

Appendix E

Option Cost Methodology

Wellington Public Transport Spine Study

Option Evaluation Report



Wellington Public Transport Spine Study

Option Evaluation Report

Prepared for

Greater Wellington Regional Council

Prepared by

Davis Langdon New Zealand Ltd

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12 June 2013

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Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
	30-May-2013		Craig Mills Technical Director	
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Executive Summary

This cost report has been prepared for Greater Wellington Regional Council from the Public Transport Spine Study modelling and corridor definition.

The project comprises the estimation of three options of and the following summarises this indicative Cost Estimate:

Project Component	Total Estimated Cost \$ (plus GST)
Light Rail Transit 2 tunnel Option (LRT)	\$938,000,000 (plus GST)
Bus Rapid Transit (BRT)	\$207,112,000 (plus GST)
Bus Priority (BP)	\$58,568,000 (plus GST)

Our key assumptions are:

The cost estimates are indicative only and are based on design information available at the time and where available bench mark cost data has been available. We note that while we have benched marked other projects the data varies greatly depending on the individual projects therefore has a significant margin of error.

The Estimates provided should only be used for evaluation of the indicative likely cost outcome of the individual options identified within the report.

We note the following specific Inclusions for the options priced:

- LRT has included scope for:
 - Concrete slab beneath all tracks, this requiring the movement of existing services outside this concrete corridor.
 - 2No 6.5m diameter rail tunnels located adjacent to Mount Victoria Road Tunnels.
 - Upgrading existing power to existing substations, the extent of this has to be confirmed.
 - 22No Light Rail Rolling Stock
 - Altering and extending existing Real Time displays to new route
 - Tram Depot
 - Control Centre
 - Budget allowance for strengthening the State Insurance Tower basement roof on Willis Street, scope still to be defined.
- BRT has included scope for:
 - Assumed as not requiring a concrete slab on the bus route, this therefore does not require the alteration of existing services from these routes unless for specific road alterations including alterations to junctions.
 - for 40No higher capacity busses
 - altering and extending existing Real Time displays to new route
- BP has included scope for:
 - Assumed as not requiring a concrete slab on the bus route, this therefore does not require the alteration of existing services from these routes unless for specific road alterations including alterations to junctions.
 - Route extension to Constable street, including carriageway widening

We note the following specific Exclusions for the options priced:

- General Assumptions Exclusion
 - Options are allowed within the existing carriageways unless otherwise noted within the corridor definitions identified.
 - No land acquisition or demolition costs of existing structures have been included
 - Existing Bus Power Lines have been removed by others
 - Alterations to roads, signage, services outside the scope identified which may be indirectly impacted by the options
 - GST
 - Escalation from May 2013
- LRT Excludes the following:
 - Refer General Assumption Exclusions above.
 - Ticketing and Fare collection systems
- BRT Excludes the following:
 - Refer General Assumption Exclusions above.
 - Ticketing and Fare collection systems
 - Victoria Tunnel, assumed use of existing and new road tunnels by others
 - Concrete Slab below carriageway
 - Relocation of existing services in roads unless required by junction alterations or road widening
 - Power upgrade to existing substations
 - Bus depots, reuse of existing assumed
 - Control Centre, reuse of existing assumed
- BP Excludes the following:
 - Refer General Assumption Exclusions above.
 - Adelaide Road
 - Ticketing and Fare collection systems
 - Victoria Tunnel, assumed use of existing and new road tunnels by others
 - Concrete Slab below carriageway
 - Relocation of existing services in roads unless required by junction alterations or road widening
 - Power upgrade to existing substations
 - Upgrade to existing bus power lines
 - Bus depots, reuse of existing assumed
 - Control Centre, reuse of existing assumed
 - Bus stock, reuse of existing or new bus stock by others

References:

Refer to other sections in this Report for important detail and information concerning the following:

- Basis of Report – Inclusions and Exclusions, Track Schedule, Corridor Width Report
- Risk Analysis comprising market conditions, contingency assessment, sensitivities

1.0 Indicative Cost Plan

The following summary provides a breakdown of the current Indicative Cost Estimate.

