



Auckland CBD Rail Link Study

Phase 2 – Concept Design

Cost Estimate

Prepared for KiwiRail and ARTA

By APB&B

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Appendix A – Indicative Project Cost Estimate

1 Executive Summary

1.1 Introduction

The following cost estimate report considers the capital cost requirements for the proposed new Auckland Central Business District Rail Link project based on the preferred scheme selected at the end of Phase 1 and developed by the engineering and constructability workstreams from March to July 2010. This cost estimate has been issued as 'Commercial in Confidence' and is intended for client review only for the purposes of developing the project business case.

This cost estimate has been developed and refined since October 2009 in conjunction with the Engineering study activities known as:

Phase 1 Options Evaluation – Broadly consisted of a study of the alignment options including preliminary engineering and spatial planning work to define typical station arrangements and tunnel configuration, etc. All options were evaluated with the highest scoring option (known as Option 6c) being selected as the preferred alignment for further development in Phase 2.

Phase 2 Engineering Summary – Primarily focuses on developing the preferred option, building a business case and preparing background Notice of Requirement (NOR) documents being the assessment of environmental effects.

Please note that the scope and cost assumptions are based on the Engineering outputs produced from the above design phases and from other anticipated requirements as a result of constructability or temporary works demands which may not specifically be detailed in the main report and drawings referenced as the Concept Design Report, rev 3 dated 30 July 2010.

To counter gaps and uncertainties in our project knowledge still present at this stage of project development, we have focused our benchmarking on three overseas recent metro projects that have similarity to the Auckland's CBD Rail Link. These are Copenhagen Metro, Sydney North West Metro and Dublin Metro North. Further details are contained in section 2.3.

1.2 Project Brief

The Auckland CBD Rail Link is a new transport initiative that proposes to link the existing Britomart Transport Centre to the North Auckland Line (NAL) at Mt Eden.

This cost estimate report specifically relates to the preferred alignment known as Option 6c as referred to in the Auckland CBD Rail Link Study - Options Evaluation Report January 2010. Please note that any significant deviation from this scheme will invalidate this estimate.

The general scope of this project broadly consists of:

- Approximately 4km of underground tunnels of varying type (i.e. bored, mined, cut and cover tunnels, retained/open cut sections) running from Britomart Station (connecting to the existing platform tracks 1 and 5) to the NAL in the vicinity of Mt Eden Road and Porters Avenue.

- The reconfiguration of the west end of Britomart Station platforms 1 and 5, to accommodate the new route
- The provision of 3 new underground stations, Aotea Station (Albert St near the Crown Plaza), Karangahape Road Station (at the junction of K Road and Pitt St and utilising Beresford Square for shaft construction) and Newton Station (at the junction of Symonds St with Khyber Pass and New North Road)
- Retention of Mt Eden station
- Passive provisions for a future rail line connection to the North Shore (no infrastructure allowed)
- East and West dive structures linking to the North Auckland Rail Corridor
- New rail infrastructure such as track works, line side services, signalling systems, overhead line electrification, traction power, SCADA, automatic fare collection, etc
- Demolition and enabling works to provide accessible work sites including utilities diversions, traffic management and environmental compliance measures
- Temporary and permanent property acquisition along the proposed route.
- Property costs on a net basis, purchase, retain for good or resale at the end of the construction.

1.3 Cost Estimate Results

The Auckland CBD Rail Link concept design cost estimate based on the design developed as noted in section 1.2 above is summarised as follows. Please refer to section 2.4 for more details.

	Phase 2 Estimate Base Cost	Phase 2 Estimate Lower Bound Cost	Phase 2 Estimate Upper Bound Cost
Item Description	\$ NZD	\$ NZD	\$ NZD
Total Construction Costs	\$1,403.1m	\$1,612.9m	\$1,888.4m
Total Project Add On Costs	\$267.4m	\$294.2m	\$334.3m
Grand Total Project Cost (Excluding Property Costs)	\$1,670.5m	\$1,907.1m	\$2,222.7m
Property Acquisition Costs	\$59.0m	\$73.8m	\$82.6m
Grand Total Project Cost (Including Property Costs)	\$1,729.5m	\$1,980.9m	\$2,305.3m

2 Estimate Summary

2.1 Adopted Estimating Philosophy

This concept level estimate has been prepared using a combination of high level and detailed estimating principles (i.e. cost per functional area, cost per elemental item, cost per resourcing, etc) for the key scope items identified. Our adopted work breakdown structure for this project is as set out in Appendix A of this report.

Our estimating knowledge base for these types of underground urban rail projects was built on our key team member's experience on these projects acting on both the consultant, contractor and client side and the particular experience of our lead Estimators three years of direct experience on Dublin Metro North (DMN) and the Sydney North West Metro.

From the design data from these projects, as discussed further in section 2.3, and from the design concepts developed in these studies, detailed 'cost models' were built for each key element of the project. For example, for the construction of a mined cavern a detailed elemental and resource based estimate was developed based on the developed construction methodology and productivity rates derived by the team for this project.

As the bulk of cost is driven by the excavated volume in the ground, whether this is for a station or tunnel (cut and cover, mined or TBM), the concept engineering concentrated on providing primary structural form and the sizing of main elements. The remainder of the systems design information is based on 'single line' system descriptions and priced from more detailed cost info on comparable systems on other projects.

The property costing has been developed based on the requirements for permanent use and the additional requirements for the land necessary for construction purposes on the basis that these latter requirements are then on sold for development by others.

At the time of writing this data is awaited and therefore the nominal base rate of \$59m net (after on sale of land at the end of the projects construction). This will be updated in the final version of the report on the basis of the 'Property Group's' analysis.

2.2 Procurement

2.2.1 Procurement

Large scale urban underground rail infrastructure projects have been procured in our region of the world (South East Asia and Australia) under a variety of contracting, models over the last 20 years.

In Hong Kong and Singapore for example, the governments have set up large project delivery organizations acting as the 'design and construction' manager which then packages out the contracts on a geographic or system based scale and then the client body manages the overall project and the interfaces.

The first major underground rail project in Australia recent times, the Sydney Airport Link (SAL), built between 1995 and 2000 (valued at A\$900m in 1997 dollars) was delivered under a different model. The preliminary design and planning work was conducted by the Rail Authority which then formed the basis of a performance specification to a "Design and Construct" contract to a single contractor (Australian/Overseas contractor joint venture) and was controlled by a relatively small (less than 30) client project team.

The next major underground rail infrastructure in Australia was the Epping to Chatswood rail link in Sydney, procured closer to the Asian model described above, where a large client

project delivery organization was formed, the “Transport Development Infrastructure Corporation”, who procured the design services and broke up the construction packages (come D&C) into 3 main groups:

- Tunnelling and civil works in stations (i.e. includes all structure to support the station form).
- Fitout of stations
- Tunnel rail systems fitout

Again the Client had to ultimately manage the interfaces.

Alliances could also be used, similar to that which NZTA has developed in recent major roading projects.

The choice of procurement options to a large extent hinge around whether the project can be split up along ‘geographical’ or systems’ lines to reduce the size of the packages.

The factors to consider for this project are:

- The mined and bored tunnelling works are integrated in Newton and K Road Stations, and mined tunnelling also occurs on the eastern NAL link and TBM launching tunnels.
- The initial cut and cover works on the NAL worksite are necessary in order to launch the TBM tunnelling and are then in part required for the servicing of this aspect for the following 3 years.
- The NAL Corridor, cut and cover works, civil works and bridges rely on NAL rail diversions into a worksite shared with the tunnelling operation. This could be separated but requires further development.
- The Aotea station cut and cover box has to be ready prior to the arrival of the first TBM and should these works be late it will hold up the TBM progress. The TBM requires ground treatment immediately adjacent to the station ends.
- The TBM portal in Lower Albert Street: In order to carry out the tunnelling, the initial Westfield construction and Lower Albert cut and cover works have to be done to receive, turn around and re-receive the TBM. This effectively keeps a dependency on this area of construction until Year 5 of the project.
- Station Fitout: (i.e. that beyond ‘ground support civil/structural works’) can achieve significant efficiencies if integrated with the station civil works. This is what we have assumed is the construction method development. A single point in time hand generally introduces delays and inefficiencies.
- Rail Systems Fitout: (track, overhead line, traction power and signalling) As discussed in Option 1B above this could be a separate package.
- Utility Services and Enabling Works: Could be separate but as there are many unknowns and risks in this area that can have a significant effect on following activities, this approach needs consideration.

Option 1- Single Main Contracting Consortia

The first option, 1A, is to procure based on the “Single Design and Construct Contracting Model”. Once the designation and securing of funds phase concludes this would entail the following:

The Client would, conduct detailed geotechnical and survey investigations and develop a preliminary or reference design with its advisors to inform the consenting process and develop the basis of a performance specification for the Design and Construct phase.

This would most likely be procured via a two stage R.O.I. and R.F.T. phase where consortia would be invited to bid for the work. In reality the likely bidding parties would be the large NZ contractors, such as Fletchers coupled with international tunnelling based contractors such as Kumagai Gumi, Obayashi or Bouygues S.A. The Australian based contractors such as Leightons or Theiss would also most likely combine with a specialist tunnelling contractor

These consortia would most likely include significant sub-contracting of some elements to other contractors which could include service diversions, rail systems specialists and building fitout elements.

A variant to Options 1A, 1B would be to scribe out the 'Rail Systems' (track, overhead, signalling and traction power components) and let separately, leaving the Client to define and manage the interfaces. However as this is only 9% of the total project value, the primary reason for choosing it would be that these components require close integration with the existing rail system and hence the Client is able to exert far greater control and influence. With this benefit comes the disbenefit of having to manage the contractual interface that can be messy and difficult to define and will come with a cost penalty.

The other main factor to consider is that the responsibility and power placed in the hands of one major private body can introduce control and delivery risks.

Option 2 – Multi Packaged Model

On the basis of this brief overview of the criteria and constraints to consider as noted above, a feasible break up into separate packages managed by a client based management organization could be: (similar to the NSW model discussed earlier)

Package 1: (Civil, Structural & Building) Enabling works and all civil and structural works for cut and cover, mined and bored tunnelling works and station formation from Westfield to the NAL worksite. Separating out utility divisions, whilst of low value in itself, has a major impact on following civil works, so it is recommended that it is controlled by the major civil package.

Station Fitout: Whilst this was separated out on the Epping to Chatswood project, for the reasons noted above together with the relatively low value of this work in comparison to the project value, the only reason to separate is to spread the number of contractors the Client is dependent on as the interface risks and costs would be high. It is considered more efficient and cost effective for the main contractor to control the fitout as a sub-contract.

Package 2: (NAL Corridor Works) This would entail creating defined worksites and staging principles between Package 1 and 2. Package 1 would construct the crossover box, eastern cut and cover box and Mt Eden Road mined section. Package 2 would build the western cut and cover box and then all the works in the corridor including the three bridges. There is simple enough geographical separation with these 2 packages to make this approach feasible. The dependency is the running and commissioning of the rail systems.

Package 3: (QEII Square to Britomart Works) This could be feasible as a separate package providing sufficient worksite space could be gained in QEII Square to enable the work face from west to east to operate effectively distinct from the works on the Westfield site.

Package 4: Rail Systems fitout for the reasons discussed above.

Option 2 Value split is:

Phase 1	74%
Phase 2	12%
Phase 3	5%
Phase 4	9%
	100%

Option 3 - Alliance

Given that the above multi packaged approach still requires $\frac{3}{4}$ of the value to be delivered in a single package, to adequately mitigate the interface risks and to deliver value an Alliance is the main option beyond the single main contracting model described in Option 1. An alliance has the benefits of the multi packaged approach with close client influence and integration of design, construction and operations and reduced interface risk, however the premium for this model needs to be carefully considered against the risks/benefits of this approach. For the basis of the cost plan Option 1 is assumed, which would hold true for Option 2 and needs further consideration for Option 3.

Public Private Partnerships are being addressed as a part of the Business Case Workstream of this study and so are not discussed here.

2.3 Project Benchmarking

The major cost components of this estimate (i.e. tunnels and stations) have been based on historical costs from other international Metro projects in combination with elemental estimate checks on the design form developed for this project. We have benchmarked the key cost elements of this estimate (i.e. Stations and Bored Tunnelling Works) on the following Metro projects:

Item	ACBDRL	DMN	SNWM	CM
Description				
Stations	NZD \$200-230m 190-200m Long	NZD \$160m 130m Long	NZD \$160-220m 127m Long	NZD \$150m 110m Long
Bored Tunnelling	NZD \$47K/m single 6.9m O/Dia	NZD \$40K/m single 6.5m O/Dia	NZD \$45K/m single 6.2m O/Dia	NZD \$70K/m double Approx 6.0m O/D

Please note that the above costs are net construction costs and exclude all other ancillary and project add-on costs.

Key:

ACBDRL Auckland CBD Rail Link

DMN Dublin Metro North – (Construction Commercial 2010)

SNWM Sydney North West Metro – (Yet to be built)

CM Copenhagen Metro – (Completed 2002)

Other project data from other metro projects have also been reviewed and included where appropriate. These include:

- City West Cable Tunnel, Sydney (1.6km x 4m diameter tunnel) AUD \$45m or NZD \$50m (Approx \$31,000/m) – 2006
- Ney Lynn Trench, Auckland (1km) NZD \$160m (Approx \$178,000/m) – 2009
- Note: Section to be updated with other project benchmarks

2.4 Cost Estimate Summary

Please refer to the following pages for the Phase 2 Cost Estimate Summary.

SUMMARY

Ref	Item Description	February 2010 Phase 1 Estimate						August 2010 Phase 2 Estimate						Comments	Difference P1 UB & P2 UB Total Cost (NZD \$)
		Lower Bound (LB)			Upper Bound (UB)			Lower Bound (LB)			Upper Bound (UB)				
		Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)		
1.00	Demolition & Enabling Works	26,000,000	30%	7,800,000	26,000,000	50%	13,000,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(26,000,000)
2.00	Utility Diversions	25,000,000	30%	7,500,000	25,000,000	50%	12,500,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(25,000,000)
3.00	Stations														
3.01	Britomart Station Alterations incl GPO underpinning	25,000,000	20%	5,000,000	25,000,000	40%	10,000,000	0	0%	0	0	0%	0	Now included in alignment costs	(25,000,000)
3.02	Aotea Station	200,000,000	20%	40,000,000	200,000,000	40%	80,000,000	195,380,000	15%	29,307,000	195,380,000	35%	68,383,000	Cut & Cover Station. Station Volume 99,992m3 (Note: Phase 1 Volume 126,525m3)	(4,620,000)
3.03	Karangahape Road Station	212,000,000	20%	42,400,000	212,000,000	40%	84,800,000	245,510,000	15%	36,826,500	245,510,000	35%	85,928,500	Single Cavern Station. Station Volume 123,396m3 (Note: Phase 1 Volume 125,800m3)	33,510,000
3.04	Newton Station	224,000,000	20%	44,800,000	224,000,000	40%	89,600,000	233,210,000	15%	34,981,500	233,210,000	35%	81,623,500	Single Cavern Station. Station Volume 128,401m3 (Note: Phase 1 Volume 134,016m3)	9,210,000
4.00	Alignment														
4.01	Britomart Station/CPO to TBM Reception Portal (North)	61,720,000	30%	18,516,000	61,720,000	50%	30,860,000	122,300,000	15%	18,345,000	122,300,000	35%	42,805,000	Alignment in mined/cut & cover tunnels	60,580,000
4.02	TBM Reception Portal (North) to TBM Launch Portal (South)	240,000,000	20%	48,000,000	240,000,000	40%	96,000,000	205,900,000	15%	30,885,000	205,900,000	35%	72,065,000	Alignment in twin bore tunnels	(34,100,000)
4.03	NAL Western Connection (Main Link)	119,590,000	24%	28,613,000	119,590,000	44%	52,531,000	108,090,000	15%	16,213,500	108,090,000	35%	37,831,500	Alignment in mined/cut & cover tunnels and retained cut sections	(11,500,000)
4.04	NAL Eastern Connection (Spur only off Western Link)	81,570,000	20%	16,705,000	81,570,000	40%	33,019,000	120,390,000	15%	18,058,500	120,390,000	35%	42,136,500	Alignment in mined/cut & cover tunnels and retained cut sections	38,820,000
5.00	Tracks Works	43,570,000	10%	4,357,000	43,570,000	30%	13,071,000	34,350,000	10%	3,435,000	34,350,000	25%	8,587,500	Combination of EBSFS, EBS, Standard Slab Track & Ballasted Track. See line costs for details	(9,220,000)
6.00	Line Side Services	24,362,000	20%	4,872,400	24,362,000	40%	9,744,800	27,450,000	15%	4,117,500	27,450,000	35%	9,607,500	Emergency lighting & signage; fire protection systems, CCTV, PA, drains & pumps, etc	3,088,000
7.00	Signalling	7,000,000	20%	1,400,000	7,000,000	40%	2,800,000	10,820,000	15%	1,623,000	10,820,000	35%	3,787,000	Allowance for signalling systems that comply with the proposed operational headways	3,820,000
8.00	Overhead Line Electrification (OLE)	9,040,000	10%	904,000	9,040,000	30%	2,712,000	10,730,000	10%	1,073,000	10,730,000	25%	2,682,500	Conductor rail & catenary mast OLE arrangement	1,690,000
9.00	Traction Power	10,000,000	20%	2,000,000	10,000,000	40%	4,000,000	14,490,000	15%	2,173,500	14,490,000	35%	5,071,500	Allowance for 1 No. feeder station incl. transformers, cable feeds & lineal rail network cable feeds	4,490,000
10.00	Supervisory Controls & Data Acquisition (SCADA)	10,000,000	30%	3,000,000	10,000,000	50%	5,000,000	10,000,000	25%	2,500,000	10,000,000	40%	4,000,000	Allowance for an ancillary SCADA system that monitors the performance and controls of all stop locations	0
11.00	Automatic Fare Collection	8,000,000	20%	1,600,000	8,000,000	40%	3,200,000	8,000,000	15%	1,200,000	8,000,000	35%	2,800,000	Integration of AFC systems to existing control centre only. Note: AFC hardware included in station cost	0
12.00	System Testing & Commissioning	10,000,000	20%	2,000,000	10,000,000	40%	4,000,000	10,000,000	15%	1,500,000	10,000,000	35%	3,500,000	Full systems testing & commissioning/trial operations for 6 months	0
13.00	Tunnel Boring Machines & Spares	54,000,000	10%	5,400,000	54,000,000	30%	16,200,000	27,120,000	10%	2,712,000	27,120,000	25%	6,780,000	Assumed 1 No. TBM's required.	(26,880,000)
14.00	Traffic Management	15,000,000	30%	4,500,000	15,000,000	50%	7,500,000	19,330,000	25%	4,832,500	19,330,000	40%	7,732,000	Allowance for Traffic Management to 5 No. primary locations.	4,330,000
15.00	Environmental Compliance	8,000,000	30%	2,400,000	8,000,000	50%	4,000,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(8,000,000)
TOTAL CONSTRUCTION COST		1,413,852,000	-	291,767,400	1,413,852,000	-	574,537,800	1,403,070,000	-	209,783,500	1,403,070,000	-	485,321,000		(10,782,000)

SUMMARY

Ref	Item Description	February 2010 Phase 1 Estimate						August 2010 Phase 2 Estimate						Comments	Difference P1 UB & P2 UB Total Cost (NZD \$)
		Lower Bound (LB)			Upper Bound (UB)			Lower Bound (LB)			Upper Bound (UB)				
		Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)		
16.00	Design, Planning, Project & Cost Management Fees	211,866,683	10%	21,186,668	211,866,683	30%	63,560,005	210,460,000	10%	21,046,000	210,460,000	25%	52,615,000	Calculated at approximately 15% of total construction cost (assumed 7% Design & 8% Management)	(1,406,683)
17.00	Client Management Costs	56,231,115	10%	5,623,111	56,231,115	30%	16,869,334	56,980,000	10%	5,698,000	56,980,000	25%	14,245,000	Full resource based estimate of client management costs through design, procurement, construction & commissioning	748,885
18.00	Building Consent Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Design, Planning, Project & Cost Management Fees	-
19.00	Resource Consent Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Design, Planning, Project & Cost Management Fees	-
20.00	Legal Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
21.00	Project Insurances	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
22.00	Financing Costs	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
BASE COST SUB-TOTAL		1,681,949,798	-	318,577,180	1,681,949,798	-	654,967,139	1,670,510,000	-	236,527,500	1,670,510,000	-	552,181,000		(11,439,798)
23.00	Contingency / Funding Risk	318,577,180	-	-	654,967,139	-	-	236,527,500	-	-	552,181,000	-	-		(102,786,139)
24.00	Escalation Allowances	-	-	-	-	-	-	-	-	-	-	-	-	Excluded	-
25.00	Goods & Services Tax	-	-	-	-	-	-	-	-	-	-	-	-	Excluded	-
GRAND TOTAL PROJECT COST (EXCL. PROPERTY)		2,000,526,978	-	-	2,336,916,937	-	-	1,907,037,500	-	-	2,222,691,000	-	-		(114,225,938)
PROPERTY COSTS - NET (ACQUISITION/SALE)		59,000,000	30%	17,700,000	59,000,000	50%	29,500,000	59,000,000	25%	14,750,000	59,000,000	40%	23,600,000		0
GRAND TOTAL PROJECT COST (INCL. PROPERTY)		2,077,226,978	-	-	2,425,416,937	-	-	1,960,787,500	-	-	2,305,291,000	-	-		(120,125,937)

2.5 Phase 1 & 2 Cost Estimate Comparison

In the Phase 1 Indicative Project Cost Estimate Working Paper dated 23 February 2010, a comparison was tabled between the previous 2005 CBD Rail Link estimate and that estimate. Reference should be made to this paper for an understanding of the differences between the earlier study and this study.

The purpose of this section is to understand the targeting of the concept design phase and development of the construction methodology in order to refine the cost estimate and achieve value for money.

Please note that we have used our Phase 2 'Upper Bound' estimate as a base line for comparison against the previously issued Phase 1 Cost Estimate issued in February 2010.

Our capital cost estimate for the works is as summarised below:

	Previous Phase 1 Estimate February 2010 (Upper Bound)	Current Phase 2 Estimate August 2010 (Upper Bound)	Difference
Item Description	\$ NZD	\$ NZD	\$ NZD
Total Construction Costs	\$1,413.9m	\$1,403.1m	-\$10.8m
Total Project Add On Costs	\$268.1m	\$267.4m	-\$0.7m
Contingency/Risk (Upper Bound)	\$655.0m	\$552.2m	-\$102.8m
Grand Total Project Cost (Excluding Property Costs)	\$2,337.0m	\$2,222.7m	-\$114.3m
Property Acquisition Costs	\$59.0m	\$59.0m	\$0.0m
Contingency/Risk (Upper Bound)	\$29.5m	\$23.6m	-\$5.9m
Grand Total Project Cost (Including Property Costs)	\$2,425.5m	\$2,305.3m	-\$120.2m

Further details of this estimate can be found in Appendix A of this report. Please note that the project risks, estimate assumptions and exclusions must be read in conjunction with the reported figures.

The core cost differences between the Phase 1 Cost Estimate and our current Phase 2 Upper Bound Cost Estimate primarily relate to the following reasons:

- § Reduced station volumes for Aotea Station from 126,600 to 100,000m³ with an effective 10% decrease in cost.
- § K Road and Newton Station volumes have stayed largely the same, however direct cost has varied between +10% and - 3% respectively.

- § The value of the works at the lower end of the job, Lower Albert to Britomart, have increased significantly by 50% as a result of the complexity of the works being investigated and understood.
- § Procurement and purchase of 1 No. Tunnel Boring Machine (in-lieu of 2 No)
- § Optimised bored tunneling back-up logistics (i.e. previously based on hire equipment. Now based on direct purchase of plant where more economical), less 14%.
- § Sundry cost savings on track costs (i.e. supply price basis of steel rail sections being much lower (less 23%).
- § Tunnel services and systems reduced in value by around 15% due to definition and design refinement.
- § Decreased project add on costs as a result of decreased construction costs.
- § P & G and off site overheads and profit have been analyzed in detail as described in section 4.33. Generally the allowances have been increased.

2.6 Contingency & Uncertainty Approach

The accuracy of this budget estimate is commensurate with the level of design and scope definition of the project. At this phase 2 stage, the route and number of stations are defined together with the outline concept of station types and configurations of construction types to join Britomart at the Northern extremity and the North Auckland line at the Southern extremity. In conjunction with this the construction methods and sequence and have been investigated in some detail the results of which are contained in the CDR and construction programme. However, the level of the design is very much broad outlines focused on the primary elements driving the bulk size and configuration of the railway where the prime cost risk resides. For this reason we have used a mixture of elemental estimating on known components, built-up cost models and estimating allowances based on experience and other similar project types. The built up cost models are derived from known benchmarked data on similar work types (e.g. bored segmentally lined tunnels, etc).

Note: The NZTA risk based confidence level derivation of the contingency is to be completed and will be included in the final version of the estimate. The following approach is maintained as consistent with the Phase 1 estimate

The contingency and estimate tolerance has then been looked at from a summary level breakdown per item assessed on:

- The account for normal design and construction development contingency
- How well the scope is defined
- How many unknowns are likely to affect the outcome
- The likelihood that project specific investigation is required to define the element (or is it estimated for an equivalent construction type).

We have assumed that the route alignment is fixed and types of construction will stay largely similar through design development.

