

Table of Contents

Volume 1: Main Report

Executive Summary

	Page		Page
1. Introduction and Background.....	1-1	3. Project Description and Existing Environmental Conditions	3-1
1.1 Introduction.....	1-1	3.1 Project Description.....	3-1
1.1.1 Provincial Context	1-3	3.2 Policy Context.....	3-4
1.1.1.1 Provincial Policy Statement	1-3	3.3 Existing Environmental Conditions	3-13
1.1.1.2 Growth Plan for the Greater Golden Horseshoe	1-3	3.3.1 Natural Environment	3-13
1.1.1.3 Transportation and Transit Network	1-4	3.3.1.1 Groundwater	3-13
1.1.1.4 Economy and Goods Movement	1-4	3.3.1.2 Surface Water / Watersheds	3-19
1.1.1.5 Tourism.....	1-4	3.3.1.3 Wetlands	3-30
1.1.1.6 Environmental Policies	1-7	3.3.1.4 Areas of Natural and Scientific Interest.....	3-34
1.1.2 Regional Context (Durham Region)	1-7	3.3.1.5 Environmentally Sensitive Areas.....	3-37
1.1.2.1 Regional and Municipal Official Plan Policies.....	1-9	3.3.1.6 Provincial Parks	3-37
1.1.2.2 Transportation and Transit Network	1-9	3.3.1.7 Conservation Areas.....	3-37
1.1.2.3 Economy and Goods Movement	1-12	3.3.1.8 Typical Species	3-45
1.1.2.4 Tourism.....	1-12	3.3.1.9 Significant Species.....	3-45
1.1.2.5 Environmental Policies	1-12	3.3.1.10 Summary of Natural Environmental Features	3-47
1.2 Background	1-14	3.3.2 Social / Economic Environment / Land Use.....	3-48
2. Overview of the Environmental Assessment Process and Study Organization	2-1	3.3.2.1 Land Use Planning Policy Documents	3-48
2.1 EA Process.....	2-1	3.3.2.2 Existing Land Use	3-56
2.1.1 Ontario Environmental Assessment Act.....	2-3	3.3.3 Cultural Environment	3-58
2.1.2 Canadian Environmental Assessment Act	2-3	3.3.3.1 Archaeological Investigations.....	3-58
2.1.3 Coordination of the Federal and Provincial Environmental Assessment Processes	2-5	3.3.3.2 Built Heritage and Cultural Heritage Landscapes	3-58
2.1.4 Highway 407 Act, 1998 and Highway 407 East Completion Act, 2001	2-5	3.3.3.2 Aboriginal Communities	3-58
2.2 Study Organization.....	2-5	3.3.3.2 European Settlement	3-59
2.2.1 Proponent.....	2-5	4. Consultation	4-1
2.2.2 Study Team.....	2-6	4.1 Overview of Consultation Process	4-1
2.2.3 Study Schedule	2-6	4.2 Consultation Elements	4-1
2.2.4 Consultation Groups.....	2-7	4.2.1 Advisory Groups	4-3
2.3 Overview of the Environmental Assessment Report, Appendices and Reference Documents.....	2-7	4.2.1.1 Municipal Technical Advisory Group.....	4-4
		4.2.1.2 Regulatory Advisory Group	4-4

4.2.1.3	Community Advisory Group.....	4-6	4.3.4.4	Newsletter #4	4-27
4.2.2	Project Mailing List	4-9	4.3.4.5	Newsletter #5	4-27
4.2.2.1	Project Initiation Notice.....	4-9	4.3.4.6	Newsletter #6	4-27
4.2.2.2	Public Information Centre #1 Notice.....	4-9	4.3.4.7	Newsletter #7	4-27
4.2.2.3	Public Information Centre #2 Notice.....	4-9	4.3.5	Fact Sheets.....	4-27
4.2.2.4	Public Information Centre #3 Notice.....	4-9	4.4	Key Milestones.....	4-28
4.2.2.5	Public Information Centre #4 Notice.....	4-9	4.4.1	Transportation Problems and Opportunities / Alternatives To the Undertaking (Transportation Alternatives)	4-28
4.2.2.6	Public Information Centre #5 Notice.....	4-10	4.4.2	Alternative Methods (Route Alternatives)	4-35
4.2.2.7	Notification of Potentially Affected Property Owners	4-10	4.4.3	Recommended Alternative Method (Technically Recommended Route)	4-39
4.2.2.8	Notice of Project Completion	4-10	4.4.4	Preferred Alternative Method (Technically Preferred Route)	4-43
4.2.3	Project Website	4-10	4.4.5	Preferred Alternative Method (Technically Preferred Route) and Recommended Mitigation / Compensation and Enhancement Measures	4-47
4.2.4	Dedicated Project Phone Line / Toll Free Number.....	4-11	4.4	EA Pre-submission Consultation	4-50
4.2.5	Project Office.....	4-11	4.5	Formal EA Submission Consultation	4-50
4.2.6	Public Information Centres	4-11	4.5	Commitments for Ongoing Consultation	4-51
4.2.6.1	Public Information Centre #1	4-12	5.	Transportation Problems and Opportunities (Purpose of and Rationale for the Undertaking)	5-1
4.2.6.2	Public Information Centre #2	4-13	5.1	Purpose of the Undertaking	5-1
4.2.6.3	Public Information Centre #3	4-13	5.2	Rationale for the Undertaking	5-1
4.2.6.4	Public Information Centre #4	4-14	5.2.1	Policy Framework	5-2
4.2.6.5	Public Information Centre #5	4-14	5.2.2	Description of the Existing Transportation Network	5-2
4.2.7	Aboriginal Communities and First Nations	4-15	5.2.2.1	Road Infrastructure	5-3
4.3	Proactive Involvement Plan.....	4-16	5.2.2.2	Transit Infrastructure / Services	5-6
4.3.1	Workshops	4-18	5.2.2.3	Rail Infrastructure / Services	5-6
4.3.1.1	Workshop #1 – Transportation Alternatives	4-17	5.2.2.4	Marine	5-6
4.3.1.2	Workshop #2 – Route Alternatives	4-17	5.2.2.5	Air	5-7
4.3.1.3	Wetland Workshop	4-20	5.2.2.6	People and Goods Movement.....	5-7
4.3.1.4	Aboriginal Community Workshops	4-21	5.2.3	Current Operating Conditions of Existing Transportation System	5-9
4.3.2	Property Information Sessions	4-22	5.2.4	Summary of Transportation Issues Relating to Existing Operating Conditions	5-11
4.3.2.1	Agricultural / Business Operations Information Sessions.....	4-22	5.2.5	Future Conditions – Do Nothing Scenario	5-11
4.3.2.2	Directly Impacted Property Owner Information Sessions	4-22	5.2.5.1	Land Use Growth	5-12
4.3.3	Community Value Plan.....	4-23	5.2.5.2	Demand Analysis Method	5-13
4.3.3.1	Overview of CVP Process and Objectives	4-23	5.2.5.3	Base Case – Trend Transit Mode Split	5-17
4.3.3.2	CVP Workshop #1	4-24	5.2.5.4	Network Assignment Analysis.....	5-18
4.3.3.3	CVP Workshop #2	4-24	5.2.5.5	Base Case Analysis Conclusions.....	5-20
4.3.3.4	CVP Workshop #3	4-25	5.3	Sensitivity Analysis	5-20
4.3.3.5	Feedback on the CVP Process	4-25	5.4	Summary of Problems and Opportunities	5-22
4.3.4	Project Newsletters	4-26			
4.3.4.1	Newsletter #1.....	4-27			
4.3.4.2	Newsletter #2.....	4-27			
4.3.4.3	Newsletter #3.....	4-27			

