area.

EM4

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM4.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 355.0 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (133.8 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation is affected in this area, and one (1) livestock operation 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. Thirty-three (33) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Thirty-eight (38) parcels of land greater than 20 ha and thirty-three (33) parcels less than 20 ha would be created. Two (2) high investment agricultural operations (specialty crop and livestock) would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM5

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM5.

The majority of this section of the East Mainline crosses Class 1 – 3 land 391.9 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (94.1 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation was observed or affected in this area, and one (1) livestock operation would be affected by this proposed route. Forty-six (46) field crop operations would be affected, resulting in the loss of land and severance of property. Forty-two (42) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-two (42) parcels of land greater than 20 ha and forty (40) parcels less than 20 ha would be created. Two (2) high investment agricultural operations (specialty crop and livestock) would be affected.

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The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area will be similar across the study area.

EM6

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM6.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 279.3 ha would be removed by this alternative. Smaller areas of Class 4 – 7 lands (69.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) specialty crop area or operation is affected in this area and one (1) livestock operation would be affected by this proposed route. Forty-six (46) field crop operations would be affected, resulting in the loss of land and severance of property. Forty-two (42) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-two (42) parcels of land greater than 20 ha and forty (40) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM7

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM7.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 283.3 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (116.3 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were 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. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-two (42) parcels of land greater than 20 ha and forty-two (42) parcels less than 20 ha would be created. One (1) high investment agricultural operation would be affected.

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The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM8

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM8.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 290.7 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (125.6 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop area or operation are 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. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-two (42) parcels of land greater than 20 ha and forty-two (42) parcels less than 20 ha would be created. One (1) high investment agricultural operation would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM9

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM9.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 312.7 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (68.6 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were 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. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty (40) parcels of land greater than 20 ha and forty-two (42) parcels less than 20 ha would be created. One (1) high investment agricultural operation would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

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EM10

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM10.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 267.3 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (70.5 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop area or operations were observed or affected in this area. 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. Twenty-three (23) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty (40) parcels of land greater than 20 ha and forty-two (42) parcels less than 20 ha would be created. One (1) high investment agricultural operation would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM11

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM11.

The majority of this section of the East Mainline crosses Class 1 – 3 lands 343.3 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (88.2 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One specialty crop area or operation were observed or affected in this area. One livestock operation would be affected by this proposed route. Forty-nine (49) field crop operations would be affected, resulting in the loss of land and severance of property. Forty-four (44) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Forty-four (44) parcels of land greater than 20 ha and forty (40) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

EM12

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EM12

The majority of this section of the East Mainline crosses Class 1 – 3 lands 352.6 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (89.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop area or operations were observed or affected in this area, and no livestock operations would be affected by this proposed route. Thirty-eight (38) field crop operations would be affected, resulting in the loss of land and severance of property. Thirty-five (35) farm properties greater than 20 ha would be impacted due to the loss of land and potential severance of property. Twenty-three (23) parcels of land greater than 20 ha and thirty (30) parcels less than 20 ha would be created. One (1) high investment agricultural operation would be affected.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

2.6.2 Evaluation Results

An analysis of the specific criteria of the 12 route alternatives illustrated that all routes had some significant impacts to agriculture. Each of the respective routes consumed Class 1 – 3 lands, which is a high impact to agriculture.

Alternatives EM1, EM2, EM3, EM4, EM5, EM6 and EM11 would consume portions of special crops or of specialty cropland resulting in a moderate impact to agriculture.

Route alternative EM1 impacted three (3) livestock operations; EM2, EM3, EM4, EM5, EM6 and EM11 impacted one (1) livestock operation. The impacts to three (3) livestock operations on alternative EM1 are considered high, while the impacts to one (1) livestock operation are considered moderate.

Route alternatives EM1, EM2, EM3, EM4, EM5, EM6 and EM11 impact forty-five (45) or greater field crop operations. These impacts are considered high. The proposed routes EM7, EM8, EM9, EM10 and EM12 impact thirty-five (35) to thirty-eight (38) field crop operations. These impacts are considered to be moderate.