The summary level contingency levels have been assumed as the following % of the base estimate:

	Lower Bound	Upper Bound	Definition
i)	+10%	+25%	Reasonable level of certainty of scope; design & basis

ii)	+15%	+35%	Uncertainty of scope typical for this stage of development but high reliance on knowledge gained from other projects
iii)	+25%	+40%	High uncertainty of scope; deficiencies in knowledge base, very high reliance on knowledge from other similar projects

2.7 Business Case Sensitivity Options

During the Phase 2 Preferred Option design period a number of options were identified on the base scheme that require investigation as apart of the overall business case for this study. The purpose of this section is to provide the cost differences at a project cost level – upper bound so that the merits or otherwise of this options can be assessed. The six options that have been investigated are:

- Full scheme but with a reduction in platform length at the 3 stations from 170m to 150m.
- Full scheme with 300mm reduction in TBM bore diameter
- Reduction in station entrance provision at all 3 stations. At Aotea it would be the deletion of the entrance structure and road underpass at Victoria and Albert Streets intersection. At K Road it is the deletion of the at grade access from Beresford Square to K Rd. At Newton it is the deletion of the western entrance and road underpass.
- Postpone construction of the NAL eastern connection. The cost of this is simply itemised for consideration in the business case.
- A 2 station CBD Rail Link scheme with Aotea and K Rd stations only and Mt Eden Station retained with no Porters Avenue station.
- A 1 station CBD Rail Link scheme with Aotea station and Mt Eden station retained with no Porters Avenue station.

Our capital cost estimate for the works is as summarised below:

	Preferred Option Phase 2 Estimate August 2010 (Upper Bound)	Revised Phase 2 Estimate based on Sensitivity Option August 2010 (Upper Bound)	Variance
Sensitivity Option	\$ NZD	\$ NZD	\$ NZD
1. 150m platforms	\$2,305.3m	\$2,245.0m	-\$60.3m
2. 300mm reduced TBM Bore	\$2,305.3m	\$2,287.8m	-\$17.5m

3. Reduced no. of station entrances	\$2,305.3m	\$2,220.3m	-\$85.0m
4. Delay NAL Eastern Connection	\$2,305.3m	\$2,066.5m	-\$238.8m
5. 2 station CBD Rail Link	\$2,305.3m	\$1,968.1m	-\$337.2m
6. 1 station CBD Rail Link	\$2,305.3m	\$1,584.8m	-\$720.5m

3 Project Risks

In Phase 2 a further risk workshop was held on the 23rd July 2010 and subsequent analysis to update the risk register and identify the cost risks. The register is currently being updated from the amendments and this report will be updated with this data in the final version. The risk analysis has been conducted in accordance with NZTA's Risk Manual approach where identified cost risks are valued on a best, likely and worst case basis and their probability of occurrence. These are then modelled in a monte carlo statistical analysis to determine the 50 percentile (lower bound) and 95 percentile (upper bound) estimates. The top risks identified to date typically fall into the category of major disruptions to the project progress or viability such as lack of funding, lack of benefit justification, N.O.R designation has serious flaws or major rolling stock mismatch. Such risks are not accounted for in the contingency allowances in this estimate.

The type of risks that have been considered in our contingency approach are those that feature in our 'high' and above threat risk category. These risks generally fall into the following:

- Design quality expectation and integration with the surrounding environment to the extent defined in the project scope (i.e. urban design around station limited to the approx footprint of the station)
- Consent authority conditions and land owner conditions on maintaining existing structures, entrances and traffic management not accepted. Design requirements have accommodated this to a reasonable extent but our information base is still uncertain
- Delay to starting the main design and construct phase of the project (beyond the 4 years allowed) prolonging the consenting period.
- Vulnerability of station impacts
- Beresford Square heritage value of adjacent buildings requiring a major design change.
- Landowner interface impacts and hence measures to protect them are greater than assumed.
- Insufficient investigation data results in both geotechnical and obstructions uncertainty.

- Project scope uncertainty but not a shift in alignment or major parameters of construction types but reflects the low level of design and investigation.
- Normal design and construction contingency around known scope.
- Robustness of the design assumptions in the estimate.
- Variation in Fire and Life Safety requirements (i.e. intervention shafts have not been allowed for except that where only one station is included a plug figure has been put in)
- Utility information and diversion uncertainty
- Lower Albert Street to Britomart difficulty in construction
- Mined tunnelling sequence and linings based on uncertain geotechnical data.
- Ground improvement works only allowed in specific areas and adequate contingency has been provided for the same. Major growth in requirements could be an issue
- Noise and vibration impacts greater than allowed requiring a greater level of protection.
- NAL corridor construction sequence impacts not accepted and are more expensive solution is required.
- TBM and Road Header tunnelling works variability in difficulty.

For a complete register of the risks and their ranking refer to Appendix.....

4 Estimate Assumptions

The following assumptions (listed by category) are a current working interpretation of the proposed scheme to date as outlined in the Concept Design Report, CDR, dated 30 July 2010, rev 3 and the constructability, sequence and programming assumptions contained within this report. This information has been combined with our data from other international metro projects as described in section 2 and the reliability of the design status and cost model has assessed in the risk and contingency analysis as outlined in section 2.6 and 3.0 above. The cost estimates contained within are therefore subject to variance in accordance with the development of the design.

4.1 General Estimating Assumptions

Our estimate of cost is based on the following estimating assumptions:

- All costs included in our Capital Cost Estimate have a base date of 2nd Quarter 2010. Any future revision of the cost estimate should inflate accordingly from this base date
- All estimated costs are in New Zealand Dollars and exclude GST (unless otherwise stated)
- Dimensions are based on the APB&B Auckland CBD Rail Link Study – Concept Design Report, CDR, rev 3, dated 30 July 2010.
- All costs quoted in this section are at “construction only cost level” eg. direct sub-contractor cost and main contractor P&G and margins included
- Assistance from Local Authority for diversionary works

4.2 Programme/Constructability

This estimate is based on the following programme and construction method assumptions as outlined in section 4.0 of the CDR. Productivity, durations and volume of work are further detailed in the full construction programme in Appendix 3 of the CDR which is then reflected in the detail of the cost model assumptions in the estimate. The programme sequence and assumptions are:

- The estimate allows for project related costs including property purchase and resale from the period from funding approval and lodgement of the Notice of requirements, NOR, onwards. It has been assumed that this occurs by mid 2011.
- We have then assumed in our calculation of design, management and Client costs a period of 4 years prior to the start of the construction period – mid 2015.
- The assumed construction period to commencement of the rail service is 6 years – mid 2021.
- 1 No. Tunnel Boring Machines are required
- Estimates for tunnelling works are based on the purchase of plant (e.g. TBM's and back-up systems, road header machinery, etc) where hire rates exceed the acquisition value of plant
- Tunnelling works is from South to North
- The Eastern TBM drive (critical path) will proceed in advance of the completed caverns for the K Road and Newton Stations but will transition through the completed Aotea Station box. The following Western TBM drive will transition through completed station caverns/boxes
- Newton and K Road Cavern stations: Retained excavation from surface level for entrances and vent shafts, etc then road header into excavation of caverns using sequentially excavated mining (SEM) and canopy tube construction techniques
- TBM removed and dismantled from Westfield site. Note that this can be done in a constricted area as machinery assumed to be dismantled in the tunnel and removed in bits
- Remaining constructability assumptions are recorded primarily in section 4 of the CDR and also in the specific section information below.

4.3 Demolition & Enabling Works

Allowances for demolition and enabling works are now dispersed amongst the relevant station and alignment sections. Please refer to these sections for detailed assumptions and inclusions/exclusions.

4.4 Utility Diversions

Allowances for utility diversions are now dispersed amongst the relevant station and alignment sections. Please refer to these sections for detailed assumptions and inclusions/exclusions.

4.5 Britomart Station Alterations

Allowances for Britomart Station Alterations are now included in the alignment works under section 4.9

4.6 Aotea Station

Station Cost:	\$195,380,000 (refer 4.1)
Volume:	99,992m ³ (Note: Includes cut and cover tunnels across streets)
Station Length:	180m (i.e. 170m platform length + 5m each side for services)
Station Width:	23m
Station Depth:	18m
Station Type:	Cut and Cover Station

Our estimate of cost for cut and cover stations assume the following requirements:

- Demolition of existing hotel adjacent to Crown Plaza to provide temporary access to Crown Plaza basement for loading traffic including all associated reconfiguration works
- Demolition of other buildings positioned in station entrance locations and other sundry obstructions (i.e. retaining wall, loading bay portico, shop awnings, etc)
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access to the Crown Plaza and other buildings
- Underpinning and making good existing buildings adjacent to the heavy civil works activities (i.e. diaphragm retaining walls)
- Ground improvement works such as jet-grouting to form break out boxes North & South of Station box and to weak ground areas as located at Chainage 600 to 710 on Eastern bore.
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- The construction for enclosures to isolated and protect TBM backup operations
- Temporary hoardings and footpaths for pedestrian access
- Relocation/diversionary works of secondary connections branching off service mains
- Structural strengthening works to existing Orakei sewer main (based on grouting or bridging works)
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Breaking up existing roads and footpaths and laying a piling mat where required
- Bulk excavation work to reduce levels including disposal of spoil
- Spoil removal is by truck to tip site
- Backfilling with imported engineering fill

- Cast in situ concrete diaphragm retaining walls
- Tanking, drainage, ground monitoring and dewatering
- Reinstating roads, hard and soft landscaping on completion of the works
- Internal fit-out and finishing to high specification Metro standards
- Platform screens and automated doors
- Fire protection and suppression systems
- Automatic fare collection such as ticketing machines and gating
- Lifts & escalators
- Power, lighting and building management systems
- Mechanical HVAC to station and supply/exhaust extract to bored tunnels
- Security, communications and monitoring services
- Platform length is based on 8 x 20m car arrangement with 5m additional at each end of train
- Assumed that the thickness and weight of the base slab will resist hydrostatic pressure (Note: Tension pile anchors have not been allowed for)
- Assumes partial closure of Albert Street (i.e. reduce to 2 lanes). Station box will be completed in 2 halves.
- Costs assume use of vacant land in Council location for use as work site.
- Extension lengths beyond platform is based on assumed configurations for services and fire escapes to reach currently identified locations of vent shaft, emergency egress locations and entries
- Contractor's preliminary and general, overheads and profit

Please note that traffic management allowances are made in section 4.22.

4.7 Karangahape Road Station

Station Cost:	\$245,510,000 (refer 4.1)
Volume:	123,396m ³
Station Length:	180m (i.e. 170m platform length + 5m each end for services)
Station Width:	21.3m
Station Depth:	43.0m
Station Type:	Single Cavern Station

Our estimate of cost for single cavern stations assumes the following requirements:

- Demolition of buildings and other sundry obstructions
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- The construction for enclosures to isolated and protect TBM backup operations
- Temporary hoardings and footpaths for pedestrian access

- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Relocation/diversionary works of secondary connections branching off service mains
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Breaking up existing roads and footpaths and laying a piling mat where required
- Bulk excavation work to reduce levels including disposal of spoil
- Spoil removal is by truck to tip site
- Backfilling with imported engineering fill
- Cast in situ concrete diaphragm retaining walls in shaft construction (to head of cavern only)
- Shotcrete primary and secondary wall linings with rock-bolts in shaft construction (below cavern head)
- Underpinning and making good existing buildings adjacent to the heavy civil works activities (i.e. diaphragm retaining walls)
- Tanking, drainage, ground monitoring and dewatering
- Reinstating roads, hard and soft landscaping on completion of the works
- Formation of a underground mined cavern (See mined tunnel and cavern assumptions for further detail)
- Internal fit-out and finishing to high specification Metro standards
- Platform screens and automated doors
- Fire protection and suppression systems
- Automatic fare collection such as ticketing machines and gating
- Lifts & escalators
- Power, lighting and building management systems
- Mechanical HVAC to station and supply/exhaust extract to bored tunnels
- Security, communications and monitoring services
- Platform length is based on 8 x 20m car arrangement plus 5m at each end of train.
- Extension lengths beyond platform is based on assumed configurations for services and fire escapes.
- Contractor's preliminary and general, overheads and profit

4.8 Newton Station

Station Cost:	\$233,210,000 (refer 4.1)
Volume:	128,401m ³
Station Length:	180m (i.e. 170m platform length + 5m each end for services)
Station Width:	21.3m

Station Depth: 49.0m

Station Type: Single Cavern Station

Our estimate of cost for single cavern stations assumes the following requirements:

- Demolition of buildings and other sundry obstructions
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- The construction for enclosures to isolated and protect TBM backup operations
- Temporary hoardings and footpaths for pedestrian access
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Relocation/diversionary works of secondary connections branching off service mains
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Breaking up existing roads and footpaths and laying a piling mat where required
- Bulk excavation work to reduce levels including disposal of spoil
- Spoil removal is by truck to tip site
- Backfilling with imported engineering fill
- Cast in situ concrete diaphragm retaining walls in shaft construction (to head of cavern only)
- Shotcrete primary and secondary wall linings with rock-bolts in shaft construction (below cavern head)
- Underpinning and making good existing buildings adjacent to the heavy civil works activities (i.e. diaphragm retaining walls)
- Tanking, drainage, ground monitoring and dewatering
- Reinstating roads, hard and soft landscaping on completion of the works.
- Formation of a underground mined cavern (See mined tunnel and cavern assumptions for further detail)
- Internal fit-out and finishing to high specification Metro standards
- Platform screens and automated doors
- Fire protection and suppression systems
- Automatic fare collection such as ticketing machines and gating
- Lifts & escalators
- Power, lighting and building management systems
- Mechanical HVAC to station and supply/exhaust extract to bored tunnels
- Security, communications and monitoring services
- Platform length is based on 8 x 20m car arrangement plus 5m at each end of train.
- Extension lengths beyond platform is based on assumed configurations for services and fire escapes

- Contractor's preliminary and general, overheads and profit

Please note that traffic management allowances are made in section 4.22.

4.9 Britomart Station/CPO to TBM Reception Portal

Location	Section Type	Cost (NZD \$)	Chainage Frm (km)	Chainage To (km)	Distance (km)
Britomart Station/CPO	Cut & Cover Tunnel/Mined	\$37,430,000	0.000	0.100	0.100
Queen St/Westfield	Cut & Cover Tunnel	\$38,180,000	0.100	0.230	0.130
Westfield/Albert St	Cut & Cover Tunnel	\$46,690,000	0.230	0.390	0.160
	Total	\$122,300,000	-	-	0.390

Chainage 0.000 to 0.100 (100m) - Britomart Station/CPO - \$37,430,000:

Alignment assumptions for works under Britomart Station/CPO include:

- Combination of semi mined and cut and cover tunnelling type construction
- General demolition of sundry building obstructions
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Forming openings in existing CPO building to allow construction access for building tunnels under CPO including forming access for load transfer gantries
- Breakout of existing platform slab on track lines 1 & 5
- The provision of temporary access stairs to allow access to tenancy space at 1st floor level and to provide temporary platform access from glazed atrium
- Decommissioning and removing existing equipment and reinstating on completion (i.e. escalators, stairs, feature artwork, etc)
- Salvaging heritage artefacts and building elements and reinstating on completion of the works (i.e. mosaic tiling, etc)
- Hoarding off public spaces to separate from construction zones
- Demolition of the existing underground tunnel link between the CPO and the Westfield shopping centre
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Relocation/diversionary works of secondary connections branching off service mains
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Temporary propping and ground support during construction of the alignment tunnels

- Dewatering basement excavations including discharges to sediment settlement tanks
- Underpinning foundations of the existing CPO with micro-piles
- Reconfiguration of the existing station layout to suit construction activities and restoring back to operational standards on completion
- Reinstatement of the underground tunnel link to Westfield (within tunnel void)
- Temporary relocation of existing bus precinct at Britomart station. Assumed bus precinct is relocated to nearby location (within 1 km of current site)
- Maintaining rail operations during construction (Accessibility only. Not actual rail operations or loss of revenue, etc)
- Allowances for delayed productivity as a result of restricted working hours and working in confined spaces
- Load transfer frames and gantries to support existing structures
- Shotcrete primary & secondary linings supported by rock bolting
- Structures generally formed from cast insitu reinforced concrete (i.e. ground slab, roof slab, columns and beams, etc)
- Fire protection and suppression systems
- Automatic fare collection such as ticketing machines and gating
- Lifts & escalators
- Power, lighting and building management systems
- Mechanical HVAC to station and supply/exhaust extract to bored tunnels
- Security, communications and monitoring services
- Contractor's preliminary and general, overheads and profit

Chainage 0.100 to 0.230 (130m) - Queen St/Westfield - \$38,180,000:

Alignment assumptions for works under Queen Street and the Westfield Shopping Centre include:

- Cut & cover type tunnelling construction (refer to section 4.30 for typical inclusions)
- Demolition of existing Westfield building (Allowances include for pro-rata value of total demolition cost based on rail corridor area over site) and other sundry surface level structures
- Demolition of existing Britomart/Westfield tunnel link and lift
- Removal of existing transport services and bus shelters
- Underpinning works to corner of AMP building
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access

- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- The construction of a new Westfield/Britomart tunnel link (within the new cut and cover tunnel structure) and a emergency fire escape shaft from track level to street level
- Contractor's preliminary and general, overheads and profit

Please note that traffic management allowances are made in section 4.22.

Chainage 0.230 to 0.390 (160m) - Westfield/Albert St - \$46,690,000:

Alignment assumptions for works under Albert Street include:

- Cut & cover type tunnelling construction (refer to section 4.30 for typical inclusions)
- Tunnel ventilation building & equipment
- Emergency fire escape shaft
- General demolition of sundry building obstructions (i.e. shop awnings and street furniture, etc)
- Removal of existing transport services and bus shelters
- The demolition of the existing redundant pump station
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Ground improvement works such as jet-grouting to form a break out box at the North TBM portal
- Contractor's preliminary and general, overheads and profit

Please note that traffic management allowances are made in section 4.22.

4.10 TBM Reception Portal (North) to TBM Launch Portal (South)

Location	Section Type	Cost (NZD \$)	Chainage Frm (km)	Chainage To (km)	Distance (km)
TBM Reception Portal (North) to TBM Launch Portal (South)	Twin Bore Tunnel	\$205,900,000	0.390	2.925	2.535
	Total	\$205,900,000	-	-	2.535

Alignment assumptions for bored tunnelling works from TBM Reception Portal (North) to TBM Launch Portal (South) include:

- Twin bore tunnels (refer to section 4.28 for typical inclusions)
- Contractor's preliminary and general, overheads and profit

4.11 North Auckland Line Western Connection (Main Link)

Location	Section Type	Cost (NZD \$)	Chainage Frm (km)	Chainage To (km)	Distance (km)
Newton Industrial Area	SEM Tunnel	\$12,000,000	2.925	2.950	0.025
Newton Industrial Area	Cut & Cover Cross Over Box	\$28,600,000	2.950	3.000	0.050
Newton Industrial Area	Cut & Cover Tunnel (Type 4)	\$22,160,000	3.000	3.150	0.150
NAL West Portal	Retained Cut Section/Cut & Cover Tunnel (Type 3)	\$10,750,000	3.150	3.225	0.075
Porters Ave	Retained Cut Section (Type 2)	\$28,140,000	3.225	3.400	0.175
NAL West Link	Retained Cut Section (Type 1)	\$5,630,000	3.400	3.550	0.150
NAL West Link	Temporary Works	\$810,000	10.500	10.775	0.275
Total		\$108,090,000	-	-	0.900

Chainage 2.925 to 2.950 (25m) – Newton Industrial Area – Sequentially Excavated Mined (SEM) Tunnels - \$12,000,000:

Alignment assumptions for works under Newton Industrial Estate include:

- Twin SEM tunnels (refer to section 4.29 for typical inclusions)
- Contractor's preliminary and general, overheads and profit

Chainage 2.950 to 3.000 (50m) – Newton Industrial Area – Cut & Cover Cross Over Box - \$28,600,000:

Alignment assumptions for works under Newton Industrial Estate include:

- Cut & cover type box construction (refer to section 4.30 for typical inclusions)
- Tunnel ventilation building & equipment
- Emergency fire escape shaft
- Demolition of existing buildings located within Newton Industrial/Commercial zone (North of NAL)
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.000 to 3.150 (150m) – Newton Industrial Area – Cut & Cover Tunnel (Type 4) - \$22,160,000:

Alignment assumptions for works under Newton Industrial Estate include:

- Cut & cover type tunnel construction (refer to section 4.30 for typical inclusions)
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.150 to 3.225 (75m) – NAL West Portal – Retained Cut Section/Cut & Cover Tunnel (Type 3) - \$10,750,000:

Alignment assumptions for works under Newton Industrial Estate include:

- Cut & cover type tunnel construction (refer to section 4.30 for typical inclusions)
- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access

- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.225 to 3.400 (175m) – Porters Ave – Retained Cut Section (Type 2) - \$28,140,000:

Alignment assumptions for works adjacent to Porters Avenue include:

- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- Demolition of existing commercial and residential buildings located within construction zone
- New Porters Avenue Vehicle/Pedestrian bridge (Assumed 2 vehicle lanes and 1 pedestrian footpath)
- Temporary pedestrian bridge
- Allowances for reconfiguring roading network and signalling
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.400 to 3.550 (150m) – NAL West Link – Retained Cut Section (Type 1) - \$5,630,000:

Alignment assumptions for NAL West Link works include:

- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- Demolition of existing commercial buildings located within construction zone
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 10.500 to 10.775 (275m) – NAL West Link – Temporary Works - \$810,000:

Alignment assumptions for NAL West Link Temporary Works include:

- All temporary works required to keep the NAL operational during construction of the Auckland CBD Rail link tie-in including
 - Site clearance and excavation to reduce levels including removal of spoil
 - Imported engineering fill to suit track design levels
 - Precast concrete post and panel retaining walls
 - Temporary drainage services
 - Contractor's preliminary and general, overheads and profit

4.12 North Auckland Line Eastern Connection (Spur Off Western Link)

Location	Section Type	Cost (NZD \$)	Chainage Frm (km)	Chainage To (km)	Distance (km)
Newton Industrial Area	Cut & Cover Tunnel (Type 4)	\$20,810,000	3.000	3.125	0.125
Mt Eden Road	SEM Tunnel	\$31,990,000	3.125	3.225	0.100
NAL East Portal	Retained Cut Section/Cut & Cover Tunnel (Type 3)	\$30,950,000	3.225	3.375	0.150
Normanby Road	Retained Cut Section (Type 2)	\$27,790,000	3.375	3.560	0.185
NAL East Link	Retained Cut Section (Type 1)	\$5,990,000	3.560	3.710	0.150
NAL East Link	Temporary Works	\$2,860,000	10.075	10.475	0.400
Total		\$120,390,000	-	-	1.110

Chainage 3.000 to 3.125 (125m) – Newton Industrial Area – Cut & Cover Tunnel (Type 4) - \$20,810,000:

Alignment assumptions for works under Newton Industrial Estate include:

- Cut & cover type tunnel construction (refer to section 4.30 for typical inclusions)
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services

- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.125 to 3.225 (100m) – Mt Eden Road – Sequentially Excavated Mined (SEM) Tunnels - \$31,990,000:

Alignment assumptions for works under Mt Eden Road include:

- Single SEM tunnels (refer to section 4.29 for typical inclusions)
- Contractor's preliminary and general, overheads and profit

Chainage 3.225 to 3.375 (150m) – NAL East Portal – Retained Cut Section/Cut & Cover Tunnel (Type 3) - \$30,950,000:

Alignment assumptions for works near NAL East Portal include:

- Cut & cover type tunnel construction (refer to section 4.30 for typical inclusions)
- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- Demolition of existing commercial buildings located within construction zone
- New Mt Eden Vehicle/Pedestrian bridge (Assumed 4 vehicle lanes and 2 pedestrian footpaths)
- Emergency fire escape shaft
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.375 to 3.560 (185m) – Normanby Road – Retained Cut Section (Type 2) - \$27,790,000:

Alignment assumptions for works adjacent to Normanby Road include:

- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- New Normanby Road Vehicle/Pedestrian bridge (Assumed 2 vehicle lanes and 1 pedestrian footpath)
- Temporary pedestrian bridge

- Allowances for reconfiguring roading network and signalling
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 3.560 to 3.710 (150m) – NAL East Link – Retained Cut Section (Type 1) - \$5,990,000:

Alignment assumptions for NAL East Link works include:

- Retained cut trench construction (refer to section 4.31 for typical inclusions)
- Full diversion of existing electrical, communications, gas, storm/waste water drainage, water reticulation and transport services
- Environmental compliance works to mitigate noise, dust, vibration, & contamination
- Land owner accommodation works to maintain operating services and pedestrian/vehicle access
- Hoarding off public spaces to separate from construction zones
- Dewatering basement excavations including discharges to sediment settlement tanks
- Contractor's preliminary and general, overheads and profit

Chainage 10.075 to 10.475 (400m) – NAL East Link – Temporary Works - \$2,860,000:

Alignment assumptions for NAL East Link Temporary Works include:

- All temporary works required to keep the NAL operational during construction of the Auckland CBD Rail link tie-in including
 - Site clearance and excavation to reduce levels including removal of spoil
 - Imported engineering fill to suit track design levels
 - Precast concrete post and panel retaining walls
 - Temporary drainage services
 - Contractor's preliminary and general, overheads and profit

4.13 Track Works

Cost: \$34,350,000 (refer 4.1)

Key characteristics and assumptions for Track Works:

- Narrow track gauge of 1,067mm

- Embedded boot sleeper floating slab (EBSFS) track – Twin Track Length 1,000m
- Embedded boot sleeper (EBS) track – Twin Track Length 1,535m
- Standard slab track – Twin Track Length 1,065m
- Ballasted track – Twin Track Length 2,320m
- Floating track bed system in vibration and noise sensitive areas
- Stray current collection
- Derailment protection
- Diamond crossing and turnout switch gear equipment complete with closures, check rails, fittings & sleepers; points motors; points heating; tail cables & plug couplers, etc

4.14 Line Side Services

Cost: \$27,450,000 (refer 4.1)

Key characteristics and assumptions for Line Related Services:

- Electrical services such as low voltage distribution; earthing; general and emergency lighting; small power
- Allowances for containment and cable management
- Fire protection systems (i.e. fire alarms, internal hydrant & hose reel systems, fire extinguishers, etc)
- CCTV and PA systems
- Drainage lines and pump stations
- Contractor's preliminary and general, overheads and profit

4.15 Signalling

Cost: \$10,820,000 (refer 4.1)

Key characteristics and assumptions for Signalling:

- Our allowances for signalling include for a system that complies with the proposed operational headway requirements. This is achieved under a 'normal metro type' signalling system in the tunnels and by the drivers operating on 'line of sight' principles elsewhere.
- Signalling will be by Multiple Track CTC rules
- 2 signalling arrangements
- An ETCS level 1 system would be provided for arrangement 1
- An ETCS level 2 system or Level 1 + Infill would be required for arrangement 2
- Bi-directional signalling is required with some crossovers at Mt Eden
- Allowances for other special requirements (i.e. accurate train stopping for platform screen doors; leaky feeder cable for GSM-R & tunnel radio system, etc)
- Leaky feeder cable for GSM-R would already be provided for the tunnel radio system

- Allowances include for builders work in connection with the signalling installations (i.e. duct lines, location house sites, etc)
- Allowances include for design, testing and commissioning
- Allowances have been benchmarked from similar schemes on other Metro projects

4.16 Overhead Line Electrification (OLE)

Cost: \$10,730,000 (refer 4.1)

Key characteristics and assumptions for Overhead Line Electrification:

- The current collection system is by an overhead catenary system comprising:
- A overhead conductor rail arrangement in underground bored tunnel sections
- Catenary mast with single contact wire & feeder cables in cut and cover tunnels and above ground sections
- Contractor's preliminary and general, overheads and profit
- Allowances have been benchmarked from similar schemes on other Metro projects

4.17 Traction Power & HV/LV Reticulation

Cost: \$14,490,000 (refer 4.1)

Key characteristics and assumptions for Traction Power:

- Traction power is integrated into the existing network with the addition of 1 main feeder station located along the route at either the Transpower Hobson Street Sub Station or the Vector Sub Station near Quay Park.
- Feeder station allowances include for new 50m² building, transformers, cable feed, lineal rail network cable feeds and protection switchgear, etc.
- Allowances include for North Auckland Line tie-in
- The incoming high voltage power supply is based on a AC return current system
- Allowances include for Contractor's preliminary and general, overheads and profit

4.18 Supervisory Controls & Data Acquisition (SCADA)

Cost: \$10,000,000 (refer 4.1)

Key characteristics and assumptions for SCADA:

- A SCADA system that controls and monitors the traction power system.
- A ancillary SCADA system that monitors performance and controls fixed equipment at stops such as lighting, electrical supplies, lifts and escalators, ventilation fans, automatic fare collection, intrusion alarms, fire alarms, communication systems, etc. The ancillary SCADA system will also monitor equipment located at the depot and all services contained in the underground tunnels.

