Compatibility, offers higher Accessibility, requires fewer road realignments and allows for an interchange at Highway 7.

Overall Ranking and Rationale for the West Mainline

In summary, Route WM 1 is recommended for the following primary reasons:

- Minimizes effects on sensitive watercourses, forested valley habitat, ESA's and other natural heritage features.
- Impacts fewer residential and business properties.
- Requires fewer and less significant local road realignments and allows for an interchange at Highway 7, a key east-west arterial road.

Table 5.2 provides a visual representation of the evaluation results.

Table 5.2: Visual Representation of Reasoned Argument Evaluation Results for Section 2, West Mainline from Audley Road to Ashburn Road

Factor Area / Alternative	WM1	WM2
Natural	●	•
Social	●	•
Land Use /Economic	●	•
Cultural	●	●
Technical	●	•
Rec'd = Recommended Not Rec'd = Not Recommended	Rec'd	Not Rec'd

Grade of Preference

● → •

Most Preferred Least Preferred

5.3.2.2 Arithmetic Results

The arithmetic evaluation results for Section 2 confirmed that Route WM1 is the Technically Recommended Route from Audley Road to Ashburn Road. Route WM1 ranked first for all Factor areas based on the initial weightings as well as with the various alternate weightings considered as part of the sensitivity testing. The arithmetic evaluation results are summarized in **Table 5.3**, with the details provided in **Supporting Document #1**.

Table 5.3: Arithmetic Evaluation Results for Section 2, West Mainline from Audley Road to Ashburn Road

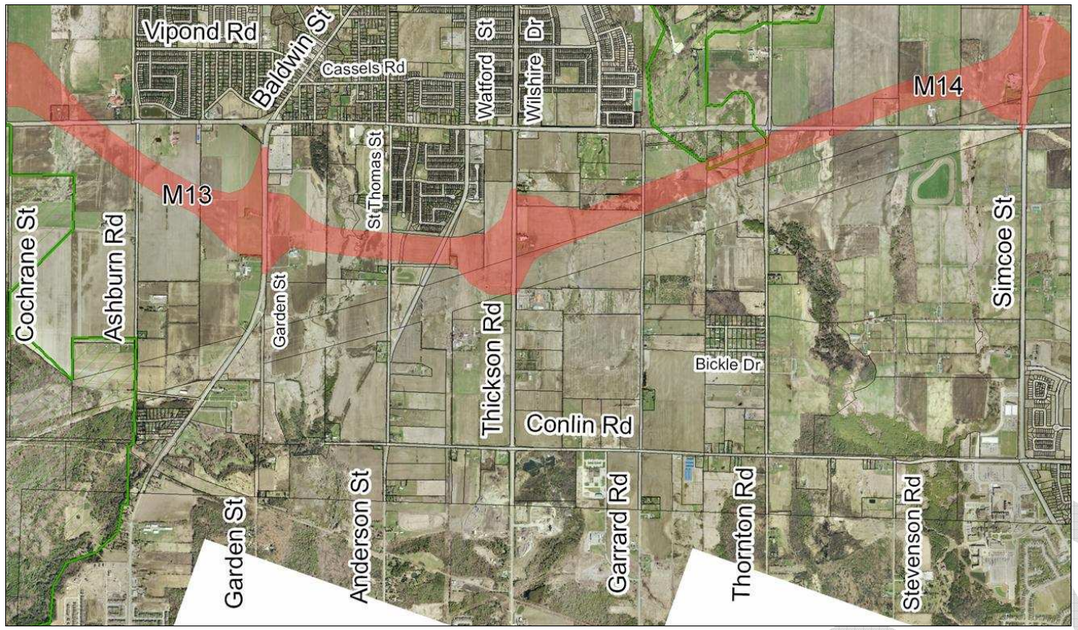
Factor		Rankings Based on Initial Weights	
		Alternative WM1	Alternative WM2
Natural Environment (40%)		1	2
Social Environment (20%)		1	2
Land Use/Economic Environment (25%)		1	2
Cultural Environment (5%)		1	2
Technical Considerations (10%)		1	2
Overall Ranking		1	2
Sensitivity Analysis			
Factor		**Rankings Based on Alternate Weights**	
		Alternative WM1	**Alternative WM2**
Natural Environment	High (50%)	1	2
Natural Environment	Low (20%)	1	2
Social Environment	High (40%)	1	2
Social Environment	Low (10%)	1	2
Economic Environment	High (40%)	1	2
Economic Environment	Low (10%)	1	2
Cultural Environment	High (10%)	1	2
Cultural Environment	Low (5%)	1	2
Technical Environment	High (10%)	1	2
Technical Environment	Low (5%)	1	2
Stakeholder Weights		1	2
Overall Ranking		1	2