Route alternatives EM1, EM2, EM3 and EM4 comprise thirty-three – thirty-four (33 – 34) farm properties greater than 20 ha affected. These routes are considered to have a moderate impact to agriculture. Routes EM5, EM6, EM11 and EM12 comprise thirty-five – forty-four (35 to 44) farm properties greater than 20 ha affected. These routes are considered a high impact to agriculture.

Routes EM7, EM8, EM9 and EM10 comprise twenty-three (23) farm properties each and are considered a low impact to agriculture.

Routes EM1 – EM11 comprise thirty-seven – forty-two (37 – 42) severed parcels greater than 20 ha created. These are considered a high impact to agriculture. Route EM12 would create twenty-three (23) severed parcels greater than 20 ha and is considered a low impact to agriculture.

Routes EM1, EM5 – EM11 comprise forty – forty-three (40 – 43) severed parcels less than 20 ha created. These are considered a high impact to agriculture. Route EM2, EM4 and EM12 comprise thirty – thirty-three (30 – 33) parcels less than 20 ha created and are considered to be a moderate impact to agriculture. Route EM3 contains twenty –four (24) parcels less than 20 ha created and is considered to be a low impact to agriculture.

Routes EM1, EM2 and EM3 have no high investment agricultural operations and are considered to have no impact to agriculture. Routes EM1-EM5, EM7 – EM10 and EM12 have one high investment agricultural operation each and are considered to be a moderate impact to agriculture. Routes EM6 and EM11 have 3 high investment agricultural operations and are considered to have a high impact to agriculture.

Each route would have similar farm transportation routes affected and would have similar affects on the division of agricultural community areas. These are considered moderate impacts to each route.

All routes have net negative agricultural effects. Though route EM12 is considered to have the least impact of all alternatives and is preferred.

Route EM12 is preferred as it; impacts no specialty crop lands or operations; impacts no dairy/livestock operations; impacts comparable (to all other alternatives) numbers of field crop operations; creates the fewest severed parcels (greater than and less than 20ha); and impacts comparable (to all other alternatives) numbers of high investment operations.

2.7 West Link**2.7.1 Net Effects Analysis****WL1**

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL1.

The majority of this section of the West Link crosses Class 1 – 3 lands 312.3 ha removed by this alternative. Smaller areas of Class 4 – 7 lands (36.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

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Four (4) 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 sixteen (16) parcels less than 20 ha would be created. Eight (8) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL2

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route WL2.

The majority of this section of the West Link crosses Class 1 – 3 lands 307.6 ha would be removed by this alternative. Smaller areas of Class 4 – 7 lands (37.3 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Four (4) specialty crop areas or operations were observed or affected in this area, and six (6) 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 fifteen (15) parcels less than 20 ha would be created. Eight (8) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL3

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL3.

The majority of this section of the West Link crosses Class 1 – 3 lands, 303.3 ha would be removed by this alternative. Smaller areas of Class 4 – 7 lands (41.2 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

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Four (4) 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 six (6) parcels less than 20 ha would be created. Eight (8) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL4

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL4.

The majority of this section of the West Link crosses Class 1 – 3 lands 309.6 ha would be removed by this alternative. Smaller areas of Class 4 – 7 lands (43.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Four (4) 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 seven (7) parcels less than 20 ha would be created. Eight (8) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL5

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL5.

The majority of this section of the West Link crosses Class 1 – 3 lands 336.6 ha would be removed by this alternative. Smaller areas of Class 4 – 7 lands (50.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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

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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 eight (8) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL6

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL6.

The majority of this section of the West Link crosses Class 1 – 3 lands 317.6 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (22.81 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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 thirteen (13) parcels less than 20 ha would be created. One (1) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL7

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL7.

The majority of this section of the West Link crosses Class 1 – 3 lands 286.8 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (41.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Four (4) 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 eight (8) parcels less than 20 ha

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would be created. Nine (9) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL8

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL8.

The majority of this section of the West Link crosses Class 1 – 3 lands 279.2 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (35.0 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Four (4) 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 four (4) parcels less than 20 ha would be created. Ten (10) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

WL9

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative WL9.