Option:	Name:	Km:	Est Cost	Cost /Km
LRT	2 Tunnel Option			
	Wellington (Central) PT Spine	6.9 Km	\$204,811,000	\$29,683,000
	Wellington (Southern) PT Spine	1.3 Km	\$52,659,000	\$40,507,000
	Wellington (Eastern) PT Spine	2.5 Km	\$37,661,000	\$15,064,000
	General Allowances		\$486,536,000	
	Design and Construction Contingencies	20%	\$156,333,000	
	Total Construction Cost	10.7 Km	\$938,000,000	\$87,663,000
	Cost Excluding Victoria Rail Tunnels (incl. Contingency)	9.9 Km	\$558,391,000	\$56,400,000
BRT				
	Wellington (Central) PT Spine	5.7 Km	\$79,844,000	\$14,008,000
	Wellington (Southern) PT Spine	1.3 Km	\$29,384,000	\$22,603,000
	Wellington (Eastern) PT Spine	2.5 Km	\$25,566,000	\$10,226,000
	General Allowances		\$37,800,000	
	Design and Construction Contingencies	20%	\$34,519,000	
	Total Construction Cost	9.5 Km	\$207,113,000	\$21,801,000
BP				
	Wellington (Central) PT Spine	5.7 Km	\$16,149,000	\$2,833,000
	Wellington (Southern) PT Spine	1.3 Km	\$5,946,000	\$4,574,000
	Wellington (Southern) PT Spine Constable	0.8 Km	\$7,650,000	\$9,562,500
	Wellington (Eastern) PT Spine	2.5 Km	\$14,062,000	\$5,625,000
	General Allowances		\$5,000,000	
	Design and Construction Contingencies	20%	\$9,761,000	
	Total Construction Cost	10.3 Km	\$58,568,000	\$5,686,000

2.0 Benchmarking

Benchmarking for the options is available through many sources, where available this has been identified for comparison with the options being reviewed within this report.

The benchmark data available in the main however is unreliable due to the many variances within the benchmark schemes; the location and works required in order to provide the specific service for any particular city or location having a wide variance within these projects.

3.0 Sensitivity Analysis

Benchmarking this projects cost estimate against comparable other projects indicates this project has a high comparable role in some areas.

4.0 Design and Construction Risk Analysis

Project estimates need to be regarded as having a range of accuracies depending on many factors. These include the degree of resolution of design and specification, resolved scope and market conditions and predictability. In this Report Davis Langdon highlights a number of project risks but these are not exhaustive. Our client is advised to discuss project risks with Davis Langdon and with other project parties to form their own view of risk and appropriate mitigation strategies.

A number of key issues however have been identified which carry a significant risk within any particular project, these being;

- Infrastructure upgrades
- Infrastructure alterations/relocation
- Unforeseen engineering requirements/complexity
- Unforeseen construction requirements/complexity
- Changing economic conditions/escalation
- Changing political requirements local and national
- Changing planning/consent requirements
- Environmental issues
- Procurement route

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

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Estimate Summary
LRT Central Alignment

No.	Description	Quantity	Unit	Rate	Amount	Notes
LRT Central Alignment						
1	Wellington (Central) PT Spine				204,811,456.00	
2	Newtown (Southern) PT Spine				52,659,136.00	
3	Kilbirnie (Eastern) PT Spine				37,660,723.20	
	Sub Total				295,131,315.20	
4	General Allowances				486,536,000.00	
5	Design And Construction Contingencies			20.00	156,333,463.04	
					938,000,778.24	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Wellington (Central) PT Spine					
	Site Preparation Works (Within Existing Carriageway)					
1	Uplifting Existing Road surfaces, base course, new 450 thick concrete slab, reinforcement 150kg/m ³ , blinding, bedding slab	22,092	m ²	660.00	14,580,720.00	
2	Demolish existing concrete tram tracks (33% assumed existing)	7,290	m ²	50.00	364,500.00	
3	Allowance for strengthening to State Tower Basement roof slab	1	Item	1,000,000.00	1,000,000.00	
	Traffic Management, Road Alterations					
4	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Major Road Junction	9	No	750,000.00	6,750,000.00	
5	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Minor Road Junction	10	No	600,000.00	6,000,000.00	
6	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	23	No	300,000.00	6,900,000.00	
7	Realignment of existing reserve between Molesworth St and Bowen St	1	Item	350,000.00	350,000.00	
8	Alteration of Featherston pavement and road layout	1	Item	350,000.00	350,000.00	
9	Allowance for alterations to street signage	7,871	m	100.00	787,100.00	