5.4 Section 3 – Central Mainline, Ashburn Road to Simcoe Street

5.4.1 Net Effects Analysis

The following provides the key net environmental effects for the single route within Section 3 as illustrated in **Figure 5.5**. Refer to the Specialist Reports in **Appendices E through M** for additional information.

Figure 5.5: Central Mainline Alternative, Ashburn Road to Simcoe Street



Natural Environment

The west portion of the route segment occurs just south of the expanding settlement area of Brooklin. To the east, land use is predominately agricultural and rural. Within this landscape, most of the natural vegetation features have been previously cleared/removed. Remnant and therefore important natural areas are associated with the Lynde Creek and Oshawa Creek valley systems. Large natural core areas associated with each of these systems are present approximately 2 km south.

Both valley crossings are located in anthropogenically influenced vegetation communities (cultural meadow, cultural thicket) and open areas with limited forest valley cover. Even so, the route segment does encompass narrow strips of forested valley along Oshawa Creek, which are more sensitive to disturbance than open meadow and thicket.

Only two watercourses crossed by the route have fish and fish habitat. Lynde Creek and Oshawa Creek are both permanent watercourses and are considered to provide fish habitat with high sensitivity, including migratory and resident salmon and trout species. Overall potential impacts to fish and fish habitat will be greatly reduced by meander belt spanning structures, anticipated avoidance of instream works and implementation of stormwater management measures (e.g. water quality treatment, water quantity control and controlled discharge to creeks). Appropriate mitigation measures will be developed during the subsequent design stages to protect fish habitat.

Summary of net effects:

- 2 permanent watercourse crossings at Oshawa Creek West and Lynde Creek
- 7 intermittent watercourse crossings: 6 are agricultural swales and 1 is an ephemeral drainage area with no defined channel
- 631 m of high sensitivity fish habitat being crossed associated with Lynde Creek and Oshawa Creek. West, including spawning habitat for migratory and resident trout and salmon species
- Removal of a total of approximately 15.5 ha of terrestrial vegetation communities (includes 3.6 ha of upland deciduous, mixed and conifer forest and 12.9 ha of culturally influenced features (including meadow and thicket) of low to moderate quality)
- No known flora species of conservation concern are present
- Less than 0.1 ha of unevaluated wetland vegetation removed in one low quality thicket community
- No interior forest is removed by the route alternative
- No known wildlife species of conservation concern or Species At Risk within 50 m of route alternative
- 2 ESA crossings: Upper Lynde Creek to Chalk Lake and Oshawa Creek ESA. Recreational trails and restoration/stewardship planting sites are present in the Upper Lynde Creek ESA north of the route alternative
- 2 major linkages are crossed by the route alternative
- The west mainline route from Ashburn Road to Simcoe Street covers 108 ha of low permeability soil, crosses 13 ha of high permeability soil, intersects 3 water wells within the route and associated interchange footprints, and, intersects 11 shallow water wells in low permeability soil and 5 shallow water wells in high permeability soil within 500 m of the route and associated interchange footprints.

Social Environment

There are low impacts to the community fabric indicator for this route alternative extending from Ashburn Road to Simcoe Street. The route does not encroach on or sever established or proposed settlement areas however the route does create a barrier effect between the community of Brooklin to the community of Whitby to the south.

The route does not have any effect on hiking, hunting, fishing, nature viewing or educational opportunities.

There is a moderate impact on property as there are a total of 29 property impacts, including 8 residential displacements for this route alternative.

There are 100 noise sensitive receptors that could potentially be impacted by this route segment and 89 sensitive receptors that could potentially be impacted from an air quality perspective.