The majority of this section of the West Link crosses Class 1 – 3 lands 318.3 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (41.6 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (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 eleven (11) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

2.7.2 Evaluation Results

An analysis of the specific criteria of the 9 route alternatives illustrated that all routes had some significant impacts to agriculture. Each of the respective routes consumed Class 1 – 3 lands, which is a high impact to agriculture.

Routes WL1-WL4, WL7 and WL8 affect four (4) specialty crop operations. Routes WL1 – WL4 are considered to be a high impact to agriculture while routes WL7 and WL8 are considered to be a moderate impact. This is due to the location of the impact for route alternatives WL1 – WL4 where the routes cut directly through the property as opposed to taking a portion of the edge of a property as in routes WL7 and WL8. Routes WL5, WL6 and WL9 affect two (2) specialty crop operations. Route WL5 is considered a high impact, while routes WL6 and WL9 are considered a moderate impact to agriculture. WL5 is considered a high impact due to the location and impingement of the footprint of the proposed route on specialty crop areas. The proposed route would result in a greater impact to the specialty crop areas than the potential impacts on specialty crop areas from the other proposed routes.

Routes WL1-WL4 affect 6 livestock operations. WL5 affects two (2) livestock operations. WL6 affects one (1) operation, WL7 affects seven (7) operations. WL 8 affects eight (8) operations and WL9 affects two (2) livestock operations. Routes WL1-WL4, WL7 and WL8 are considered high impacts to agriculture, due to the number of properties impacted; and routes WL5, WL6 and WL9 are considered moderate impacts to agriculture.

Routes WL1-WL6 and WL9 affect twenty-one – thirty-five (21 – 35) field crop operations, while routes WL7 and WL8 affect forty-four – forty-five (44 and 45) operations respectively. Routes WL7 and WL8 are high impacts to agriculture, due to the number of properties impacted; and the other routes are considered to be moderate impacts.

Routes WL1-WL4, WL7 and WL8 will affect twenty-three – twenty-five (23-25) farm properties greater than 20 ha. Routes WL5, WL6 and WL9 will affect seventeen (17), fifteen (15) and fifteen (15) farm properties greater than 20 ha (respectively). Routes WL1-WL4, WL7 and WL8 are considered to have a high impact to agriculture, due to the number of properties impacted; and routes WL5, WL6 and WL9 are considered to be of moderate impact to agriculture.

Routes WL1-WL9 will create fifteen – twenty-one (15 – 21) parcels greater than 20 ha in size. Each of these routes is considered to have a moderate impact to agriculture.

Routes WL1, WL2, WL6 and WL9 will create eleven – sixteen (11 – 16) parcels less than 20 ha in size. Each of these routes is considered a high impact to agriculture. Routes WL3, WL4, WL5,

WL7 and WL8 will create four – eight (4 – 8) parcels. These routes are considered a moderate impact to agriculture.

Routes WL1 – WL4, WL 7 and WL8 will affect eight – ten (8 – 10) high investment agricultural operations. These routes are considered a high impact to agriculture. Routes WL5, WL6 and WL9 will affect one – three (1-3) high investment agricultural operations. These routes are considered a moderate impact to agriculture.

The potential for limitations to farm transportation routes is similar for all routes in the West Link section. The potential for the division of the agricultural community area is similar across the study area.

Routes WL5, WL6 and WL9 impact fewer specialty crop (2) and livestock operations (2), Routes WL7 and WL8 impact a greater number of field crop operations while routes WL5, WL6 and WL9 impact fewer farm properties greater than 20 ha. All routes create a similar number of parcels greater than 20 ha, while routes WL3, WL4, WL5, WL7 and WL8 create the fewest number of parcels, less than 20 ha (four –eight (4 – 8) vs eleven – sixteen (11-16)). Routes WL5, WL6 and WL9 impact the fewest number of high investment operations, while impacts to farm equipment routes and division of the agricultural community is similar within all routes.

Routes WL6 and WL9 were considered to have the least impact to agriculture all route alternatives Route WL6 and WL9 have the least impact to agriculture of all route alternatives and are preferred. Routes WL6 and WL9 are preferred because they are least impacting on high investment operations, and comparable impacts (to all other route alternatives) to all other measures.

