

# Hamilton Light Rail Transit Project

## Cost Consultant 2019 Estimate

Cost Category (Nominal \$)	Cost Consultant Estimate (October 2019)
<b>Provincial Costs</b>	
<b>Total Capital Costs for main procurement (incl contingency)</b>	
Construction	
Transit vehicles	
Construction financing	
	\$ 2,854,657,554
<b>Provincial Operating Term Costs</b>	
Lifecycle	
Long-term financing	
	\$ 983,926,505
<b>Other costs</b>	
Property and expropriations	
Pre-procurement enabling works	
Services	
HST	
	\$ 765,798,849
<b>Total Provincial Costs</b>	\$ 4,604,382,908
<b>Municipal Costs</b>	
<b>Municipal Operating Term Costs</b>	
Operating and Maintenance	
	\$ 950,299,025
<b>Total Municipal Costs</b>	\$ 950,299,025
<b>Total Project Costs (Provincial and Municipal)</b>	
<b>Total Project Costs</b>	\$ 5,554,681,932

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ATTACHMENT 2

<b>HAMILTON LRT - FTA ESTIMATE TEMPLATE</b>		
<b>SCC Division</b>	<b>Description</b>	<b>Estimate in \$2019</b>
SCC 10	Guideway	138,464,021
SCC 20	Stations, Stops, Terminals, Intermodals	101,492,570
SCC 30	Support Facilities: Yards, Shops and Admin Bldgs.	163,645,076
SCC 40	Site work and Special Conditions	617,424,988
SCC 50	Systems	260,933,586
SCC 60	ROW, Land and existing improvements	6,252,000
SCC 70	Vehicles	143,335,843
SCC 80	Professional services and Agency costs	345,650,000
Tax	Non-Recoverable HST(1.76%)	31,278,686
<b>Total Estimate W/O Contingency</b>		<b>1,808,476,770</b>
SCC 90	Contingency (17.75%)	320,930,174
	Escalation	190,115,213
<b>Total Estimate With Contingency</b>		<b>2,319,522,157</b>