Project : Wellington Public Spine Study
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 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
10	Allowance for alterations to road markings	7,871	m	125.00	983,875.00	
11	Allowance for alterations to street lighting	7,871	m	300.00	2,361,300.00	
12	Allowance for 10% of road/pavement fencing	736	m	1,000.00	736,000.00	
13	Allowance for 10% of road/pavement fencing to depot	220	m	1,000.00	220,000.00	
	Utility Diversions/new services					
14	Alter Existing Services from Conc slab areas, including electricity, gas, water, sewer, surface water, fibre optics	5,671	m	5,200.00	29,489,200.00	
15	Alter Existing Services from Conc slab areas, including electricity, gas, water, sewer, surface water, fibre optics, for depot route to site only	1,200	m	5,200.00	6,240,000.00	
16	Allowance for new drainage to light rail	7,364	m	315.00	2,319,660.00	
17	Allowance for new drainage to light rail to depot	2,200	m	315.00	693,000.00	
18	Allowance for alteration to Kent/Cambridge Terrace pumping stations	2	No	500,000.00	1,000,000.00	
	Trackwork/Power Supply/Signalling/Control Centres					
19	LRT rails, power reticulation	7,364	m	3,200.00	23,564,800.00	
20	LRT rails, power reticulation, to and inside depot	2,200	m	3,200.00	7,040,000.00	
21	Installation of conduits and pits along proposed track alignment to depot	2,200	m	1,000.00	2,200,000.00	
22	Allowance for piers and pads for track side infrastructure	7,364	m	900.00	6,627,600.00	
23	Allowance for piers and pads for track side infrastructure to depot	2,200	m	900.00	1,980,000.00	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
24	Installation of conduits and pits along proposed track alignment	7,364	m	1,000.00	7,364,000.00	
Stations/Ticketing and Fare Collection Systems						
25	Interchanges including access ramps, canopies (ticket system excluded)	2	No	330,000.00	660,000.00	
26	Line stations including access ramps, canopies (ticket system excluded)	3	No	200,000.00	600,000.00	
27	Allowance for Bus Stop Alterations	17	No	30,000.00	510,000.00	
Road/Pavements/Landscaping						
28	Relay surface to roads adjacent to concrete slab	28,703	m2	240.00	6,888,720.00	
29	Allowance for general landscaping to median/reserves	7,871	m	125.00	983,875.00	
General Items						
30	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	20,464,600.00	20,464,600.00	
31	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	44,802,506.00	
					204,811,456.00	
Newtown (Southern) PT Spine						
Site Preparation Works (Within Existing Carriageway)						
32	Uplifting Existing Road surfaces, base course, new 450 thick concrete slab, reinforcement 150kg/m3, blinding, bedding slab	7,002	m2	660.00	4,621,320.00	

LRT Central Alignment

No.	Description	Quantity	Unit	Rate	Amount	Notes
33	Demolish existing concrete tram tracks (33% assumed existing)	2,311	m2	50.00	115,550.00	
Traffic Management, Road Alterations						
34	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Major Road Junction	4	No	750,000.00	3,000,000.00	
35	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Minor Road Junction	2	No	600,000.00	1,200,000.00	
36	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	11	No	300,000.00	3,300,000.00	
37	Widen existing road of Adelaide Rd and Riddford Rd Hospital Entrance	555	m2	660.00	366,300.00	
38	Allowance for alterations to street signage	1,324	m	100.00	132,400.00	
39	Allowance for alterations to road markings	1,324	m	125.00	165,500.00	
40	Allowance for alterations to street lighting	1,324	m	300.00	397,200.00	
41	Allowance for 10% of road/pavement fencing	233	m	1,000.00	233,000.00	
Utility Diversions/new services						
42	Alter Existing Services from Conc slab areas, including electricity, gas, water, sewer, surface water, fibre optics	1,324	m	5,200.00	6,884,800.00	
43	Allowance for new drainage to light rail	1,324	m	315.00	417,060.00	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Trackwork/Power Supply/Signalling/Control Centres					
44	LRT rails, power reticulation	2,334	m	3,200.00	7,468,800.00	
45	Installation of conduits and pits along proposed track alignment	2,334	m	1,000.00	2,334,000.00	
46	Allowance for piers and pads for track side infrastructure	2,334	m	900.00	2,100,600.00	
	Stations/Ticketing and Fare Collection Systems					
47	Interchanges including access ramps, canopies (ticket system excluded)	1	No	330,000.00	330,000.00	
48	Line stations including access ramps, canopies (ticket system excluded)	1	No	200,000.00	200,000.00	
49	Allowance for Bus Stop Alterations	9	No	30,000.00	270,000.00	
	Road/Pavements/Landscaping					
50	Relay surface to roads adjacent to concrete slab	16,648	m2	240.00	3,995,520.00	
51	Allowance for general landscaping to median/reserves	1,324	m	125.00	165,500.00	
	General Items					
52	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	3,442,400.00	3,442,400.00	
53	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	11,519,186.00	
	Kilbirnie (Eastern) PT Spine					
	Site Preparation Works (Within Existing Carriageway)					
					52,659,136.00	