- All main SCADA control operating equipment is located at the Depot Control centre. Our allowances also include for local control terminals located at the stops.
- Our allowances for SCADA systems also include for integration with the Automatic Fare Collection Payment Mechanism System (PMS)
- Allowances have been benchmarked from similar schemes on other Metro projects

4.19 Automatic Fare Collection

Cost: \$8,000,000 (refer 4.1)

Allowances have been made for software integration of automatic fare collection systems back to the main control centre. Automatic fare collection hardware such as ticketing machines and gating are included in the station costs. Allowances have been benchmarked from similar schemes on other Metro projects

4.20 System Testing & Commissioning

Cost: \$10,000,000 (refer 4.1)

Allowances have been made in this estimate for testing and commissioning of the system for 6 months. Allowances have been benchmarked from similar schemes on other Metro projects

4.21 Tunnel Boring Machines & Support Equipment

Cost: \$27,120,000 (refer 4.1)

Diameter: 6.9m to outside face

Type: Earth Pressure Balance Machine

No. Required: 1 No.

Lead Time: 12 – 15 months from main contractor award.

Key characteristics and assumptions for TBM's:

- 10% buy-back option of the TBM purchase cost is noted but excluded from the cost allowance
- Logistical equipment such as tracked vehicles, conveyors, lighting, ventilation, Bentonite supply, etc is included in the Bored Tunnelling cost model
- Allowances for TBM's typically include for:

Main unit including main drive & sealing system, forward shell, rotary fluid joint, active and passive articulation systems, trailing belt conveyors, segment handling systems, trailing gantry, etc

TBM accessories such as TACS automatic guidance systems, ground conditioning and grout injection systems, grout tanks, auxiliary ventilation and ventilation cassette lifting systems; water hose reels, segment cars, etc

TBM grout plant including Colloidal mixer based grout plant, silo screw conveyor, peristaltic pumps, mixer dust collection systems, storage silos, civil, building and services infrastructure to support grout plant operations

Segmental lining equipment including segment forms, segment carousel system and handling machines, etc.

Testing, commissioning and training

Transportation of TBM's to New Zealand from overseas supplier

Assembly of TBM equipment on site

The supply of machine and cutter spares

4.22 Traffic Management

Cost: \$19,330,000 (refer 4.1)

Allowances have been made for inner city traffic management during the construction of stations, and tunnel portals (i.e. 5 No. primary locations). It is assumed that all costs associated with the wider traffic management leading into Auckland City will be borne by the respective Local Authorities.

4.23 Environmental Compliance

Allowances for Environmental Compliance works are now dispersed amongst the relevant station and alignment sections. Please refer to these sections for detailed assumptions and inclusions/exclusions.

4.24 Design, Planning, Project and Cost Management Fees

Cost: \$210,460,000

Design, planning, project and cost management fees have been allowed for in this estimate and have been calculated at a rate of 15% of the total construction cost of the project. This allowance is based on comparison with other large infrastructure projects such as Waterview. A resource demand has not been derived for this element. The split between design and management has been set at 7% and 8% respectively. Our allowances represent a cost to complete value for the project and excludes all effort spent to date in this study and up to funding approval and NOR lodgement.

4.25 Client Management Costs

Cost: \$56,980,000

Duration: 10 Years (i.e. 4 years procurement / 6 years construction)

Key characteristics and assumptions for Client Management Costs:

Client management costs have been allowed for in this estimate and have been calculated at a rate of approximately 4% of the total construction cost of the project which is derived

from a resource demand calculation as described in Appendix 1. Allowances for Client Management Costs typically include for resources such as:

- General Management Team
- Rail Systems Delivery Team
- Tunnel Boring Machine Delivery Team
- Construction & Infrastructure Delivery Team
- Commercial Management Team
- Health & Safety, Quality, Environmental Management team
- Planning Team
- Stakeholder Relations Team
- Project Office, Equipment and General Office Expenses

4.26 Property Acquisition – not updated – await Property Groups calculations

Cost: \$59,000,000

Land/property acquisition, temporary land take, land owner accommodation works; land owner and substrata lease compensation payments; property protection costs and the like are included as a 'below the line' cost to the project.

Our estimate also assumes the following:

- Land take sufficient to house full TBM logistics (i.e. such as storage of segmental linings, etc.) and support operations.
- That the entire Westfield site at Downtown Auckland is secured for the duration of construction.
- Purchase of property above the alignment in the Newton Gully (i.e. where piled structures cross bored tunnelling routes)
- Allowances are Net Property Cost
- Property Acquisition costs are based on the December 2005 Beca Peer Review Estimate figures

4.27 Risk/Contingency Allowance

Cost: \$236,527,500 - \$552,181,000

Please refer to section 2.6 'Contingency and Uncertainty Approach' for detailed commentary on contingency calculations and estimate basis

4.28 Bored Tunnels

Total Length: 2.535km
Diameter: 6.9m cut ground diameter
Arrangement: Twin-bore with a single track in each bore

Average Advance Rate: 8m/day

Our estimate of cost for bored tunnelling works assumes the following requirements:

- A ruling gradient of 3.5% due to the approximate 76m difference between Britomart and Newton Station
- Cross passages (generally allowed for at 240m centres between tunnels)
- Each bored tunnel contains 2 walkways (i.e. 1 for emergency escape & 1 for fireman access)
- TBM drives are from South to North
- Bored tunnelling works will be undertaken in 2 consecutive drives (i.e. 1 Eastern drive and 1 Western drive) and will commence from the cut and cover cross-over box/mined tunnelling sections located at Newton. Separate TBM launch/reception chambers have not been allowed for in this estimate.
- For the Eastern bore, the TBM will be launched in advance of the completed cavern stations located at Newton and K Road but will transition through the completed Aotea station box. On completion of the Eastern bore the TBM will be dismantled in sections and transported back to Newton for re-launch of the Western bore.
- For the Western bore the TBM will transition through semi-completed station caverns located at Newton and K Road and the completed Aotea station box.
- TBM maintenance will take place where transitioning through completed station sections
- Provisions have been made for in the Station cost allowances for TBM enclosure structures to protect and isolate TBM back-up operations.
- Solid rock ground conditions are assumed however allowances have been made for ground improvement works North of Aotea Station (Eastern bore only; Chainage 600 to 710; Refer to Aotea Station for cost allowances). It is also assumed that no ground improvement works are required underneath the North Western Motorway as previously envisaged
- Spoil removal will be by conveyor belt system (not track and locomotive system).
- Excavated material expected to be of clean quality.
- Spoil collection and removal will be from the Southern tunnel portal located at Newton Station.
- Spoil disposal site is within 50km radius of collection site.
- Spoil removal is by truck
- That the TBM will run under the existing piled foundations at Newton Gully
- Our allowances for bored tunnelling works assume the following:
 - Full underground mining team and surface site support team
 - All plant, equipment and small tools.
 - Tracked systems for moving precast concrete segments and equipment
 - All materials required to complete the works such as precast concrete tunnel rings, grout, plugs and sealants, etc.

Plant consumables such as power, water, electricity and fuel.

Temporary ventilation ducting.

Temporary lighting.

Forward probing and ground monitoring, dewatering.

Contractor's preliminary and general, overheads and profit

4.29 Sequentially Excavated Mined (SEM) Tunnels and Caverns

K Road Cavern: 1 x 180m long, 330m² face area, total volume approx 59,400m³

Newton Cavern: 1 x 180m long, 330m² face area, total volume approx 59,400m³

Mt Eden Tunnel: 1 x 100m long, 57m² face area, total volume approx 5,700m³

Newton Tunnels: 2 x 25m long, 64m² face area, total volume approx 3,200m³

Average Advance Rate: 3.5m/day (tunnels) – 1m/day (caverns)

- Solid rock ground conditions expected (assumed no ground improvement required)
- Excavated material expected to be of clean quality
- Spoil collection and removal will be from the Southern tunnel portal located at Newton
- Spoil disposal site is within 50km radius of collection site
- Spoil removal is by truck
- Allowances for mined tunnelling works assume the following:

Full underground mining team and surface site support team

All plant, equipment and small tools.

All materials required to complete the works such as canopy tubes, rock bolts, reinforcing steel, shotcrete primary linings, tanking membranes, lattice girders, insitu concrete secondary linings, tunnel forms, plugs and sealants, etc.

Consumables such as power, water, electricity and fuel

Temporary ventilation ducting, power & lighting

Forward probing and ground monitoring, dewatering during the works

Contractor's preliminary and general, overheads and profit

4.30 Cut and Cover Tunnels

Total Length: 940m

Width: Varies

Depth: Varies

Key characteristics and assumptions for Cut and Cover Tunnels:

- Cut and cover tunnels are of sufficient size to accommodate double track and passenger escape walkways each side. No allowance has been made for vehicle (other than trains) and pedestrian access through underpasses.
- We have assumed that the internal faces of concrete structures will remain unfinished.
- Our estimate of cost for cut and cover tunnels also assume:
 - Clearing site of organic material and vegetation
 - Breaking up existing roads and footpaths and laying a piling mat where required
 - Bulk excavation work to reduce levels including disposal of spoil
 - Backfilling with imported engineering fill
 - Cast in situ concrete diaphragm/secant/contiguous retaining walls with capping beams and guide walls, etc
 - Cast insitu, reinforced concrete ground slab
 - Intermediate cast insitu, reinforced concrete struts and slabs where required
 - Post tensioned, reinforced concrete beam and slab arrangement for roof slabs
 - Propping walls with structural steel sections
 - Tanking, drainage, ground monitoring & dewatering during the works
 - Reinstating roads, hard and soft landscaping on completion of the works
 - Contractor's preliminary and general, overheads and profit

4.31 Retained Cut (Open Cut) Sections

Total Length: 885m

Width: Varies

Depth: Varies

Key characteristics and assumptions for Retained Cut Sections:

- Retained cut sections are of sufficient size to accommodate double track and passenger escape walkways each side. No allowance has been made for vehicle (other than trains) and pedestrian access through underpasses.
- We have assumed that the internal faces of concrete structures will be finished with anti-graffiti applied finishes
- Our estimate of cost for retained cut sections also assume:

Clearing site of organic material and vegetation

Breaking up existing roads and footpaths and laying a piling mat where required

Bulk excavation work to reduce levels including disposal of spoil

Cast in situ concrete bored pile retaining walls with capping beams and guide walls, etc

Cast insitu, reinforced concrete ground slab

Reinstating roads, hard and soft landscaping on completion of the works

Contractor's preliminary and general, overheads and profit

4.32 Grade Level Sections

Total Length: 675m (NAL East & West Temporary Works)

Corridor Width: Varies

Key characteristics and assumptions for Grade Level Sections:

- The alignment will not deviate from the existing ground level by more than +/- 3.0m
- Minor demolition and site preparation works are required for the alignment running at-grade
- Our allowance for grade works typically include for:

Site clearance such as stripping organic material and topsoil to a depth of 300mm

Breaking up existing roads and footpaths and laying a piling mat where required

Excavating cuttings where the alignment is lower than the existing ground level

Filling in ditches with imported engineering grade fill

600mm of imported engineering grade fill (Note: 300mm thick for temporary track arrangements), compacted to form a prepared surface for track sections (Refer to track estimate for additional layers of fill and ballast)

Temporary/permanent 'post & panel' retaining works where required

The installation of new storm water drainage main running the length of the line

Temporary/permanent security fencing

Soft landscaping such as re-contouring levels, filling, drainage works, planting and grassing, etc

Hard landscaping such as re-contouring levels, filling, drainage works, footpaths, kerbs and channels, etc

Road works (minor - access roads) such as re-contouring levels, filling, bitumen seal, kerbs and channels, drainage works and road marking, etc

4.33 Contractors Preliminary and General / Off Site Overheads and Profit

Our allowances for P&G are based on fully resourced cost models which have been prepared in accordance with the proposed programme of works and adopted construction methodology.

For the purposes of calculating P&G/OH&P costs, we have allocated the physical works into working zones (derived by location) in anticipation of how the Building Contractor will manage the project. The working zones proposed is as detailed in the following table:

Cat	Location	Duration Years	P&G Cost \$m	P&G %	OH&P %
Zone 1	Britomart Connection	4.0	\$28.0m	35.8%	15.0%
Zone 2	Aotea Station	5.3	\$36.4m	27.3%	15.0%
Zone 3	K Road Station	4.5	\$32.8m	18.2%	15.0%
Zone 4	Newton Station	4.6	\$33.5m	19.8%	15.0%
Zone 5	NAL Connection (East & West)	4.0	\$30.0m	17.8%	15.0%
Zone 6	TBM Operations	4.4	\$26.0m	17.0%	15.0%
Other	Track, OLE, Signalling, Services, Traction Power, Traffic Management, etc	Varies	Varies	8-15%	5-8%

Key characteristics and assumptions for Preliminary and General / Off Site Overheads and Profit:

- Our estimate allowances for preliminary and general / off site overheads and profit include for all time related costs and fixed costs associated with delivering the building works.
- Allowances for P&G/OH&P have been benchmarked against standard industry levels for major civil projects.
- No management synergy between work sites. The current working logic assumes that each work zone will have 'independent' management and plant resources (i.e. resources are not shared) and does not take into consideration shared work activities across the project as a whole.
- Our estimate for preliminaries includes for:
 - Local Authority charges, Building Consents & Insurances
 - Site establishment, constructing access roads and erecting fencing, hoardings, staff accommodation, amenities furniture and equipment, etc
 - All staff required to complete the works such as construction management and administration
 - Staff transport
 - Temporary services such as power, water, telephones, drainage, etc
 - Consumable goods
 - Erection and dismantle of scaffolding
 - Security

Plant such as forklifts, hoists, dumpers, mobile cranes, concrete pumps, dewatering pumps and well points, and other sundry plant required to complete the works

5 Value Management Opportunities

The following value management opportunities have been identified through the Phase 2 design review meetings that would be explored in a subsequent phase:

- Run TBM's through to Westfield site to avoid disruption of Albert Street/Customs street traffic networks and utility services. This was discounted due to poor ground conditions. There is a minor probability that more detailed site investigations and design could identify a method to achieve this.
- Less underpinning works may be required under the AMP building (depending on alignment route). To be confirmed
- Use of car park near Crown Plaza (i.e. CNR of Albert Street and Victoria Street) as work site for Aotea Station
- Full closure of Albert Street and Symonds Street, south section, for a period to allow for a faster and more economic construction of the stations.
- Auckland CBD Rail Link and North Auckland Line connection reduced to single connection only (i.e. Not East & West connections as currently designed)
- Close Porters Avenue permanently and do not construct a bridge.
- Early procurement of TBM was considered but offers no advantage ahead of award of the main contract as a result of the advance works needed to be built prior to the TBM launch.
- Once more detailed geotechnical investigation is obtained and engineering analysis done it maybe possible to delete the 30m long mined TBM launch tunnels at Flower Street.
- Contractor management synergy between work sites to minimise working resource requirements and provide cost savings to the project. The current working logic assumes that each work zone will have 'independent' management and plant resources (i.e. resources are not shared) and does not take into consideration shared work activities across the project as a whole.

6 Estimate Exclusions

This estimate excludes the following:

- The construction of temporary traffic decks over Cut and Cover sections (i.e. Customs Street/Albert Street and Symonds Street, etc) is not required. Construction methodology is based on top down construction which negates the need for temporary traffic deck requirements.
- Temporarily bracing box/shaft walls with structural steel struts. It is assumed that the proposed construction methodology will negate the need for temporary strutting through construction of permanent bracing members as the works proceeds.

- Ground improvement works such as injected grouting into the soil strata under the North Western Motorway. Assumed that existing ground conditions are suitable for bored tunnelling works underneath Central Motorway Junction.
- Structural strengthening works to existing retaining walls adjacent to the North Western Motorway
- Compensatory grouting under buildings and general ground improvement works near the bored tunnelling and station locations (200m length in Newton Gully)
- The demolition of the existing Westfield building (demolition over rail corridor allowed for only)
- The demolition and removal of existing buildings (and piled structures) in the Newton Gully with piled foundations that cross the bored tunnelling route.
- Purpose built TBM Launch/Reception Chambers. It is assumed that the TBM's will be launched from the mined tunnels (North of the cross-over tunnel) and received at the Northern portal constructed within the cut and cover tunnel on Albert Street.
- Emergency Intervention Shafts: Line specific EIS only (station EIS are included in the station costs)
- Upgrade and extension works of the existing Depot/Control Centre and stabling facilities including, vehicle maintenance workshops, vehicle cleaning buildings, storage of maintenance equipment and spares, etc (assumed not part of this estimate)
- Rolling stock upgrade or fleet replacement (assumed not part of this estimate)
- The construction of park and ride facilities such as multi-storey or grade level park and ride facilities
- Remodelling of Quay Park Junction and re-routing of tracks from that location into Britomart
- Upgrade works of the wider existing network (assumed will proceed independently)
- Factoring of 3rd party development contributions
- All rail related operational costs
- Escalation
- Goods and Services Tax

7 Reference Documentation

The following documentation has been used to prepare this cost report:

- APB&B Auckland CBD Rail Link Study (Phase 2) – Concept Design Report, rev 3 – Volume 1 & 2 – (Draft 30 July 2010)
- APB&B Auckland CBD Rail Link Study - Phase 1 – Indicative Project Cost Estimate (Option 6c) Working Paper

APPENDIX A

CONCEPT DESIGN COST ESTIMATE

DRAFT

SUMMARY

Ref	Item Description	February 2010 Phase 1 Estimate						August 2010 Phase 2 Estimate						Comments	Difference P1 UB & P2 UB Total Cost (NZD \$)
		Lower Bound (LB)			Upper Bound (UB)			Lower Bound (LB)			Upper Bound (UB)				
		Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)		
1.00	Demolition & Enabling Works	26,000,000	30%	7,800,000	26,000,000	50%	13,000,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(26,000,000)
2.00	Utility Diversions	25,000,000	30%	7,500,000	25,000,000	50%	12,500,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(25,000,000)
3.00	Stations														
3.01	Britomart Station Alterations incl GPO underpinning	25,000,000	20%	5,000,000	25,000,000	40%	10,000,000	0	0%	0	0	0%	0	Now included in alignment costs	(25,000,000)
3.02	Aotea Station	200,000,000	20%	40,000,000	200,000,000	40%	80,000,000	195,380,000	15%	29,307,000	195,380,000	35%	68,383,000	Cut & Cover Station. Station Volume 99.992m3 (Note: Phase 1 Volume 126.525m3)	(4,620,000)
3.03	Karangahape Road Station	212,000,000	20%	42,400,000	212,000,000	40%	84,800,000	245,510,000	15%	36,826,500	245,510,000	35%	85,928,500	Single Cavern Station. Station Volume 123.396m3 (Note: Phase 1 Volume 125.800m3)	33,510,000
3.04	Newton Station	224,000,000	20%	44,800,000	224,000,000	40%	89,600,000	233,210,000	15%	34,981,500	233,210,000	35%	81,623,500	Single Cavern Station. Station Volume 128.401m3 (Note: Phase 1 Volume 134.016m3)	9,210,000
4.00	Alignment														
4.01	Britomart Station/CPO to TBM Reception Portal (North)	61,720,000	30%	18,516,000	61,720,000	50%	30,860,000	122,300,000	15%	18,345,000	122,300,000	35%	42,805,000	Alignment in mined/cut & cover tunnels	60,580,000
4.02	TBM Reception Portal (North) to TBM Launch Portal (South)	240,000,000	20%	48,000,000	240,000,000	40%	96,000,000	205,900,000	15%	30,885,000	205,900,000	35%	72,065,000	Alignment in twin bore tunnels	(34,100,000)
4.03	NAL Western Connection (Main Link)	119,590,000	24%	28,613,000	119,590,000	44%	52,531,000	108,090,000	15%	16,213,500	108,090,000	35%	37,831,500	Alignment in mined/cut & cover tunnels and retained cut sections	(11,500,000)
4.04	NAL Eastern Connection (Spur only off Western Link)	81,570,000	20%	16,705,000	81,570,000	40%	33,019,000	120,390,000	15%	18,058,500	120,390,000	35%	42,136,500	Alignment in mined/cut & cover tunnels and retained cut sections	38,820,000
5.00	Tracks Works	43,570,000	10%	4,357,000	43,570,000	30%	13,071,000	34,350,000	10%	3,435,000	34,350,000	25%	8,587,500	Combination of EBSFS, EBS, Standard Slab Track & Ballasted Track. See line costs for details	(9,220,000)
6.00	Line Side Services	24,362,000	20%	4,872,400	24,362,000	40%	9,744,800	27,450,000	15%	4,117,500	27,450,000	35%	9,607,500	Emergency lighting & signage; fire protection systems, CCTV, PA, drains & pumps, etc	3,088,000
7.00	Signalling	7,000,000	20%	1,400,000	7,000,000	40%	2,800,000	10,820,000	15%	1,623,000	10,820,000	35%	3,787,000	Allowance for signalling systems that comply with the proposed operational headways	3,820,000
8.00	Overhead Line Electrification (OLE)	9,040,000	10%	904,000	9,040,000	30%	2,712,000	10,730,000	10%	1,073,000	10,730,000	25%	2,682,500	Conductor rail & catenary mast OLE arrangement	1,690,000
9.00	Traction Power	10,000,000	20%	2,000,000	10,000,000	40%	4,000,000	14,490,000	15%	2,173,500	14,490,000	35%	5,071,500	Allowance for 1 No. feeder station incl. transformers, cable feeds & lineal rail network cable feeds	4,490,000
10.00	Supervisory Controls & Data Acquisition (SCADA)	10,000,000	30%	3,000,000	10,000,000	50%	5,000,000	10,000,000	25%	2,500,000	10,000,000	40%	4,000,000	Allowance for an ancillary SCADA system that monitors the performance and controls of all stop locations	0
11.00	Automatic Fare Collection	8,000,000	20%	1,600,000	8,000,000	40%	3,200,000	8,000,000	15%	1,200,000	8,000,000	35%	2,800,000	Integration of AFC systems to existing control centre only. Note: AFC hardware included in station cost	0
12.00	System Testing & Commissioning	10,000,000	20%	2,000,000	10,000,000	40%	4,000,000	10,000,000	15%	1,500,000	10,000,000	35%	3,500,000	Full systems testing & commissioning/trial operations for 6 months	0
13.00	Tunnel Boring Machines & Spares	54,000,000	10%	5,400,000	54,000,000	30%	16,200,000	27,120,000	10%	2,712,000	27,120,000	25%	6,780,000	Assumed 1 No. TBM's required.	(26,880,000)
14.00	Traffic Management	15,000,000	30%	4,500,000	15,000,000	50%	7,500,000	19,330,000	25%	4,832,500	19,330,000	40%	7,732,000	Allowance for Traffic Management to 5 No. primary locations.	4,330,000
15.00	Environmental Compliance	8,000,000	30%	2,400,000	8,000,000	50%	4,000,000	0	0%	0	0	0%	0	Now included in station and alignment costs	(8,000,000)
TOTAL CONSTRUCTION COST		1,413,852,000	-	291,767,400	1,413,852,000	-	574,537,800	1,403,070,000	-	209,783,500	1,403,070,000	-	485,321,000		(10,782,000)

