

TABLE OF CONTENTS

	Page
1. EXECUTIVE SUMMARY	1
1.1 The Recommended Route (2002)	1
1.1.1 Background	1
1.1.2 MTO Review.....	2
1.2 Purpose of the Undertaking	2
1.3 Study Area	3
1.4 Description of the Undertaking (Recommended Route (2002)).....	3
1.5 Documentation for the Recommended Route (2002)	8
1.5.1 Features of the Study Area	9
1.5.2 Need and Justification.....	12
1.5.3 Analysis and Evaluation.....	16
1.5.4 Study Organization.....	20
2. ENVIRONMENTAL ASSESSMENT PROCESS	24
2.1 EA Report 1997	24
2.2 MTO Review	24
2.3 Study Organization	25
2.4 Consultation During the MTO Review.....	27
2.4.1 Municipalities.....	27
2.4.2 External Agencies	27
2.4.3 Property Owners.....	28
2.4.4 Public.....	28
2.4.5 Interest Groups	28
2.5 MTO Review Phases.....	28
2.5.1 Phase 1: Minor Alignment Shifts to the Recommended Plan (1997) (February 1999 – March 2000)	29
2.5.1.1 Phase 1 Consultation.....	31
2.5.2 Phase 2: New Alignment Alternatives (April 2000 to February 2001).....	33
2.5.2.1 Phase 2: Consultation	34
2.5.3 Phase 3: Central Section Alternatives (February 2001 – March 2002).....	38
2.5.3.1 Phase 3 Consultation.....	39
2.6 Preliminary Design	40
2.7 Potential Environmental Effects and Proposed Mitigation Measures	41
2.8 Preparation and Submission of the Amendment to the EA Report 1997	41
2.9 Commitments to Further Work	46
2.10 Canadian Environmental Assessment Act	46
3. EXISTING AND FUTURE CONDITIONS	48
3.1 Socio-Economic Environment	48
3.1.1 Municipalities.....	49
3.1.2 Communities/Land Use.....	52
3.1.3 Noise.....	55
3.1.4 Heritage Resources.....	57
3.2 Natural Environment.....	63
3.2.1 Geology and Physiography	64

3.2.2 Soils.....	66
3.2.3 Water Quality and Quantity	68
3.2.4 Aquatic Resources and Fisheries.....	72
3.2.5 Vegetation and Wetlands	81
3.2.6 Wildlife Resources	94
3.2.7 Environmentally Sensitive Areas	100
3.3 Agriculture	101
3.3.1 Soil Capability.....	101
3.3.2 Agricultural Land Use.....	102
3.3.3 Farm Community	104
3.4 Transportation	108
3.4.1 Background Information from EA Report 1997	108
3.4.2 Existing Conditions During the MTO Review.....	109
3.4.3 Traffic Forecasts.....	111
3.4.3.1 1989 / 1990 Traffic Forecasts	111
3.4.3.2 Initial Review of Traffic Forecasts	112
3.4.3.3 Independent Review of Future Demand	113
3.5 Summary of Environmentally Significant Issues	118
3.5.1 Introduction	118
4. ALTERNATIVES: ANALYSIS AND EVALUATION	120
4.1 Alternatives to the Undertaking	120
4.1.1 Transit.....	120
4.1.1.1 Rail Transit	122
4.1.1.2 Bus Transit.....	123
4.1.1.3 Transit Alternatives Summary	124
4.1.2 Road Improvements	125
4.1.3 Rationale for Selecting Road Improvement Alternatives	126
4.2 Alternative Methods of Carrying Out the Undertaking	126
4.2.1 Review Phase 1: Minor Alignment Shifts to the Recommended Plan (1997) ..	130
4.2.2 Review Phase 2: New Alignment Alternatives	136
4.2.2.1 Revised Easterly (RE) Alternatives	136
4.2.2.2 Revised Westerly (RW) Alternatives	139
4.2.2.3 Existing Highway 7 Alternatives	142
4.2.2.4 Connectors – Kitchener	147
4.2.2.5 Connectors – Guelph	147
4.2.3 Review Phase 3: Revised Central Section Alternatives	148
4.3 Analysis and Evaluation	152
4.3.1 Introduction	152
4.3.2 Groupings, Factors and Indicators	152
4.3.3 Analysis and Evaluation Process.....	164
4.3.3.1 Analysis	164
4.3.3.2 Evaluation Process.....	164
4.3.4 Analysis and Evaluation Procedure.....	165
4.3.4.1 Revised Easterly Alternatives (RE)	165
4.3.4.2 Stage IA Evaluation: Revised Easterly Alternatives (RE).....	167
4.3.4.3 Revised Westerly Alternatives (RW)	175