LRT Central Alignment

No.	Description	Quantity	Unit	Rate	Amount	Notes
54	Uplifting Existing Road surfaces, base course, new 450 thick concrete slab, reinforcement 150kg/m ³ , blinding, bedding slab, Wellington Rd to Evans Bay Parade	762	m ²	660.00	502,920.00	
55	Uplifting Soft Landscape surfaces, new 450 thick concrete slab, reinforcement 150kg/m ³ , blinding, bedding slab, Tunnel to Wellington Rd (No demolitions of Existing Buildings Included)	6,720	m ²	645.00	4,334,400.00	
56	Demolish existing concrete tram tracks (33% assumed existing)	251	m ²	50.00	12,550.00	
57	Retaining wall to Ruahine St	993	m	1,000.00	993,000.00	
	Traffic Management, Road Alterations					
58	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed track and changes to traffic and pedestrian control, to Major Road Junction	1	No	750,000.00	750,000.00	
59	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed tack and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	2	No	300,000.00	600,000.00	
60	Allowance for alterations to street signage to Kilbirnie Crescent	451	m	100.00	45,100.00	
61	Widen existing road of Kilbirnie Crescent	90	m ²	326.00	29,340.00	
62	Allowance for alterations to road markings to Kilbirnie Crescent	451	m	125.00	56,375.00	
63	Allowance for alterations to street lighting	1,698	m	300.00	509,400.00	
64	Allowance for 10% of road/pavement fencing	170	m	1,000.00	170,000.00	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Utility Diversions/new services					
65	Alter Existing Services from Conc slab areas, including electricity, gas, water, sewer, surface water, fibre optics	451	m	5,200.00	2,345,200.00	
66	Alter Existing Services from soft landscape areas	1,247	m	2,000.00	2,494,000.00	
67	Allowance for new drainage to light rail	2,691	m	315.00	847,665.00	
	Trackwork/Power Supply/Signalling/Control Centres					
68	LRT rails, power reticulation	2,691	m	3,200.00	8,611,200.00	
69	Installation of conduits and pits along proposed track alignment	2,691	m	1,000.00	2,691,000.00	
70	Allowance for piers and pads for track side infrastructure	2,691	m	900.00	2,421,900.00	
	Stations/Ticketing and Fare Collection Systems					
71	Interchanges including access ramps, canopies (ticket system excluded)	1	No	330,000.00	330,000.00	
72	Line stations including access ramps, canopies (ticket system excluded)	1	No	200,000.00	200,000.00	
73	Allowance for Bus Stop Alterations	2	No	30,000.00	60,000.00	
	Road/Pavements/Landscaping					
74	Relay surface to roads adjacent to concrete slab	2,526	m2	240.00	606,240.00	
75	Allowance for general landscaping to median/reserves	254	m	125.00	31,750.00	
	General Items					

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
76	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	780,400.00	780,400.00	
77	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	8,238,283.20	
					37,660,723.20	
General Allowances						
Power Upgrade						
78	Power Upgrade to existing substations	1	Item	45,000,000.00	45,000,000.00	
Real Time Alteration/Extension						
79	Alteration to existing Real Time installations	1	Item	5,000,000.00	5,000,000.00	
Building Structures						
80	Tram Depots	1	Item	18,640,000.00	18,640,000.00	
81	Control Centre allowance for 500m2 building, 250m2 control rooms, 250m2 ancillary space	1	Item	4,000,000.00	4,000,000.00	
Rolling Stock						
82	Light Rail Rolling Stock	22	No	4,000,000.00	88,000,000.00	
Victoria Tunnel						
83	Allowance for road header tunnel, 2no 6.5m OD, 794m long, including contingencies. Fees, rails and necessary services, cross tunnels	1	Item	316,296,000.00	316,296,000.00	
Design Fees						
84	Detail Design and Supervision	1	Item	9,600,000.00	9,600,000.00	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
					486,536,000.00	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision A
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Total				781,667,315.20	

