

## Appendix F. Shortlist Option Estimates

## Cost estimate for shortlisted Heavy rail option (high cost option)

Level 1 - Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Level 4 Cost Activity	Total	
<b>Length</b>				<b>13,186</b>	
1. Land and Property	1. Land and Property	1. Land Acquisitions			
		2. Relocations		\$ -	
		3. Alterations /Refurbishments/ Demolitions		\$ -	
		4. Legal and other Fees	2%		
Sub Total Land and Property					
2. Investigation and Reporting	1. Planning	1. Route development costs	2.5%	\$ 48,890,432	
		2. Consultation			
	2. Approvals	1. Designations costs			
		2. Legislative approvals costs			
	3. Funding	1. Outline business case			
		2. Full business case			
Sub Total Investigation and Reporting				\$ 48,890,432	
3. Developed design reporting including D&C Contract monitoring	1. Preliminary Design		3%	\$ 58,668,520	
					2. Reference Design
					3. Detailed Design
					4. Procurement
	5. Programme and Project Management	1. Internal management costs	2.5%	\$ 48,890,432	
			2. External management support	1.0%	\$ 19,556,173
			3. D&C Contract Monitoring	0.5%	\$ 9,778,087
			4. Stakeholder & Publicity	0.50%	\$ 9,778,087
Sub Total Developed design and D&C monitoring				\$ 146,671,299	
4. Detailed design and Construction	1. Track	1. Trackbed and rail		\$ 47,283,461	
		2. Bridges and support structures		\$ 352,460,212	
		3. Tunnels		\$ 191,648,370	
		4. Open cut trenches		\$ 211,383,217	
		4. Public realm		\$ -	
		5. Public Art		\$ -	
		6. Track drainage		\$ 2,174,000	
		6. Track attenuation		\$ 9,541,900	
	2. Power	1. Supply		\$ -	
		2. Sub-Stations		\$ 54,000,000	

		3. OLE		\$ 26,407,171
		4. Underground		\$ -
	3. Systems	1. Signalling		\$ -
		2. Telecoms		\$ 2,508,839
	2. Statutory undertakers Equipment	1. Diversions		\$ 22,500,000
		2. Upgrades		\$ 750,000
	3. Highway costs	1. Highway changes		\$ 44,857,085
		2. Park and ride		\$ 3,776,985
		3. Cycle facilities		\$ -
	4. Stops	1. Civil Works		\$ -
		Penrose Station		\$ 2,500,000
		Mt Smart Stadium		\$ 4,000,000
		Te Papapa		\$ 2,500,000
		Onehunga		\$ 7,500,000
		Mangere bridge Station (Rimu Road)		\$ 5,447,120
		Bader Drive (Mangere station)		\$ 22,975,208
		John Goulter		\$ 72,023,067
		Airport (200 x 20)		\$ -
		Airport (300 x 50)		\$ 123,033,978
		2. Shelters and furniture		
		3. Bus Interchange		\$ -
	5. Support Facilities	1. Administration building/Control centre		\$ -
		2. Control centre		\$ -
		3. Maintenance sheds		\$ -
		4. Storage sheds		
		5. Storage Yards		\$ -
	6. Design	1. Detailed design	8%	\$ 96,741,649
		2. MSQA		
	6. Programme and Project Management	1. Temporary traffic Management	4.50%	\$ 54,417,177
		2. Preliminaries and General	25%	\$ 340,107,361
Sub Total Base D&C				\$ 1,700,536,800
Off-site Overheads and Profit			15%	\$ 255,080,520
Sub Total D&C				\$ 1,955,617,320
Total excluding Risk				\$ 2,151,179,051
	Contingency (P50)	Estimating Risk	5.00%	\$ 107,558,953
		Scope Risk	6.00%	\$ 129,070,743
		Specific Risk	19%	\$ 508,938,535
Sub Total Contingency				\$ 745,568,231
	Total expected cost			\$ 2,896,747,282
	Post per m			