4.3.4.4	Stage IB Evaluation: Revised Westerly Alternatives (RW)	188
4.3.4.5	Analysis of the Kitchener Connector (KC) Alternatives	189
4.3.4.6	Stage IC Evaluation: Kitchener Connectors (KC) Alternatives	200
4.3.4.7	Guelph Connector (GC) Alternatives – Analysis and Evaluation	200
4.3.4.8	Analysis of Existing Highway 7 Alternatives	201
4.3.4.9	Stage II Evaluation Highway 7 Alternatives	213
4.3.4.10	Analysis of Stage III Evaluation Alternatives	214
4.3.4.11	Stage III Evaluation	227
4.3.4.12	Public response to the Technically Preferred Alternative (2001).....	228
4.3.4.13	Analysis of Phase 3 (RC) Alternatives	230
4.3.4.14	Evaluation of Phase 3 (RC) Alternatives	244
4.3.4.15	Analysis and Evaluation – Conclusion	246
5.	DESCRIPTION OF THE RECOMMENDED ROUTE	248
5.1	Introduction	248
5.2	Comparison of Recommended Route (2002) and Recommended Plan (1997)	249
5.3	Preliminary Design Features	254
5.3.1	Roadway	255
5.3.2	Structures.....	263
5.3.3	Preliminary Design Criteria	264
5.3.4	Drainage and Stormwater Management.....	264
5.3.5	Operations	266
5.3.6	Right-of-Way Requirements	267
5.3.7	Corridor Control	268
5.3.7.1	Assumptions, Designations and Transfers.....	268
5.3.7.2	Utilities	268
5.3.7.3	Railways	269
5.3.8	Cost Estimate.....	270
5.3.9	Other Preliminary Design Features	271
5.4	Future Work Activities	271
5.5	Maintenance Features	273
6.	ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES	274
6.1	Environmental Protection Strategies.....	274
6.2	Socio-Economic Environment	275
6.2.1	Community Effects and Land Use	275
6.2.2	Special Policy Areas.....	278
6.2.3	Noise.....	279
6.2.4	Heritage Resources.....	282
6.2.4.1	Archaeology	282
6.2.4.2	Built Heritage Features / Cultural Landscapes	285
6.3	Natural Environment.....	289
6.3.1	Soils	289
6.3.2	Water Quality and Quantity	290
6.3.2.1	Groundwater Resources.....	290
6.3.2.2	Surface Water Resources	293
6.3.3	Aquatic Resources and Fisheries.....	298
6.3.4	Vegetation and Wetlands	304

6.3.4.1	Significant Flora	304
6.3.4.2	Vegetation and Wetland Resources – General Strategies.....	306
6.3.4.3	Site-Specific Impact Mitigation Review.....	312
6.3.5	Wildlife and Linkages	321
6.3.6	Air Quality.....	326
6.4	Agriculture	328
6.4.1	Agricultural Land Use and Farm Community.....	328
6.5	Transportation	334
6.5.1	Road Network	334
6.5.2	Traffic.....	335
6.6	Excess Materials and Contaminated Property	338
6.6.1	Management of Excess Materials	338
6.6.2	Contaminated Property.....	338
GLOSSARY OF TERMS.....		340
REFERENCES.....		344

I:\Work Order File\2029-200 Highway 7 EA Review\2029.700 Planning\2029.705 Addendum Report\FINAL REPORT\2029 MWS Merged Chapters Final Draft March-04.doc