5.4.1	Problem Statement.....	5-22	6.3.3	Combination 3 – Combination 1 plus New Corridors	6-24
5.4.2	Opportunities	5-22	6.4	Description of the Environment Potentially Affected	6-28
5.4.3	Conclusion.....	5-22	6.4.1	Natural Environment	6-28
5.5	Forecasting Update	5-27	6.4.2	Socio-Economic / Land Use Environment	6-30
5.5.1	Updated Base Year Travel Patterns.....	5-27	6.4.3	Cultural Environment	6-31
5.5.2	Model Calibration	5-28	6.4.4	Technical Environment (Drainage)	6-32
5.5.3	Updated Land Use Forecasts.....	5-29	6.5	Evaluation of the Combination Alternatives To the Undertaking.....	6-33
5.5.4	Metrolinx Regional Transportation Plan	5-31	6.5.1	Description of the Comparative Evaluation Methodology	6-33
5.5.5	Updated Municipal Road Network Improvements	5-34	6.5.2	Comparative Evaluation of the Combination Alternatives To the Undertaking	6-33
5.5.6	Update of Forecasting Results	5-35	6.5.3	Identification and Rationale for the Recommended Alternative To the Undertaking.....	6-44
6.	Transportation Alternatives (Alternatives To the Undertaking).....	6-1	6.6	Identification of the Preferred Alternative To the Undertaking	6-44
6.1	Identification of Alternatives To the Undertaking.....	6-1	6.7	Forecasting Update.....	6-46
6.1.1	“Do Nothing”	6-2	6.7.1	Update of Forecasting Results – Combination 1: Enhanced Transit / TDM / TSM.....	6-46
6.1.2	Travel Demand Management (TDM).....	6-2	6.7.2	Ultimate Lane Requirements – 407 Mainline, West Link and East Link	6-47
6.1.3	Transportation Systems Management (TSM)	6-2	6.7.3	Sensitivity Analysis	6-49
6.1.4	Improved Air Transport Service.....	6-3	7.	Route Alternatives (Alternative Methods of Carrying out the Undertaking).....	7-1
6.1.5	Improved and/or New Passenger Rail Service.....	6-3	7.1	Generation of a Preliminary Study Area	7-1
6.1.6	Improved and/or New Goods Movement by Rail.....	6-3	7.2	Generation of the Long List of Route Alternatives	7-1
6.1.7	Improved and/or New Marine Service	6-3	7.3	Screening of the Long List of Alternative Routes	7-5
6.1.8	Improved and/or New Transit Services	6-3	7.3.1	Step No. 1 – Develop Screening Criteria	7-5
6.1.9	Improved and/or New Roadways / Transitways	6-4	7.3.2	Step No. 2 – Apply the Screening Criteria	7-6
6.1.9.1	Expansion of Existing Corridors	6-4	7.3.3	Step No. 3 - Identify the “Short-Listed” Alternative Routes	7-18
6.1.9.2	New Corridors.....	6-4	7.3.3.1	Section 1 – Brock Road to Kinsale Road	7-19
6.2	Assessment of the Alternatives To the Undertaking	6-6	7.3.3.2	Section 2 – Kinsale Road to Ashburn Road.....	7-19
6.2.1	“Do Nothing”	6-6	7.3.3.3	Section 3 – Ashburn Road to Simcoe Street.....	7-19
6.2.2	Travel Demand Management (TDM).....	6-9	7.3.3.4	Section 4 – Simcoe Street to Enfield Road	7-19
6.2.3	Transportation Systems Management (TSM)	6-9	7.3.3.5	Section 5 – Enfield Road to Highway 35/115.....	7-19
6.2.4	Improved Air Transport Service.....	6-10	7.3.3.6	Section 6 – West Durham Link.....	7-19
6.2.5	Improved and/or New Passenger Rail Service.....	6-11	7.3.3.7	Section 7 – East Durham Link.....	7-19
6.2.6	Improved and/or New Goods Movement by Rail.....	6-12	7.4	Assessment and Evaluation of Short-Listed Alternative Routes	7-19
6.2.7	Improved and/or New Marine Service	6-13	7.4.1	Evaluation Methodology.....	7-19
6.2.8	Improved and/or New Transit Services	6-14	7.4.1.1	Step No. 1 – Confirm the Proposed Evaluation Criteria, Indicators and Measures.....	7-20
6.2.9	Improved and/or New Roadways / Transitways	6-15	7.4.1.2	Step No. 2 – Undertake the Net Effects Analysis.....	7-22
6.2.9.1	Expansion of Existing Corridors	6-15	7.4.1.3	Step No. 3 – Carry out the Comparative Evaluation	7-23
6.2.9.2	New Corridors.....	6-18	7.4.2	Section 1 – West Mainline, Brock Road to Kinsale Road	7-24
6.3	Rationale for Development of the Combination of Alternatives To the Undertaking	6-19	7.4.2.1	Net Effects Analysis	7-24
6.3.1	Combination 1 – Enhanced Transit/TDM/TSM.....	6-22	7.4.3	Section 2 – West Mainline, Kinsale Road to Ashburn Road	7-26
6.3.2	Combination 2 – Modified Transit/TDM/TSM plus Expansion of Existing Roadway.....	6-23			

7.4.3.1	Net Effects Analysis.....	7-26
7.4.3.2	Comparative Evaluation	7-31
7.4.4	Section 3 – Central Mainline, Ashburn Road to Simcoe Street.....	7-39
7.4.4.1	Net Effects Analysis.....	7-39
7.4.5	Section 4 – Central Mainline, Simcoe Street to Enfield Road	7-40
7.4.5.1	Net Effects Analysis.....	7-40
7.4.5.2	Comparative Evaluation	7-45
7.4.6	Section 5 – East Mainline, Enfield Road to Highway 35/115	7-53
7.4.6.1	Net Effects Analysis.....	7-53
7.4.6.2	Comparative Evaluation	7-80
7.4.7	Section 6 – West Durham Link.....	7-99
7.4.7.1	Net Effects Analysis.....	7-99
7.4.7.2	Comparative Evaluation	7-117
7.4.8	Section 7 – East Durham Link.....	7-138
7.4.8.1	Net Effects Analysis.....	7-138
7.4.8.2	Comparative Evaluation	7-165
7.5	Identification of the Technically Recommended Route	7-180
7.6	Generation, Assessment and Evaluation of the Preliminary Design Refinements and Alternatives.....	7-184
7.6.1	Simcoe Street Interchange Route Refinement.....	7-184
7.6.2	Mainline from Harmony Road to Enfield Road Route Refinement.....	7-186
7.6.3	Mainline in the Vicinity of Enfield Road and Solina Bog Route Refinement.....	7-186
7.6.4	West Durham Link at Taunton Road Route Refinement.....	7-191
7.6.5	East Durham Link at Highway 2 Route Refinement.....	7-191
7.6.6	East Durham Link at Taunton Road Route Refinement.....	7-195
7.6.7	Brock Road / Highway 7 Intersection Design Alternatives	7-195
7.6.8	Lake Ridge Road / Cochrane Street Interchanges Design Alternatives.....	7-195
7.6.9	Coronation Road Realignment at 407 Corridor Design Alternatives	7-200
7.6.10	Ashburn Road Realignment Design Alternatives	7-200
7.6.11	Rail Crossing north of Rossland Road (on West Durham Link) Design Alternatives	7-200
7.6.13	Lake Ridge Road Realignment at Highway 401 Design Alternatives.....	7-200
7.6.14	Regional Road 57 Interchange Design Alternatives.....	7-200
7.6.15	Bethesda Road versus Darlington-Clarke Townline Road Interchange Design Alternatives	7-202
7.6.16	Highway 35/115 Connection Design Alternatives	7-202
7.7	Identification of the Technically Preferred Route.....	7-204

8.	Recommended Design and Assessment of the Undertaking	8-1
8.1	Description of the Recommended Design	8-1
8.1.1	Highway and Transitway Geometrics	8-11
8.1.1.1	Horizontal Alignment	8-11
8.1.1.2	Vertical Alignment	8-11
8.1.1.3	Cross Section	8-11
8.1.2	Crossing Roads	8-13
8.1.2.1	Interchanges	8-13
8.1.2.2	Grade Separations	8-15
8.1.2.3	Road Closures	8-15
8.1.3	Local Road Realignments / Connections.....	8-16
8.1.4	Right-of-Way Requirements.....	8-17
8.1.5	Support Facilities	8-17
8.1.5.1	Maintenance Facilities.....	8-17
8.1.5.2	Commercial Vehicle Inspection Facilities.....	8-17
8.1.5.3	Transitway Stations.....	8-23
8.1.6	Structures.....	8-23
8.1.6.1	Bridges and Culverts.....	8-23
8.1.6.2	Retaining Walls	8-23
8.1.6.3	Noise Walls	8-23
8.1.7	Drainage and Stormwater Management	8-23
8.1.7.1	Drainage.....	8-23
8.1.7.2	Stormwater Management.....	8-29
8.1.8	Illumination.....	8-31
8.1.9	Pavement.....	8-32
8.1.10	Other Design Features.....	8-32
8.1.10.1	Sidewalks and Bike Lanes at Crossing Road Structures	8-32
8.1.10.2	Recreational Trails	8-33
8.1.11	Utilities	8-33
8.1.12	Construction Methods and Staging.....	8-34
8.2	Detailed Description of the Environment Potentially Affected.....	8-35
8.2.1	Natural Environment	8-35
8.2.2	Social Environment	8-38
8.2.3	Economic/ Land Use Environment.....	8-38
8.2.4	Cultural Environment	8-40
8.3	Net Effects on the Environment	8-40
8.3.1	Net Effects Analysis Process.....	8-40
8.3.2	Natural Environment – Hydrogeology	8-40
8.3.2.1	Section 1 – Brock Road to Kinsale Road	8-46