SUMMARY

Ref	Item Description	February 2010 Phase 1 Estimate						August 2010 Phase 2 Estimate						Comments	Difference P1 UB & P2 UB Total Cost (NZD \$)
		Lower Bound (LB)			Upper Bound (UB)			Lower Bound (LB)			Upper Bound (UB)				
		Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)	Base Cost (NZD \$)	(%)	Contingency (NZD \$)		
16.00	Design, Planning, Project & Cost Management Fees	211,866,683	10%	21,186,668	211,866,683	30%	63,560,005	210,460,000	10%	21,046,000	210,460,000	25%	52,615,000	Calculated at approximately 15% of total construction cost (assumed 7% Design & 8% Management)	(1,406,683)
17.00	Client Management Costs	56,231,115	10%	5,623,111	56,231,115	30%	16,869,334	56,980,000	10%	5,698,000	56,980,000	25%	14,245,000	Full resource based estimate of client management costs through design, procurement, construction & commissioning	748,885
18.00	Building Consent Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Design, Planning, Project & Cost Management Fees	-
19.00	Resource Consent Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Design, Planning, Project & Cost Management Fees	-
20.00	Legal Fees	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
21.00	Project Insurances	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
22.00	Financing Costs	-	-	-	-	-	-	-	-	-	-	-	-	Included in Client Management Costs	-
BASE COST SUB-TOTAL		1,681,949,798	-	318,577,180	1,681,949,798	-	654,967,139	1,670,510,000	-	236,527,500	1,670,510,000	-	552,181,000		(11,439,798)
23.00	Contingency / Funding Risk	318,577,180	-	-	654,967,139	-	-	236,527,500	-	-	552,181,000	-	-		(102,786,139)
24.00	Escalation Allowances	-	-	-	-	-	-	-	-	-	-	-	-	Excluded	-
25.00	Goods & Services Tax	-	-	-	-	-	-	-	-	-	-	-	-	Excluded	-
GRAND TOTAL PROJECT COST (EXCL. PROPERTY)		2,000,526,978	-	-	2,336,916,937	-	-	1,907,037,500	-	-	2,222,691,000	-	-		(114,225,938)
PROPERTY COSTS - NET (ACQUISITION/SALE)		59,000,000	30%	17,700,000	59,000,000	50%	29,500,000	59,000,000	25%	14,750,000	59,000,000	40%	23,600,000		0
GRAND TOTAL PROJECT COST (INCL. PROPERTY)		2,077,226,978	-	-	2,425,416,937	-	-	1,980,787,500	-	-	2,305,291,000	-	-		(120,125,937)

BUSINESS CASE SENSITIVITIES

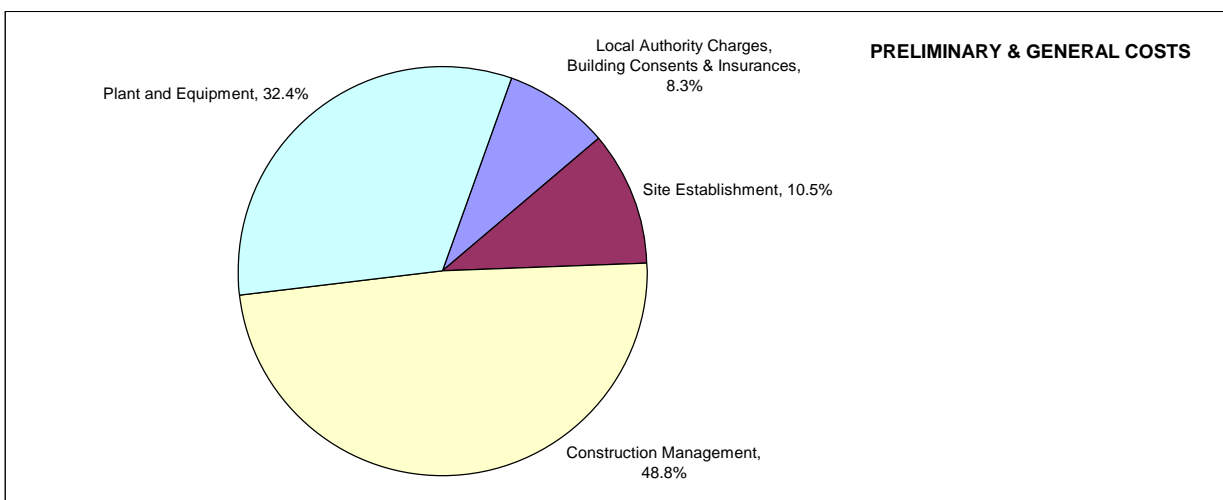
Ref	Item Description	Full Scheme with 150m Long Platforms	Full Scheme with 300mm Reduction in TBM Diameter	Reduce Station Entrance Requirements to Aotea, K Road & Newton	Postpone Construction of Eastern NAL Link	2 Station Scheme (Aotea & K Road Stations Only)	1 Station Scheme (Aotea Station Only)
		Total (NZD \$)	Total (NZD \$)	Total (NZD \$)	Total (NZD \$)	Total (NZD \$)	Total (NZD \$)
1.00	Base Estimate - Phase 2 Upper Bound (Including Property)	2,305,291,000	2,305,291,000	2,305,291,000	2,305,291,000	2,305,291,000	2,305,291,000
2.00	Demolition & Enabling Works	Included	Included	Included	Included	Included	Included
3.00	Utility Diversions	Included	Included	Included	Included	Included	Included
4.00	Britomart Station Alterations incl GPO underpinning	No Change	No Change	No Change	No Change	No Change	No Change
5.00	Aotea Station	(17,280,000)	No Change	(20,000,000)	No Change	No Change	No Change
6.00	Karangahape Road Station	(13,200,000)	No Change	(1,000,000)	No Change	No Change	(245,510,000)
7.00	Newton Station	(13,200,000)	No Change	(20,000,000)	No Change	(233,210,000)	(233,210,000)
8.00	Britomart Station/CPO to TBM Reception Portal (North)	No Change	No Change	No Change	No Change	No Change	No Change
9.00	TBM Reception Portal (North) to TBM Launch Portal (South)	5,700,000	(8,000,000)	No Change	No Change	17,100,000	34,200,000
10.00	NAL Western Connection (Main Link)	No Change	No Change	No Change	No Change	No Change	No Change
11.00	NAL Eastern Connection (Spur only off Western Link)	No Change	No Change	No Change	(120,390,000)	No Change	No Change
12.00	Tracks Works	No Change	No Change	No Change	(6,190,000)	No Change	No Change
13.00	Line Side Services	No Change	No Change	No Change	(4,430,000)	No Change	No Change
14.00	Signalling	No Change	No Change	No Change	(3,000,000)	(1,000,000)	(2,000,000)
15.00	Overhead Line Electrification (OLE)	No Change	No Change	No Change	(3,769,200)	No Change	No Change
16.00	Traction Power	No Change	No Change	No Change	(500,000)	No Change	No Change
17.00	Supervisory Controls & Data Acquisition (SCADA)	No Change	No Change	No Change	(1,000,000)	(1,000,000)	(2,000,000)
18.00	Automatic Fare Collection	No Change	No Change	No Change	No Change	(1,000,000)	(2,000,000)
19.00	System Testing & Commissioning	No Change	No Change	No Change	No Change	No Change	No Change
20.00	Tunnel Boring Machines & Spares	No Change	(3,000,000)	No Change	No Change	No Change	No Change
21.00	Traffic Management	No Change	No Change	No Change	(3,000,000)	(2,000,000)	(4,000,000)
22.00	Environmental Compliance	Included	Included	Included	Included	Included	Included
23.00	Other Identified Construction Work Requirements:	-	-	-	-	-	-
a	Emergency Services Intervention & Fire Escape Shaft (Deep) - Between Aotea Station & NAL Link	-	-	-	-	20,000,000	20,000,000
24.00	Design, Planning, Project & Cost Management Fees	(5,697,000)	(1,650,000)	(6,150,000)	(21,341,880)	(33,166,500)	(68,178,000)
25.00	Client Management Costs	(1,519,200)	(440,000)	(1,640,000)	(5,691,168)	(8,844,400)	(18,180,800)
26.00	Building Consent Fees	Included	Included	Included	Included	Included	Included
27.00	Resource Consent Fees	Included	Included	Included	Included	Included	Included
28.00	Legal Fees	Included	Included	Included	Included	Included	Included
29.00	Project Insurances	Included	Included	Included	Included	Included	Included
30.00	Financing Costs	Included	Included	Included	Included	Included	Included
31.00	Contingency / Funding Risk	(15,046,524)	(4,357,866)	(16,242,956)	(56,366,702)	(80,938,760)	(173,408,721)
32.00	Escalation Allowances	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
33.00	Goods & Services Tax	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
34.00	Property Costs	No Change	No Change	(20,000,000)	(13,107,833)	(13,107,833)	(26,215,667)
35.00	Rounding Adjustment	(48,277)	(3,134)	(8,044)	(4,217)	(3,507)	(7,813)
	Total	2,245,000,000	2,287,840,000	2,220,250,000	2,066,500,000	1,968,120,000	1,584,780,000
	Variance from Base Estimate	(60,291,000)	(17,451,000)	(85,041,000)	(238,791,001)	(337,171,000)	(720,511,000)

PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

A	Construction Cost Value (Measured Works)	\$133,460,000	NZD
B	Programme (Duration)	5.29	In Years
C	Programme (Duration)	63.50	In Months <input type="text" value="Input Duration Here"/>
D	Programme (Duration)	275.15	In Weeks
E	Total Estimated Value of Contractors Preliminary & General Costs	\$36,440,534	NZD
F	Approximate % Value of Construction Cost	27.30%	%
G	Maximum Number of Management & Support Personnel on Site	36	No.

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	3,036,120	8.3%	
1.01	Local Authority Charges & Building Consents	667,300	1.8%	
1.02	Notification of Work to Department of Labour	800,760	2.2%	
1.03	Insurances & Bonds	1,568,060	4.3%	
2.00	Site Establishment	3,829,298	10.5%	
2.01	Site Signage	13,000	0.0%	
2.02	Temporary Water, Plumbing and Drainage	65,935	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	758,950	2.1%	
2.04	Temporary Power & Lighting	462,150	1.3%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc	498,000	1.4%	
2.06	Site Accommodation	1,316,058	3.6%	
2.07	Office Furniture & Equipment	110,200	0.3%	
2.08	Security	605,006	1.7%	
3.00	Construction Management	17,780,787	48.8%	
3.01	Management Personnel	13,043,958	35.8%	
3.02	General Labour & Support Personnel	3,598,333	9.9%	
3.03	Vehicles	1,000,000	2.7%	
3.04	Protective Clothing & Accessories	17,140	0.0%	
3.05	Sundries & General Expenses	121,355	0.3%	
4.00	Plant and Equipment	11,794,328	32.4%	
4.01	Plant and Equipment	11,794,328	32.4%	
	Total	36,440,534	100.0%	



PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						667,300.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	133,460,000.00	LS	0.50%	667,300.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						800,760.00
a	Building Research Levy	100%	133,460,000.00	LS	0.10%	133,460.00	
b	Local Body Reserve Contribution	100%	133,460,000.00	LS	0.50%	667,300.00	
1.03	Insurances & Bonds						1,568,060.00
a	Contractors All Risk	100%	133,460,000.00	LS	0.80%	1,067,680.00	
b	Public Liability (\$5,000,000)	100%	133,460,000.00	LS	0.30%	400,380.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						65,934.75
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	275.15	Week	67.00	18,434.75	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						758,950.00
a	Telephone line connection fees	100%	1.00	LS	1,500.00	1,500.00	
b	Telephone rental (30 Lines)	100%	63.50	Month	1,200.00	76,200.00	
c	Telephone toll charges	100%	63.50	Month	3,000.00	190,500.00	
d	Fax line connection fees (3 Lines)	100%	1.00	LS	300.00	300.00	
e	Fax rental (3 Lines)	100%	63.50	Month	150.00	9,525.00	
f	Data line connection fees (30 Lines)	100%	1.00	LS	1,500.00	1,500.00	
g	Data rental (30 Lines)	100%	63.50	Month	1,500.00	95,250.00	
h	Cell phone charges	100%	63.50	Month	6,000.00	381,000.00	

PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	63.50	Month	50.00	3,175.00	
2.04	Temporary Power & Lighting						462,150.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	5.00	No	10,000.00	50,000.00	
d	Main Switch Board	100%	5.00	No	5,000.00	25,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	63.50	Month	2,000.00	127,000.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	63.50	Month	200.00	12,700.00	
l	Sundries	100%	63.50	Month	200.00	12,700.00	
m	Allowance for repairs	100%	63.50	Month	500.00	31,750.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						498,000.00
a	Footpaths	100%	800.00	m2	100.00	80,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	4.00	No	5,000.00	20,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	100%	1.00	LS	200,000.00	200,000.00	
j	Canopies	100%	200.00	m	200.00	40,000.00	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						1,316,058.20
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
f	Site Office 6 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	100%	275.15	Week	200.00	55,029.10	
l	Toilet Block 2 - (4 Pan Unit)	100%	275.15	Week	200.00	55,029.10	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
o	Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						110,200.00
a	Desks	100%	28.00	No	500.00	14,000.00	
b	Chairs	100%	28.00	No	150.00	4,200.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	3.00	No	5,000.00	15,000.00	
f	Computers	100%	28.00	No	1,500.00	42,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	3.00	No	500.00	1,500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						605,005.55
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	63.50	Month	200.00	12,700.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	275.15	Week	2,100.00	577,805.55	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						13,043,958.33
a	Commercial Manager	30%	5.29	Year	250,000.00	396,875.00	
b	Site Manager	100%	5.29	Year	220,000.00	1,164,166.67	
c	Project Manager (Senior)	100%	5.29	Year	180,000.00	952,500.00	
d	Project Managers (Intermediate)	50%	5.29	Year	100,000.00	264,583.33	
e	Project Managers (Graduate)	50%	5.29	Year	70,000.00	185,208.33	
f	Quantity Surveyor (Senior)	100%	5.29	Year	160,000.00	846,666.67	
g	Quantity Surveyors (Intermediate)	50%	5.29	Year	100,000.00	264,583.33	
h	Quantity Surveyors (Graduate)	50%	5.29	Year	70,000.00	185,208.33	
i	Services Engineer (Senior)	100%	5.29	Year	160,000.00	846,666.67	
j	Services Engineers (Intermediate)	50%	5.29	Year	100,000.00	264,583.33	
k	Services Engineers (Graduate)	50%	5.29	Year	70,000.00	185,208.33	
l	Construction Planner/Programmer	100%	5.29	Year	150,000.00	793,750.00	
m	Surveyor	50%	5.29	Year	150,000.00	396,875.00	
n	Construction Manager	100%	5.29	Year	150,000.00	793,750.00	
o	Construction Foreman 1	100%	5.29	Year	130,000.00	687,916.67	
p	Construction Foreman 2	100%	5.29	Year	130,000.00	687,916.67	
q	Construction Supervisor 1	100%	5.29	Year	120,000.00	635,000.00	
r	Construction Supervisor 2	100%	5.29	Year	120,000.00	635,000.00	
s	Services Manager	100%	5.29	Year	160,000.00	846,666.67	
t	Services Foreman	100%	5.29	Year	130,000.00	687,916.67	
u	Services Supervisor	100%	5.29	Year	120,000.00	635,000.00	
v	Health & Safety Officer	50%	5.29	Year	130,000.00	343,958.33	
w	Quality Control Manager	50%	5.29	Year	130,000.00	343,958.33	
3.02	General Labour & Support Personnel						3,598,333.33
a	General Labourer 1	100%	5.29	Year	50,000.00	264,583.33	
b	General Labourer 2	100%	5.29	Year	50,000.00	264,583.33	

PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

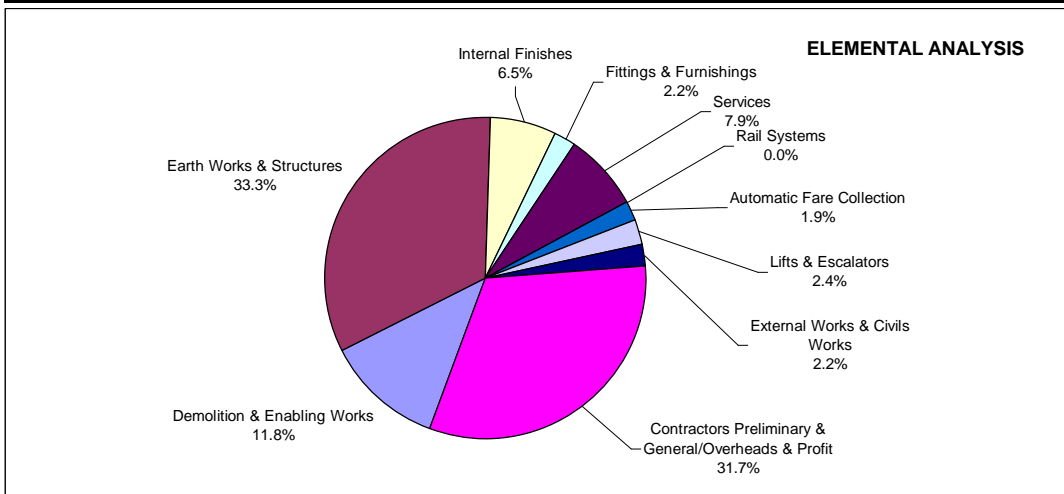
Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	5.29	Year	50,000.00	264,583.33	
d	General Labourer 4	100%	5.29	Year	50,000.00	264,583.33	
e	General Labourer 5	100%	5.29	Year	50,000.00	264,583.33	
f	Storeman	100%	5.29	Year	70,000.00	370,416.67	
g	Clerk of Works	100%	5.29	Year	100,000.00	529,166.67	
h	Traffic Supervisor	50%	5.29	Year	80,000.00	211,666.67	
i	Office Receptionist	100%	5.29	Year	40,000.00	211,666.67	
j	Secretary/PA	100%	5.29	Year	60,000.00	317,500.00	
k	General Office Administrator 1	100%	5.29	Year	40,000.00	211,666.67	
l	General Office Administrator 2	100%	5.29	Year	40,000.00	211,666.67	
m	General Office Administrator 3	100%	5.29	Year	40,000.00	211,666.67	
3.03	Vehicles						1,000,000.00
a	Lease car	100%	10.00	No.	35,000.00	350,000.00	
b	Lease station wagon	100%	6.00	No.	40,000.00	240,000.00	
c	Lease utility vehicle	100%	6.00	No.	50,000.00	300,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						17,140.00
a	Hard Hats	100%	36.00	No	100.00	3,600.00	
b	High visibility vests	100%	36.00	No	60.00	2,160.00	
c	Trousers	100%	36.00	No	80.00	2,880.00	
d	Boots	100%	36.00	No	200.00	7,200.00	
e	Sundries	100%	36.00	No	25.00	900.00	
f	First Aid Kits	100%	4.00	No	100.00	400.00	
3.05	Sundries & General Expenses						121,355.00
a	Petty cash	100%	63.50	Month	100.00	6,350.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	63.50	Month	100.00	6,350.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	63.50	Month	500.00	31,750.00	
e	Photographs	100%	63.50	Month	30.00	1,905.00	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						11,794,328.48
a	Mobile crane (100 tonne)	20%	275.15	Week	35,000.00	1,926,018.50	
b	Forklift	50%	275.15	Week	3,920.00	539,285.18	
c	Scissor platform	40%	275.15	Week	1,645.00	181,045.74	
d	Boom type platform	40%	275.15	Week	3,500.00	385,203.70	
e	Cheery Picker 1	40%	275.15	Week	1,750.00	192,601.85	
f	Cheery Picker 2	40%	275.15	Week	1,750.00	192,601.85	
g	Scaffolding (In place)	40%	275.15	Week	3,000.00	330,174.60	
h	Scaffolding (mobile)	40%	275.15	Week	1,000.00	110,058.20	
i	Dumper (6 ton 4 x 4)	50%	275.15	Week	6,160.00	847,448.14	
j	Road sweeper	25%	275.15	Week	6,160.00	423,724.07	
k	Concrete batching plant	50%	275.15	Week	2,500.00	343,931.88	

PRELIMINARY & GENERAL - ZONE 2 - AOTEA STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	275.15	Week	5,600.00	770,407.40	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	50%	64	Month	133,000.00	4,222,750.00	
q	Diesel bowser	100%	275.15	Week	1,000.00	275,145.50	
r	Temporary generator (100 kVA)	50%	275.15	Week	500.00	68,786.38	
s	Small tools allowance	50%	275.15	Week	500.00	68,786.38	
t	Skips	50%	275.15	Week	1,000.00	137,572.75	
u	Compressors	50%	275.15	Week	500.00	68,786.38	
	Total					36,440,533.64	36,440,533.64

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

SUMMARY OF COST		Value	Cost/Area	Cost/Volume	Total
Ref	Item Description	%	(NZD \$/m2)	(NZD \$/m3)	(NZD \$)
1.00	Demolition & Enabling Works	11.8%	1,710	231	23,120,000
1.01	Demolition & Enabling Works	8.0%	1,158	157	15,660,000
1.02	Utilities Diversions	3.8%	552	75	7,460,000
2.00	Earth Works & Structures	33.3%	4,808	650	65,020,000
2.01	Earth Works	5.2%	746	101	10,090,000
2.02	External Walls	10.3%	1,493	202	20,190,000
2.03	Ground Slab	2.6%	370	50	5,000,000
2.04	Columns	0.8%	121	16	1,630,000
2.05	Beams	3.2%	457	62	6,180,000
2.06	Upper Floors	3.9%	560	76	7,570,000
2.07	Roof Slab	2.4%	344	47	4,650,000
2.08	Internal Walls	0.4%	61	8	820,000
2.09	Stairs	0.2%	24	3	320,000
2.10	Internal Doors	0.3%	38	5	520,000
2.11	Surface Level Structures	4.1%	595	81	8,050,000
3.00	Internal Finishes	6.5%	933	126	12,610,000
3.01	Floor Finishes	1.4%	206	28	2,780,000
3.02	Wall Finishes	3.4%	496	67	6,710,000
3.03	Ceiling Finishes	1.6%	231	31	3,120,000
4.00	Fittings & Furnishings	2.2%	322	44	4,360,000
4.01	Fittings & Furnishings	2.2%	322	44	4,360,000
5.00	Services	7.9%	1,148	155	15,520,000
5.01	Tunnel & Trackway Ventilation	1.8%	253	34	3,420,000
5.02	Station HVAC	1.7%	242	33	3,270,000
5.03	Electrical Services	2.5%	367	50	4,960,000
5.04	Fire Protection Services	0.8%	111	15	1,500,000
5.05	Building Management Systems	0.3%	39	5	530,000
5.06	Communications Systems	0.4%	53	7	720,000
5.07	Security Systems	0.2%	32	4	430,000
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.2%	24	3	320,000
5.09	Drainage services	0.2%	27	4	370,000
6.00	Rail Systems	0.0%	0	0	0
6.01	Rail Systems	0.0%	0	0	0
7.00	Automatic Fare Collection	1.9%	277	38	3,750,000
7.01	Automatic Fare Collection	1.9%	277	38	3,750,000
8.00	Lifts & Escalators	2.4%	348	47	4,710,000
8.01	Lifts	0.9%	129	17	1,740,000
8.02	Escalators	1.5%	220	30	2,970,000
9.00	External Works & Civils Works	2.2%	323	44	4,370,000
9.01	External Works	0.5%	74	10	1,000,000
9.02	Civil Works	1.7%	249	34	3,370,000
10.00	Contractors Preliminary & General/Overheads & Profit	31.7%	4,579	619	61,920,000
10.01	Contractors Preliminary & General	18.7%	2,695	364	36,440,000
10.01	Contractors Overheads & Profit	13.0%	1,884	255	25,480,000
Total		100.0%	14,449	1,954	195,380,000



KEY METRIC DATA		Perimeter Length	Cross Section Area	Gross Floor Area	Height (to u/s slab)	Volume	Wall Area
Ref	Item Description	(m)	(m2)	(m2)	(m)	(m3)	(m2)
1.00	Roof Level	853	6,644	0	1.00	6,644	853
2.00	Concourse Level	853	6,644	5,654	7.00	46,508	5,971
3.00	Mezzanine Level	434	4,684	3,184	4.00	18,736	1,736
4.00	Platform Level	434	4,684	4,684	6.00	28,104	2,604
	Total	-	22,656	13,522	18.00	99,992	11,164

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)							
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						15,660,000.00
a	Allowance for other sundry demolition & enabling works to facilitate surface level penetrations	1.00	1	LS	250,000.00	250,000.00	
b	Demolish existing hotel adjacent to Crown Plaza	2,250.00	2,250	m2	100.00	225,000.00	
c	Demolish existing building CNR Victoria Street & Albert Street	1,350.00	1,350	m2	100.00	135,000.00	
d	Demolish existing building CNR Wellesley Street & Albert Street	1,350.00	1,350	m2	100.00	135,000.00	
e	Demolish Crown Plaza loading bay dock/portico	1,000.00	1,000	m2	50.00	50,000.00	
f	Demolish existing retaining wall adjacent Crown Plaza	1.00	1	LS	50,000.00	50,000.00	
g	Demolish existing shop awnings on Albert Street West	700.00	700	m2	50.00	35,000.00	
h	Construct temporary footpaths (East and West side of station)	2,000.00	2,000	m2	60.00	120,000.00	
i	Allowance for hoarding to construction zones including clip-on temporary canopies to Albert Street West	1.00	1	LS	200,000.00	200,000.00	
j	Allowance for monitoring adjacent buildings & carrying out remedial works where affected by diaphragm wall construction (4 No. buildings)	4.00	4	LS	500,000.00	2,000,000.00	
k	Construct temporary traffic ramp & remove on completion of the works (Street level to Crown Plaza Loading Bay)	450.00	450	m2	800.00	360,000.00	
l	Allowance for Crown Plaza basement/loading bay enabling works incl. forming of openings in structure & reconfiguration of access	1.00	1	LS	500,000.00	500,000.00	
m	Allowance for temporary deck to allow construction of Eastern D Walls	900.00	900	LS	700.00	630,000.00	
n	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
o	Injected grout, ground improvement works - TBM breakout box North (Box surround for TBMS only)	2,100.00	2,100	m3	600.00	1,260,000.00	
p	Injected grout, ground improvement works - TBM breakout box South (Box surround for TBMS only)	2,100.00	2,100	m3	600.00	1,260,000.00	
q	Injected grout, ground improvement works - Chainage 600 to 710 (Eastern bore only)	11,000.00	11,000	m3	600.00	6,600,000.00	
r	Construct temporary steel framed and plywood clad enclosed structure (To separate TBM operations from Station construction activities)	1,800.00	1,800	m2	500.00	900,000.00	
s	Allowance for traffic management	-	-	Month	-	Included elsewhere	
t	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
u	Allowance for land owner accommodation works	1.00	1	LS	250,000.00	250,000.00	
v	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						7,460,000.00
a	Allowance for services duct (Incorporated into station structure)	200.00	200	m	4,800.00	960,000.00	
b	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
c	Allowance for Communications Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
d	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
e	Allowance for Storm/Waste Water Drainage diversions & disconnections - Strengthening works to existing Orakei Sewer Main & Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	3,000,000.00	3,000,000.00	
f	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
g	Allowance for diversions of Transport Services	1.00	1	LS	500,000.00	500,000.00	
h	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						10,090,000.00
a	Break up existing roads & footpaths	6,644.00	6,644	m2	40.00	265,760.00	