Project : Wellington Public Spine Study
 Estimate : Version LRT, Revision B - Single tunnel
 Price Date : 25/03/2013

LRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Total				614,154,403.20	

Project : Wellington Public Spine Study
 Estimate : Version BRT, Revision B - 30 May
 Price Date : 25/03/2013

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Estimate Summary
BRT Central Alignment

No.	Description	Quantity	Unit	Rate	Amount	Notes
BRT Central Alignment						
1	Wellington (Central) PT Spine				79,843,520.00	
2	Newtown (Southern) PT Spine				29,383,910.40	
3	Kilbirnie (Eastern) PT Spine				25,566,315.52	
	Sub Total				134,793,745.92	
4	General Allowances				37,800,000.00	
5	Design And Construction Contingencies			20.00	34,518,749.18	
					207,112,495.10	

Project : Wellington Public Spine Study
 Estimate : Version BRT, Revision B - 30 May
 Price Date : 25/03/2013

BRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Wellington (Central) PT Spine					
	Site Preparation Works (Within Existing Carriageway)					
1	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
	Traffic Management, Road Alterations					
2	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Major Road Junction	9	No	750,000.00	6,750,000.00	
3	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Minor Road Junction	10	No	600,000.00	6,000,000.00	
4	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	23	No	300,000.00	6,900,000.00	
5	Realignment of existing reserve between Molesworth St and Bowen St	1	Item	350,000.00	350,000.00	
6	Alteration of Featherston pavement and road layout	1	Item	350,000.00	350,000.00	
7	Allowance for alterations to street signage	5,671	m	100.00	567,100.00	
8	Allowance for alterations to road markings	5,671	m	125.00	708,875.00	
9	Allowance for alterations to street lighting	5,671	m	300.00	1,701,300.00	
10	Allowance for 10% of road/pavement fencing	567	m	1,000.00	567,000.00	

Project : Wellington Public Spine Study
 Estimate : Version BRT, Revision B - 30 May
 Price Date : 25/03/2013

BRT Central Alignment

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations					
11	Alter Existing Services including electricity, gas, water, sewer, surface water, fibre optics to Courtenay place / Kent Terrace Junction	1	No	1,300,000.00	1,300,000.00	
12	Alter Existing Services including electricity, gas, water, sewer, surface water, fibre optics for realignment of existing reserve between Molesworth St and Bowen St	1	No	780,000.00	780,000.00	
13	Alter Existing Services including electricity, gas, water, sewer, surface water, fibre optics for realignment of existing reserve between Featherston St junction	1	No	780,000.00	780,000.00	
14	Allowance for alteration to Kent/Cambridge Terrace pumping stations	2	No	500,000.00	1,000,000.00	
	Signalling/Controls					
15	Telecoms and signaling	7,364	m	1,500.00	11,046,000.00	
16	Installation of conduits and pits along proposed road for controls wiring	7,364	m	1,000.00	7,364,000.00	
	Stations/Ticketing and Fare Collection Systems					
17	Allowance for Bus Stop Alterations	17	No	30,000.00	510,000.00	
18	Allowance for new Bus Stops	5	No	50,000.00	250,000.00	
	Road/Pavements/Landscaping					
19	Allowance for general landscaping to median/reserves	5,671	m	125.00	708,875.00	
	General Items					

Project : Wellington Public Spine Study
 Estimate : Version BRT, Revision B - 30 May
 Price Date : 25/03/2013