8.3.2.2	Section 2 – Kinsale Road to Ashburn Road	8-50	8.3.5.1	General Construction Potential Effects and Mitigation Measures	8-189
8.3.2.3	Section 3 – Ashburn Road to Simcoe Street	8-52	8.3.5.2	Section 1 – Brock Road to Kinsale Road	8-189
8.3.2.4	Section 4 – Simcoe Street to Enfield Road	8-55	8.3.5.3	Section 2 – Kinsale Road to Ashburn Road	8-193
8.3.2.5	Section 5 – Enfield Road to Highway 35/115	8-58	8.3.5.4	Section 3 – Ashburn Road to Simcoe Street.....	8-196
8.3.2.6	Section 6 – West Durham Link	8-68	8.3.5.5	Section 4 – Simcoe Street to Enfield Road	8-201
8.3.2.7	Section 7 – East Durham Link	8-73	8.3.5.6	Section 5 – Enfield Road to Highway 35/115.....	8-205
8.3.2.8	Summary of Net Effects.....	8-80	8.3.5.7	Section 6 – West Durham Link.....	8-210
8.3.3	Natural Environment – Terrestrial	8-87	8.3.5.8	Section 7 – East Durham Link.....	8-215
8.3.3.1	General Potential Construction Related Effects	8-87	8.3.5.9	Summary of Mitigated Noise Impacts from the Project	8-218
8.3.3.2	General Potential Operation and Maintenance Related Effects	8-87	8.3.6	Air Quality	8-221
8.3.3.3	Standard Terrestrial Mitigation Applied across the Study Area	8-88	8.3.6.1	General Construction Potential Effects and Mitigation Measures	8-222
8.3.3.4	Site Specific Mitigation and Enhancement	8-89	8.3.6.2	General Operational Potential Effects and Mitigation Measures.....	8-222
8.3.3.5	Operation and Maintenance Mitigation.....	8-95	8.3.6.3	Section 1 – Brock Road to Kinsale Road	8-223
8.3.3.6	Section 1 – Brock Road to Kinsale Road	8-95	8.3.6.4	Section 2 – Kinsale Road to Ashburn Road.....	8-226
8.3.3.7	Section 2 – Kinsale Road to Ashburn Road	8-101	8.3.6.5	Section 3 – Ashburn Road to Simcoe Street.....	8-228
8.3.3.8	Section 3 – Ashburn Road to Simcoe Street	8-105	8.3.6.6	Section 4 – Simcoe Street to Enfield Road	8-231
8.3.3.9	Section 4 – Simcoe Street to Enfield Road	8-108	8.3.6.7	Section 5 – Enfield Road to Hwy 35/115.....	8-233
8.3.3.10	Section 5 – Enfield Road to Highway 35/115	8-111	8.3.6.8	Section 6 – West Durham Link.....	8-236
8.3.3.11	Section 6 – West Durham Link	8-118	8.3.6.9	Section 7 – East Durham Link.....	8-238
8.3.3.12	Section 7 – East Durham Link	8-124	8.3.6.10	Summary of Net Effects	8-241
8.3.3.13	Summary of Anticipated and Residual Effects	8-129	8.3.7	Socio-economic	8-244
8.3.4	Natural Environment – Fisheries	8-130	8.3.7.1	General Potential Effects, Mitigation and Net Effects.....	8-244
8.3.4.1	General Potential Effects.....	8-130	8.3.7.2	Section 1 – Brock Road to Kinsale Road	8-244
8.3.4.2	Mitigation Measures through Design	8-131	8.3.7.3	Section 2 – Kinsale Road to Ashburn Road.....	8-247
8.3.4.3	General Construction Mitigation Measures	8-134	8.3.7.4	Section 3 – Ashburn Road to Simcoe Street.....	8-249
8.3.4.4	Duffins Creek Watershed	8-137	8.3.7.5	Section 4 – Simcoe Street to Enfield Road	8-251
8.3.4.5	Carruthers Creek Watershed.....	8-143	8.3.7.6	Section 5 – Enfield Road to Highway 35/115.....	8-253
8.3.4.6	Lynde Creek Watershed (Mainline)	8-147	8.3.7.7	Section 6 – West Durham Link.....	8-256
8.3.4.7	Lynde Creek Watershed (West Durham Link)	8-152	8.3.7.8	Section 7 – East Durham Link.....	8-258
8.3.4.8	Oshawa Creek Watershed	8-159	8.3.7.9	Summary of Effects	8-260
8.3.4.9	Harmony Creek Watershed	8-166	8.3.8	Landscape Composition	8-260
8.3.4.10	Farewell Creek Watershed	8-168	8.3.8.1	Recommended Design Overview.....	8-261
8.3.4.11	Black Creek Watershed.....	8-171	8.3.8.2	Section 1 – Brock Road to Kinsale Road	8-263
8.3.4.12	Tooley Creek Watershed.....	8-174	8.3.8.3	Section 2 – Kinsale Road to Ashburn Road.....	8-264
8.3.4.13	Bowmanville Creek Watershed	8-176	8.3.8.4	Section 3 – Ashburn Road to Simcoe Street.....	8-265
8.3.4.14	Soper Creek Watershed	8-178	8.3.8.5	Section 4 – Simcoe Street to Enfield Road	8-266
8.3.4.15	Wilmot Creek Watershed.....	8-180	8.3.8.6	Section 5 – Enfield Road to Highway 35/115.....	8-267
8.3.4.17	Summary of Anticipated and Residual Effects	8-183	8.3.8.7	Section 6 – West Durham Link.....	8-268
8.3.5	Noise	8-189	8.3.8.8	Section 7 – East Durham Link.....	8-269