## Cost estimate for shortlisted Heavy rail option (low cost)

Level 1 - Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Level 4 Cost Activity		
Length				13,186	
1. Land and Property	1. Land and Property	1. Land Acquisitions			
		2. Relocations		\$ -	
		3. Alterations /Refurbishments/ Demolitions		\$ -	
		4. Legal and other Fees	2%		
Sub Total Land and Property					
2. Investigation and Reporting	1.Planning	1. Route development costs			
		2. Consultation			
	2.Approvals	1. Designations costs	2.5%	\$	42,872,053
		2. Legislative approvals costs			
	3.Funding	1. Outline business case			
2. Full business case					
Sub Total Investigation and Reporting					
3. Developed design reporting including D&C Contract monitoring	1.Preliminary Design		3%	\$	51,446,464
	2.Reference Design				
	3. Detailed Design				
	4. Procurement				
	5.Programme and Project Management	1. Internal management costs	2.5%	\$	42,872,053
		2. External management support	1.0%	\$	17,148,821
		3. D&C Contract Monitoring	0.5%	\$	8,574,411
		4. Stakeholder & Publicity	0.50%	\$	8,574,411
Sub Total Developed design and D&C monitoring				\$ 119,890,130	
4. Detailed design and Construction	1.Track	1. Trackbed and rail		\$	44,317,181
		2. Bridges and support structures		\$	352,460,212
		3. Tunnels		\$	191,648,370
		4. Open cut trenches		\$	85,294,549
		4. Public realm		\$	-
		5. Public Art		\$	-
		6. Track drainage		\$	2,174,000
		6. Track attenuation		\$	9,541,900
	2. Power	1. Supply		\$	-

		2. Sub-Station		\$ 54,000,000
		3. OLE		\$ 26,407,171
		4. Underground		\$ -
	3. Systems	1. Signalling		\$ -
		2. Telecoms		\$ 2,508,839
	2. Statutory undertakers Equipment	1. Diversions		\$ 22,500,000
		2. Upgrades		\$ 750,000
	3. Highway costs	1. Highway changes		\$ 25,051,625
		2. Park and ride		\$ 3,776,985
		3. Cycle facilities		\$ -
	4. Stops	1. Civil Works		\$ -
		Penrose Station		\$ 2,500,000
		Mt Smart Stadium		\$ 4,000,000
		Te Papapa		\$ 2,500,000
		Onehunga		\$ 7,500,000
		Mangere bridge Station ( Rimu Road)		\$ 5,447,120
		Bader Drive (Mangere station)		\$ 22,975,208
		John Goulter Airport (200 x 20)		\$ -
		Airport (300 x 50)		\$ 123,033,978
		2. Shelters and furniture		
		3. Bus Interchange		\$ -
	5. Support Facilities	1. Administration building/Control centre		\$ -
		2. Control centre		\$ -
		3. Maintenance sheds		\$ -
		4. Storage sheds		
		5. Storage Yards		\$ -
	6. Design	1. Detailed design		
		2. MSQA	8%	\$ 84,832,816
	6. Programme and Project Management	1. Temporary traffic Management	4.50%	\$ 47,718,458
		2. Preliminaries and General	25%	\$ 298,240,371
Sub Total Base D&C				\$ 1,491,201,850
Off-site Overheads and Profit			15%	\$ 223,680,278
Sub Total D&C				\$ 1,714,882,128
Total excluding Risk				\$ 1,874,735,634
	Contingency (P50)	Estimating Risk	5.00%	\$ 93,736,782
		Scope Risk	6.00%	\$ 112,484,138
		Specific Risk	19%	\$ 456,414,286
Sub Total Contingency				\$ 662,635,206
	Total expected cost			\$ 2,537,370,840