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<b>SCC Division</b>	<b>Description</b>	<b>Estimate in \$2019</b>
<b>SCC 10</b>	<b>Guideway</b>	<b>138,464,021</b>
10.01	Guideway at grade exclusive right of way	69,047,780
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	
10.04	Guideway aerial structure	
10.06	Guideway: Underground cut & cover - Portal	
10.07	Guideway: Underground tunnel	
10.08	Guideway retained cut or fill	
10.09	Track direct fixation - on bridge	1,615,300
10.10	Track: Embedded - At-Grade	59,613,184
10.11	Track: Ballasted	
10.12	Track special	8,187,756
<b>SCC 20</b>	<b>Stations, Stops, Terminals, Intermodals</b>	<b>101,492,570</b>
<b>20.01</b>	<b>At grade station. Stop. Shelter. Mall. Terminal. Platform</b>	<b>101,492,570</b>
20.01.01	Centre stops with good soils- assumed 8 No.	12,384,162
20.01.02	Centre stops with bad soils- assumed 4 No.	8,009,693
20.01.03	Side Stop Roadway good soil 1 No.	3,003,353
20.01.04	Side Stop Roadway bad soil 1 No.	3,868,202
20.01.05	Side stops with good soils 1 stops	2,963,353
20.01.06	Side stops with bad soils 1 No.	3,828,202
20.01.07	Modified Platform - 90m Platform	1,964,888
20.01.08	McMaster Bus terminal	17,294,050
20.01.09	McMaster Parking	25,976,666
20.01.10	Traction Power Sub-Station Buildings	20,500,000
20.01.11	Signage to platforms	1,700,000
<b>20.02</b>	<b>Aerial station, stop, shelter, mall, terminal, platform</b>	
<b>20.03</b>	<b>Underground station. Stop. Shelter. Mall. Terminal. platform</b>	
<b>20.04</b>	<b>Other stations, landings, terminals: Intermodal, ferry, trolley, etc.</b>	
<b>20.04</b>	<b>Other Fire station</b>	
<b>20.07</b>	<b>Elevators, escalators</b>	
<b>SCC 30</b>	<b>Support Facilities: Yards, Shops and Admin Bldgs.</b>	<b>163,645,076</b>
<b>30.02</b>	<b>Light Maintenance Facility</b>	
<b>30.03</b>	<b>Heavy Maintenance Facility</b>	<b>97,014,850</b>
30.03.01	Heavy Maintenance Facility	80,927,500
30.03.02	Heavy Maintenance Facility - Site M&E	
30.03.03	Building Equipment	16,087,350
30.03.04	Loose furniture	
<b>30.04</b>	<b>Maintenance of Way Building</b>	<b>8,250,000</b>
<b>30.05</b>	<b>Yard and Yard Track</b>	<b>58,380,226</b>
<b>SCC 40</b>	<b>Site work and Special Conditions</b>	<b>617,424,988</b>
<b>40.01</b>	<b>General Demolition. Clearing. Earthwork</b>	<b>13,539,375</b>
40.01.01	General Demolition. Clearing. Earthwork	4,200,000
40.01.02	Demolition of properties buildings & houses - 90 structures	8,139,375
40.01.03	Noise & Vibration Monitoring during Demolition and Modification	1,200,000
<b>40.02</b>	<b>Site Utilities. Utility Relocation - public utility including street lighting</b>	<b>388,787,341</b>
40.02.01	Site Utilities. Utility Relocation - public utility including street lighting	152,351,274
40.02.02	Corrosion Control - Cathodic Protection	2,002,000
40.02.03	Private utility	180,879,040
40.02.04	Hazardous material. Contaminated soil mitigation. Ground water treatments	43,555,027
40.02.05	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	10,000,000
<b>40.05</b>	<b>Site structures including retaining walls, sound walls</b>	<b>105,148,401</b>
40.05.01	Site structures - bridges; Hwy 403 LRT Flyover Guideway	22,928,620