8.3.8.9	Summary	8-269	8.3.12.7	Section 6 – West Durham Link.....	8-317
8.3.9	Agriculture	8-270	8.3.12.8	Section 7 – East Durham Link.....	8-317
8.3.9.1	General Potential Effects, Mitigation and Compensation	8-270	8.3.12.9	Summary of Cultural Heritage Effects.....	8-320
8.3.9.2	Section 1 – Brock Road to Kinsale Road	8-270	8.3.13	Net Effects Summary	8-320
8.3.9.3	Section 2 – Kinsale Road to Ashburn Road	8-273	8.3.14	Human Health Implications	8-333
8.3.9.4	Section 3 – Ashburn Road to Simcoe Street	8-275	8.3.14.1	Air Quality Implications on Human Health.....	8-333
8.3.9.5	Section 4 – Simcoe Street to Enfield Road	8-277	8.3.14.2	Groundwater and Surface Water Implications on Human Health.....	8-334
8.3.9.6	Section 5 – Enfield Road to Highway 35/115	8-279	8.3.14.3	Summary of Human Health Implications.....	8-334
8.3.9.7	Section 6 – West Durham Link	8-283	9. Commitments and Monitoring for the Undertaking	9-1	
8.3.9.8	Section 7 – East Durham Link	8-286	9.1	Environmental Effects Monitoring	9-1
8.3.9.9	Summary of Effects	8-269	9.2	EA Compliance Monitoring	9-1
8.3.10	Waste Management and Contamination	8-289	10. Canadian Environmental Assessment Act Process	10-1	
8.3.10.1	Section 1 – Brock Road to Kinsale Road	8-289	10.1	Background.....	10-1
8.3.10.2	Section 2 – Kinsale Road to Ashburn Road	8-292	10.2	Scope of the Undertaking	10-1
8.3.10.3	Section 3 – Ashburn Road to Simcoe Street	8-292	10.3	EA Documentation – Screening.....	10-3
8.3.10.4	Section 4 – Simcoe Street to Enfield Road	8-295	11. Approvals and Agreements Required for the Undertaking.....	11-1	
8.3.10.5	Section 5 – Enfield Road to Highway 35/115	8-295	11.1	Provincial Approvals and Agreements	11-1
8.3.10.6	Section 6 – West Durham Link.....	8-298	11.1.1	Ministry of Environment	11-1
8.3.10.7	Section 7 – East Durham Link	8-300	11.1.2	Ministry of Natural Resources.....	11-1
8.3.10.8	Operational Effects	8-300	11.1.3	Ministry of Culture	11-2
8.3.10.9	Regional Contamination Effects	8-302	11.1.4	GO Transit	11-2
8.3.10.10	Summary of Effects.....	8-302	11.1.5	Ontario Realty Corporation	11-2
8.3.11	Archaeology	8-303	11.1.6	Hydro One Networks.....	11-2
8.3.11.1	Section 1 – Brock Road to Kinsale Road	8-303	11.1.7	Compliance with Provincial Plans and Policies.....	11-2
8.3.11.2	Section 2 – Kinsale Road to Ashburn Road	8-304	11.2	Federal Approvals and Agreements	11-3
8.3.11.3	Section 3 – Ashburn Road to Simcoe Street	8-304	11.2.1	Responsible Authorities	11-3
8.3.11.4	Section 4 – Simcoe Street to Enfield Road	8-305	11.2.2	Potential Responsible Authorities	11-3
8.3.11.5	Section 5 – Enfield Road to Highway 35/115	8-305	11.2.2.1	Canadian Transportation Agency	11-3
8.3.11.6	Section 6 – West Durham Link.....	8-305	11.2.2.2	National Energy Board	11-4
8.3.11.7	Section 7 – East Durham Link	8-306	11.2.3	Additional Federal Approvals	11-4
8.3.11.8	Summary of Effects	8-306	11.2.3.1	Fisheries Act – DFO	11-4
8.3.12	Cultural Heritage	8-308	11.2.3.2	Species At Risk Act – Environmental Canada and DFO	11-4
8.3.12.1	General Effects and Mitigation Measures – Construction and Operation.....	8-308	11.2.3.3	Migratory Birds Convention Act – Environmental Canada	11-4
8.3.12.2	Section 1 – Brock Road to Kinsale Road	8-308	11.3	Municipal Approvals and Agreements	11-5
8.3.12.3	Section 2 – Kinsale Road to Ashburn Road	8-310	11.3.1	Region of Durham.....	11-5
8.3.12.4	Section 3 – Ashburn Road to Simcoe Street	8-310	11.3.2	City of Pickering.....	11-5
8.3.12.5	Section 4 – Simcoe Street to Enfield Road	8-313			
8.3.12.6	Section 5 – Enfield Road to Highway 35/115	8-313			

11.3.3	Town of Ajax.....	11-5
11.3.4	Town of Whitby.....	11-6
11.3.5	City of Oshawa.....	11-6
11.3.6	Municipality of Clarington	11-6
11.3.7	Utility Companies / Authorities	11-7
11.4	MTO Class EA Requirements	11-7
12.	Amending the EA.....	12-1

List of Exhibits

CHAPTER 1 – LIST OF EXHIBITS

Exhibit 1.1	407 Analysis Area Relative to Greater Golden Horseshoe Growth Plan Area	1-2
Exhibit 1.2	Places to Grow: Urban Growth Centres	1-3
Exhibit 1.3	Provincial Transportation Network.....	1-5
Exhibit 1.4	Railway Lines in the GGH	1-6
Exhibit 1.5	Road Network in Durham Region.....	1-8
Exhibit 1.6	Land Use designations and Municipal Boundaries in Durham Region.....	1-10
Exhibit 1.7	Growing Durham Recommended Growth Scenario (Nov. 2008)	1-11
Exhibit 1.8	Natural Environment Features in Durham Region.....	1-13
Exhibit 1.9	Existing 407 ETR and 407 East EA Analysis Area	1-15
Exhibit 1.10	407 East EA Analysis Area.....	1-16

CHAPTER 2 – LIST OF EXHIBITS

Exhibit 2.1	Two Step EA Process.....	2-1
Exhibit 2.2	407 East EA Process Overview.....	2-1
Exhibit 2.3	Process Overview for the Development, Assessment and Evaluation of Alternatives to the Undertaking	2-2
Exhibit 2.4	Process Overview for the Development, Assessment and Evaluation of Alternatives Methods for the Undertaking	2-2
Exhibit 2.5	Determining if the Canadian Environmental Assessment Act Applies	2-4
Exhibit 2.6	Overview of Study Schedule	2-6
Exhibit 2.7	Study Schedule	2-6
Exhibit 2.8	Overview of EA Report.....	2-8
Exhibit 2.9	Where the OEAA/CEAA Requirements are Addressed in the 407 East EA Report / Reference Documents	2-10

CHAPTER 3 – LIST OF EXHIBITS

Exhibit 3.1	407 Analysis Area	3-2
Exhibit 3.2	Surficial Geology in the Analysis Area.....	3-14
Exhibit 3.3	Surficial Geology Cross Section along Lake Ridge Road	3-15
Exhibit 3.4	Major Watersheds and Associated Drainage Areas.....	3-19
Exhibit 3.5	Major Watersheds in the Analysis Area.....	3-21
Exhibit 3.6	Wetlands, Areas of Natural and Scientific Interest and Environmentally Sensitive Areas	3-31

Exhibit 3.7	Provincially and Locally Significant Wetlands within the Analysis Area	3-32
Exhibit 3.8	Areas of Natural and Scientific Interest within the Analysis Area.....	3-35
Exhibit 3.9	Environmentally Significant Areas within TRCA Jurisdiction.....	3-38
Exhibit 3.10	Environmentally Significant Areas within CLOCA Jurisdiction	3-39
Exhibit 3.11	Conservation Areas.....	3-43
Exhibit 3.12	Growth Plan: Urban Growth Centres	3-49
Exhibit 3.13	Growth Plan: Moving People – Transit.....	3-49
Exhibit 3.14	Growth Plan: Moving Goods	3-50
Exhibit 3.15	Metrolinx 25 Year Plan for Rapid Transit and Highway Network	3-51
Exhibit 3.16	Durham Transportation Master Plan Road Network	3-52
Exhibit 3.17	Pickering Official Plan: North Rural Area	3-53
Exhibit 3.18	Ajax Official Plan Urban Area.....	3-54
Exhibit 3.19	Town of Whitby Official Plan: Proposed Extension of Highway 407	3-54
Exhibit 3.20	City of Oshawa: Proposed Highway 407 Corridor and Adjacent Planning Areas	3-55
Exhibit 3.21	Municipality of Clarington: Proposed Extension of Highway 407 and Freeway Connection to Highway 401	3-56
Exhibit 3.22	Designated Land Use within the Analysis Area	3-57

CHAPTER 4 – LIST OF EXHIBITS

Exhibit 4.1	Overview of the 407 Consultation Process	4-2
Exhibit 4.2	Consultation Elements	4-3
Exhibit 4.3	Municipal and Regulatory Advisory Group (MTAG and RAG) Meeting Dates / Agenda Items.....	4-5
Exhibit 4.4	Community Advisory Group (CAG) Meeting Dates / Agenda Items.....	4-7
Exhibit 4.5	Summary of Workshop #2 Comments on the Alternative Methods Evaluation Processes	4-19
Exhibit 4.6	Newsletter #3	4-26
Exhibit 4.7	Heritage Fact Sheet	4-28
Exhibit 4.8	Summary of Advisory Group Comments Received During Transportation Problems and Opportunities Phase	4-30
Exhibit 4.9	Summary of Advisory Group Comments Received During Alternatives To the Undertaking Phase	4-31
Exhibit 4.10	Summary of Public Comments Received During Transportation Problems and Opportunities and Transportation Alternatives (Alternatives To the Undertaking) Phases at PIC #1	4-33
Exhibit 4.11	Summary of Advisory Group Comments Received During Route Alternatives (Alternative Methods) Phase	4-36
Exhibit 4.12	Summary of Public Comments Received During Route Alternatives (Alternative Methods) Phase at PIC #2.....	4-37