Land Use/Economic Environment

This route has a high degree of compatibility with the Provincial/municipal and private land use development strategies. The route was identified in the Durham Regional Official Plan and Town of Whitby Official Plan.

The route has a low impact on non-farm commercial activities as the route displaces an Industrial storage facility located on Thickson Road. There is potential for increased business exposure for two golf courses located north and south of Winchester Road, a plaza located east of Montgomery Avenue, a coffee shop/gas station located at

Winchester and Thickson Road, a home building centre located at Winchester Road, a gas station and animal clinic located along Winchester Road.

The majority of this section of the Central Mainline crosses Class 1 – 3 lands. Smaller areas of Class 4 – 7 lands 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 would be 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.

No properties with the potential for site contamination will be directly impacted by this route segment in urban areas. However, one (1) property with the potential for site contamination will be directly impacted by this route segment in a rural area. The property is a landscaping and gardening supply centre with a high potential for site contamination.

One (1) former waste disposal site will be disturbed by this route segment, 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.

Cultural Environment

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

Fourteen (14) cultural heritage landscapes and zero (0) built heritage resources will be displaced or disrupted by this route alternative.

Technical Considerations

This route is highly accessible to population and employment centres. Full interchanges can be accommodated at Brock Street, Thickson Road and Simcoe Street. Traffic nuisance could be experienced for the community of Brooklin.

Summary of net effects:

- High transportation compatibility
- High accessibility to population and employment centres

5.5 Section 4 – Central Mainline, Simcoe Street to Enfield Road

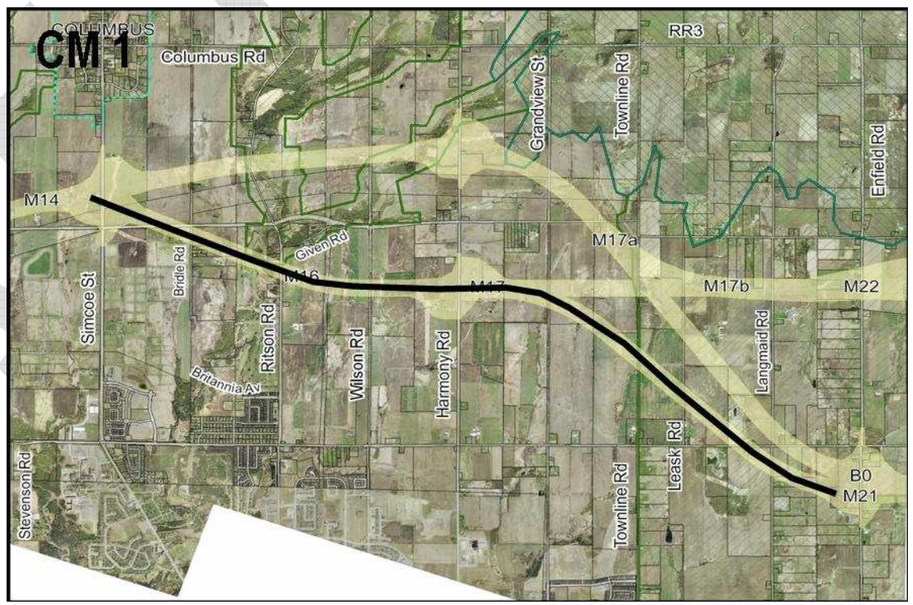
5.5.1 Net Effects Analysis

The following provides the key net environmental effects for the two routes within Section 4. Refer to the Specialist Reports in **Appendices E through M** and **Supporting Document #2** for additional information.

5.5.1.1 Route CM1

Route CM1 is illustrated in **Figure 5.6**.

Figure 5.6: Route Alternative CM1



Natural Environment

This route crosses a predominantly agricultural area where most of the natural vegetation features have been previously cleared/removed. Given the high level of anthropogenic influence in this setting, the most important natural feature is the valley system associated with Oshawa Creek East. It is noted that at the route crossing location, the valley system consists of discontinuous remnant patches of valley forest in a golf course setting.

The new valley crossing will result in the permanent removal of some valley vegetation that includes woodland and open golf course turf/scattered trees.