Route WL5 was considered to have the second least cumulative impact and route WL8 was considered to have the third least impact to agriculture.

2.8 East Link

2.8.1 Net Effects Analysis

EL1

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL1.

The majority of this section of the East Link crosses Class 1 – 3 lands 319.43 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (46.0 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Three (3) 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

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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 nine (9) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL2

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL2.

The majority of this section of the East Link crosses Class 1 – 3 lands 324.09 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (63.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) specialty crop areas or operations were observed or affected in this area, and two (2) 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 nine (9) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL3

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL3.

The majority of this section of the East Link crosses Class 1 – 3 lands 282.5 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (61.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

One (1) 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 five (5) parcels less than 20 ha would be

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created. Two (2) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL4

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL4.

The majority of this section of the East Link crosses Class 1 – 3 lands 279.8 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (71.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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 five (5) parcels less than 20 ha would be created. Four (4) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL5

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL5.

The majority of this section of the East Link crosses Class 1 – 3 lands 292.4 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (70.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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 six (6) parcels less than 20 ha would be created. Four (4) high investment agricultural operations would be affected including specialty crop and livestock operations.

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The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL6

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL6.

The majority of this section of the East Link crosses Class 1 – 3 lands 303.6 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (71.4 ha) are crossed in this section and are located within the lower elevation 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 eight (8) parcels less than 20 ha would be created. Three (3) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL7

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL7.

The majority of this section of the East Link crosses Class 1 – 3 lands 308.2 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (68.5 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (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 five (5) parcels less than 20 ha would be created. Four (4) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Mainline section. The potential for the division of the agricultural community area is similar across the study area.

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EL8

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL8.

The majority of this section of the East Link crosses Class 1 – 3 lands 313.5 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (67.2 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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 seven (7) parcels less than 20 ha would be created. Five (5) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL9

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL9.

The majority of this section of the East Link crosses Class 1 – 3 lands 268.1 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (80.3 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Two (2) 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 five (5) parcels less than 20 ha would be created. Six (6) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL10

Alternative Methods Technical Report (Agriculture)

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL10.

The majority of this section of the East Link crosses Class 1 – 3 lands 285.4 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (74.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Three (3) 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 five (5) parcels less than 20 ha would be created. Six (6) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL11

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL11.

The majority of this section of the East Link crosses Class 1 – 3 lands 297.5 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (74.3 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

Three (3) 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 five (5) parcels less than 20 ha would be created. Six (6) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL12

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL12.

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The majority of this section of the East Link crosses Class 1 – 3 lands 270.197 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (85.7 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were observed or affected in this area, and five (5) 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 four (4) parcels less than 20 ha would be created. Four (4) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

EL13

The following commentary provides a description of the potential effects based on the evaluation criteria/indicators for route alternative EL13.

The majority of this section of the East Link crosses Class 1 – 3 lands 291.2 ha will be removed by this alternative. Smaller areas of Class 4 – 7 lands (91.9 ha) are crossed in this section and are located within the lower elevation areas and stream channels.

No specialty crop areas or operations were observed or affected in this area, and five (5) 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 three (3) parcels less than 20 ha would be created. Four (4) high investment agricultural operations would be affected including specialty crop and livestock operations.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area is similar across the study area.

2.8.2 Evaluation Results

An analysis of the specific criteria of the 12 route alternatives illustrated that all routes had some significant impacts to agriculture. Each of the respective routes consumed Class 1 – 3 lands, which is a high impact to agriculture.

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Route alternatives EL1, EL9 –EL11 affect two – three (2 - 3) specialty crop operations. These routes are considered to be a high impact to agriculture. Routes EL2-EL8 will affect one – two (1 - 2) specialty crop operations. Routes EL12-EL13 do not affect any specialty crop operations and as a result will have no impact to agriculture.

Route alternatives EL2, EL4-EL13 affect one – four (1 - 4) livestock operations and are considered a moderate impact to agriculture, while EL1 and EL3 affect no livestock operations and have no impact to agriculture.

Route alternatives EL1, EL3-EL13 will affect thirty – thirty-six (30 – 36) field crop operations and are considered a moderate impact to agriculture, while route EL2 will affect forty-five (45) field crop operations and is considered a high impact to agriculture.