Exhibit 4.13	Summary of Advisory Group Comments Received During the Recommended Alternative Method (Technically Recommended Route) Phase	4-39
Exhibit 4.14	Summary of Public Comments Received During Recommended Alternative Method (Technically Recommended Route) Phase at PIC #3	4-40
Exhibit 4.15	Summary of Advisory Group Comments Received During the Preferred Alternative Method (Technically Preferred Route) Phase	4-43
Exhibit 4.16	Summary of Public Comments Received During the Preferred Alternative Method (Technically Preferred Route) Phase at PIC #4	4-44
Exhibit 4.17	Summary of Advisory Group Comments Received During the Recommended Design and Recommended Mitigation / Compensation and Enhancement Measures Phase	4-48
Exhibit 4.18	Public Comments Received During the Recommended Design and Recommended Mitigation / Compensation and Enhancement Measures Phase at PIC #5	4-49

CHAPTER 5 – LIST OF EXHIBITS

Exhibit 5.1	Analysis Area from Approved EA Terms of Reference	5-1
Exhibit 5.2	Summary of Goals and Objectives	5-2
Exhibit 5.3	Existing Provincial Road Network.....	5-3
Exhibit 5.4	Durham Transportation Plan Road Network.....	5-5
Exhibit 5.5	Travel Conditions – Recreation and Goods Movement.....	5-8
Exhibit 5.6	East-West Screenlines	5-9
Exhibit 5.7	North-South Screenline	5-9
Exhibit 5.8	Existing P.M. Peak Hour, Base Network, East-West Travel Screenline Volume/Capacity Assessment – Peak Direction	5-10
Exhibit 5.9	Existing P.M. Peak Hour, Base Network, North-South Travel Screenline Volume/Capacity Assessment – Peak Direction	5-10
Exhibit 5.10	Existing Congested Areas	5-11
Exhibit 5.11	Urban Growth Centres in Durham Region.....	5-12
Exhibit 5.12	Overview of Land Use Growth.....	5-12
Exhibit 5.13	Durham Region Road Network Improvements.....	5-14
Exhibit 5.14	2021 GTA Base Network Freeway Lane Assumptions	5-15
Exhibit 5.15	2031 GTA Base Network Freeway Lane Assumptions	5-16
Exhibit 5.16	Comparison of the Origins of 2021 P.M. Peak Hour Trips Made by Total Persons and by Auto Vehicles Destined to Durham.....	5-17
Exhibit 5.17	Comparison of the Origins of 2031 P.M. Peak Hour Trips Made by Total Persons and by Auto Vehicles Destined to Durham.....	5-17
Exhibit 5.18	2011 P.M. Peak Hour, Base Network, East-West Travel Screenline Volume/Capacity Assessment – Peak Direction	5-18

Exhibit 5.19	2011 P.M. Peak Hour, Base Network, North-South Travel Screenline Volume/Capacity Assessment – Peak Direction	5-18
Exhibit 5.20	2021 P.M. Peak Hour, Base Network, East-West Travel Screenline Volume/Capacity Assessment – Peak Direction	5-19
Exhibit 5.21	2021 P.M. Peak Hour, Base Network, North-South Travel Screenline Volume/Capacity Assessment – Peak Direction	5-19
Exhibit 5.22	2031 P.M. Peak Hour, Base Network, East-West Travel Screenline Volume/Capacity Assessment – Peak Direction	5-19
Exhibit 5.23	2031 P.M. Peak Hour, Base Network, North-South Travel Screenline Volume/Capacity Assessment – Peak Direction	5-20
Exhibit 5.24	Problem Statement	5-23
Exhibit 5.25	Opportunities.....	5-25
Exhibit 5.26	Daily Person Trips for Residents of Durham by Mode of Travel 2001 vs 2006	5-27
Exhibit 5.27	P.M. Peak Hour Passenger Trips for Residents of Durham by Mode of Travel, 2001 vs 2006.....	5-28
Exhibit 5.28	Comparison of 2001 and 2006 TTS P.M. Peak Period Transit Mode Split Summary....	5-28
Exhibit 5.29	Summary of 2006 TTS A.M. Peak Period Auto Trip Table	5-28
Exhibit 5.30	Summary of 2006 TTS P.M. Peak Period Auto Trip Table	5-28
Exhibit 5.31	Model Validation – P.M. Peak Hour	5-29
Exhibit 5.32	Model Validation – A.M. Peak Hour	5-29
Exhibit 5.33	Region of Durham Land Use Forecasts.....	5-29
Exhibit 5.34	Growing Durham Recommended Growth Scenario (Nov 2008)	5-30
Exhibit 5.35	Metrolinx 25 Year Plan for Rapid Transit and Highway Network	5-32
Exhibit 5.36	2031 P.M. Peak Period Travel Demands – Target Mode Split	5-33
Exhibit 5.37	2006 and 2031 A.M. Peak Period Travel Demands – Target Mode Split (From Durham Region)	5-33
Exhibit 5.38	2006 and 2031 A.M. Peak Period Travel Demands – Target Mode Split (To Durham Region)	5-33
Exhibit 5.39	Comparison of A.M. Peak Period Forecasts	5-34
Exhibit 5.40	Planned Municipal Road Improvements	5-35

CHAPTER 6 – LIST OF EXHIBITS

Exhibit 6.1	Process Overview for the Development & Assessment of Alternatives To the Undertaking..	6-1
Exhibit 6.2	Durham Region Road Network Improvements	6-2
Exhibit 6.3	Combination Alternatives – Options 1 to 5.....	6-5
Exhibit 6.4	Analysis of East-West Travel	6-7
Exhibit 6.5	Analysis of North-South Travel	6-8
Exhibit 6.6	Summary of TDM Auto Trip Reduction Potential (Exclusive of Transit).....	6-9

Exhibit 6.7	East-West Travel Screenlines	6-15	Exhibit 7.8	West Mainline – Screening of Long List of Route Alternatives	7-7
Exhibit 6.8	North-South Screenlines	6-15	Exhibit 7.9	Central Mainline – Screening of Long List of Route Alternatives	7-8
Exhibit 6.9	Screenline Capacity Deficiencies, Previously Planned Transportation Network	6-16	Exhibit 7.10	East Mainline – Screening of Long List of Route Alternatives	7-11
Exhibit 6.10	Potential Widening of Existing Roads, 2011	6-16	Exhibit 7.11	West Link – Screening of Long List of Route Alternatives	7-13
Exhibit 6.11	Potential Widening of Existing Roads, 2021	6-16	Exhibit 7.12	East Link – Screening of Long List of Route Alternatives	7-16
Exhibit 6.12	Potential Widening of Existing Roads, 2031	6-17	Exhibit 7.13	Final Short List of Alternative Routes	7-18
Exhibit 6.13	Summary of Assessment of Transportation Alternatives	6-20	Exhibit 7.14	Short List of Alternative Routes Section Map	7-18
Exhibit 6.14	Strategies for Dealing with Congestion	6-21	Exhibit 7.15	Evaluation Methodology	7-20
Exhibit 6.15	Analysis of East-West Travel with Enhanced Transit/TDM/TSM – 2031	6-22	Exhibit 7.16	Evaluation Factors, Criteria and Indicators	7-21
Exhibit 6.16	Analysis of North-South Travel with Enhanced Transit/TDM/TSM – 2031	6-22	Exhibit 7.17	West Mainline Alternative, Brock Road to Kinsale Road	7-24
Exhibit 6.17	Analysis of East-West Travel with Modified Transit/TDM/TSM plus Expansion of Existing Roadways – 2031	6-23	Exhibit 7.18	Route Alternative WM1	7-26
Exhibit 6.18	Analysis of North-South Travel with Modified Transit/TDM/TSM plus Expansion of Existing Roadways – 2031	6-23	Exhibit 7.19	Route Alternative WM2	7-29
Exhibit 6.19	Analysis of New Corridor Option 1, 2031	6-25	Exhibit 7.20	Visual Representation of Reasoned Argument Evaluation Results for Section 2, West Mainline from Kinsale Road to Ashburn Road	7-32
Exhibit 6.20	Analysis of New Corridor Option 2, 2031	6-25	Exhibit 7.21	Arithmetic Evaluation Results for Section 2, West Mainline from Kinsale Road to Ashburn Road	7-32
Exhibit 6.21	Analysis of New Corridor Option 3, 2031	6-26	Exhibit 7.22	Comparative Evaluation of Western Mainline Route Alternatives	7-33
Exhibit 6.22	Analysis of New Corridor Option 4, 2031	6-26	Exhibit 7.23	Central Mainline Alternative, Ashburn Road to Simcoe Street	7-39
Exhibit 6.23	Analysis of New Corridor Option 5, 2031	6-27	Exhibit 7.24	Route Alternative CM1	7-41
Exhibit 6.24	Natural Environment Features	6-29	Exhibit 7.25	Route Alternative CM2	7-43
Exhibit 6.25	Factors, Criteria and Measures for Evaluating the Alternatives To the Undertaking	6-34	Exhibit 7.26	Visual Representation of Reasoned Argument Evaluation Results for Section 4, Central Mainline from Simcoe Street to Enfield Road	7-46
Exhibit 6.26	Summary of Assessment of Combination Alternatives To the Undertaking	6-41	Exhibit 7.27	Arithmetic Evaluation Results for Section 4, Central Mainline from Simcoe Street to Enfield Road	7-46
Exhibit 6.27	Summary of Assessment of Combination Alternatives	6-44	Exhibit 7.28	Comparative Evaluation of Central Mainline Route Alternatives	7-47
Exhibit 6.28	Recommended Freeway / Transitway Corridor – Combination 3	6-45	Exhibit 7.29	Route Alternative EM1	7-53
Exhibit 6.29	Elements of the Preferred Planning Alternative and the Applicable Jurisdiction	6-45	Exhibit 7.30	Route Alternative EM2	7-55
Exhibit 6.30	Analysis of East-West Travel with Enhanced Transit/TDM/TSM – 2031	6-46	Exhibit 7.31	Route Alternative EM3	7-57
Exhibit 6.31	Analysis of North-South Travel with Enhanced Transit/TDM/TSM – 2031	6-46	Exhibit 7.32	Route Alternative EM4	7-60
Exhibit 6.32	2006 Truck Percentages on Existing Facilities in Study Area	6-48	Exhibit 7.33	Route Alternative EM5	7-62
Exhibit 6.33	2005 Summer (SADT) Volume Increase on Existing Facilities in Study Area	6-48	Exhibit 7.34	Route Alternative EM6	7-64
Exhibit 6.34	Ultimate 2031 Lane Requirements for 407 Mainline, West Link and East Link	6-48	Exhibit 7.35	Route Alternative EM7	7-66
CHAPTER 7 – LIST OF EXHIBITS					
Exhibit 7.1	Alternative Methods (Route Alternatives) Process	7-1	Exhibit 7.36	Route Alternative EM8	7-69
Exhibit 7.2	Preliminary Study Area	7-1	Exhibit 7.37	Route Alternative EM9	7-71
Exhibit 7.3	Guiding Principles and Objectives for Use in Generating Alternative Routes	7-2	Exhibit 7.38	Route Alternative EM10	7-73
Exhibit 7.4	Long List of Mainline Route Alternatives	7-3	Exhibit 7.39	Route Alternative EM11	7-75
Exhibit 7.5	Long List of Link Route Alternatives	7-4	Exhibit 7.40	Route Alternative EM12	7-78
Exhibit 7.6	Screening Process	7-5	Exhibit 7.41	Visual Representation of Reasoned Argument Evaluation Results for Section 5, East Mainline from Enfield Road to Highway 35/115	7-81
Exhibit 7.7	Screening Criteria for Identifying the Short-List of Alternative Routes	7-5			