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	Machine excavation in made ground	53,152.00	53,152	m3	35.00	1,860,320.00	
c	Machine excavation in soft rock	18,736.00	18,736	m3	35.00	655,760.00	
d	Machine excavation in hard rock	28,104.00	28,104	m3	100.00	2,810,400.00	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	94,992.40	94,993	m3	40.00	3,799,720.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	4,999.60	5,000	m3	90.00	450,000.00	
g	Imported engineering fill	3,322.00	3,322	m3	75.00	249,150.00	
h	Rounding adjustment	1.00	1	LS	-1,110.00	-1,110.00	
2.02	External Walls						20,190,000.00
a	300 x 900mm reinforced concrete guide wall	460.62	461	m3	1,984.50	914,854.50	
b	900mm thick, reinforced concrete diaphragm wall (Primary Wall)	12,350.70	12,351	m3	1,307.21	16,145,288.96	
c	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	256.61	257	tonne	4,500.00	Not Required	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	242.35	243	tonne	4,500.00	Not Required	
e	Allowance for bolted steel plate connections	49.90	50	tonne	7,000.00	Not Required	
f	Tanking/waterproof membranes	11,164.00	11,164	m2	100.00	1,116,400.00	
g	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Secondary Wall)	11,164.00	11,164	m2	180.00	2,009,520.00	
h	Rounding adjustment	1.00	1	LS	3,936.54	3,936.54	
2.03	Ground Slab						5,000,000.00
a	300mm thick, reinforced concrete blinding layer	1,405.20	1,406	m3	784.30	1,102,725.80	
b	Tanking/waterproof membranes	6,644.00	6,644	m2	100.00	664,400.00	
c	Tension pile anchors (assumed @ 2m grid centres)	-	-	No	230.00	Assumed Not Required	
d	700mm thick, reinforced concrete slab	3,278.80	3,279	m3	984.89	3,229,463.68	
e	Rounding adjustment	1.00	1	LS	3,410.52	3,410.52	
2.04	Columns						1,630,000.00
a	1,000 x 1,000mm reinforced concrete column	378.00	378	m3	2,093.00	791,154.00	
b	1,000 x 1,000mm reinforced concrete column (Temporary - To support roof slab)	144.00	144	m3	2,093.00	301,392.00	
c	1,500 x 900mm reinforced concrete column (Line of support for plantroom box)	72.90	73	m3	2,016.33	147,192.33	
d	1,000 x 1,000mm reinforced concrete column (Stub columns to support rail level slab - Assumed 5m grid centres)	187.36	188	m3	2,093.00	393,484.00	
e	Rounding adjustment	1.00	1	LS	-3,222.33	-3,222.33	
2.05	Beams						6,180,000.00
a	1,700 x 750mm post tensioned, reinforced concrete beam	1,071.00	1,071	m3	1,756.66	1,881,381.60	
b	1,000 x 1,000mm reinforced concrete beam	1,888.00	1,888	m3	2,274.70	4,294,633.60	
c	Rounding adjustment	1.00	1	LS	3,984.80	3,984.80	
2.06	Upper Floors						7,570,000.00
a	400mm thick, precast concrete floor system (solid flat slab) (Concourse level)	5,654.00	5,654	m2	500.00	2,827,000.00	
b	400mm thick, precast concrete floor system (solid flat slab) (Mezzanine level)	3,184.00	3,184	m2	500.00	1,592,000.00	
c	400mm thick, precast concrete floor system (solid flat slab) (Platform level - Platform slab)	1,980.00	1,980	m2	500.00	990,000.00	
d	450 DHC slab with 100mm thick, reinforced concrete topping slab (Rail level)	3,604.00	3,604	m2	600.00	2,162,400.00	
e	Rounding adjustment	1.00	1	LS	-1,400.00	-1,400.00	
2.07	Roof Slab						4,650,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab	6,644.00	6,644	m2	600.00	3,986,400.00	
b	Tanking/waterproof membranes	6,644.00	6,644	m2	100.00	664,400.00	
c	Rounding adjustment	1.00	1	LS	-800.00	-800.00	
2.08	Internal Walls						820,000.00
a	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Concourse level)	1,740.00	1,740	m2	180.00	313,200.00	
b	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Mezzanine level)	1,596.00	1,596	m2	180.00	287,280.00	

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Platform level)	1,232.00	1,232	m2	180.00	221,760.00	
d	Rounding adjustment	1.00	1	LS	-2,240.00	-2,240.00	
2.09	Stairs						320,000.00
a	250mm thick, reinforced concrete stairs & landings	121.00	121	m3	2,671.45	323,245.45	
b	Rounding adjustment	1.00	1	LS	-3,245.45	-3,245.45	
2.10	Internal Doors						520,000.00
a	Single FRR door (Concourse level)	16.00	16	No.	2,500.00	40,000.00	
b	Single FRR door (Mezzanine level)	10.00	10	No.	2,500.00	25,000.00	
c	Single FRR door (Platform level)	3.00	3	No.	2,500.00	7,500.00	
d	Double FRR door (Concourse level)	60.00	60	No.	4,500.00	270,000.00	
e	Double FRR door (Mezzanine level)	13.00	13	No.	4,500.00	58,500.00	
f	Double FRR door (Platform level)	27.00	27	No.	4,500.00	121,500.00	
g	Rounding adjustment	1.00	1	LS	-2,500.00	-2,500.00	
2.11	Surface Level Structures						8,050,000.00
a	Entry Building - Aotea Centre	260.00	260	m2	4,000.00	1,040,000.00	
b	Entry Building - Victoria Street	600.00	600	m2	4,000.00	2,400,000.00	
c	Stair Entry 1	56.00	56	m2	3,000.00	168,000.00	
d	Stair Entry 2	56.00	56	m2	3,000.00	168,000.00	
e	Stair Entry 3	56.00	56	m2	3,000.00	168,000.00	
f	Lift Entry 1	16.00	16	m2	3,000.00	48,000.00	
g	Service Building & Ventilation Shaft 1 - (Includes for 3 Levels up from GL)	1,260.00	1,260	m2	2,500.00	3,150,000.00	
h	Feature Skylight	14.00	14	No.	35,000.00	490,000.00	
i	Reinstate shop awnings on Albert Street West	700.00	700	m2	600.00	420,000.00	
j	Rounding adjustment	1.00	1	LS	-2,000.00	-2,000.00	
3.00	Internal Finishes						
3.01	Floor Finishes						2,780,000.00
a	Terrazzo floor finishes - 50% of GFA (FOH, high pedestrian traffic areas)	6,761.00	6,761	m2	350.00	2,366,350.00	
b	Anti-static carpet tiles - 20% of GFA (BOH, control room areas)	2,704.40	2,705	m2	100.00	270,500.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	4,056.60	4,057	m2	35.00	141,995.00	
d	Rounding adjustment	1.00	1	LS	1,155.00	1,155.00	
3.02	Wall Finishes						6,710,000.00
-	Total Internal Wall Area	20,300.00					
a	Pre-finished steel wall linings on proprietary steel framing - 50% of WA (FOH, high pedestrian traffic areas)	10,150.00	10,150	m2	600.00	6,090,000.00	
b	Plaster with painted finish - 20% of WA (BOH, control room areas)	4,060.00	4,060	m2	100.00	406,000.00	
c	Painted finish to exposed concrete surfaces - 30% of WA (BOH, plant room & fire escape areas)	6,090.00	6,090	m2	35.00	213,150.00	
d	Rounding adjustment	1.00	1	LS	850.00	850.00	
3.03	Ceiling Finishes						3,120,000.00
a	Steel framed suspended ceiling with profiled metal tiles - 50% of GFA (FOH, high pedestrian traffic areas)	6,761.00	6,761	m2	400.00	2,704,400.00	
b	Fibrous plaster suspended ceiling system - 20% of GFA (BOH, control room areas)	2,704.40	2,705	m2	100.00	270,500.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	4,056.60	4,057	m2	35.00	141,995.00	
d	Rounding adjustment	1.00	1	LS	3,105.00	3,105.00	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						4,360,000.00

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	Allowance for sundry furniture (i.e. barriers, bins, seating, notice boards, staff furniture, etc)	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for station & direction signage (illuminated)	13,522.00	13,522	m2	15.00	202,830.00	
c	Toughened glass platform partitioning with automated doors	1,020.00	1,020	m2	2,500.00	2,550,000.00	
d	Allowance for balustrades and handrails (assumed high specification, i.e. toughened glass with stainless steel frame members)	1.00	1	LS	350,000.00	350,000.00	
e	Stainless steel balustrades and handrails	264.00	264	m	500.00	132,000.00	
f	Stainless steel handrails and brackets fixed to wall	346.00	346	m	250.00	86,500.00	
g	Heavy duty aluminium stair treads	1,533.33	1,534	m	120.00	184,080.00	
h	Allowance for interior & exterior artwork	1.00	1	LS	500,000.00	500,000.00	
i	Rounding adjustment	1.00	1	LS	4,590.00	4,590.00	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						3,420,000.00
a	Saccardo nozzle & damper	4.00	4	No.	100,000.00	400,000.00	
b	1.8m dia station/tunnel ventilation fan - Supply (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
c	1.8m dia station/tunnel ventilation fan - Exhaust (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
d	1.8m dia station/tunnel ventilation fan - Supply/exhaust spare (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
e	Attenuator (Fire rated, 4.5m x 4.5m x 3m)	4.00	4	No.	75,000.00	300,000.00	
f	Exhaust grille (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
g	Damper - Exhaust stack (Fire rated, 15m2)	8.00	8	No.	50,000.00	400,000.00	
h	Damper - Draft relief (Fire rated, 15m2)	4.00	4	No.	50,000.00	200,000.00	
i	Damper - Tunnel exhaust (Fire rated, 10m2)	4.00	4	No.	30,000.00	120,000.00	
j	Damper (Fire rated, 5m2)	6.00	6	No.	15,000.00	90,000.00	
k	Register (Fire rated)	16.00	16	No.	7,500.00	120,000.00	
l	Allowance for pipework, ductwork & grilles, controls, interface with SCADA & BMS, etc	2,480,000.00	2,480,000	LS	30.0%	744,000.00	
m	Allowance for BWIC with installations	3,224,000.00	3,224,000	LS	5.0%	161,200.00	
n	Testing & commissioning	3,224,000.00	3,224,000	LS	1.0%	32,240.00	
o	Rounding adjustment	1.00	1	LS	2,560.00	2,560.00	
5.02	Station HVAC						3,270,000.00
a	CT1 & 2 - Cooling tower (975 KW)	2.00	2	No.	150,000.00	300,000.00	
b	CH1 & 2 - Chiller (750 KW - Assumed water cooled)	2.00	2	No.	350,000.00	700,000.00	
c	CHWP1 to 3 - Chilled water pumps (60 m3/h)	3.00	3	No.	5,000.00	15,000.00	
d	CWP1 to 3 - Cooled water pumps (100 m3/h)	3.00	3	No.	10,000.00	30,000.00	
e	AHU1 & 2 - Air handling unit (15 m3/s) - Public area supply	2.00	2	No.	195,000.00	390,000.00	
f	AHU3 & 4 - Air handling unit (20 m3/s) - Plant area supply	2.00	2	No.	260,000.00	520,000.00	
g	AHU5 & 6 - Air handling unit (0.5 m3/s) - Station accommodation supply	2.00	2	No.	10,000.00	20,000.00	
h	AHU7 & 8 - Air handling unit (0.2 m3/s) - Foul area supply	2.00	2	No.	5,000.00	10,000.00	
i	AHU9 & 10 - Air handling unit (0.3 m3/s) - Battery room supply	2.00	2	No.	7,000.00	14,000.00	
j	EXH1 & 2 - Fan unit (10 - 20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
k	EXH3 & 4 - Fan unit (20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
l	EXH5 & 6 - Fan unit (0.5 m3/s) - Station accommodation extract	2.00	2	No.	2,500.00	5,000.00	
m	EXH7 & 8 - Fan unit (0.2 m3/s) - Foul area extract	2.00	2	No.	2,000.00	4,000.00	
n	EXH9 & 10 - Fan unit (0.3 m3/s) - Battery room extract	2.00	2	No.	2,500.00	5,000.00	
o	SC1 & 2 - Fan unit (10 m3/s) - Staircase pressurisation (duty & standby)	4.00	4	No.	25,000.00	100,000.00	
p	CRAC1 & 2 - Air conditioning unit (25 kW cooling) - PSD computer room	2.00	2	No.	25,000.00	50,000.00	
q	FCU1 to 20 - Fan coil unit (130 L/s, 2kW cooling) - Staff accommodation	20.00	20	No.	2,500.00	50,000.00	

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
r	Allowance for pipework, ductwork, grilles & dampers	2,373,000.00	2,373,000	LS	30.0%	711,900.00	
s	Allowance for BWIC with installations	3,084,900.00	3,084,900	LS	5.0%	154,245.00	
t	Testing & commissioning	3,084,900.00	3,084,900	LS	1.0%	30,849.00	
u	Rounding adjustment	1.00	1	LS	6.00	6.00	
5.02	Electrical Services						4,960,000.00
a	Transformers	-	-	No.	-	Incl. in HV/LV Power Supply	
b	Ring Main	-	-	No.	-	Incl. in HV/LV Power Supply	
c	HV cabling	-	-	LS	-	Incl. in HV/LV Power Supply	
d	LV Switch Gear	-	-	No.	-	Incl. in HV/LV Power Supply	
e	Distribution boards	12.00	12	No.	20,000.00	240,000.00	
f	Mains cabling	12.00	12	No.	5,000.00	60,000.00	
g	UPS	1.00	1	No.	100,000.00	100,000.00	
h	Containment	13,522.00	13,522	m2	25.00	338,050.00	
i	Earthing cables	1.00	1	No.	20,000.00	20,000.00	
j	Change over panel (Evacuation lift)	4.00	4	No.	10,000.00	40,000.00	
k	Lift power supply	5.00	5	No.	4,000.00	20,000.00	
l	Escalator power supply	14.00	14	No.	4,000.00	56,000.00	
m	Ventilation fan power supply	5.00	5	No.	15,000.00	75,000.00	
n	Cooling tower power supply	2.00	2	No.	15,000.00	30,000.00	
o	Chiller power supply	2.00	2	No.	15,000.00	30,000.00	
p	Chilled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
q	Cooled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
r	Air handling unit power supply	10.00	10	No.	4,000.00	40,000.00	
s	Fan unit power supply	14.00	14	No.	4,000.00	56,000.00	
t	Air conditioning unit power supply	2.00	2	No.	4,000.00	8,000.00	
u	Fan coil unit power supply	20.00	20	No.	4,000.00	80,000.00	
v	Motorised platform door power supply	2.00	2	No.	4,000.00	8,000.00	
w	UPS power supply	1.00	1	No.	4,000.00	4,000.00	
x	Allowance for power supply to motorised drainage services	1.00	1	LS	10,000.00	10,000.00	
y	Allowance for power supply to fire protection services	1.00	1	LS	25,000.00	25,000.00	
z	Allowance for rail systems power supply (i.e. AFC, signalling, communications, etc)	1.00	1	LS	150,000.00	150,000.00	
aa	Small power	13,522.00	13,522	m2	50.00	676,100.00	
ab	Internal lighting - Front of house/public areas - 50% of GFA (High quality fittings)	6,761.00	6,761	m2	250.00	1,690,250.00	
ac	Internal lighting - Back of house/staff accommodation - 20% of GFA (Medium quality fittings)	2,704.40	2,705	m2	100.00	270,500.00	
ad	Internal lighting - Back of house/plant rooms - 30% of GFA (Standard plantroom quality fittings)	4,056.60	4,057	m2	80.00	324,560.00	
ae	Allowance for external lighting	1.00	1	LS	300,000.00	300,000.00	
af	Allowance for BWIC with installations	4,675,460.00	4,675,460	LS	5.0%	233,773.00	
ag	Testing & commissioning	4,675,460.00	4,675,460	LS	1.0%	46,754.60	
ah	Rounding adjustment	1.00	1	LS	4,012.40	4,012.40	
5.03	Fire Protection Services						1,500,000.00
a	Sprinkler systems	13,522.00	13,522	m2	60.00	811,320.00	
b	Smoke detection systems	13,522.00	13,522	m2	20.00	270,440.00	
c	Fire monitoring panels	13,522.00	13,522	m2	10.00	135,220.00	
d	Fire hydrants connected to mains	13,522.00	13,522	m2	15.00	202,830.00	
e	Allowance for BWIC with installations	1,419,810.00	1,419,810	LS	5.0%	70,990.50	

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
f	Testing & commissioning	1,419,810.00	1,419,810	LS	1.0%	14,198.10	
g	Rounding adjustment	1.00	1	LS	-4,998.60	-4,998.60	
5.04	Building Management Systems						530,000.00
a	Building management systems	1.00	1	LS	500,000.00	500,000.00	
b	Allowance for BWIC with installations	500,000.00	500,000	LS	5.0%	25,000.00	
c	Testing & commissioning	500,000.00	500,000	LS	1.0%	5,000.00	
d	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.05	Communications Systems						720,000.00
a	Communications systems	13,522.00	13,522	m2	50.00	676,100.00	
b	Allowance for BWIC with installations	676,100.00	676,100	LS	5.0%	33,805.00	
c	Testing & commissioning	676,100.00	676,100	LS	1.0%	6,761.00	
d	Rounding adjustment	1.00	1	LS	3,334.00	3,334.00	
5.06	Security Systems						430,000.00
a	Security systems	13,522.00	13,522	m2	30.00	405,660.00	
b	Allowance for BWIC with installations	405,660.00	405,660	LS	5.0%	20,283.00	
c	Testing & commissioning	405,660.00	405,660	LS	1.0%	4,056.60	
d	Rounding adjustment	1.00	1	LS	0.40	0.40	
5.07	Hydraulics/Sanitary Plumbing & Fittings						320,000.00
a	Hydraulics/sanitary plumbing & fittings	1.00	1	LS	300,000.00	300,000.00	
b	Allowance for BWIC with installations	300,000.00	300,000	LS	5.0%	15,000.00	
c	Testing & commissioning	300,000.00	300,000	LS	1.0%	3,000.00	
d	Rounding adjustment	1.00	1	LS	2,000.00	2,000.00	
5.08	Drainage services						370,000.00
a	Drainage services	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for BWIC with installations	350,000.00	350,000	LS	5.0%	17,500.00	
c	Testing & commissioning	350,000.00	350,000	LS	1.0%	3,500.00	
d	Rounding adjustment	1.00	1	LS	-1,000.00	-1,000.00	
6.00	Rail Systems						0.00
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						3,750,000.00
7.01	Automatic Fare Collection						3,750,000.00
a	Ticket vending machine	12.00	12	No.	85,000.00	1,020,000.00	
b	Gate line end stanchion	6.00	6	No.	85,000.00	510,000.00	
c	Gate line intermediate stanchion	12.00	12	No.	119,000.00	1,428,000.00	
d	Manually operated stanchion	3.00	3	No.	25,500.00	76,500.00	
e	Allowance for interface to BMS & Control Centre	1.00	1	LS	500,000.00	500,000.00	

CH782 TO CH964 - AOTEA STATION (DEEP CUT & COVER TYPE)

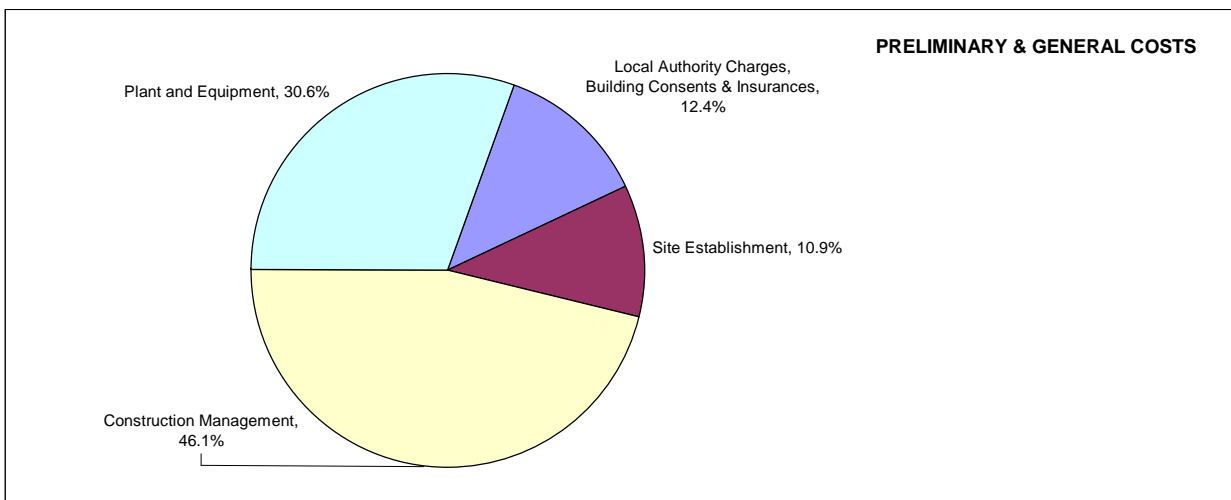
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
f	Allowance for BWIC with installations	3,534,500.00	3,534,500	LS	5.0%	176,725.00	
g	Testing & commissioning	3,534,500.00	3,534,500	LS	1.0%	35,345.00	
h	Rounding adjustment	1.00	1	LS	3,430.00	3,430.00	
8.00	Lifts & Escalators						
8.01	Lifts						1,740,000.00
a	Fire fighting lift (27 person)	2.00	2	No.	256,000.00	512,000.00	
b	Passenger lift (17 person)	-	-	No.	243,000.00	-	
c	Passenger lift (27 person)	3.00	3	No.	375,000.00	1,125,000.00	
d	Passenger lift (40 person)	-	-	No.	450,000.00	-	
e	Allowance for BWIC with installations	1,637,000.00	1,637,000	LS	5.0%	81,850.00	
f	Testing & commissioning	1,637,000.00	1,637,000	LS	1.0%	16,370.00	
g	Rounding adjustment	1.00	1	LS	4,780.00	4,780.00	
8.02	Escalators						2,970,000.00
a	Escalators (Conventional type)	14.00	14	No.	200,000.00	2,800,000.00	
b	Allowance for BWIC with installations	2,800,000.00	2,800,000	LS	5.0%	140,000.00	
c	Testing & commissioning	2,800,000.00	2,800,000	LS	1.0%	28,000.00	
d	Rounding adjustment	1.00	1	LS	2,000.00	2,000.00	
9.00	External Works & Civils Works						
9.01	External Works						1,000,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	-	-	m2	50.00	-	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	4,900.00	4,900	m2	200.00	980,000.00	
c	Rounding adjustment	1.00	1	LS	20,000.00	20,000.00	
9.02	Civil Works						3,370,000.00
a	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	-	-	m2	300.00	-	
b	Road works (major - main roads & highways) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	8,400.00	8,400	m2	400.00	3,360,000.00	
c	Rounding adjustment	1.00	1	LS	10,000.00	10,000.00	
10.00	Contractors Preliminary & General/Overheads & Profit						
10.01	Contractors Preliminary & General						36,440,000.00
a	Contractors preliminary & general	133,460,000.00	133,460,000	LS	27.3%	36,440,533.64	
b	Rounding adjustment	1.00	1	LS	-533.64	-533.64	
10.02	Contractors Overheads & Profit						25,480,000.00
a	Contractors overheads & profit	169,900,000.00	169,900,001	LS	15.0%	25,485,000.15	
b	Rounding adjustment	1.00	1	LS	-5,000.15	-5,000.15	
	Total					195,380,000.00	195,380,000.00

PRELIMINARY & GENERAL - ZONE 3 - KARANGAHAPE ROAD STATION

A	Construction Cost Value (Measured Works)	\$180,670,000	NZD
B	Programme (Duration)	4.45	In Years
C	Programme (Duration)	53.45	In Months <input type="text" value="Input Duration Here"/>
D	Programme (Duration)	231.60	In Weeks
E	Total Estimated Value of Contractors Preliminary & General Costs	\$32,821,054	NZD
F	Approximate % Value of Construction Cost	18.17%	%
G	Maximum Number of Management & Support Personnel on Site	36	No.