## Cost estimate for shortlisted Light rail option

Level 1 - Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Level 4 Cost Activity	
	Length			15,500
1. Land and Property	1. Land and Property	1. Land Acquisitions		<b>Excluded</b>
		2. Relocations		<b>Excluded</b>
		3. Alterations /Refurbishments/ Demolitions		<b>\$ 125,000</b>
		4. Legal and other Fees	2%	<b>\$ 2,500</b>
<b>Sub Total Land and Property</b>				<b>\$ 127,500</b>
2. Investigation and Reporting	1. Planning	1. Route development costs	2.5%	<b>\$ 20,424,305</b>
		2. Consultation		
	2. Approvals	1. Designations costs		
		2. Legislative approvals costs		
3. Funding	1. Outline business case			
	2. Full business case			
<b>Sub Total Investigation and Reporting</b>				<b>\$ 20,424,305</b>
3. Developed design reporting including D&C Contract monitoring	1. Preliminary Design		3%	<b>\$ 24,509,166</b>
	5. Programme and Project Management	1. Internal management costs	2.5%	<b>\$ 20,424,305</b>
		2. External management support	1.0%	<b>\$ 8,169,722</b>
		3. D&C Contract Monitoring	0.5%	<b>\$ 4,084,861</b>
	4. Stakeholder& Publicity	0.50%	<b>\$ 4,084,861</b>	
<b>Sub Total Developed design and D&amp;C monitoring</b>				<b>\$ 61,272,915</b>
4. Detailed design and Construction	1.Track	1. Trackbed and rail		<b>\$ 93,021,068</b>
		2. Bridges and support structures		<b>\$ 277,776,672</b>
		3. Portals or underpasses		<b>\$ -</b>
		4. Public realm		<b>Excluded</b>
		5. Public Art		<b>Excluded</b>
		6. Track drainage		<b>\$ 1,054,000</b>
		6. Track attenuation		<b>\$ 8,680,000</b>
	2. Power	1. Supply		<b>Excluded</b>
		2. Sub-Stations		<b>\$ 22,000,000</b>

		3. OLE		\$ 14,927,729
		4. Underground		Not Required
	3. Systems	1. Signalling		\$ 2,260,000
		2. Telecoms		\$ 2,725,098
	2. Statutory undertakers Equipment	1. Diversions		\$ 12,120,900
		2. Upgrades		Excluded
	3. Highway costs	1. Highway changes		\$ 24,968,525
		2. Park and ride		\$ 11,681,203
		3. Cycle facilities		\$ 10,496,500
	4. Stops	1. Civil Works		\$ 20,600,610
		2. Shelters and furniture		
		3. Bus Interchange		Excluded
	5. Support Facilities	1. Administration building/Control centre		N/A
		2. Control centre		\$ 1,000,000
		3. Maintenance sheds		
		4. Storage sheds		
		5. Storage Yards		\$ 1,868,571
	6. Design	1. Detailed design		
		2. MSQA	8%	\$ 40,414,470
	6. Programme and Project Management	1. Temporary traffic Management	4.50%	\$ 22,733,139
		2. Preliminaries and General	25%	\$ 142,082,121
<b>Sub Total Base D&amp;C</b>				<b>\$ 710,410,606</b>
Off site Overheads and Profit			15%	\$ 106,561,591
<b>Sub Total D&amp;C</b>				<b>\$ 816,972,197</b>
		Total excluding Risk		\$ 898,796,917
	Contingency (P50)	Estimating Risk	5.00%	\$ 44,939,846
		Scope Risk	6.00%	\$ 53,927,815
		Specific Risk	19%	\$ 170,771,414
Sub Total Contingency				\$ 269,639,075
Total expected cost				\$ 1,168,435,992
Post per m				\$ 75,383