	Facilities (West of Enfield Road to)	8-15	Exhibit 8.44	Vegetation Communities Brock Road to Westney Road.....	8-97
Exhibit 8.16	Comparative Evaluation of Candidate Commercial Vehicle Inspection Facility Sites	8-21	Exhibit 8.45	Vegetation Communities Westney Road to Country lane	8-98
Exhibit 8.17	Watercourse Crossing Location Plan	8-25	Exhibit 8.46	Vegetation Communities lake Ridge Road to Thickson Road	8-102
Exhibit 8.18	Watercourse Crossing Treatment Summary Table	8-26	Exhibit 8.47	Vegetation Communities Thickson Road to Harmony Road.....	8-106
Exhibit 8.19	2031 Illumination Requirements	8-32	Exhibit 8.48	Vegetation Communities Simcoe Street to Enfield Road.....	8-110
Exhibit 8.20	Sidewalk/Bike Lane Locations at Crossing Road Structures.....	8-33	Exhibit 8.49	Vegetation Communities Enfield Road to Holt Road	8-113
Exhibit 8.21	List of Watersheds and the watercourses crossed by the Recommended Design	8-36	Exhibit 8.50	Vegetation Communities Holt Road to Acres Road	8-114
Exhibit 8.22	Structure ID vs. Site ID Reference Table	8-41	Exhibit 8.51	Vegetation Communities Acres Road to Best Road	8-115
Exhibit 8.23	Hydraulic Conductivity Summary by Hydrostratigraphic Unit	8-42	Exhibit 8.52	Vegetation Communities Best Road to Highway 35/115	8-116
Exhibit 8.24	Proposed Works, Standard Impacts and Mitigation Options Summary.....	8-43	Exhibit 8.53	Vegetation Communities West Durham Link, 407 Mainline to Taunton Road	8-119
Exhibit 8.25	Summary of Standard Mitigation Measures	8-44	Exhibit 8.54	Vegetation Communities West Durham Link, Taunton Road to Highway 401	8-120
Exhibit 8.26	Surficial Geology of the 407 East Transportation Corridor	8-45	Exhibit 8.55	Vegetation Communities West Durham Link, Highway 401 and West Durham.....	8-120
Exhibit 8.27	Hydrogeology - Section 1 Brock Road to Westney Road.....	8-48		Link Interchange.....	8-120
Hydrogeology	Cross Section 1 – Section 1	8-48a	Exhibit 8.56	Vegetation Communities East Durham Link, Taunton Road to Solina Road	8-125
Exhibit 8.28	Hydrogeology - Section 1 Westney Road to Country Lane	8-49	Exhibit 8.57	Vegetation Communities East Durham Link, Solina Road to Baseline Road	8-126
Hydrogeology	Cross Section 2 – Section 2	8-50a	Exhibit 8.58	Vegetation Communities East Durham Link, Highway 407 and East Durham	
Exhibit 8.29	Hydrogeology - Section 2 Lake Ridge Road to Thickson Road	8-51		Link Interchange.....	8-127
Hydrogeology	Cross Section 3 – Section 3	8-52a	Exhibit 8.59	Summary of Vegetation Removals (ha)	8-129
Exhibit 8.30	Hydrogeology - Section 3 Thickson Road to Harmony Road	8-53	Exhibit 8.60	Interior Forest Habitat Removed	8-130
Exhibit 8.31	Hydrogeology - Section 4 Harmony Road to Enfield Road	8-56	Exhibit 8.61	Construction timing windows based on the fishery present.	8-135
Hydrogeology	Cross Section 4 – Section 4	8-56a	Exhibit 8.62	Duffins Creek Watershed – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.32	Hydrogeology - Section 5 Enfield Road to Holt Road.....	8-64		Brock Road to Westney Road.....	8-139
Exhibit 8.33	Hydrogeology - Section 5 Holt Road to Acres Road	8-65	Exhibit 8.63	Carruthers Creek Watershed – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.34	Hydrogeology - Section 5 Acres Road to Best Road.....	8-66		Westney Road to Country Lane	8-144
Hydrogeology	Cross Section 5 – Section 5	8-66a	Exhibit 8.64	Lynde Creek Watershed (Mainline) – Fisheries and Aquatic Habitat Sensitivity	
Hydrogeology	Cross Section 6 – Section 5	8-67a		Thickson Road to Harmony Road	8-148
Exhibit 8.35	Hydrogeology - Section 5 Best Road to Highway 35/115.....	8-67	Exhibit 8.65	Lynde Creek Watershed (West Durham Link) – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.36	Hydrogeology - Section 6 West Durham Link, 407 Mainline to Taunton Road	8-70		407 Mainline to Taunton Road	8-153
Exhibit 8.37	Hydrogeology - Section 6 West Durham Link, Taunton Road to Highway 401	8-71	Exhibit 8.66	Lynde Creek Watershed (West Durham Link) – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.38	Hydrogeology - Section 6 West Durham Link, Highway 401 and the West Durham			8-136	
	Link Interchange.....	8-72	Exhibit 8.67	Lynde Creek Watershed (West Durham Link) – Fisheries and Aquatic Habitat Sensitivity	
Hydrogeology	Cross Section 7 – Section 6	8-72a		Taunton Road to Highway 401.....	8-137
Exhibit 8.39	Hydrogeology - Section 7 East Durham Link, Taunton Road to Solina Road	8-77	Exhibit 8.68	Lynde Creek Watershed (West Durham Link) – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.40	Hydrogeology - Section 7 East Durham Link, Solina Road to Baseline Road.....	8-78		Highway 401 and West Durham Link INterchange	8-138
Hydrogeology	Cross Section 8 – Section 7	8-78a	Exhibit 8.69	Oshawa Creek Watershed – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.41	Hydrogeology - Section 7 East Durham Link, Highway 401 and East Durham			Thickson Road to Harmony Road.....	8-161
	Link Interchange.....	8-79	Exhibit 8.70	Oshawa Creek Watershed – Fisheries and Aquatic Habitat Sensitivity	
Exhibit 8.42	Hydrogeology - Summary of Anticipated Temporary Effects.....	8-81		Harmony Road to Enfield Road	8-162
Exhibit 8.43	Hydrogeology - Summary of Anticipated Residual Effects.....	8-84	Exhibit 8.71	Harmony Creek Watershed – Fisheries and Aquatic Habitat Sensitivity	