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	4,074,740	12.4%	
1.01	Local Authority Charges & Building Consents	903,350	2.8%	
1.02	Notification of Work to Department of Labour	1,084,020	3.3%	
1.03	Insurances & Bonds	2,087,370	6.4%	
2.00	Site Establishment	3,566,764	10.9%	
2.01	Site Signage	13,000	0.0%	
2.02	Temporary Water, Plumbing and Drainage	63,017	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	639,355	1.9%	
2.04	Temporary Power & Lighting	433,005	1.3%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc	498,000	1.5%	
2.06	Site Accommodation	1,298,640	4.0%	
2.07	Office Furniture & Equipment	110,200	0.3%	
2.08	Security	511,548	1.6%	
3.00	Construction Management	15,139,513	46.1%	
3.01	Management Personnel	10,979,521	33.5%	
3.02	General Labour & Support Personnel	3,028,833	9.2%	
3.03	Vehicles	1,000,000	3.0%	
3.04	Protective Clothing & Accessories	17,140	0.1%	
3.05	Sundries & General Expenses	114,019	0.3%	
4.00	Plant and Equipment	10,040,037	30.6%	
4.01	Plant and Equipment	10,040,037	30.6%	
	Total	32,821,054	100.0%	



PRELIMINARY & GENERAL - ZONE 3 - KARANGAHAPE ROAD STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						903,350.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	180,670,000.00	LS	0.50%	903,350.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						1,084,020.00
a	Building Research Levy	100%	180,670,000.00	LS	0.10%	180,670.00	
b	Local Body Reserve Contribution	100%	180,670,000.00	LS	0.50%	903,350.00	
1.03	Insurances & Bonds						2,087,370.00
a	Contractors All Risk	100%	180,670,000.00	LS	0.80%	1,445,360.00	
b	Public Liability (\$5,000,000)	100%	180,670,000.00	LS	0.30%	542,010.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						63,017.12
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	231.60	Week	67.00	15,517.12	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						639,355.00
a	Telephone line connection fees	100%	1.00	LS	1,500.00	1,500.00	
b	Telephone rental (30 Lines)	100%	53.45	Month	1,200.00	64,140.00	
c	Telephone toll charges	100%	53.45	Month	3,000.00	160,350.00	
d	Fax line connection fees (3 Lines)	100%	1.00	LS	300.00	300.00	
e	Fax rental (3 Lines)	100%	53.45	Month	150.00	8,017.50	
f	Data line connection fees (30 Lines)	100%	1.00	LS	1,500.00	1,500.00	
g	Data rental (30 Lines)	100%	53.45	Month	1,500.00	80,175.00	
h	Cell phone charges	100%	53.45	Month	6,000.00	320,700.00	

PRELIMINARY & GENERAL - ZONE 3 - KARANGAHAPE ROAD STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	53.45	Month	50.00	2,672.50	
2.04	Temporary Power & Lighting						433,005.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	5.00	No	10,000.00	50,000.00	
d	Main Switch Board	100%	5.00	No	5,000.00	25,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	53.45	Month	2,000.00	106,900.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	53.45	Month	200.00	10,690.00	
l	Sundries	100%	53.45	Month	200.00	10,690.00	
m	Allowance for repairs	100%	53.45	Month	500.00	26,725.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						498,000.00
a	Footpaths	100%	800.00	m2	100.00	80,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	4.00	No	5,000.00	20,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	100%	1.00	LS	200,000.00	200,000.00	
j	Canopies	100%	200.00	m	200.00	40,000.00	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						1,298,639.54
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
f	Site Office 6 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	100%	231.60	Week	200.00	46,319.77	
l	Toilet Block 2 - (4 Pan Unit)	100%	231.60	Week	200.00	46,319.77	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 3 - KARANGAHAPE ROAD STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
	o Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						110,200.00
a	Desks	100%	28.00	No	500.00	14,000.00	
b	Chairs	100%	28.00	No	150.00	4,200.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	3.00	No	5,000.00	15,000.00	
f	Computers	100%	28.00	No	1,500.00	42,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	3.00	No	500.00	1,500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						511,547.59
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	53.45	Month	200.00	10,690.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	231.60	Week	2,100.00	486,357.59	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						10,979,520.83
a	Commercial Manager	30%	4.45	Year	250,000.00	334,062.50	
b	Site Manager	100%	4.45	Year	220,000.00	979,916.67	
c	Project Manager (Senior)	100%	4.45	Year	180,000.00	801,750.00	
d	Project Managers (Intermediate)	50%	4.45	Year	100,000.00	222,708.33	
e	Project Managers (Graduate)	50%	4.45	Year	70,000.00	155,895.83	
f	Quantity Surveyor (Senior)	100%	4.45	Year	160,000.00	712,666.67	
g	Quantity Surveyors (Intermediate)	50%	4.45	Year	100,000.00	222,708.33	
h	Quantity Surveyors (Graduate)	50%	4.45	Year	70,000.00	155,895.83	
i	Services Engineer (Senior)	100%	4.45	Year	160,000.00	712,666.67	
j	Services Engineers (Intermediate)	50%	4.45	Year	100,000.00	222,708.33	
k	Services Engineers (Graduate)	50%	4.45	Year	70,000.00	155,895.83	
l	Construction Planner/Programmer	100%	4.45	Year	150,000.00	668,125.00	
m	Surveyor	50%	4.45	Year	150,000.00	334,062.50	
n	Construction Manager	100%	4.45	Year	150,000.00	668,125.00	
o	Construction Foreman 1	100%	4.45	Year	130,000.00	579,041.67	
p	Construction Foreman 2	100%	4.45	Year	130,000.00	579,041.67	
q	Construction Supervisor 1	100%	4.45	Year	120,000.00	534,500.00	
r	Construction Supervisor 2	100%	4.45	Year	120,000.00	534,500.00	
s	Services Manager	100%	4.45	Year	160,000.00	712,666.67	
t	Services Foreman	100%	4.45	Year	130,000.00	579,041.67	
u	Services Supervisor	100%	4.45	Year	120,000.00	534,500.00	
v	Health & Safety Officer	50%	4.45	Year	130,000.00	289,520.83	
w	Quality Control Manager	50%	4.45	Year	130,000.00	289,520.83	
3.02	General Labour & Support Personnel						3,028,833.33
a	General Labourer 1	100%	4.45	Year	50,000.00	222,708.33	
b	General Labourer 2	100%	4.45	Year	50,000.00	222,708.33	

PRELIMINARY & GENERAL - ZONE 3 - KARANGHAPE ROAD STATION

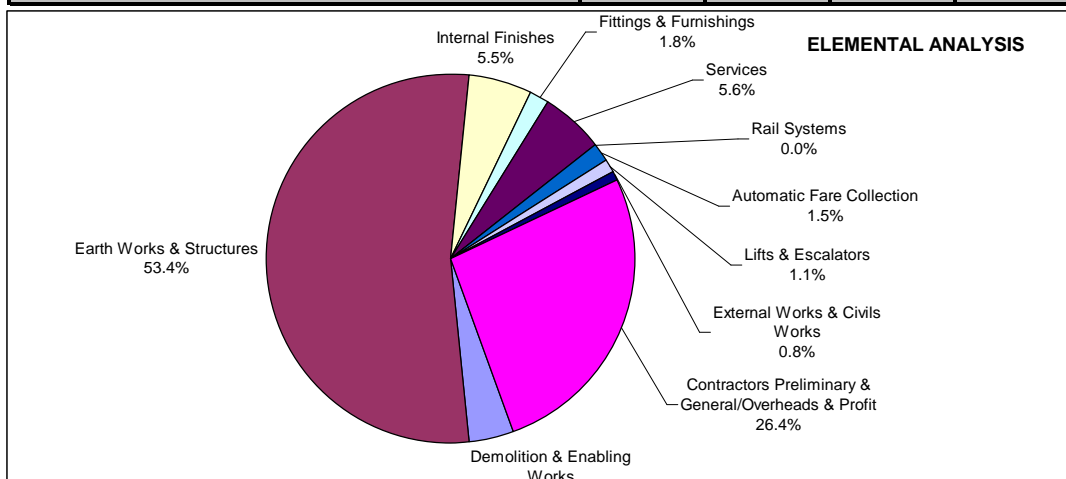
Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	4.45	Year	50,000.00	222,708.33	
d	General Labourer 4	100%	4.45	Year	50,000.00	222,708.33	
e	General Labourer 5	100%	4.45	Year	50,000.00	222,708.33	
f	Storeman	100%	4.45	Year	70,000.00	311,791.67	
g	Clerk of Works	100%	4.45	Year	100,000.00	445,416.67	
h	Traffic Supervisor	50%	4.45	Year	80,000.00	178,166.67	
i	Office Receptionist	100%	4.45	Year	40,000.00	178,166.67	
j	Secretary/PA	100%	4.45	Year	60,000.00	267,250.00	
k	General Office Administrator 1	100%	4.45	Year	40,000.00	178,166.67	
l	General Office Administrator 2	100%	4.45	Year	40,000.00	178,166.67	
m	General Office Administrator 3	100%	4.45	Year	40,000.00	178,166.67	
3.03	Vehicles						1,000,000.00
a	Lease car	100%	10.00	No.	35,000.00	350,000.00	
b	Lease station wagon	100%	6.00	No.	40,000.00	240,000.00	
c	Lease utility vehicle	100%	6.00	No.	50,000.00	300,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						17,140.00
a	Hard Hats	100%	36.00	No	100.00	3,600.00	
b	High visibility vests	100%	36.00	No	60.00	2,160.00	
c	Trousers	100%	36.00	No	80.00	2,880.00	
d	Boots	100%	36.00	No	200.00	7,200.00	
e	Sundries	100%	36.00	No	25.00	900.00	
f	First Aid Kits	100%	4.00	No	100.00	400.00	
3.05	Sundries & General Expenses						114,018.50
a	Petty cash	100%	53.45	Month	100.00	5,345.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	53.45	Month	100.00	5,345.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	53.45	Month	500.00	26,725.00	
e	Photographs	100%	53.45	Month	30.00	1,603.50	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						10,040,037.12
a	Mobile crane (100 tonne)	20%	231.60	Week	35,000.00	1,621,191.95	
b	Forklift	50%	231.60	Week	3,920.00	453,933.75	
c	Scissor platform	40%	231.60	Week	1,645.00	152,392.04	
d	Boom type platform	40%	231.60	Week	3,500.00	324,238.39	
e	Cheery Picker 1	40%	231.60	Week	1,750.00	162,119.20	
f	Cheery Picker 2	40%	231.60	Week	1,750.00	162,119.20	
g	Scaffolding (In place)	40%	231.60	Week	3,000.00	277,918.62	
h	Scaffolding (mobile)	40%	231.60	Week	1,000.00	92,639.54	
i	Dumper (6 ton 4 x 4)	50%	231.60	Week	6,160.00	713,324.46	
j	Road sweeper	25%	231.60	Week	6,160.00	356,662.23	
k	Concrete batching plant	50%	231.60	Week	2,500.00	289,498.56	

PRELIMINARY & GENERAL - ZONE 3 - KARANGAHAPE ROAD STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	231.60	Week	5,600.00	648,476.78	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	50%	53	Month	133,000.00	3,554,425.00	
q	Diesel bowser	100%	231.60	Week	1,000.00	231,598.85	
r	Temporary generator (100 kVA)	50%	231.60	Week	500.00	57,899.71	
s	Small tools allowance	50%	231.60	Week	500.00	57,899.71	
t	Skips	50%	231.60	Week	1,000.00	115,799.43	
u	Compressors	50%	231.60	Week	500.00	57,899.71	
	Total					32,821,054.04	32,821,054.04

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

SUMMARY OF COST		Value	Cost/Area	Cost/Volume	Total
Ref	Item Description	%	(NZD \$/m2)	(NZD \$/m3)	(NZD \$)
1.00	Demolition & Enabling Works	3.8%	989	76	9,360,000
1.01	Demolition & Enabling Works	2.0%	514	39	4,860,000
1.02	Utilities Diversions	1.8%	476	36	4,500,000
2.00	Earth Works & Structures	53.4%	13,865	1,063	131,150,000
2.01	Caverns, Tunnels, Adits (Mined Construction Works)	36.5%	9,463	725	89,510,000
2.02	Earth Works	4.4%	1,147	88	10,850,000
2.03	External Walls	5.0%	1,301	100	12,310,000
2.04	Ground Slab	1.0%	265	20	2,510,000
2.05	Columns	0.4%	97	7	920,000
2.06	Beams	0.8%	216	17	2,040,000
2.07	Upper Floors	2.0%	512	39	4,840,000
2.08	Roof Slab	0.6%	155	12	1,470,000
2.09	Internal Walls	0.3%	87	7	820,000
2.10	Stairs	0.2%	51	4	480,000
2.11	Internal Doors	0.2%	55	4	520,000
2.12	Surface Level Structures	2.0%	516	40	4,880,000
3.00	Internal Finishes	5.5%	1,431	110	13,540,000
3.01	Floor Finishes	0.8%	205	16	1,940,000
3.02	Wall Finishes	3.8%	996	76	9,420,000
3.03	Ceiling Finishes	0.9%	230	18	2,180,000
4.00	Fittings & Furnishings	1.8%	469	36	4,440,000
4.01	Fittings & Furnishings	1.8%	469	36	4,440,000
5.00	Services	5.6%	1,442	111	13,640,000
5.01	Tunnel & Trackway Ventilation	1.4%	362	28	3,420,000
5.02	Station HVAC	1.3%	346	27	3,270,000
5.03	Electrical Services	1.6%	410	31	3,880,000
5.04	Fire Protection Services	0.4%	111	9	1,050,000
5.05	Building Management Systems	0.2%	56	4	530,000
5.06	Communications Systems	0.2%	53	4	500,000
5.07	Security Systems	0.1%	32	2	300,000
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.1%	34	3	320,000
5.09	Drainage services	0.2%	39	3	370,000
6.00	Rail Systems	0.0%	0	0	0
6.01	Rail Systems	0.0%	0	0	0
7.00	Automatic Fare Collection	1.5%	396	30	3,750,000
7.01	Automatic Fare Collection	1.5%	396	30	3,750,000
8.00	Lifts & Escalators	1.1%	295	23	2,790,000
8.01	Lifts	0.3%	71	5	670,000
8.02	Escalators	0.9%	224	17	2,120,000
9.00	External Works & Civils Works	0.8%	211	16	2,000,000
9.01	External Works	0.4%	106	8	1,000,000
9.02	Civil Works	0.4%	106	8	1,000,000
10.00	Contractors Preliminary & General/Overheads & Profit	26.4%	6,855	525	64,840,000
10.01	Contractors Preliminary & General	13.4%	3,470	266	32,820,000
10.01	Contractors Overheads & Profit	13.0%	3,385	259	32,020,000
Total		100.0%	25,954	1,990	245,510,000



KEY METRIC DATA		Perimeter Length	Cross Section Area	Gross Floor Area	Height (to u/s slab)	Volume	Wall Area
Ref	Item Description	(m)	(m2)	(m2)	(m)	(m3)	(m2)
1.00	Roof Level	301	2,093	0	3.00	6,279	903
2.00	Shaft/Tunnel - Concourse/Emergency Escape	301	2,093	2,093	11.00	23,023	3,311
3.00	Shaft - Concourse/Mezzanine Level	168	1,168	1,168	14.00	16,352	2,352
4.00	Shaft - Platform Level	168	1,168	1,168	7.00	8,176	1,176
5.00	Shaft - Basement Level	146	682	682	8.00	5,456	1,168
6.00	Ventilation/Access/Emergency Escape Adit	-	384	384	-	8,064	-
7.00	Mined Cavern	-	3,964	3,964	-	56,046	-
	Total	-	11,552	9,459	43.00	123,396	8,910

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						4,860,000.00
a	Allowance for sundry demolition & enabling works to facilitate surface level penetrations	1.00	1	LS	200,000.00	200,000.00	
b	Demolish existing building CNR Karangahape Road & Pitt Street	1,350.00	1,350	m2	100.00	135,000.00	
c	Demolish existing building adjacent to Hopetown Carpark	900.00	900	m3	100.00	90,000.00	
d	Allowance for structural strengthening and underpinning works to existing Masonry Buildings (Adjacent Beresford Square)	5.00	5	LS	500,000.00	2,500,000.00	
e	Construct temporary footpaths	500.00	500	m2	60.00	30,000.00	
f	Allowance for hoarding to construction zones	1.00	1	LS	50,000.00	50,000.00	
g	Construct temporary steel framed and plywood clad enclosed structure (To separate TBM operations from Station construction activities)	1,800.00	1,800	m2	500.00	900,000.00	
h	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
i	Allowance for traffic management	-	-	Month	-	Included elsewhere	
j	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
k	Allowance for land owner accommodation works	1.00	1	LS	250,000.00	250,000.00	
l	Allowance for temporary steel framed/reinforced concrete traffic bridge	-	-	m2	3,000.00	Not Required	
m	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						4,500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
f	Allowance for diversions of Transport Services	1.00	1	LS	500,000.00	500,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Caverns, Tunnels, Adits (Mined Construction Works)						89,510,000.00
a	Main Platform Cavern (Refer to SEM Cavern Cost Model for Allowances)	56,045.60	56,046	m3	1,396.14	78,248,147.47	
b	Ventilation/Access/Emergency Escape Adits (Refer to SEM Cavern Cost Model for Allowances)	8,064.00	8,064	m3	1,396.14	11,258,485.19	
c	Rounding adjustment	1.00	1	LS	3,367.33	3,367.33	
2.02	Earth Works						10,850,000.00
a	Break up existing roads & footpaths	2,093.00	2,093	m2	40.00	83,720.00	
b	Machine excavation to reduce levels (in made ground)	6,279.00	6,279	m3	70.00	439,530.00	
c	Machine excavation to reduce levels (in soft rock)	23,023.00	23,023	m3	70.00	1,611,610.00	
d	Machine excavation to reduce levels (in hard rock)	29,984.00	29,984	m3	200.00	5,996,800.00	

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	56,321.70	56,322	m3	40.00	2,252,880.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	2,964.30	2,965	m3	90.00	266,850.00	
g	Cavern spoil disposal is included in cavern construction costs	-	-	Note	-	-	
h	Imported engineering fill	2,666.00	2,666	m3	75.00	199,950.00	
i	Rounding adjustment	1.00	1	LS	-1,340.00	-1,340.00	
2.03	External Walls						12,310,000.00
a	300 x 900mm reinforced concrete guide wall	162.54	163	m3	1,984.50	323,473.50	
b	900mm thick, reinforced concrete diaphragm wall (Primary Wall)	5,909.40	5,910	m3	1,307.21	7,725,581.55	
c	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	225.72	226	tonne	4,500.00	Not Required	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	237.60	238	tonne	4,500.00	Not Required	
e	Allowance for bolted steel plate connections	46.33	47	tonne	7,000.00	Not Required	
f	Tanking/waterproof membranes	6,566.00	6,566	m2	100.00	656,600.00	
g	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Secondary Wall)	6,566.00	6,566	m2	180.00	1,181,880.00	
h	300mm thick, fibre reinforced shotcrete wall	703.20	704	m3	924.00	650,496.00	
i	32mm dia rock bolts 8m (L) @ 3.0m horizontal crs & 3.0m vertical crs	2,083.56	2,084	m	170.00	354,280.00	
j	Tanking/waterproof membranes	2,344.00	2,344	m2	100.00	234,400.00	
k	300mm thick, cast insitu reinforced concrete wall	703.20	704	m3	1,679.58	1,182,420.80	
l	Cavern external walls is included in cavern construction costs	-	-	Note	-	-	
m	Rounding adjustment	1.00	1	LS	868.15	868.15	
2.04	Ground Slab						2,510,000.00
a	300mm thick, reinforced concrete blinding layer	627.90	628	m3	784.30	492,540.40	
b	Tanking/waterproof membranes	2,093.00	2,093	m2	100.00	209,300.00	
c	Tension pile anchors (assumed @ 2m grid centres)	-	-	No	230.00	Assumed not required	
d	700mm thick, reinforced concrete slab	1,465.10	1,466	m3	984.89	1,443,852.93	
e	Cavern ground slab is included in cavern construction costs	-	-	Note	-	-	
f	500mm thick, reinforced concrete side platforms	450.00	450	m3	799.48	359,766.00	
g	Rounding adjustment	1.00	1	LS	4,540.67	4,540.67	
2.05	Columns						920,000.00
a	600mm dia, reinforced concrete circular column	274.82	275	m3	2,049.30	563,557.50	
b	750mm dia, reinforced concrete circular column	198.80	199	m3	1,796.30	357,463.70	
c	Rounding adjustment	1.00	1	LS	-1,021.20	-1,021.20	
2.06	Beams						2,040,000.00
a	750mm dia precast, reinforced concrete strut (In Shaft)	185.54	186	m3	1,016.60	189,087.60	
b	750 x 600mm cast insitu, reinforced concrete beams (Generally)	616.50	617	m3	2,095.43	1,292,878.94	
c	1,700 x 750mm post tensioned, reinforced concrete beam (Roof Level)	-	-	m3	1,756.66	Not Required	
d	1,800 x 850mm post tensioned, reinforced concrete beam (Mezzanine Transfer Level)	302.66	303	m3	1,848.63	560,133.38	
e	Rounding adjustment	1.00	1	LS	-2,099.91	-2,099.91	
2.07	Upper Floors						4,840,000.00
a	400mm thick, precast concrete floor system (solid flat slab) (1st Landing Level)	333.00	333	m2	500.00	166,500.00	
b	400mm thick, precast concrete floor system (solid flat slab) (Concourse/Mezzanine Level)	2,768.00	2,768	m2	500.00	1,384,000.00	
c	400mm thick, precast concrete floor system (solid flat slab) (Platform Level)	3,069.00	3,069	m2	500.00	1,534,500.00	
d	400mm thick, precast concrete floor system (solid flat slab) (Basement Level)	3,519.00	3,519	m2	500.00	1,759,500.00	
e	Rounding adjustment	1.00	1	LS	-4,500.00	-4,500.00	
2.08	Roof Slab						1,470,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab	2,093.00	2,093	m2	600.00	1,255,800.00	
b	Tanking/waterproof membranes	2,093.00	2,093	m2	100.00	209,300.00	

CH1742 TO CH1923 - KARANGHAPE ROAD STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	Rounding adjustment	1.00	1	LS	4,900.00	4,900.00	
2.09	Internal Walls						820,000.00
a	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Concourse level)	1,740.00	1,740	m2	180.00	313,200.00	
b	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Mezzanine level)	1,596.00	1,596	m2	180.00	287,280.00	
c	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Platform level)	1,232.00	1,232	m2	180.00	221,760.00	
d	Rounding adjustment	1.00	1	LS	-2,240.00	-2,240.00	
2.10	Stairs						480,000.00
a	250mm thick, reinforced concrete stairs & landings	180.00	180	m3	2,671.45	480,861.00	
b	Rounding adjustment	1.00	1	LS	-861.00	-861.00	
2.11	Internal Doors						520,000.00
a	Single FRR door (Concourse level)	16.00	16	No.	2,500.00	40,000.00	
b	Single FRR door (Mezzanine level)	10.00	10	No.	2,500.00	25,000.00	
c	Single FRR door (Platform level)	3.00	3	No.	2,500.00	7,500.00	
d	Double FRR door (Concourse level)	60.00	60	No.	4,500.00	270,000.00	
e	Double FRR door (Mezzanine level)	13.00	13	No.	4,500.00	58,500.00	
f	Double FRR door (Platform level)	27.00	27	No.	4,500.00	121,500.00	
g	Rounding adjustment	1.00	1	LS	-2,500.00	-2,500.00	
2.12	Surface Level Structures						4,880,000.00
a	Station Entry	986.00	986	m2	4,000.00	3,944,000.00	
b	Services Building; Ventilation Shafts & Emergency Egress	374.00	374	m2	2,500.00	935,000.00	
c	Rounding adjustment	1.00	1	LS	1,000.00	1,000.00	
3.00	Internal Finishes						
3.01	Floor Finishes						1,940,000.00
a	Terrazzo floor finishes - 50% of GFA (FOH, high pedestrian traffic areas)	4,729.70	4,730	m2	350.00	1,655,500.00	
b	Anti-static carpet tiles - 20% of GFA (BOH, control room areas)	1,891.88	1,892	m2	100.00	189,200.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	2,837.82	2,838	m2	35.00	99,330.00	
d	Rounding adjustment	1.00	1	LS	-4,030.00	-4,030.00	
3.02	Wall Finishes						9,420,000.00
-	Total Internal Wall Area	28,496.00					
a	Pre-finished steel wall linings on proprietary steel framing - 50% of WA (FOH, high pedestrian traffic areas)	14,248.00	14,248	m2	600.00	8,548,800.00	
b	Plaster with painted finish - 20% of WA (BOH, control room areas)	5,699.20	5,700	m2	100.00	570,000.00	
c	Painted finish to exposed concrete surfaces - 30% of WA (BOH, plant room & fire escape areas)	8,548.80	8,549	m2	35.00	299,215.00	
d	Rounding adjustment	1.00	1	LS	1,985.00	1,985.00	
3.03	Ceiling Finishes						2,180,000.00
a	Steel framed suspended ceiling with profiled metal tiles - 50% of GFA (FOH, high pedestrian traffic areas)	4,729.70	4,730	m2	400.00	1,892,000.00	
b	Fibrous plaster suspended ceiling system - 20% of GFA (BOH, control room areas)	1,891.88	1,892	m2	100.00	189,200.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	2,837.82	2,838	m2	35.00	99,330.00	
d	Rounding adjustment	1.00	1	LS	-530.00	-530.00	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						4,440,000.00
a	Allowance for sundry furniture (i.e. barriers, bins, seating, notice boards, staff furniture, etc)	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for station & direction signage (illuminated)	9,459.40	9,460	m2	15.00	141,900.00	
c	Toughened glass platform partitioning with automated doors	1,020.00	1,020	m2	2,500.00	2,550,000.00	