## Cost estimate for shortlisted BRT option

Level 1- Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Level 4 Cost Activity	Total
<b>Length</b>				<b>10,425</b>
<b>1. Land and Property</b>	1. Land and Property	1. Land Acquisitions		
		2. Relocations		\$ -
		3. Alterations /Refurbishments/ Demolitions		\$ 3,094,300
		4. Legal and other Fees	3%	\$ 92,829
<b>Sub Total Land and Property</b>				<b>\$ 3,187,129</b>
<b>2. Investigation and Reporting</b>	1. Planning	1. Route development costs		
		2. Consultation		
	2. Approvals	1. Designations costs	2.5%	\$ 26,126,543
		2. Legislative approvals costs		
3. Funding	1. Outline business case			
	2. Full business case			
<b>Sub Total Investigation and Reporting</b>				<b>\$ 13,896,606</b>
<b>3. Developed design reporting including D&amp;C Contract monitoring</b>	1.Preliminary Design		3%	\$ 31,351,853
	2.Reference Design			
	3.Detailed Design			
	4.Procurement			
	5.Programme and Project Management	1. Internal management costs	2.5%	\$ 26,126,543
		2. External management support	1.0%	\$ 10,450,617
		3. D&C Contract Monitoring	0.5%	\$ 5,225,309
		4. Stakeholder & Publicity	0.50%	\$ 5,225,309
<b>Sub Total Developed design and D&amp;C monitoring</b>				<b>\$ 41,689,820</b>
<b>4. Detailed design and Construction</b>	1.Road works	1. Deep lift road replacement		\$ 127,778,912
		2. Bridges and support structures		\$ 147,852,350
		2.1 Alterations to CRL Aotea Stn		\$ 80,000,000
		3. Tunnels - Wellesley		\$ 47,366,783
		Tunnels - Newmarket		\$ 73,542,892
		4. Open cut trenches		\$ -
		4. Public realm		\$ -
		5. Public Art		\$ -
		6. Signals		\$ 6,100,000
		2.Statutory undertakers Equipment	1. Diversions	
	2. Upgrades			\$ -



	3.Highway costs	1. Highway changes		\$ 28,567,250	
		2. Park and ride		\$ 3,776,985	
		3. Cycle facilities		\$ -	
	4.Stops	1. Civil Works			\$ -
			Wellesley		\$ 19,276,260
			Symonds Street		\$ 1,466,284
			Khyber pass		\$ 2,743,128
			Newmarket		\$ 37,570,575
			Broadway South		\$ 2,395,288
			Bracken Ave		\$ 2,395,288
			Cornwall Park		\$ 2,395,288
			Pah Road		\$ 2,395,288
			Mt Albert Road		\$ 2,395,288
			Onehunga		\$ 8,145,900
			Mangere bridge Station (Rimu Road)		\$ 990,000
			Favona Road		\$ 3,348,000
			Bader Drive (Mangere station)		\$ 4,240,000
			Ascot		\$ 2,240,000
	Airport Business Station		\$ 2,240,000		
	Airport		\$ 5,000,000		
	5.Support Facilities	1. Administration building/Control centre			\$ -
			2. Control centre		\$ -
			3. Maintenance sheds		\$ -
			4. Storage sheds		\$ -
			5. Storage Yards		\$ -
	6.Design	1. Detailed design			\$ -
			2. MSQA	8%	\$ 51,697,741
6.Programme and Project Management	1. Temporary traffic Management		4.50%	\$ 29,079,980	
		2. Preliminaries and General	25%	\$ 181,749,870	
<b>Sub Total Base D&amp;C</b>				<b>\$ 908,749,350</b>	
<b>Off-site Overheads and Profit</b>			15%	<b>\$ 136,312,403</b>	
Sub Total D&C				<b>\$ 1,045,061,753</b>	
Total excluding Risk				<b>\$ 1,103,835,308</b>	
Sub Total Contingency				<b>\$ 384,570,874</b>	
<b>Total expected cost</b>				<b>\$ 1,488,406,182</b>	
<b>Post per m</b>					