Harmony Road to Enfield Road.....	8-167	Exhibit 8.104	Future Build Sound Levels – Simcoe Street to Enfield Road.....	8-202
Exhibit 8.72 Farewell Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.105	Changes in Sound Levels – Simcoe Street to Enfield Road.....	8-203
Enfield Road to Holt Road.....	8-170	Exhibit 8.106	Construction Noise for Various Activities – Section 4.....	8-204
Exhibit 8.73 Black Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.107	Ranking of Future Noise Levels – Unmitigated – Section 5.....	8-205
Solina Road to Baseline Road.....	8-173	Exhibit 8.108	Ranking of Change in Sound Levels – Unmitigated – Section 5.....	8-205
Exhibit 8.74 Tooley Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.109	Noise Level Statistics – Unmitigated – Section 5.....	8-205
Highway 401 and East Durham Link Interchange.....	8-175	Exhibit 8.110	Future Build Sound Levels – Enfield Road to Highway 35/115 (West Portion).....	8-206
Exhibit 8.75 Bowmanville Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.111	Future Build Sound Levels – Enfield Road to Highway 35/115 (East Portion).....	8-206
Holt Road to Acres Road.....	8-177	Exhibit 8.112	Changes in Sound Levels – Enfield Road to Highway 35/115 (West Portion).....	8-207
Exhibit 8.76 Soper Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.113	Changes in Sound Levels – Enfield Road to Highway 35/115 (East Portion).....	8-207
Acres Road to Best Road.....	8-179	Exhibit 8.114	Construction Noise for Various Activities – Section 5.....	8-208
Exhibit 8.77 Wilmot Creek Watershed – Fisheries and Aquatic Habitat Sensitivity		Exhibit 8.115	Recommended Noise Barrier Location – Section 5.....	8-209
Best Road to Highway 35/115.....	8-182	Exhibit 8.116	Ranking of Future Noise Levels – Mitigated – Section 5.....	8-210
Exhibit 8.78 Summary of Watercourses Impacted, Net Effects and Preliminary Risk Assessment..	8-183	Exhibit 8.117	Ranking of Change in Sound Levels – Mitigated – Section 5.....	8-210
Exhibit 8.79 Ranking of Future Noise Levels – Unmitigated – Section 1.....	8-190	Exhibit 8.118	Noise Level Statistics – Mitigated – Section 5.....	8-210
Exhibit 8.80 Ranking of Change in Sound Levels – Unmitigated – Section 1.....	8-190	Exhibit 8.119	Ranking of Future Noise Levels – Unmitigated – Section 6.....	8-211
Exhibit 8.81 Noise Level Statistics – Unmitigated – Section 1.....	8-190	Exhibit 8.120	Ranking of Change in Sound Levels – Unmitigated – Section 6.....	8-211
Exhibit 8.82 Future Build Sound Levels – Brock Road to Kinsale Road.....	8-190	Exhibit 8.121	Noise Level Statistics – Unmitigated – Section 6.....	8-211
Exhibit 8.83 Changes in Sound Levels – Brock Road to Kinsale Road.....	8-191	Exhibit 8.122	Future Build Sound Levels – West Durham Link.....	8-211
Exhibit 8.84 Construction Noise for Various Activities – Section 1.....	8-192	Exhibit 8.123	Changes in Sound Levels – West Durham Link.....	8-212
Exhibit 8.85 Ranking of Future Noise Levels – Unmitigated – Section 2.....	8-193	Exhibit 8.124	Construction Noise for Various Activities – Section 6.....	8-213
Exhibit 8.86 Ranking of Change in Sound Levels – Unmitigated – Section 2.....	8-193	Exhibit 8.125	Recommended Noise Barrier Location – Section 6.....	8-214
Exhibit 8.87 Noise Level Statistics – Unmitigated – Section 2.....	8-193	Exhibit 8.126	Ranking of Future Noise Levels – Unmitigated – Section 7.....	8-215
Exhibit 8.88 Future Build Sound Levels – Kinsale Road to Ashburn Road.....	8-194	Exhibit 8.127	Ranking of Change in Sound Levels – Unmitigated – Section 7.....	8-215
Exhibit 8.89 Changes in Sound Levels – Kinsale Road to Ashburn Road.....	8-194	Exhibit 8.128	Noise Level Statistics – Unmitigated – Section 7.....	8-215
Exhibit 8.90 Construction Noise for Various Activities – Section 2.....	8-195	Exhibit 8.129	Future Build Sound Levels – East Durham Link.....	8-216
Exhibit 8.91 Ranking of Future Noise Levels – Unmitigated – Section 3.....	8-196	Exhibit 8.130	Changes in Sound Levels – East Durham Link.....	8-216
Exhibit 8.92 Ranking of Change in Sound Levels – Unmitigated – Section 3.....	8-196	Exhibit 8.131	Construction Noise for Various Activities – Section 7.....	8-217
Exhibit 8.93 Noise Level Statistics – Unmitigated – Section 3.....	8-197	Exhibit 8.132	Ranking of Mitigated Future Build Sound Levels.....	8-218
Exhibit 8.94 Future Build Sound Levels – Ashburn Road to Simcoe Street.....	8-197	Exhibit 8.133	Ranking of Changes in Mitigated Future Build Sound Levels – Entire Project.....	8-219
Exhibit 8.95 Changes in Sound Levels – Ashburn Road to Simcoe Street.....	8-198	Exhibit 8.134	Comparison of Rankings of Mitigated Future Build vs. Future No-Build Sound Levels.....	8-219
Exhibit 8.96 Construction Noise for Various Activities – Section 3.....	8-199	Exhibit 8.135	Comparison of Rankings of Mitigated Future Build Versus Future No-Build Sound Levels.....	8-219
Exhibit 8.97 Recommended Noise Barrier Location – Section 3.....	8-200	Exhibit 8.136	Change in Future Build Versus No-Build Sound Levels Only for NSAs With Future Build Levels > 65 dBA.....	8-220
Exhibit 8.98 Ranking of Future Noise Levels – Mitigated – Section 3.....	8-200	Exhibit 8.137	Future Sound Levels for 56 Receptors Previously Identified as Greater than 10 dB Change in Sound.....	8-221
Exhibit 8.99 Ranking of Change in Sound Levels – Mitigated – Section 3.....	8-200	Exhibit 8.138	Section 1 – Brock Road to Kinsale Road.....	8-224
Exhibit 8.100 Noise Level Statistics – Mitigated – Section 3.....	8-200			
Exhibit 8.101 Ranking of Future Noise Levels – Unmitigated – Section 4.....	8-201			
Exhibit 8.102 Ranking of Change in Sound Levels – Unmitigated – Section 4.....	8-201			
Exhibit 8.103 Noise Level Statistics – Unmitigated – Section 4.....	8-202			