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
d	Allowance for balustrades and handrails (assumed high specification, i.e. toughened glass with stainless steel frame members)	1.00	1	LS	500,000.00	500,000.00	
e	Stainless steel balustrades and handrails	258.00	258	m	500.00	129,000.00	
f	Stainless steel handrails and brackets fixed to wall	602.00	602	m	250.00	150,500.00	
g	Heavy duty aluminium stair treads	956.00	956	m	120.00	114,720.00	
h	Allowance for interior & exterior artwork	1.00	1	LS	500,000.00	500,000.00	
i	Rounding adjustment	1.00	1	LS	3,880.00	3,880.00	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						3,420,000.00
a	Saccardo nozzle & damper	4.00	4	No.	100,000.00	400,000.00	
b	1.8m dia station/tunnel ventilation fan - Supply (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
c	1.8m dia station/tunnel ventilation fan - Exhaust (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
d	1.8m dia station/tunnel ventilation fan - Supply/exhaust spare (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
e	Attenuator (Fire rated, 4.5m x 4.5m x 3m)	4.00	4	No.	75,000.00	300,000.00	
f	Exhaust grille (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
g	Damper - Exhaust stack (Fire rated, 15m2)	8.00	8	No.	50,000.00	400,000.00	
h	Damper - Draft relief (Fire rated, 15m2)	4.00	4	No.	50,000.00	200,000.00	
i	Damper - Tunnel exhaust (Fire rated, 10m2)	4.00	4	No.	30,000.00	120,000.00	
j	Damper (Fire rated, 5m2)	6.00	6	No.	15,000.00	90,000.00	
k	Register (Fire rated)	16.00	16	No.	7,500.00	120,000.00	
l	Allowance for pipework, ductwork & grilles, controls, interface with SCADA & BMS, etc	2,480,000.00	2,480,000	LS	30.0%	744,000.00	
m	Allowance for BWIC with installations	3,224,000.00	3,224,000	LS	5.0%	161,200.00	
n	Testing & commissioning	3,224,000.00	3,224,000	LS	1.0%	32,240.00	
o	Rounding adjustment	1.00	1	LS	2,560.00	2,560.00	
5.02	Station HVAC						3,270,000.00
a	CT1 & 2 - Cooling tower (975 KW)	2.00	2	No.	150,000.00	300,000.00	
b	CH1 & 2 - Chiller (750 KW - Assumed water cooled)	2.00	2	No.	350,000.00	700,000.00	
c	CHWP1 to 3 - Chilled water pumps (60 m3/h)	3.00	3	No.	5,000.00	15,000.00	
d	CWP1 to 3 - Cooled water pumps (100 m3/h)	3.00	3	No.	10,000.00	30,000.00	
e	AHU1 & 2 - Air handling unit (15 m3/s) - Public area supply	2.00	2	No.	195,000.00	390,000.00	
f	AHU3 & 4 - Air handling unit (20 m3/s) - Plant area supply	2.00	2	No.	260,000.00	520,000.00	
g	AHU5 & 6 - Air handling unit (0.5 m3/s) - Station accommodation supply	2.00	2	No.	10,000.00	20,000.00	
h	AHU7 & 8 - Air handling unit (0.2 m3/s) - Foul area supply	2.00	2	No.	5,000.00	10,000.00	
i	AHU9 & 10 - Air handling unit (0.3 m3/s) - Battery room supply	2.00	2	No.	7,000.00	14,000.00	
j	EXH1 & 2 - Fan unit (10 - 20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
k	EXH3 & 4 - Fan unit (20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
l	EXH5 & 6 - Fan unit (0.5 m3/s) - Station accommodation extract	2.00	2	No.	2,500.00	5,000.00	
m	EXH7 & 8 - Fan unit (0.2 m3/s) - Foul area extract	2.00	2	No.	2,000.00	4,000.00	
n	EXH9 & 10 - Fan unit (0.3 m3/s) - Battery room extract	2.00	2	No.	2,500.00	5,000.00	
o	SC1 & 2 - Fan unit (10 m3/s) - Staircase pressurisation (duty & standby)	4.00	4	No.	25,000.00	100,000.00	
p	CRAC1 & 2 - Air conditioning unit (25 kW cooling) - PSD computer room	2.00	2	No.	25,000.00	50,000.00	
q	FCU1 to 20 - Fan coil unit (130 L/s, 2kW cooling) - Staff accommodation	20.00	20	No.	2,500.00	50,000.00	
r	Allowance for pipework, ductwork, grilles & dampers	2,373,000.00	2,373,000	LS	30.0%	711,900.00	
s	Allowance for BWIC with installations	3,084,900.00	3,084,900	LS	5.0%	154,245.00	
t	Testing & commissioning	3,084,900.00	3,084,900	LS	1.0%	30,849.00	

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
u	Rounding adjustment	1.00	1	LS	6.00	6.00	
5.02	Electrical Services						3,880,000.00
a	Transformers	-	-	No.	-	Incl. in HV/LV Power Supply	
b	Ring Main	-	-	No.	-	Incl. in HV/LV Power Supply	
c	HV cabling	-	-	LS	-	Incl. in HV/LV Power Supply	
d	LV Switch Gear	-	-	No.	-	Incl. in HV/LV Power Supply	
e	Distribution boards	12.00	12	No.	20,000.00	240,000.00	
f	Mains cabling	12.00	12	No.	5,000.00	60,000.00	
g	UPS	1.00	1	No.	100,000.00	100,000.00	
h	Containment	9,459.40	9,460	m2	25.00	236,500.00	
i	Earthing cables	1.00	1	No.	20,000.00	20,000.00	
j	Change over panel (Evacuation lift)	4.00	4	No.	10,000.00	40,000.00	
k	Lift power supply	2.00	2	No.	4,000.00	8,000.00	
l	Escalator power supply	10.00	10	No.	4,000.00	40,000.00	
m	Ventilation fan power supply	5.00	5	No.	15,000.00	75,000.00	
n	Cooling tower power supply	2.00	2	No.	15,000.00	30,000.00	
o	Chiller power supply	2.00	2	No.	15,000.00	30,000.00	
p	Chilled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
q	Cooled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
r	Air handling unit power supply	10.00	10	No.	4,000.00	40,000.00	
s	Fan unit power supply	14.00	14	No.	4,000.00	56,000.00	
t	Air conditioning unit power supply	2.00	2	No.	4,000.00	8,000.00	
u	Fan coil unit power supply	20.00	20	No.	4,000.00	80,000.00	
v	Motorised platform door power supply	2.00	2	No.	4,000.00	8,000.00	
w	UPS power supply	1.00	1	No.	4,000.00	4,000.00	
x	Allowance for power supply to motorised drainage services	1.00	1	LS	10,000.00	10,000.00	
y	Allowance for power supply to fire protection services	1.00	1	LS	25,000.00	25,000.00	
z	Allowance for rail systems power supply (i.e. AFC, signalling, communications, etc)	1.00	1	LS	150,000.00	150,000.00	
aa	Small power	9,459.40	9,460	m2	50.00	473,000.00	
ab	Internal lighting - Front of house/public areas - 50% of GFA (High quality fittings)	4,729.70	4,730	m2	250.00	1,182,500.00	
ac	Internal lighting - Back of house/staff accommodation - 20% of GFA (Medium quality fittings)	1,891.88	1,892	m2	100.00	189,200.00	
ad	Internal lighting - Back of house/plant rooms - 30% of GFA (Standard plantroom quality fittings)	2,837.82	2,838	m2	80.00	227,040.00	
ae	Allowance for external lighting	1.00	1	LS	300,000.00	300,000.00	
af	Allowance for BWIC with installations	3,656,240.00	3,656,240	LS	5.0%	182,812.00	
ag	Testing & commissioning	3,656,240.00	3,656,240	LS	1.0%	36,562.40	
ah	Rounding adjustment	1.00	1	LS	4,385.60	4,385.60	
5.03	Fire Protection Services						1,050,000.00
a	Sprinkler systems	9,459.40	9,460	m2	60.00	567,600.00	
b	Smoke detection systems	9,459.40	9,460	m2	20.00	189,200.00	
c	Fire monitoring panels	9,459.40	9,460	m2	10.00	94,600.00	
d	Fire hydrants connected to mains	9,459.40	9,460	m2	15.00	141,900.00	
e	Allowance for BWIC with installations	993,300.00	993,300	LS	5.0%	49,665.00	
f	Testing & commissioning	993,300.00	993,300	LS	1.0%	9,933.00	
g	Rounding adjustment	1.00	1	LS	-2,898.00	-2,898.00	
5.04	Building Management Systems						530,000.00

CH1742 TO CH1923 - KARANGAHAPE ROAD STATION (SINGLE CAVERN TYPE)

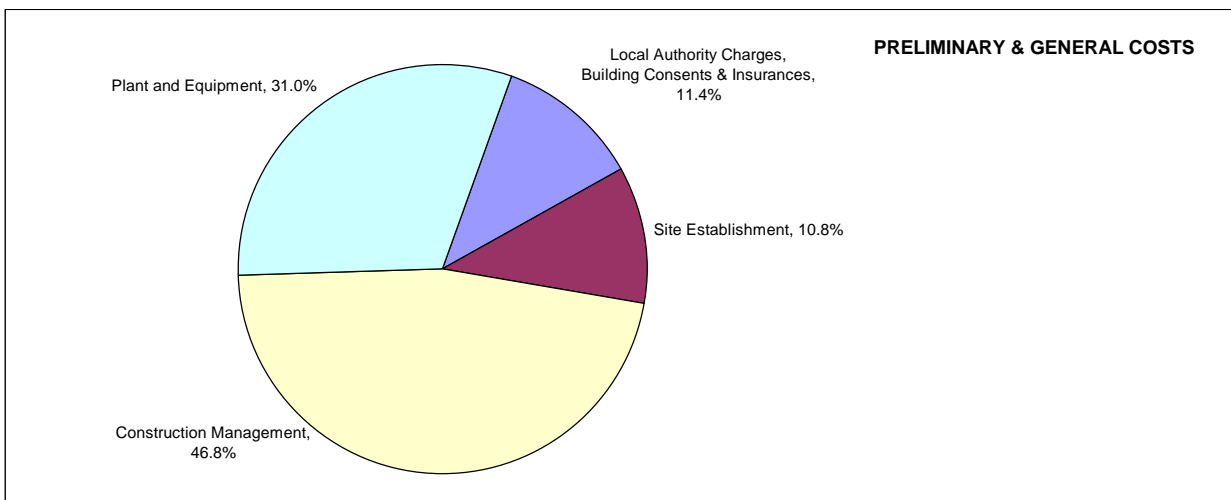
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	Building management systems	1.00	1	LS	500,000.00	500,000.00	
b	Allowance for BWIC with installations	500,000.00	500,000	LS	5.0%	25,000.00	
c	Testing & commissioning	500,000.00	500,000	LS	1.0%	5,000.00	
d	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.05	Communications Systems						500,000.00
a	Communications systems	9,459.40	9,460	m2	50.00	473,000.00	
b	Allowance for BWIC with installations	473,000.00	473,000	LS	5.0%	23,650.00	
c	Testing & commissioning	473,000.00	473,000	LS	1.0%	4,730.00	
d	Rounding adjustment	1.00	1	LS	-1,380.00	-1,380.00	
5.06	Security Systems						300,000.00
a	Security systems	9,459.40	9,460	m2	30.00	283,800.00	
b	Allowance for BWIC with installations	283,800.00	283,800	LS	5.0%	14,190.00	
c	Testing & commissioning	283,800.00	283,800	LS	1.0%	2,838.00	
d	Rounding adjustment	1.00	1	LS	-828.00	-828.00	
5.07	Hydraulics/Sanitary Plumbing & Fittings						320,000.00
a	Hydraulics/sanitary plumbing & fittings	1.00	1	LS	300,000.00	300,000.00	
b	Allowance for BWIC with installations	300,000.00	300,000	LS	5.0%	15,000.00	
c	Testing & commissioning	300,000.00	300,000	LS	1.0%	3,000.00	
d	Rounding adjustment	1.00	1	LS	2,000.00	2,000.00	
5.08	Drainage services						370,000.00
a	Drainage services	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for BWIC with installations	350,000.00	350,000	LS	5.0%	17,500.00	
c	Testing & commissioning	350,000.00	350,000	LS	1.0%	3,500.00	
d	Rounding adjustment	1.00	1	LS	-1,000.00	-1,000.00	
6.00	Rail Systems						0.00
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						3,750,000.00
7.01	Automatic Fare Collection						3,750,000.00
a	Ticket vending machine	12.00	12	No.	85,000.00	1,020,000.00	
b	Gate line end stanchion	6.00	6	No.	85,000.00	510,000.00	
c	Gate line intermediate stanchion	12.00	12	No.	119,000.00	1,428,000.00	
d	Manually operated stanchion	3.00	3	No.	25,500.00	76,500.00	
e	Allowance for interface to BMS & Control Centre	1.00	1	LS	500,000.00	500,000.00	
f	Allowance for BWIC with installations	3,534,500.00	3,534,500	LS	5.0%	176,725.00	
g	Testing & commissioning	3,534,500.00	3,534,500	LS	1.0%	35,345.00	
h	Rounding adjustment	1.00	1	LS	3,430.00	3,430.00	

PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

A	Construction Cost Value (Measured Works)	\$169,270,000	NZD
B	Programme (Duration)	4.63	In Years
C	Programme (Duration)	55.50	In Months <input type="text" value="Input Duration Here"/>
D	Programme (Duration)	240.48	In Weeks
E	Total Estimated Value of Contractors Preliminary & General Costs	\$33,520,414	NZD
F	Approximate % Value of Construction Cost	19.80%	%
G	Maximum Number of Management & Support Personnel on Site	36	No.

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	3,823,940	11.4%	
1.01	Local Authority Charges & Building Consents	846,350	2.5%	
1.02	Notification of Work to Department of Labour	1,015,620	3.0%	
1.03	Insurances & Bonds	1,961,970	5.9%	
2.00	Site Establishment	3,620,316	10.8%	
2.01	Site Signage	13,000	0.0%	
2.02	Temporary Water, Plumbing and Drainage	63,612	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	663,750	2.0%	
2.04	Temporary Power & Lighting	438,950	1.3%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc	498,000	1.5%	
2.06	Site Accommodation	1,302,193	3.9%	
2.07	Office Furniture & Equipment	110,200	0.3%	
2.08	Security	530,611	1.6%	
3.00	Construction Management	15,678,280	46.8%	
3.01	Management Personnel	11,400,625	34.0%	
3.02	General Labour & Support Personnel	3,145,000	9.4%	
3.03	Vehicles	1,000,000	3.0%	
3.04	Protective Clothing & Accessories	17,140	0.1%	
3.05	Sundries & General Expenses	115,515	0.3%	
4.00	Plant and Equipment	10,397,878	31.0%	
4.01	Plant and Equipment	10,397,878	31.0%	
	Total	33,520,414	100.0%	



PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						846,350.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	169,270,000.00	LS	0.50%	846,350.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						1,015,620.00
a	Building Research Levy	100%	169,270,000.00	LS	0.10%	169,270.00	
b	Local Body Reserve Contribution	100%	169,270,000.00	LS	0.50%	846,350.00	
1.03	Insurances & Bonds						1,961,970.00
a	Contractors All Risk	100%	169,270,000.00	LS	0.80%	1,354,160.00	
b	Public Liability (\$5,000,000)	100%	169,270,000.00	LS	0.30%	507,810.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						63,612.26
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	240.48	Week	67.00	16,112.26	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						663,750.00
a	Telephone line connection fees	100%	1.00	LS	1,500.00	1,500.00	
b	Telephone rental (30 Lines)	100%	55.50	Month	1,200.00	66,600.00	
c	Telephone toll charges	100%	55.50	Month	3,000.00	166,500.00	
d	Fax line connection fees (3 Lines)	100%	1.00	LS	300.00	300.00	
e	Fax rental (3 Lines)	100%	55.50	Month	150.00	8,325.00	
f	Data line connection fees (30 Lines)	100%	1.00	LS	1,500.00	1,500.00	
g	Data rental (30 Lines)	100%	55.50	Month	1,500.00	83,250.00	
h	Cell phone charges	100%	55.50	Month	6,000.00	333,000.00	

PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	55.50	Month	50.00	2,775.00	
2.04	Temporary Power & Lighting						438,950.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	5.00	No	10,000.00	50,000.00	
d	Main Switch Board	100%	5.00	No	5,000.00	25,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	55.50	Month	2,000.00	111,000.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	55.50	Month	200.00	11,100.00	
l	Sundries	100%	55.50	Month	200.00	11,100.00	
m	Allowance for repairs	100%	55.50	Month	500.00	27,750.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						498,000.00
a	Footpaths	100%	800.00	m2	100.00	80,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	4.00	No	5,000.00	20,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	100%	1.00	LS	200,000.00	200,000.00	
j	Canopies	100%	200.00	m	200.00	40,000.00	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						1,302,192.60
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
f	Site Office 6 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	100%	240.48	Week	200.00	48,096.30	
l	Toilet Block 2 - (4 Pan Unit)	100%	240.48	Week	200.00	48,096.30	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
o	Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						110,200.00
a	Desks	100%	28.00	No	500.00	14,000.00	
b	Chairs	100%	28.00	No	150.00	4,200.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	3.00	No	5,000.00	15,000.00	
f	Computers	100%	28.00	No	1,500.00	42,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	3.00	No	500.00	1,500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						530,611.15
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	55.50	Month	200.00	11,100.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	240.48	Week	2,100.00	505,011.15	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						11,400,625.00
a	Commercial Manager	30%	4.63	Year	250,000.00	346,875.00	
b	Site Manager	100%	4.63	Year	220,000.00	1,017,500.00	
c	Project Manager (Senior)	100%	4.63	Year	180,000.00	832,500.00	
d	Project Managers (Intermediate)	50%	4.63	Year	100,000.00	231,250.00	
e	Project Managers (Graduate)	50%	4.63	Year	70,000.00	161,875.00	
f	Quantity Surveyor (Senior)	100%	4.63	Year	160,000.00	740,000.00	
g	Quantity Surveyors (Intermediate)	50%	4.63	Year	100,000.00	231,250.00	
h	Quantity Surveyors (Graduate)	50%	4.63	Year	70,000.00	161,875.00	
i	Services Engineer (Senior)	100%	4.63	Year	160,000.00	740,000.00	
j	Services Engineers (Intermediate)	50%	4.63	Year	100,000.00	231,250.00	
k	Services Engineers (Graduate)	50%	4.63	Year	70,000.00	161,875.00	
l	Construction Planner/Programmer	100%	4.63	Year	150,000.00	693,750.00	
m	Surveyor	50%	4.63	Year	150,000.00	346,875.00	
n	Construction Manager	100%	4.63	Year	150,000.00	693,750.00	
o	Construction Foreman 1	100%	4.63	Year	130,000.00	601,250.00	
p	Construction Foreman 2	100%	4.63	Year	130,000.00	601,250.00	
q	Construction Supervisor 1	100%	4.63	Year	120,000.00	555,000.00	
r	Construction Supervisor 2	100%	4.63	Year	120,000.00	555,000.00	
s	Services Manager	100%	4.63	Year	160,000.00	740,000.00	
t	Services Foreman	100%	4.63	Year	130,000.00	601,250.00	
u	Services Supervisor	100%	4.63	Year	120,000.00	555,000.00	
v	Health & Safety Officer	50%	4.63	Year	130,000.00	300,625.00	
w	Quality Control Manager	50%	4.63	Year	130,000.00	300,625.00	
3.02	General Labour & Support Personnel						3,145,000.00
a	General Labourer 1	100%	4.63	Year	50,000.00	231,250.00	
b	General Labourer 2	100%	4.63	Year	50,000.00	231,250.00	

PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

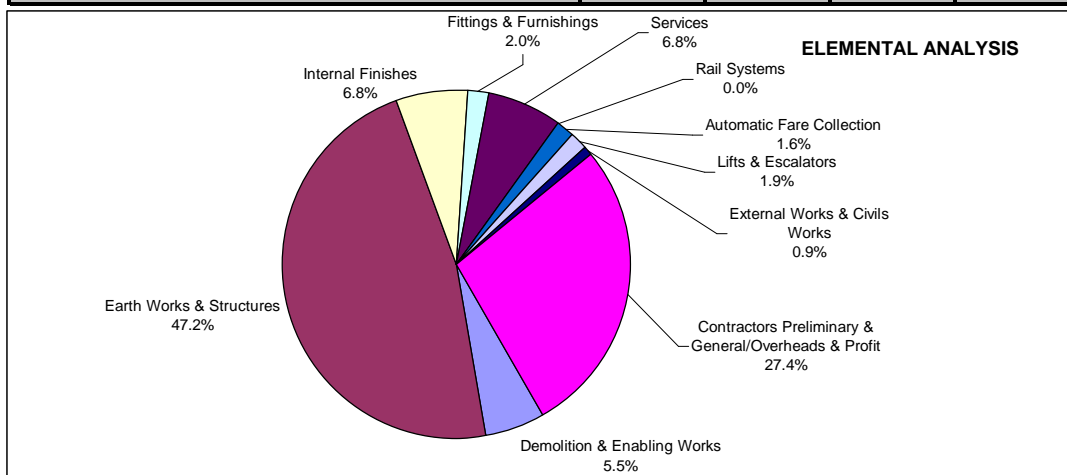
Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	4.63	Year	50,000.00	231,250.00	
d	General Labourer 4	100%	4.63	Year	50,000.00	231,250.00	
e	General Labourer 5	100%	4.63	Year	50,000.00	231,250.00	
f	Storeman	100%	4.63	Year	70,000.00	323,750.00	
g	Clerk of Works	100%	4.63	Year	100,000.00	462,500.00	
h	Traffic Supervisor	50%	4.63	Year	80,000.00	185,000.00	
i	Office Receptionist	100%	4.63	Year	40,000.00	185,000.00	
j	Secretary/PA	100%	4.63	Year	60,000.00	277,500.00	
k	General Office Administrator 1	100%	4.63	Year	40,000.00	185,000.00	
l	General Office Administrator 2	100%	4.63	Year	40,000.00	185,000.00	
m	General Office Administrator 3	100%	4.63	Year	40,000.00	185,000.00	
3.03	Vehicles						1,000,000.00
a	Lease car	100%	10.00	No.	35,000.00	350,000.00	
b	Lease station wagon	100%	6.00	No.	40,000.00	240,000.00	
c	Lease utility vehicle	100%	6.00	No.	50,000.00	300,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						17,140.00
a	Hard Hats	100%	36.00	No	100.00	3,600.00	
b	High visibility vests	100%	36.00	No	60.00	2,160.00	
c	Trousers	100%	36.00	No	80.00	2,880.00	
d	Boots	100%	36.00	No	200.00	7,200.00	
e	Sundries	100%	36.00	No	25.00	900.00	
f	First Aid Kits	100%	4.00	No	100.00	400.00	
3.05	Sundries & General Expenses						115,515.00
a	Petty cash	100%	55.50	Month	100.00	5,550.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	55.50	Month	100.00	5,550.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	55.50	Month	500.00	27,750.00	
e	Photographs	100%	55.50	Month	30.00	1,665.00	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						10,397,877.65
a	Mobile crane (100 tonne)	20%	240.48	Week	35,000.00	1,683,370.50	
b	Forklift	50%	240.48	Week	3,920.00	471,343.74	
c	Scissor platform	40%	240.48	Week	1,645.00	158,236.83	
d	Boom type platform	40%	240.48	Week	3,500.00	336,674.10	
e	Cheery Picker 1	40%	240.48	Week	1,750.00	168,337.05	
f	Cheery Picker 2	40%	240.48	Week	1,750.00	168,337.05	
g	Scaffolding (In place)	40%	240.48	Week	3,000.00	288,577.80	
h	Scaffolding (mobile)	40%	240.48	Week	1,000.00	96,192.60	
i	Dumper (6 ton 4 x 4)	50%	240.48	Week	6,160.00	740,683.02	
j	Road sweeper	25%	240.48	Week	6,160.00	370,341.51	
k	Concrete batching plant	50%	240.48	Week	2,500.00	300,601.88	

PRELIMINARY & GENERAL - ZONE 4 - NEWTON STATION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	240.48	Week	5,600.00	673,348.20	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	50%	56	Month	133,000.00	3,690,750.00	
q	Diesel bowser	100%	240.48	Week	1,000.00	240,481.50	
r	Temporary generator (100 kVA)	50%	240.48	Week	500.00	60,120.38	
s	Small tools allowance	50%	240.48	Week	500.00	60,120.38	
t	Skips	50%	240.48	Week	1,000.00	120,240.75	
u	Compressors	50%	240.48	Week	500.00	60,120.38	
	Total					33,520,413.66	33,520,413.66

CH2611 TO CH2793 - NEWTON STATION (SINGLE CAVERN TYPE)

SUMMARY OF COST		Value	Cost/Area	Cost/Volume	Total
Ref	Item Description	%	(NZD \$/m2)	(NZD \$/m3)	(NZD \$)
1.00	Demolition & Enabling Works	5.5%	877	99	12,710,000
1.01	Demolition & Enabling Works	3.5%	567	64	8,210,000
1.02	Utilities Diversions	1.9%	311	35	4,500,000
2.00	Earth Works & Structures	47.2%	7,602	858	110,120,000
2.01	Caverns, Tunnels, Adits (Mined Construction Works)	26.4%	4,258	480	61,680,000
2.02	Earth Works	6.6%	1,055	119	15,280,000
2.03	External Walls	5.6%	903	102	13,080,000
2.04	Ground Slab	1.4%	228	26	3,300,000
2.05	Columns	0.4%	64	7	920,000
2.06	Beams	1.4%	220	25	3,180,000
2.07	Upper Floors	1.7%	267	30	3,870,000
2.08	Roof Slab	0.9%	139	16	2,010,000
2.09	Internal Walls	0.4%	57	6	820,000
2.10	Stairs	0.3%	44	5	640,000
2.11	Internal Doors	0.2%	36	4	520,000
2.12	Surface Level Structures	2.1%	333	38	4,820,000
3.00	Internal Finishes	6.8%	1,093	123	15,830,000
3.01	Floor Finishes	1.3%	206	23	2,980,000
3.02	Wall Finishes	4.1%	657	74	9,510,000
3.03	Ceiling Finishes	1.4%	231	26	3,340,000
4.00	Fittings & Furnishings	2.0%	316	36	4,570,000
4.01	Fittings & Furnishings	2.0%	316	36	4,570,000
5.00	Services	6.8%	1,102	124	15,960,000
5.01	Tunnel & Trackway Ventilation	1.5%	236	27	3,420,000
5.02	Station HVAC	1.4%	226	25	3,270,000
5.03	Electrical Services	2.2%	360	41	5,210,000
5.04	Fire Protection Services	0.7%	111	13	1,610,000
5.05	Building Management Systems	0.2%	37	4	530,000
5.06	Communications Systems	0.3%	53	6	770,000
5.07	Security Systems	0.2%	32	4	460,000
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.1%	22	2	320,000
5.09	Drainage services	0.2%	26	3	370,000
6.00	Rail Systems	0.0%	0	0	0
6.01	Rail Systems	0.0%	0	0	0
7.00	Automatic Fare Collection	1.6%	259	29	3,750,000
7.01	Automatic Fare Collection	1.6%	259	29	3,750,000
8.00	Lifts & Escalators	1.9%	299	34	4,330,000
8.01	Lifts	0.4%	65	7	940,000
8.02	Escalators	1.5%	234	26	3,390,000
9.00	External Works & Civils Works	0.9%	138	16	2,000,000
9.01	External Works	0.4%	69	8	1,000,000
9.02	Civil Works	0.4%	69	8	1,000,000
10.00	Contractors Preliminary & General/Overheads & Profit	27.4%	4,414	498	63,940,000
10.01	Contractors Preliminary & General	14.4%	2,314	261	33,520,000
10.01	Contractors Overheads & Profit	13.0%	2,100	237	30,420,000
Total		100.0%	16,100	1,816	233,210,000