BRT Central Alignment

Davis Langdon
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No.	Description	Quantity	Unit	Rate	Amount	Notes
20	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	14,744,600.00	14,744,600.00	
21	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	17,465,770.00	
					79,843,520.00	
Newtown (Southern) PT Spine						
Site Preparation Works (Within Existing Carriageway)						
22	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
Traffic Management, Road Alterations						
23	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Major Road Junction	4	No	750,000.00	3,000,000.00	
24	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Minor Road Junction	2	No	600,000.00	1,200,000.00	
25	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	11	No	300,000.00	3,300,000.00	
26	Widen existing road of Adelaide Rd and Riddford Rd Hospital Entrance	555	m2	326.00	180,930.00	
27	Allowance for alterations to street signage	2,334	m	100.00	233,400.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
28	Allowance for alterations to road markings	2,334	m	125.00	291,750.00	
29	Allowance for alterations to street lighting	2,334	m	300.00	700,200.00	
30	Allowance for 10% of road/pavement fencing	233	m	1,000.00	233,000.00	
	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations					
31	Alter Existing Services for road widening to Adelaide Rd and Hospital Entrance, including electricity, gas, water, sewer, surface water, fibre optics	770	m	5,200.00	4,004,000.00	
	Signalling/Controls					
32	Telecoms and signalling	2,334	m	1,500.00	3,501,000.00	
33	Installation of conduits and pits along proposed road for controls wiring	2,334	m	1,000.00	2,334,000.00	
	Stations/Ticketing and Fare Collection Systems					
34	Allowance for new Bus Stops	2	No	50,000.00	100,000.00	
35	Allowance for Bus Stop Alterations	9	No	30,000.00	270,000.00	
	Road/Pavements/Landscaping					
36	Allowance for general landscaping to median/reserves	1,324	m	125.00	165,500.00	
	General Items					
37	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	3,442,400.00	3,442,400.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
38	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	6,427,730.40	
					29,383,910.40	
39	Kilbirnie (Eastern) PT Spine No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
40	Site Preparation Works (Within Existing Carriageway) Uplifting Soft Landscape surfaces, new 450 thick concrete slab, reinforcement 150kg/m ³ , blinding, bedding slab, from existing Tunnel to Wellington Rd (No demolitions of Existing Buildings Included)	6,720	m ²	645.00	4,334,400.00	
41	Retaining wall to Ruahine St	993	m	1,000.00	993,000.00	
	Traffic Management, Road Alterations					
42	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Major Road Junction	1	No	750,000.00	750,000.00	
43	Allowance for re-configuring existing traffic junctions, strengthening of pavements surrounding the proposed route and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	2	No	300,000.00	600,000.00	
44	Widen existing road of Kilbirnie Crescent	1,579	m ²	326.00	514,754.00	
45	Allowance for alterations to street signage to Kilbirnie Crescent	451	m	100.00	45,100.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
46	Allowance for alterations to road markings to Kilbirnie Crescent	451	m	125.00	56,375.00	
47	Allowance for alterations to street lighting	1,698	m	300.00	509,400.00	
48	Allowance for 10% of road/pavement fencing	170	m	1,000.00	170,000.00	
	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations					
49	Alter Existing Services for road widening to Kilbirnie Crescent, including electricity, gas, water, sewer, surface water, fibre optics	451	m	2,000.00	902,000.00	
50	Alter Existing Services from soft landscape areas	1,247	m	2,000.00	2,494,000.00	
51	Allowance for new drainage to new road finish	1,247	m	315.00	392,805.00	
	Signalling/Controls					
52	Telecoms and signaling	2,691	m	1,500.00	4,036,500.00	
53	Installation of conduits and pits along proposed road for controls wiring	2,691	m	1,000.00	2,691,000.00	
	Stations/Ticketing and Fare Collection Systems					
54	Allowance for Bus Stop Alterations	2	No	30,000.00	60,000.00	
55	Allowance for new Bus Stops	2	No	50,000.00	100,000.00	
	Road/Pavements/Landscaping					
56	Allowance for general landscaping to median/reserves	254	m	125.00	31,750.00	
	General Items					

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No.	Description	Quantity	Unit	Rate	Amount	Notes
57	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection	1	Item	1,292,600.00	1,292,600.00	
58	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	5,592,631.52	
					<u>25,566,315.52</u>	
	General Allowances					
	Power Upgrade					
59	Power Upgrade to existing substations, assume battery operated bus, no upgrade included		Note			
60	Real Time Alteration/Extension Alteration to existing Real Time installations	1	Item	5,000,000.00	5,000,000.00	
	Building Structures					
61	Bus Depots not required use of existing		Note			
62	Control Centre not required use of existing		Note			
	Rolling Stock					
63	Higher Capacity Bus Stock	40	No	700,000.00	28,000,000.00	
	Design Fees					
64	Detail Design and Supervision	1	Item	4,800,000.00	4,800,000.00	
					<u>37,800,000.00</u>	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Total				<u>172,593,745.92</u>	