Exhibit 8.139	Section 1 – Air Quality Sensitive Receptors	8-224	Exhibit 8.177	Section 7 - General Land Use Designations	8-259
Exhibit 8.140	Section 1 – Predicted PM2.5 Concentrations.....	8-225	Exhibit 8.178	Summary of Direct Property Impacts	8-260
Exhibit 8.141	Section 1 – Predicted PM10 Concentrations.....	8-225	Exhibit 8.179	Section 1 – Agriculture Brock Road to Kinsale Road.....	8-272
Exhibit 8.142	Section 2 – Kinsale Road to Ashburn Road	8-226	Exhibit 8.180	Section 2 – Agriculture Kinsale Road to Ashburn Road.....	8-274
Exhibit 8.143	Section 2 – Air Quality Sensitive Receptors	8-227	Exhibit 8.181	Section 3 - Agriculture Ashburn Road to Simcoe Street	8-276
Exhibit 8.144	Section 2 – Predicted PM2.5 Concentrations.....	8-227	Exhibit 8.182	Section 4 - Agriculture Simcoe Street to Enfield Road.....	8-278
Exhibit 8.145	Section 2 – Predicted PM10 Concentrations.....	8-228	Exhibit 8.183	Section 5a – Agriculture Enfield Road to Middle Road	8-280
Exhibit 8.146	Section 3 – Ashburn Road to Simcoe Street.....	8-229	Exhibit 8.184	Section 5b – Agriculture Middle Road to Leskard Road	8-281
Exhibit 8.147	Section 3 – Air Quality Sensitive Receptors	8-229	Exhibit 8.185	Section 5c – Agriculture Leskard Road to Highway 35/115	8-282
Exhibit 8.148	Section 3 – Predicted PM2.5 Concentrations.....	8-230	Exhibit 8.186	Section 6a – Agriculture West Durham Link	8-284
Exhibit 8.149	Section 3 – Predicted PM10 Concentrations.....	8-230	Exhibit 8.187	Section 6b – Agriculture West Durham Link	8-285
Exhibit 8.150	Section 4 – Simcoe Street to Enfield Road	8-231	Exhibit 8.188	Section 7a – Agriculture East Durham Link	8-287
Exhibit 8.151	Section 4 – Air Quality Sensitive Receptors	8-232	Exhibit 8.189	Section 7b – Agriculture East Durham Link	8-288
Exhibit 8.152	Section 4 – Predicted PM2.5 Concentrations.....	8-232	Exhibit 8.190	Summary of Agricultural Net Effects	8-289
Exhibit 8.153	Section 4 – Predicted PM10 Concentrations.....	8-233	Exhibit 8.191	Section 1 Property Screening Status Brock Road to Kinsale Road	8-290
Exhibit 8.154	Section 5 – Enfield Road to Highway 35/115	8-234	Exhibit 8.192	Waste Management Property – ID # 1-8.....	8-291
Exhibit 8.155	Section 5 – Air Quality Sensitive Receptors	8-234	Exhibit 8.193	Section 2 Property Screening Status Kinsale Road to Ashburn Road.....	8-293
Exhibit 8.156	Section 5 – Predicted PM2.5 Concentrations.....	8-235	Exhibit 8.194	Section 3 Property Screening Status Ashburn Road to Simcoe Street.....	8-294
Exhibit 8.157	Section 5 – Predicted PM10 Concentrations.....	8-235	Exhibit 8.195	Section 4 Property Screening Status Simcoe Street to Enfield Road	8-296
Exhibit 8.158	Section 6 – West Durham Link.....	8-236	Exhibit 8.196	Section 5 Property Screening Status Enfield Road to Highway 35/115.....	8-297
Exhibit 8.159	Section 6 – Air Quality Sensitive Receptors	8-237	Exhibit 8.197	Section 6 Property Screening Status West Durham Link.....	8-299
Exhibit 8.160	Section 6 – Predicted PM2.5 Concentrations.....	8-237	Exhibit 8.198	Section 7 Property Screening Status	8-301
Exhibit 8.161	Section 6 – Predicted PM10 Concentrations.....	8-238	Exhibit 8.199	Waste Management Property – ID # 7-16.....	8-302
Exhibit 8.162	Section 7 – East Durham Link.....	8-239	Exhibit 8.200	Waste Management Property – ID # 7-21.....	8-302
Exhibit 8.163	Section 7 – Air Quality Sensitive Receptors	8-239	Exhibit 8.201	Waste Management and Contamination Findings to Date.....	8-303
Exhibit 8.164	Section 7 – Predicted PM2.5 Concentrations.....	8-240	Exhibit 8.202	Archaeology Proposed Mitigation and Compensation Requirements	8-306
Exhibit 8.165	Section 7 – Predicted PM10 Concentrations.....	8-240	Exhibit 8.203	Summary of Stage 2 Archaeological Fieldwork Completed To Date (as of May 2009)	8-308
Exhibit 8.166	Maximum Predicted Concentrations – Entire Transportation Corridor	8-241	Exhibit 8.204	Summary of Archaeological Findings Submitted to MCL (as of December 2008)	8-308
Exhibit 8.167	Extent of Impact – Number of Affected Receptors	8-242	Exhibit 8.205	Heritage Resources – Section 1 Brock Road to Kinsale Road	8-309
Exhibit 8.168	Combined Effects Analysis Example for PM2.5	8-242	Exhibit 8.206	Heritage Resources – Section 2 Kinsale Road to Ashburn Road	8-311
Exhibit 8.169	Summary of Regional Criteria Contaminants Assessment for 407 East EA (kTonne/year)	8-243	Exhibit 8.207	Heritage Resources – Section 3 Ashburn Road to Simcoe Street.....	8-312
Exhibit 8.170	Comparison of Future Emissions (Metric Tonnes/Year).....	8-244	Exhibit 8.208	Heritage Resources – Section 4 Simcoe Street to Enfield Road	8-314
Exhibit 8.171	Section 1 - Brock Road to Kinsale Road General Land Use Designations	8-246	Exhibit 8.209	Heritage Resources – Section 5a Enfield Road to Bethesda Road	8-315
Exhibit 8.172	Section 2 - Kinsale Road to Ashburn Road General Land Use Designations	8-248	Exhibit 8.210	Heritage Resources – Section 5b Bethesda Road to Highway 35/115.....	8-316
Exhibit 8.173	Section 3 - General Land Use Designations Ashburn Road to Simcoe Street.....	8-250	Exhibit 8.211	Heritage Resources – Section 6a West Durham Link and Highway 401 Interchange ..	8-317
Exhibit 8.174	Section 4 - Simcoe Street to Enfield Road General Land Use Designations	8-251	Exhibit 8.212	Heritage Resources – Section 7a East Durham Link and Highway 401 Interchange ...	8-317
Exhibit 8.175	Section 5 - General Land Use Designations	8-255	Exhibit 8.213	Heritage Resources – Section 6b West Durham Link.....	8-318
Exhibit 8.176	Section 6 - General Land Use Designations	8-257	Exhibit 8.214	Heritage Resources – Section 7b East Durham Link.....	8-319
			Exhibit 8.215	Summary of Built Heritage Net Effects.....	8-320

Exhibit 8.216 Summary of Key Mitigation/Compensation Measures and Net Effects 8-321

CHAPTER 9 – LIST OF EXHIBITS

Exhibit 9.1 Summary of Monitoring Requirements Associated with the Recommended Design 9-2
Exhibit 9.2 EA Commitments and Compliance Monitoring..... 9-4
Exhibit 9.3 Reference Plan for Site Specific EA Commitments..... 9-12

CHAPTER 10 – LIST OF EXHIBITS

Exhibit 10.1 Determining if the Act Applies 10-1

Volume 2: Appendices

Appendix A	407 East EA Terms of Reference
Appendix B	Terms of Reference Commitments Table
Appendix C	List of Additional Studies and Reports
Appendix D	Recommended Design Plates
Appendix E	Recommended Community Value Plan Plates

Technical Reports / Reference Documents

Reference Document #1	Transportation Assessment and Problems and Opportunities Definition Report (Transportation Planning / Need Report)
Reference Document #2	Alternatives to the Undertaking (Transportation Alternatives) Report
Reference Document #3	Alternative Methods Report
Reference Document #4	Route Refinements and Preliminary Design Alternatives Comparative Assessment and Evaluation Report
Reference Document #5	Natural Environment (Fisheries) Impact Assessment Report
Reference Document #6	Natural Environment (Terrestrial) Impact Assessment Report
Reference Document #7	Natural Environment (Hydrogeology) Impact Assessment Report
Reference Document #8	Noise Impact Assessment Report
Reference Document #9	Air Quality Impact Assessment Report
Reference Document #10	Landscape Composition Impact Assessment Report
Reference Document #11	Socio-Economic Impact Assessment Report
Reference Document #12	Agricultural Impact Assessment Report
Reference Document #13	Waste Management and Contamination Impact Assessment Report
Reference Document #14	Archaeology Impact Assessment Report
Reference Document #15	Built Heritage Impact Assessment Report
Reference Document #16	Consultation Summary Report
Reference Document #17	Natural Environment Field Investigations Report