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40.05.02	Site structures - bridges; King St overpass CP Bridges	21,840,878
40.05.03	Site structures - bridges; Longwood, OMSF Connection	3,968,259
40.05.04	Site structures - Grade Separation at King St E	23,926,529
40.05.05	Modification to Queenston Road over Red Hill Valley Parkway	21,426,115
40.05.06	Structural/Precast Culvert Modification	0
40.05.07	Retaining Walls	5,808,000
40.05.08	MSE Walls	5,250,000
40.05.09	Landscape Walls (Concrete Block)	0
40.05.10	Green Walls	0
<b>40.06</b>	<b>Pedestrian / bike access and accommodation, landscaping</b>	<b>20,860,412</b>
40.06.01	Artwork - allow 1% of total guideway and platforms (Removed following Metrolinx Instruction)	0
40.06.02	Urban Braille for the Entire Corridor and Landscape	19,659,412
40.06.03	Pedestrian Connection to GO Centre On Hunter St - Enhance Crosswalks (as per original FTA Template)	
40.06.04	Pedestrian Crossing at Queenston Station - Enhance Crosswalks (as per original FTA Template)	
40.06.05	Allowance for Replacement of High Order Pedestrian crossing at Summers Lane (as per original FTA Template)	
40.06.06	International Village as per PA Schedule 15-2, Part 8, Article 3	575,000.00
40.06.07	Hughson Street Pedestrian Connection (100 m long x 12m wide) as per PA Schedule 15-2, Part 8, Article 4	626,000.00
<b>40.07</b>	<b>Automobile, Bus, van access ways including roads, parking lots</b>	<b>2,668,060</b>
<b>40.08</b>	<b>Temporary Facilities and other indirect costs during construction</b>	<b>80,873,399</b>
40.08.01	LEED Silver Premium for Building Construction	-
40.08.02	Traffic Management	16,817,500
40.08.03	Contractors Indirect & Management	60,055,889
40.08.04	Commissioning	4,000,010
40.08.05	Risk cost premium due to complexity	-
<b>40.09</b>	<b>Railway Flagging (Works interface with CP Rail &amp; OMSF)</b>	<b>5,548,000</b>
<b>SCC 50</b>	<b>Systems</b>	<b>260,933,586</b>
<b>50.01</b>	<b>Train control and signals including Integration in Vehicle</b>	<b>44,260,000</b>
<b>50.02</b>	<b>Traffic signals and crossing protection</b>	<b>48,000,000</b>
<b>50.03</b>	<b>Traction power supply substations include duct banks</b>	<b>30,577,500</b>
<b>50.04</b>	<b>Traction power distribution, catenary and third rail</b>	<b>45,702,536</b>
<b>50.05</b>	<b>Communications</b>	<b>78,443,550</b>
<b>50.06</b>	<b>Fare collection system and equipment</b>	<b>4,950,000</b>
<b>50.07</b>	<b>Central Control</b>	<b>9,000,000</b>
<b>SCC 60</b>	<b>ROW, Land and existing improvements</b>	<b>6,252,000</b>
<b>60.01</b>	<b>Purchase or lease of real estate</b>	<b>6,252,000</b>
<b>SCC 70</b>	<b>Vehicles</b>	<b>143,335,843</b>
<b>70.01</b>	<b>Light Rail</b>	<b>143,335,843</b>
<b>SCC 80</b>	<b>Professional services and Agency costs</b>	<b>345,650,000</b>
<b>80.01</b>	<b>Preliminary Engineering</b>	<b>70,000,000</b>
<b>80.02</b>	<b>Final Design</b>	<b>110,000,000</b>
<b>80.03</b>	<b>Project Management for Design and Construction</b>	<b>90,000,000</b>
<b>80.04</b>	<b>Construction Administration &amp; Management</b>	<b>10,150,000</b>
<b>80.05</b>	<b>Professional Liability and other Insurance Costs</b>	<b>45,000,000</b>
<b>80.06</b>	<b>Legal; Permits; Review Fees by other agencies, cities, etc.</b>	<b>4,500,000</b>
<b>80.07</b>	<b>Surveys, testing (quality related), investigation, inspection</b>	<b>7,000,000</b>
<b>80.08</b>	<b>Start up (Testing and Commissioning)</b>	<b>9,000,000</b>
<b>Tax</b>	<b>Non-Recoverable HST(1.76%)</b>	<b>31,278,686</b>

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**Operations, Maintenance and Lifecycle Estimate**

Description	Current	Indexed 2027 (2% pa)
Operations Labour	\$ 319,852,968	
Maintenance Labour	\$ 110,335,418	
<b>Operations and Maintenance Labour Total</b>	<b>\$ 430,188,385</b>	
Operations Non-Labour	\$ 37,200,000	
Maintenance Non-Labour	\$ 132,526,406	
<b>Operations and Maintenance Non-Labour Total</b>	<b>\$ 169,726,406</b>	
<b>Operations Labour and Non-Labour Total</b>	<b>\$ 357,052,968</b>	<b>\$ 565,577,706</b>
<b>Maintenance Labour and Non-Labour Total</b>	<b>\$ 242,861,823</b>	<b>\$ 384,721,318</b>
<b>Operations and Maintenance Labour and Non-Labour Total</b>	<b>\$ 599,914,791</b>	<b>\$ 950,299,025</b>
<b>Equipment Life Cycle</b>	<b>\$ 218,899,220</b>	<b>\$ 378,487,245</b>
<b>Total Operations, Maintenance and Lifecycle</b>	<b>\$ 818,814,010</b>	<b>\$ 1,328,786,270</b>

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