TABLE OF EXHIBITS

	Page
Exhibit 1-1 – Study Area	4
Exhibit 1-2 – Recommended Route (2002)	5
Exhibit 1-3 – Analysis and Evaluation Review Process.....	17
Exhibit 1-4 – Recommended Route (2002)	21
Exhibit 1-5 – Study Organization	21
Exhibit 2-1 Study Organization	26
Exhibit 2-2 MTO Review Phases	30
Exhibit 2-3 - Study Stages	43
Exhibit 3-1 - Study Area.....	50
Exhibit 3-2 Existing and Future Land Use	53
Exhibit 3-3: Bio Physical Features Summary.....	88
Exhibit 3-4 – Other Vegetation Areas	88
Exhibit 3-5 – Agricultural Uses – West Section (Color Topo).....	105
Exhibit 3-6 – Annual Average Daily Traffic (AADT)	108
Exhibit 3-7 Transportation Network.....	110
Exhibit 3-8: Actual Annual Average Daily Traffic (1989/1990 and 1999/2000).....	112
Exhibit 3-9: Traffic forecasts for Highway 7 between Ebycrest Road and Spitzig Road.	114
Exhibit 3-10: Traffic forecasts for Highway 7 between Greenhouse Road and Shantz Station Road	115
Exhibit 3-11: Capacity of Highway 7 Roadway Types	116
Exhibit 3-12: Summary of Environmentally Significant Issues	119
Exhibit 4-1 1997 Recommended Plan	121
Exhibit 4-2 Road Improvements Alternative	127
Exhibit 4-3 Bloomingdale Rosendale Wetland.....	132
Exhibit 4-4 Hopewell Creek Riparian / Townline Road West Woodlands / Wetlands	133
Exhibit 4-5 Ellis Creek Wetland	134
Exhibit 4-6 Marden South Wetland	137
Exhibit 4-7a: Revised Easterly (RE) Alternatives	137
Exhibit 4-7b: Revised Westerly (RW) Alternatives	140
Exhibit 4-8: Existing Highway Alternatives – Central Rural Sections RIRO	144
Exhibit 4-9: Existing Highway Alternatives Central Rural Sections CAH(d)	145
Exhibit 4-10: Existing Highway Alternatives Central Rural Sections CAH(c).....	146
Exhibit 4-11: Kitchener Connector Alternatives	149
Exhibit 4-12: Guelph Connector Alternatives	150
Exhibit 4-13: Revised Central Alternatives (RC-1 & RC-2)	149
Exhibit 4-14: Analysis and Evaluation Review Process.....	153
Exhibit 4-15: Comparison of Factors EA Report 1997 and MTO Review.....	154
Exhibit 4-16: Factors and Indicators Developed in Phase 2.....	156
Exhibit 4-17: Stage 1A Analysis of Revised Easterly Alternatives (RE).....	167
Exhibit 4-18: Stage 1A Evaluation Revised Easterly Alternatives.....	176
Exhibit 4-19: Stage 1B Analysis of Revised Westerly Alternatives (RW)	177
Exhibit 4-20: Stage 1B Evaluation Revised Westerly Alternatives.....	190
Exhibit 4-21: Stage 1C Analysis of the Connectors – Kitchener Alternatives (KC).....	191

Exhibit 4-22: Stage II Analysis of Existing Highway 7 Alternatives	202
Exhibit 4-23: Stage II Evaluation Existing Highway 7 Alternatives	215
Exhibit 4-24: Highway 7 Alternatives New Route Alternative Combined Alternative	216
Exhibit 4-25: Analysis of Stage III Evaluation Alternatives	217
Exhibit 4-26: Stage III Evaluation	229
Exhibit 4-27: Analysis of New Alternatives in Central Section	231
Exhibit 4-28: Fourth Stage Evaluation Revised Central Alternatives	245
Exhibit 4-29: Comparison of the Recommended Route (2002) with the Recommended Plan (1997).....	247
Exhibit 5-1: Recommended Route (2002)	250
Exhibit 5-2: Summary Comparison of the Recommended Plan (1997) and the Recommended Route (2002) by Key Factor Group	251
Exhibit 5-3: Comparison Between Wetland Impacts of Recommended Plan (1997) and Recommended Route (2002)	253
Exhibit 5-4: Proposed Highway 7 / KWE Interchange.....	257
Exhibit 5-5: Highway 7 Staging at Spitzig Road (Woolwich Road 66)	262
Exhibit 5-6: Future Hanlon North Interchange with Highway 7	272
Exhibit 6-1a: Receiver Locations Considered for Noise Analysis	280
Exhibit 6-1b: Receiver Locations Considered for Noise Analysis	281
Exhibit 6-2 - Summary of NSAs Affected.....	282
Exhibit 6-3: Recommended Route (2002) Turning Movements 2011 P.M. Peak Hour.....	336
Exhibit 6-4: Recommended Route (2002) Turning Movements 2011 P.M. Peak Hour.....	337

APPENDICES

- A Municipal and External Agencies Correspondence
- B Soil Characteristics and Mapping
- C Natural Environment
- D Agricultural Soil Capability
- E Transportation
- F Description of Groupings, Factors and Indicators
- G Preliminary Design Criteria
- H Storm Water Management Report
- I Cost Estimate
- J EPP Fact Sheets
- K Cultural Heritage Resource Assessment Built Heritage Features and Cultural Landscape Report
- L Stage 1 and 2 Archaeological Assessment
- M Noise Memo
- N Air Quality Report