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Davis Langdon
 An AECOM Company

Estimate Summary
Bus Priority Central Alignment

No.	Description	Quantity	Unit	Rate	Amount	Notes
Bus Priority Central Alignment						
1	Wellington (Central) PT Spine				16,148,448.00	
2	Newtown (Southern) PT Spine				5,945,600.00	
3	Constable Street (Southern) PT				7,650,293.76	
4	Kilbirnie (Eastern) PT Spine				14,062,044.16	
	Sub Total				43,806,385.92	
5	General Allowances				5,000,000.00	
6	Design And Construction Contingencies			20.00	9,761,277.18	
					58,567,663.10	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Wellington (Central) PT Spine					
	Site Preparation Works (Within Existing Carriageway)					
1	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
	Traffic Management, Road Alterations					
2	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Major Road Junction	9	No	300,000.00	2,700,000.00	
3	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Minor Road Junction	10	No	200,000.00	2,000,000.00	
4	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	13	No	50,000.00	650,000.00	
5	Allowance for alterations to street signage	5,671	m	100.00	567,100.00	
6	Allowance for alterations to road markings	5,671	m	125.00	708,875.00	
7	Allowance for alterations to street lighting, assumed as existing		Note			
8	Road/pavement fencing assumed as existing, no allowance included Utility Diversions/new services		Note			
9	Assumed no alteration to existing road layout required, all services to be retained in existing positions Signalling/Controls		Note			

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No.	Description	Quantity	Unit	Rate	Amount	Notes
10	Telecoms, detector loop and signaling, allowances to existing junctions only	18	No	125,000.00	2,250,000.00	
Stations/Ticketing and Fare Collection Systems						
11	Allowance for Bus Stop Alterations	17	No	30,000.00	510,000.00	
12	Allowance for new Bus Stops	5	No	50,000.00	250,000.00	
Road/Pavements/Landscaping						
13	No allowance for general landscaping to median/reserves, assumed within existing carriageway with no additional alterations required		Note			
General Items						
14	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection at signals and minor allowances for road markings	1	Item	2,980,000.00	2,980,000.00	
15	Allowance for General Preliminaries, contractors facilities, on site overheads, off site overheads			28.00	3,532,473.00	
					16,148,448.00	
Newtown (Southern) PT Spine						
Site Preparation Works (Within Existing Carriageway)						
16	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
17	No allowance for Adelaide Road					
Traffic Management, Road Alterations						