## Cost estimate for shortlisted Hybrid BRT / Heavy rail option (high cost)

Level 1 - Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Total
Length			10,425
1. Land and Property	1. Land and Property	1. Land Acquisitions	
		2. Relocations	\$ -
		3. Alterations /Refurbishments/ Demolitions	\$ 332,000
		4. Legal and other Fees	\$ 9,960
Sub Total Land and Property			\$ 341,960
2. Investigation and Reporting	1.Planning	1. Route development costs	\$ 18,037,466
		2. Consultation	
	2.Approvals	1. Designations costs	
		2. Legislative approvals costs	
	3.Funding	1. Outline business case	
		2. Full business case	
Sub Total Investigation and Reporting			\$ 18,037,466
3. Developed design reporting including D&C Contract monitoring	1.Preliminary Design		\$ 21,644,960
	2.Reference Design		
	3. Detailed Design		
	4. Procurement		
	5.Programme and Project Management	1.Internal management costs	\$ 18,037,466
		2.External management support	\$ 7,214,987
		3.D&C Contract Monitoring	\$ 3,607,493
		4.Stakeholder& Publicity	\$ 3,607,493
Sub Total Developed design and D&C monitoring			\$ 54,112,399
4. Detailed design and Construction	Road works	1. Deep lift road replacement	\$ 85,712,626
		Track bed	\$ 12,856,280
		2. Bridges and support structures	\$ 84,253,850
		2.1 Alterations to CRL Aotea Stn	\$ -
		3. Tunnels- Wellesley	\$ -
		Tunnels -Newmarket	\$ -
		4. Open cut trenches	\$ 126,088,668
		4. Public realm	\$ -
		5. Public Art	\$ -
		Track Drainage	\$ 1,800,000
	6. Signals	\$ 900,000	
	Power	1. Supply	\$ -
		2. Sub-Station	\$ 22,000,000
		3. OLE	\$ 14,927,729
		4. Underground	\$ -
	Systems	1. Signalling	\$ -
		2. Telecoms	\$ 576,348
Statutory	1. Diversions	\$ 13,000,000	

	undertakers Equipment	2. Upgrades	\$ -
	3.Highway costs	1. Highway changes	\$ 37,547,710
		2. Park and ride	\$ 3,776,985
		3. Cycle facilities	\$ -
	4. Stops	1. Civil Works	\$ -
		Penrose Station	\$ 2,500,000
		Mt Smart Stadium	\$ 4,000,000
		Te Papapa	\$ 2,500,000
		Onehunga	\$ 7,500,000
		Broadway South	\$ -
		Bracken Ave	\$ -
		Cornwall Park	\$ -
		Pah Road	\$ -
		Mt Albert Road	\$ -
		Onehunga	\$ 8,145,900
		Mangere bridge Station ( Rimu Road)	\$ 990,000
		Favona Road	\$ 3,348,000
		Bader Drive (Mangere station)	\$ 4,240,000
		Ascot	\$ 2,240,000
		Airport Business Station	\$ 2,240,000
	Airport	\$ 5,000,000	
	5.Support Facilities	1. Administration building/Control centre	\$ -
		2.Control centre	\$ -
		3.Maintenance sheds	\$ -
		4.Storage sheds	
		5.Storage Yards	\$ -
	6. Design	1.Detailed design	
		2.MSQA	\$ 35,691,528
	6.Programme and Project Management	1.Temporary traffic Management	\$ 20,076,485
		2.Preliminaries and General	\$ 125,478,027
Sub Total Base D&C			\$ 627,390,136
Off-site Overheads and Profit			\$ 94,108,521
Sub Total D&C			\$ 721,498,657
Total excluding Risk			\$ 793,990,482
Sub Total Contingency			\$ 242,432,956
Total expected cost			\$ 1,036,423,438
Post per m			