Route alternatives EL1, EL3, EL4, EL7 and EL8 will affect sixteen – nineteen (16 - 19) farm properties greater than 20 ha and are considered to have a moderate impact to agriculture. Routes EL2, EL5 and EL6 will affect twenty-one – twenty-two (21 - 22) farm properties greater than 20 ha and are considered to have a high impact to agriculture. Routes EL9-EL13 will affect nine – eleven (9-11) farm properties greater than 20 ha and are considered to have a low impact to agriculture.

All route alternatives will create eleven – seventeen (11 - 17) parcels greater than 20 ha. Each of these routes is considered to have a moderate impact to agriculture.

Route alternatives EL1, EL2 and EL6 will create eight – nine (8 - 9) parcels less than 20 ha. Each of these routes is considered a high impact to agriculture. Routes EL3, EL4, EL5, EL7-EL13 will create three – seven (3 – 7) parcels. These routes are considered a moderate impact to agriculture.

Route alternatives EL1-EL7, EL12 and EL13 will affect two – four (2 – 4) high investment agricultural operations. These routes are considered a moderate impact to agriculture. Routes EL8-EL11 will affect five – six (5 – 6) high investment agricultural operations. These routes are considered a high impact to agriculture.

The potential for limitations to farm transportation routes is similar for all routes in the East Link section. The potential for the division of the agricultural community area will be similar across the study area.

All routes have similar negative affects for agriculture, with routes EL12 and EL13 having the fewest potential impacts. Routes EL12 and EL13 would remove less prime agricultural land, and have no impact on specialty crop lands or operations. These routes also impact the fewest numbers of field crop operations and would result in the creation of the fewest severed parcels both greater than and less than 20 ha. Routes EL11 and EL12 will affect more dairy/livestock operations than the other alternatives (five (5) vs zero – four (0 – 4)). Potential impacts to farm equipment transportation routes and agricultural community areas are similar within the routes.

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Routes EL12 and EL13 are tied for first place with the least impacts to agriculture. Routes EL3, EL4 and EL7 were tied in second place for least impacts to agriculture.

3. Summary

3.1 West Mainline

For the West Mainline, alternatives WM1 and WM2 are ranked similarly with both routes comprising high and medium impacts to agriculture. Soil series and capability are similar in this area; both routes impact specialty crop operations, dairy/livestock operations and field crop operations. The South Route affects fewer farm properties greater than 20 (nine (9) vs twelve (12)) and creates fewer severed parcels greater than 20 ha (six (6) vs ten (10)). Similar impacts would be noted with regard to farm equipment transportation routes and division of the agricultural community.

Based on this assessment, it was determined that route WM1 is slightly more preferable than WM2.

3.2 Central Mainline

For the Central Mainline, the net effects for both routes are comparable across all indicators, with both CM1 and CM2 having significant agricultural impacts. Both routes are equally preferred.

3.3 East Mainline

All routes have similar impacts to farm equipment routes and division of the agricultural community areas. From all other agricultural perspectives, Route EM12 is preferred as it has the least impact of the proposed route, while routes EM3, EM7 – EM10 are tied for second as the route alternatives with the least impact because:

- Impacts no speciality crop lands or operations;
- Impacts no dairy/livestock operations;
- Impacts comparable (to all other alternatives) numbers of field crop operations
- Creates the fewest severed parcels (greater than and less than 20 ha); and
- Impacts comparable (to all other alternatives) number of high investment operations.

3.4 West Link

While impacts to farm equipment routes and division of the agricultural community is similar within all routes, routes WL6 and WL9 were considered to have the least impact to agriculture of all route alternatives within the West Link. Route WL5 was considered to have the second least impact and route WL8 was considered to have the third least impact to agriculture.

3.5 East Link

For the East Link, all routes have similar negative affects for agriculture, with routes EL12 and EL13 having the fewest potential impacts. Routes EL12 and EL13 have no impact on specialty crop lands or operations. These routes also impact the fewest numbers of field crop operations and would result in the creation of the fewest severed parcels both greater than and less than 20 ha.