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No.	Description	Quantity	Unit	Rate	Amount	Notes
18	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Major Road Junction	3	No	300,000.00	900,000.00	
19	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Minor Road Junction	3	No	200,000.00	600,000.00	
20	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	4	No	50,000.00	200,000.00	
21	Allowance for alterations to street signage	740	m	100.00	74,000.00	
22	Allowance for alterations to road markings	740	m	125.00	92,500.00	
23	Allowance for alterations to street lighting	740	m	300.00	222,000.00	
24	Allowance for 10% of road/pavement fencing	74	m	1,000.00	74,000.00	
25	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations Alter Existing Services for road widening to Riddiford Street, including electricity, gas, water, sewer, surface water, fibre optics	220	m	2,000.00	440,000.00	
26	Signalling/Controls Telecoms, detector loop and signaling, allowances to existing junctions only	6	No	125,000.00	750,000.00	
27	Stations/Ticketing and Fare Collection Systems Allowance for Bus Stop Alterations	7	No	30,000.00	210,000.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
28	Allowance for new Bus Stops	2	No	50,000.00	100,000.00	
	Road/Pavements/Landscaping					
29	Allowance for general landscaping to median/reserves	740	m	125.00	92,500.00	
	General Items					
30	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection at signals and minor allowances for road markings	1	Item	890,000.00	890,000.00	
31	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	1,300,600.00	
					5,945,600.00	
	Constable Street (Sourthern) PT					
	Site Preparation Works (Within Existing Carriageway)					
32	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
	Traffic Management, Road Alterations					
33	Allowance for widening and re-configuring existing traffic junctions and changes to traffic and pedestrian control to Constable Street, to Minor Road Junction	4	No	600,000.00	2,400,000.00	
34	Widen existing road of Riddiford st - Constable to Rintoul St	132	m2	326.00	43,032.00	
35	Widen existing Carriageway to Constable st	1,760	m2	326.00	573,760.00	
36	Allowance for alterations to street signage, road markings	800	m	100.00	80,000.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
37	Allowance for alterations to road markings	800	m	125.00	100,000.00	
38	Allowance for alterations to street lighting	800	m	300.00	240,000.00	
39	Allowance for 10% of road/pavement fencing	80	m	1,000.00	80,000.00	
	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations					
40	Alter Existing Services for road widening to Constable Street, including electricity, gas, water, sewer, surface water, fibre optics	550	m	2,000.00	1,100,000.00	
	Signalling/Controls					
41	Telecoms, detector loop and signaling, allowances to existing junctions only	4	No	125,000.00	500,000.00	
	Stations/Ticketing and Fare Collection Systems					
42	Allowance for Bus Stop Alterations	2	No	30,000.00	60,000.00	
	Road/Pavements/Landscaping					
43	Allowance for general landscaping to median/reserves	800	m	125.00	100,000.00	
	General Items					
44	Allowance for Temporary Traffic Management during construction works, including pedestrian and road protection at signals and minor allowances for road markings	1	Item	700,000.00	700,000.00	
45	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	1,673,501.76	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
					<u>7,650,293.76</u>	
	Kilbirnie (Eastem) PT Spine					
46	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
	Site Preparation Works (Within Existing Carriagway)					
47	No allowance for new concrete slabs below existing road finishes, alterations to junctions and medians measured elsewhere		Note			
	Traffic Management, Road Alterations					
48	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Major Road Junction	1	No	300,000.00	300,000.00	
49	Allowance for re-configuring existing traffic junctions and changes to traffic and pedestrian control, to Minor Road Junction No Traffic Management	2	No	200,000.00	400,000.00	
50	Allowance for alterations to street signage, road markings to Kilbirnie St	451	m	100.00	45,100.00	
51	Widen existing road of Kilbirnie Crescent	722	m2	326.00	235,372.00	
52	Allowance for alterations to road markings	1,698	m	125.00	212,250.00	
53	Allowance for alterations to street lighting	1,698	m	300.00	509,400.00	
54	Allowance for 10% of road/pavement fencing	170	m	1,000.00	170,000.00	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Utility Diversions/new services, Allowances included at junction alterations or road modifications, existing services to be retained unless specifically altered by road alterations					
55	Alter Existing Services for road widening to Kilbirnie Crescent, including electricity, gas, water, sewer, surface water, fibre optics	451	m	2,000.00	902,000.00	
	Signalling/Controls					
56	Telecoms and signaling	2,691	m	1,500.00	4,036,500.00	
57	Installation of conduits and pits along proposed road for controls wiring	2,691	m	1,000.00	2,691,000.00	
	Stations/Ticketing and Fare Collection Systems					
58	Allowance for Bus Stop Alterations	2	No	30,000.00	60,000.00	
59	Allowance for new Bus Stops	2	No	50,000.00	100,000.00	
	Road/Pavements/Landscaping					
60	Allowance for general landscaping to median/reserves	254	m	125.00	31,750.00	
	General Items					
61	Allowance for Temporary Traffic Management	1	Item	1,292,600.00	1,292,600.00	
62	Allowance for General Preliminaries, contractors facilities, on site overheads. off site overheads			28.00	3,076,072.16	
	General Allowances				14,062,044.16	
	Power Upgrade					

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No.	Description	Quantity	Unit	Rate	Amount	Notes
63	Power Upgrade to existing substations, no upgrade included		Note			
	Real Time Alteration/Extension					
64	Alteration to existing Real Time installations, not required as included within existing services		Note			
	Building Structures					
65	Bus Depots not required use of existing		Note			
66	Control Centre not required use of existing		Note			
	Rolling Stock					
67	Higher Capacity Bus Stock, re use of existing bus stock		Note			
	Design Fees					
68	Detail Design and Supervision	1	Item	5,000,000.00	5,000,000.00	
					<u>5,000,000.00</u>	

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No.	Description	Quantity	Unit	Rate	Amount	Notes
	Total				48,806,385.92	