## Cost estimate for shortlisted Hybrid BRT / Heavy rail option (low cost)

Level 1 - Project Stage	Level 1 Cost Asset	Level 3 Cost Sub Asset	Total
<b>Length</b>			<b>10,425</b>
<b>1. Land and Property</b>	1. Land and Property	1. Land Acquisitions	
		2. Relocations	\$ -
		3. Alterations /Refurbishments/ Demolitions	\$ 332,000
		4. Legal and other Fees	\$ 9,960
<b>Sub Total Land and Property</b>			<b>\$ 341,960</b>
<b>2. Investigation and Reporting</b>	1. Planning	1. Route development costs	\$ 12,019,087
		2. Consultation	
	2. Approvals	1. Designations costs	
		2. Legislative approvals costs	
	3. Funding	1. Outline business case	
		2. Full business case	
<b>Sub Total Investigation and Reporting</b>			<b>\$ 12,019,087</b>
<b>3. Developed design reporting including D&amp;C Contract monitoring</b>	1. Preliminary Design		\$ 14,422,904
	2. Reference Design		
	3. Detailed Design		
	4. Procurement		
	5. Programme and Project Management	1. Internal management costs	\$ 12,019,087
		2. External management support	\$ 4,807,635
		3. D&C Contract Monitoring	\$ 2,403,817
		4. Stakeholder& Publicity	\$ 2,403,817
<b>Sub Total Developed design and D&amp;C monitoring</b>			<b>\$ 36,057,260</b>
<b>4. Detailed design and Construction</b>	Road works	1. Deep lift road replacement	\$ 85,712,626
		Track bed	\$ 9,890,000
		2. Bridges and support structures	\$ 84,253,850
		2.1 Alterations to CRL Aotea Stn	\$ -
		3. Tunnels- Wellesley	\$ -
		Tunnels -Newmarket	\$ -
		4. Open cut trenches	\$ -
		4. Public realm	\$ -
		5. Public Art	\$ -
		Track Drainage	\$ 1,800,000
	6. Signals	\$ 900,000	
	Power	1. Supply	\$ -
		2. Sub-Stations	\$ 22,000,000
		3. OLE	\$ 14,927,729
		4. Underground	\$ -
Systems	1. Signalling	\$ -	

		2. Telecoms	\$ 576,348
Statutory undertakers Equipment		1. Diversions	\$ 13,000,000
		2. Upgrades	\$ -
3. Highway costs		1. Highway changes	\$ 17,742,250
		2. Park and ride	\$ 3,776,985
		3. Cycle facilities	\$ -
4. Stops		1. Civil Works	\$ -
		Penrose Station	\$ 2,500,000
		Mt Smart Stadium	\$ 4,000,000
		Te Papapa	\$ 2,500,000
		Onehunga	\$ 7,500,000
		Broadway South	\$ -
		Bracken Ave	\$ -
		Cornwall Park	\$ -
		Pah Road	\$ -
		Mt Albert Road	\$ -
		Onehunga	\$ 8,145,900
		Mangere bridge Station (Rimu Road)	\$ 990,000
		Favona Road	\$ 3,348,000
		Bader Drive (Mangere station)	\$ 4,240,000
		Ascot	\$ 2,240,000
		Airport Business Station	\$ 2,240,000
		Airport	\$ 5,000,000
5. Support Facilities		1. Administration building/Control centre	\$ -
		2. Control centre	\$ -
		3. Maintenance sheds	\$ -
		4. Storage sheds	
		5. Storage Yards	\$ -
6. Design		1. Detailed design	
		2. MSQA	\$ 23,782,695
6. Programme and Project Management		1. Temporary traffic Management	\$ 13,377,766
		2. Preliminaries and General	\$ 83,611,037
<b>Sub Total Base D&amp;C</b>			<b>\$ 418,055,186</b>
<b>Off-site Overheads and Profit</b>			<b>\$ 62,708,279</b>
Sub Total D&C			<b>\$ 480,763,465</b>
Total excluding Risk			<b>\$ 529,181,772</b>
Sub Total Contingency			<b>\$ 159,499,931</b>
Total expected cost			<b>\$ 688,681,703</b>
Post per m			