KEY METRIC DATA		Perimeter Length	Cross Section Area	Gross Floor Area	Height (to u/s slab)	Volume	Wall Area
Ref	Item Description	(m)	(m2)	(m2)	(m)	(m3)	(m2)
1.00	Roof Level	326	2,873	0	3.00	8,619	978
2.00	Shaft - Concourse Level	326	2,873	2,873	7.00	20,111	2,282
3.00	Shaft - Landing/Substation Level	192	1,962	1,962	7.00	13,734	1,344
4.00	Shaft - Mezzanine Level 3	158	1,305	1,305	6.00	7,830	948
5.00	Shaft - Mezzanine Level 2	158	1,305	1,305	6.00	7,830	948
6.00	Shaft - Mezzanine Level 1	158	1,305	1,305	6.00	7,830	948
7.00	Shaft - Platform Level	158	1,305	1,305	7.00	9,135	1,106
8.00	Shaft - Basement Level	158	1,305	1,305	7.00	9,135	1,106
9.00	Mined Cavern	-	3,125	3,125	-	44,177	-
	Total	-	17,358	14,485	49.00	128,401	9,660

CH2611 TO CH2793 - NEWTON STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						8,210,000.00
a	Allowance for sundry demolition & enabling works to facilitate surface level penetrations	1.00	1	LS	1,500,000.00	1,500,000.00	
b	Demolish existing buildings CNR New North Road & Basque Rd	1,800.00	1,800	m3	100.00	180,000.00	
c	Demolish existing buildings on Symonds Street	450.00	450	m3	100.00	45,000.00	
d	Demolish existing shop awnings on Symonds Street	1,000.00	1,000	m2	50.00	50,000.00	
e	Allowance for structural strengthening and underpinning works to existing Masonry Buildings (West of Symonds Street)	5.00	5	LS	500,000.00	2,500,000.00	
f	Allowance for structural strengthening and underpinning works to old Post Office building (East of Symonds Street)	1.00	1	LS	2,000,000.00	2,000,000.00	
g	Construct temporary footpaths	500.00	500	m2	60.00	30,000.00	
h	Allowance for hoarding to construction zones	1.00	1	LS	50,000.00	50,000.00	
i	Construct temporary steel framed and plywood clad enclosed structure (To separate TBM operations from Station construction activities)	1,800.00	1,800	m2	500.00	900,000.00	
j	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
k	Allowance for traffic management	-	-	Month	-	Included elsewhere	
l	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
m	Allowance for land owner accommodation works	1.00	1	LS	250,000.00	250,000.00	
n	Allowance for temporary steel framed/reinforced concrete traffic bridge	-	-	m2	3,000.00	Not Required	
o	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						4,500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	500,000.00	500,000.00	
f	Allowance for diversions of Transport Services	1.00	1	LS	500,000.00	500,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Caverns, Tunnels, Adits (Mined Construction Works)						61,680,000.00
a	Main Platform Cavern (Refer to SEM Cavern Cost Model for Allowances)	44,177.12	44,178	m3	1,396.14	61,678,739.95	
d	Rounding adjustment	1.00	1	LS	1,260.05	1,260.05	
2.02	Earth Works						15,280,000.00
a	Break up existing roads & footpaths	2,873.00	2,873	m2	40.00	114,920.00	
b	Machine excavation to reduce levels (in made ground)	8,619.00	8,619	m3	70.00	603,330.00	
c	Machine excavation to reduce levels (in soft rock)	33,845.00	33,845	m3	70.00	2,369,150.00	

CH2611 TO CH2793 - NEWTON STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
d	Machine excavation to reduce levels (in hard rock)	41,760.00	41,760	m3	200.00	8,352,000.00	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	80,012.80	80,013	m3	40.00	3,200,520.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	4,211.20	4,212	m3	90.00	379,080.00	
g	Cavern spoil disposal is included in cavern construction costs	-	-	Note	-	-	
h	Imported engineering fill	3,504.00	3,504	m3	75.00	262,800.00	
i	Rounding adjustment	1.00	1	LS	-1,800.00	-1,800.00	
2.03	External Walls						13,080,000.00
a	300 x 900mm reinforced concrete guide wall	176.04	177	m3	1,984.50	351,256.50	
b	900mm thick, reinforced concrete diaphragm wall (Primary Wall)	5,850.00	5,850	m3	1,307.21	7,647,149.25	
c	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	234.51	235	tonne	4,500.00	Not Required	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	167.51	168	tonne	4,500.00	Not Required	
e	Allowance for bolted steel plate connections	40.20	41	tonne	7,000.00	Not Required	
f	Tanking/waterproof membranes	6,500.00	6,500	m2	100.00	650,000.00	
g	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Secondary Wall)	6,500.00	6,500	m2	180.00	1,170,000.00	
h	300mm thick, fibre reinforced shotcrete wall	948.00	948	m3	924.00	875,952.00	
i	32mm dia rock bolts 8m (L) @ 3.0m horizontal crs & 3.0m vertical crs	2,808.89	2,809	m	170.00	477,530.00	
j	Tanking/waterproof membranes	3,160.00	3,160	m2	100.00	316,000.00	
k	300mm thick, cast insitu reinforced concrete wall	948.00	948	m3	1,679.58	1,592,237.10	
l	Cavern external walls is included in cavern construction costs	-	-	Note	-	-	
m	Rounding adjustment	1.00	1	LS	-124.85	-124.85	
2.04	Ground Slab						3,300,000.00
a	300mm thick, reinforced concrete blinding layer	861.90	862	m3	784.30	676,066.60	
b	Tanking/waterproof membranes	2,873.00	2,873	m2	100.00	287,300.00	
c	Tension pile anchors (assumed @ 2m grid centres)	-	-	No	230.00	Assumed not required	
d	700mm thick, reinforced concrete slab	2,011.10	2,012	m3	984.89	1,981,604.43	
e	Cavern ground slab is included in cavern construction costs	-	-	Note	-	-	
f	500mm thick, reinforced concrete side platforms	450.00	450	m3	799.48	359,766.00	
g	Rounding adjustment	1.00	1	LS	-4,737.03	-4,737.03	
2.05	Columns						920,000.00
a	600mm dia, reinforced concrete circular column	274.82	275	m3	2,049.30	563,557.50	
b	750mm dia, reinforced concrete circular column	198.80	199	m3	1,796.30	357,463.70	
c	Rounding adjustment	1.00	1	LS	-1,021.20	-1,021.20	
2.06	Beams						3,180,000.00
a	750mm dia precast, reinforced concrete strut (In Shaft)	185.54	186	m3	1,016.60	189,087.60	
b	750 x 600mm cast insitu, reinforced concrete beams (Generally)	616.50	617	m3	2,095.43	1,292,878.94	
c	1,700 x 750mm post tensioned, reinforced concrete beam (Roof Level)	645.15	646	m3	1,756.66	1,134,801.60	
d	1,800 x 850mm post tensioned, reinforced concrete beam (Mezzanine Transfer Level)	302.66	303	m3	1,848.63	560,133.38	
e	Rounding adjustment	1.00	1	LS	3,098.49	3,098.49	
2.07	Upper Floors						3,870,000.00
a	400mm thick, precast concrete floor system (solid flat slab) (Concourse Level)	1,320.00	1,320	m2	500.00	660,000.00	
b	400mm thick, precast concrete floor system (solid flat slab) (Landing Level)	864.00	864	m2	500.00	432,000.00	
c	400mm thick, precast concrete floor system (solid flat slab) (Mezzanine Level)	1,879.00	1,879	m2	500.00	939,500.00	
d	400mm thick, precast concrete floor system (solid flat slab) (Platform Level - Platform Slab)	198.00	198	m2	500.00	99,000.00	
e	400mm thick, precast concrete floor system (solid flat slab) (Basement Level)	3,479.00	3,479	m2	500.00	1,739,500.00	
f	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.08	Roof Slab						2,010,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab	2,873.00	2,873	m2	600.00	1,723,800.00	
b	Tanking/waterproof membranes	2,873.00	2,873	m2	100.00	287,300.00	

CH2611 TO CH2793 - NEWTON STATION (SINGLE CAVERN TYPE)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	Rounding adjustment	1.00	1	LS	-1,100.00	-1,100.00	
2.09	Internal Walls						820,000.00
a	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Concourse level)	1,740.00	1,740	m2	180.00	313,200.00	
b	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Mezzanine level)	1,596.00	1,596	m2	180.00	287,280.00	
c	200mm thick, block walls, core filled with concrete & 100kg/m3 bar reinforcement (Platform level)	1,232.00	1,232	m2	180.00	221,760.00	
d	Rounding adjustment	1.00	1	LS	-2,240.00	-2,240.00	
2.10	Stairs						640,000.00
a	250mm thick, reinforced concrete stairs & landings	240.00	240	m3	2,671.45	641,148.00	
b	Rounding adjustment	1.00	1	LS	-1,148.00	-1,148.00	
2.11	Internal Doors						520,000.00
a	Single FRR door (Concourse level)	16.00	16	No.	2,500.00	40,000.00	
b	Single FRR door (Mezzanine level)	10.00	10	No.	2,500.00	25,000.00	
c	Single FRR door (Platform level)	3.00	3	No.	2,500.00	7,500.00	
d	Double FRR door (Concourse level)	60.00	60	No.	4,500.00	270,000.00	
e	Double FRR door (Mezzanine level)	13.00	13	No.	4,500.00	58,500.00	
f	Double FRR door (Platform level)	27.00	27	No.	4,500.00	121,500.00	
g	Rounding adjustment	1.00	1	LS	-2,500.00	-2,500.00	
2.12	Surface Level Structures						4,820,000.00
a	Station Entry 1	390.00	390	m2	4,000.00	1,560,000.00	
b	Station Entry 2	444.00	444	m2	4,000.00	1,776,000.00	
c	Services Building; Ventilation Shafts & Emergency Egress	328.00	328	m2	3,000.00	984,000.00	
d	Reinstate shop awnings on Symonds Street	1,000.00	1,000	m2	500.00	500,000.00	
e	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						
3.01	Floor Finishes						2,980,000.00
a	Terrazzo floor finishes - 50% of GFA (FOH, high pedestrian traffic areas)	7,242.44	7,243	m2	350.00	2,535,050.00	
b	Anti-static carpet tiles - 20% of GFA (BOH, control room areas)	2,896.98	2,897	m2	100.00	289,700.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	4,345.46	4,346	m2	35.00	152,110.00	
d	Rounding adjustment	1.00	1	LS	3,140.00	3,140.00	
3.02	Wall Finishes						9,510,000.00
-	Total Internal Wall Area	28,766.00					
a	Pre-finished steel wall linings on proprietary steel framing - 50% of WA (FOH, high pedestrian traffic areas)	14,383.00	14,383	m2	600.00	8,629,800.00	
b	Plaster with painted finish - 20% of WA (BOH, control room areas)	5,753.20	5,754	m2	100.00	575,400.00	
c	Painted finish to exposed concrete surfaces - 30% of WA (BOH, plant room & fire escape areas)	8,629.80	8,630	m2	35.00	302,050.00	
d	Rounding adjustment	1.00	1	LS	2,750.00	2,750.00	
3.03	Ceiling Finishes						3,340,000.00
a	Steel framed suspended ceiling with profiled metal tiles - 50% of GFA (FOH, high pedestrian traffic areas)	7,242.44	7,243	m2	400.00	2,897,200.00	
b	Fibrous plaster suspended ceiling system - 20% of GFA (BOH, control room areas)	2,896.98	2,897	m2	100.00	289,700.00	
c	Painted finish to exposed concrete surfaces - 30% of GFA (BOH, plant room & fire escape areas)	4,345.46	4,346	m2	35.00	152,110.00	
d	Rounding adjustment	1.00	1	LS	990.00	990.00	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						4,570,000.00
a	Allowance for sundry furniture (i.e. barriers, bins, seating, notice boards, staff furniture, etc)	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for station & direction signage (illuminated)	14,484.88	14,485	m2	15.00	217,275.00	
c	Toughened glass platform partitioning with automated doors	1,020.00	1,020	m2	2,500.00	2,550,000.00	
d	Allowance for balustrades and handrails (assumed high specification, i.e. toughened glass with stainless steel frame members)	1.00	1	LS	500,000.00	500,000.00	

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Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
e	Stainless steel balustrades and handrails	294.00	294	m	500.00	147,000.00	
f	Stainless steel handrails and brackets fixed to wall	686.00	686	m	250.00	171,500.00	
g	Heavy duty aluminium stair treads	1,088.00	1,088	m	120.00	130,560.00	
h	Allowance for interior & exterior artwork	1.00	1	LS	500,000.00	500,000.00	
i	Rounding adjustment	1.00	1	LS	3,665.00	3,665.00	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						3,420,000.00
a	Saccardo nozzle & damper	4.00	4	No.	100,000.00	400,000.00	
b	1.8m dia station/tunnel ventilation fan - Supply (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
c	1.8m dia station/tunnel ventilation fan - Exhaust (Fire rated, 75 m3/s, 190 kw)	2.00	2	No.	150,000.00	300,000.00	
d	1.8m dia station/tunnel ventilation fan - Supply/exhaust spare (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
e	Attenuator (Fire rated, 4.5m x 4.5m x 3m)	4.00	4	No.	75,000.00	300,000.00	
f	Exhaust grille (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
g	Damper - Exhaust stack (Fire rated, 15m2)	8.00	8	No.	50,000.00	400,000.00	
h	Damper - Draft relief (Fire rated, 15m2)	4.00	4	No.	50,000.00	200,000.00	
i	Damper - Tunnel exhaust (Fire rated, 10m2)	4.00	4	No.	30,000.00	120,000.00	
j	Damper (Fire rated, 5m2)	6.00	6	No.	15,000.00	90,000.00	
k	Register (Fire rated)	16.00	16	No.	7,500.00	120,000.00	
l	Allowance for pipework, ductwork & grilles, controls, interface with SCADA & BMS, etc	2,480,000.00	2,480,000	LS	30.0%	744,000.00	
m	Allowance for BWIC with installations	3,224,000.00	3,224,000	LS	5.0%	161,200.00	
n	Testing & commissioning	3,224,000.00	3,224,000	LS	1.0%	32,240.00	
o	Rounding adjustment	1.00	1	LS	2,560.00	2,560.00	
5.02	Station HVAC						3,270,000.00
a	CT1 & 2 - Cooling tower (975 KW)	2.00	2	No.	150,000.00	300,000.00	
b	CH1 & 2 - Chiller (750 KW - Assumed water cooled)	2.00	2	No.	350,000.00	700,000.00	
c	CHWP1 to 3 - Chilled water pumps (60 m3/h)	3.00	3	No.	5,000.00	15,000.00	
d	CWP1 to 3 - Cooled water pumps (100 m3/h)	3.00	3	No.	10,000.00	30,000.00	
e	AHU1 & 2 - Air handling unit (15 m3/s) - Public area supply	2.00	2	No.	195,000.00	390,000.00	
f	AHU3 & 4 - Air handling unit (20 m3/s) - Plant area supply	2.00	2	No.	260,000.00	520,000.00	
g	AHU5 & 6 - Air handling unit (0.5 m3/s) - Station accommodation supply	2.00	2	No.	10,000.00	20,000.00	
h	AHU7 & 8 - Air handling unit (0.2 m3/s) - Foul area supply	2.00	2	No.	5,000.00	10,000.00	
i	AHU9 & 10 - Air handling unit (0.3 m3/s) - Battery room supply	2.00	2	No.	7,000.00	14,000.00	
j	EXH1 & 2 - Fan unit (10 - 20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
k	EXH3 & 4 - Fan unit (20 m3/s) - Public area extract	2.00	2	No.	40,000.00	80,000.00	
l	EXH5 & 6 - Fan unit (0.5 m3/s) - Station accommodation extract	2.00	2	No.	2,500.00	5,000.00	
m	EXH7 & 8 - Fan unit (0.2 m3/s) - Foul area extract	2.00	2	No.	2,000.00	4,000.00	
n	EXH9 & 10 - Fan unit (0.3 m3/s) - Battery room extract	2.00	2	No.	2,500.00	5,000.00	
o	SC1 & 2 - Fan unit (10 m3/s) - Staircase pressurisation (duty & standby)	4.00	4	No.	25,000.00	100,000.00	
p	CRAC1 & 2 - Air conditioning unit (25 kW cooling) - PSD computer room	2.00	2	No.	25,000.00	50,000.00	
q	FCU1 to 20 - Fan coil unit (130 L/s, 2kW cooling) - Staff accommodation	20.00	20	No.	2,500.00	50,000.00	
r	Allowance for pipework, ductwork, grilles & dampers	2,373,000.00	2,373,000	LS	30.0%	711,900.00	
s	Allowance for BWIC with installations	3,084,900.00	3,084,900	LS	5.0%	154,245.00	
t	Testing & commissioning	3,084,900.00	3,084,900	LS	1.0%	30,849.00	
u	Rounding adjustment	1.00	1	LS	6.00	6.00	
5.02	Electrical Services						5,210,000.00
a	Transformers	-	-	No.	-	Incl. in HV/LV Power Supply	
b	Ring Main	-	-	No.	-	Incl. in HV/LV Power Supply	

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Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	HV cabling	-	-	LS	-	Incl. in HV/LV Power Supply	
d	LV Switch Gear	-	-	No.	-	Incl. in HV/LV Power Supply	
e	Distribution boards	12.00	12	No.	20,000.00	240,000.00	
f	Mains cabling	12.00	12	No.	5,000.00	60,000.00	
g	UPS	1.00	1	No.	100,000.00	100,000.00	
h	Containment	14,484.88	14,485	m2	25.00	362,125.00	
i	Earthing cables	1.00	1	No.	20,000.00	20,000.00	
j	Change over panel (Evacuation lift)	4.00	4	No.	10,000.00	40,000.00	
k	Lift power supply	3.00	3	No.	4,000.00	12,000.00	
l	Escalator power supply	16.00	16	No.	4,000.00	64,000.00	
m	Ventilation fan power supply	5.00	5	No.	15,000.00	75,000.00	
n	Cooling tower power supply	2.00	2	No.	15,000.00	30,000.00	
o	Chiller power supply	2.00	2	No.	15,000.00	30,000.00	
p	Chilled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
q	Cooled water pump power supply	3.00	3	No.	4,000.00	12,000.00	
r	Air handling unit power supply	10.00	10	No.	4,000.00	40,000.00	
s	Fan unit power supply	14.00	14	No.	4,000.00	56,000.00	
t	Air conditioning unit power supply	2.00	2	No.	4,000.00	8,000.00	
u	Fan coil unit power supply	20.00	20	No.	4,000.00	80,000.00	
v	Motorised platform door power supply	2.00	2	No.	4,000.00	8,000.00	
w	UPS power supply	1.00	1	No.	4,000.00	4,000.00	
x	Allowance for power supply to motorised drainage services	1.00	1	LS	10,000.00	10,000.00	
y	Allowance for power supply to fire protection services	1.00	1	LS	25,000.00	25,000.00	
z	Allowance for rail systems power supply (i.e. AFC, signalling, communications, etc)	1.00	1	LS	150,000.00	150,000.00	
aa	Small power	14,484.88	14,485	m2	50.00	724,250.00	
ab	Internal lighting - Front of house/public areas - 50% of GFA (High quality fittings)	7,242.44	7,243	m2	250.00	1,810,750.00	
ac	Internal lighting - Back of house/staff accommodation - 20% of GFA (Medium quality fittings)	2,896.98	2,897	m2	100.00	289,700.00	
ad	Internal lighting - Back of house/plant rooms - 30% of GFA (Standard plantroom quality fittings)	4,345.46	4,346	m2	80.00	347,680.00	
ae	Allowance for external lighting	1.00	1	LS	300,000.00	300,000.00	
af	Allowance for BWIC with installations	4,910,505.00	4,910,505	LS	5.0%	245,525.25	
ag	Testing & commissioning	4,910,505.00	4,910,505	LS	1.0%	49,105.05	
ah	Rounding adjustment	1.00	1	LS	4,864.70	4,864.70	
5.03	Fire Protection Services						1,610,000.00
a	Sprinkler systems	14,484.88	14,485	m2	60.00	869,100.00	
b	Smoke detection systems	14,484.88	14,485	m2	20.00	289,700.00	
c	Fire monitoring panels	14,484.88	14,485	m2	10.00	144,850.00	
d	Fire hydrants connected to mains	14,484.88	14,485	m2	15.00	217,275.00	
e	Allowance for BWIC with installations	1,520,925.00	1,520,925	LS	5.0%	76,046.25	
f	Testing & commissioning	1,520,925.00	1,520,925	LS	1.0%	15,209.25	
g	Rounding adjustment	1.00	1	LS	-2,180.50	-2,180.50	
5.04	Building Management Systems						530,000.00
a	Building management systems	1.00	1	LS	500,000.00	500,000.00	
b	Allowance for BWIC with installations	500,000.00	500,000	LS	5.0%	25,000.00	
c	Testing & commissioning	500,000.00	500,000	LS	1.0%	5,000.00	
d	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.05	Communications Systems						770,000.00
a	Communications systems	14,484.88	14,485	m2	50.00	724,250.00	
b	Allowance for BWIC with installations	724,250.00	724,250	LS	5.0%	36,212.50	

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Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	Testing & commissioning	724,250.00	724,250	LS	1.0%	7,242.50	
d	Rounding adjustment	1.00	1	LS	2,295.00	2,295.00	
5.06	Security Systems						460,000.00
a	Security systems	14,484.88	14,485	m2	30.00	434,550.00	
b	Allowance for BWIC with installations	434,550.00	434,550	LS	5.0%	21,727.50	
c	Testing & commissioning	434,550.00	434,550	LS	1.0%	4,345.50	
d	Rounding adjustment	1.00	1	LS	-623.00	-623.00	
5.07	Hydraulics/Sanitary Plumbing & Fittings						320,000.00
a	Hydraulics/sanitary plumbing & fittings	1.00	1	LS	300,000.00	300,000.00	
b	Allowance for BWIC with installations	300,000.00	300,000	LS	5.0%	15,000.00	
c	Testing & commissioning	300,000.00	300,000	LS	1.0%	3,000.00	
d	Rounding adjustment	1.00	1	LS	2,000.00	2,000.00	
5.08	Drainage services						370,000.00
a	Drainage services	1.00	1	LS	350,000.00	350,000.00	
b	Allowance for BWIC with installations	350,000.00	350,000	LS	5.0%	17,500.00	
c	Testing & commissioning	350,000.00	350,000	LS	1.0%	3,500.00	
d	Rounding adjustment	1.00	1	LS	-1,000.00	-1,000.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						3,750,000.00
a	Ticket vending machine	12.00	12	No.	85,000.00	1,020,000.00	
b	Gate line end stanchion	6.00	6	No.	85,000.00	510,000.00	
c	Gate line intermediate stanchion	12.00	12	No.	119,000.00	1,428,000.00	
d	Manually operated stanchion	3.00	3	No.	25,500.00	76,500.00	
e	Allowance for interface to BMS & Control Centre	1.00	1	LS	500,000.00	500,000.00	
f	Allowance for BWIC with installations	3,534,500.00	3,534,500	LS	5.0%	176,725.00	
g	Testing & commissioning	3,534,500.00	3,534,500	LS	1.0%	35,345.00	
h	Rounding adjustment	1.00	1	LS	3,430.00	3,430.00	
8.00	Lifts & Escalators						
8.01	Lifts						940,000.00
a	Fire fighting lift (27 person)	2.00	2	No.	256,000.00	512,000.00	
b	Passenger lift (17 person)	-	-	No.	243,000.00	-	
c	Passenger lift (27 person)	1.00	1	No.	375,000.00	375,000.00	
d	Passenger lift (40 person)	-	-	No.	450,000.00	-	
e	Allowance for BWIC with installations	887,000.00	887,000	LS	5.0%	44,350.00	
f	Testing & commissioning	887,000.00	887,000	LS	1.0%	8,870.00	
g	Rounding adjustment	1.00	1	LS	-220.00	-220.00	

SEQUENTIALLY EXCAVATED METHOD (SEM) CAVERN COST MODEL

SUMMARY OF COST

Ref	Item Description	Total (NZD \$)	%	Cost/m (NZD \$)	Cost/m3 (NZD \$)
1.00	Labour, Plant & Material Costs				
1.01	Attendant Labour	2,220,000.00	2.68%	12,333.33	37.41
1.02	Excavation Face Labour	4,310,000.00	5.20%	23,944.44	72.63
1.03	Concreting Gang	2,360,000.00	2.85%	13,111.11	39.77
1.04	Excavation Face Plant	10,530,000.00	12.71%	58,500.00	177.45
1.05	Concreting Plant	5,340,000.00	6.45%	29,666.67	89.99
1.06	General Plant	8,590,000.00	10.37%	47,722.22	144.75
1.07	Canopy Pipe Materials	6,230,000.00	7.52%	34,611.11	104.98
1.08	Primary Lining Materials	16,250,000.00	19.61%	90,277.78	273.84
1.09	Secondary Lining Materials	21,620,000.00	26.10%	120,111.11	364.33
1.10	Invert Slab Materials	2,880,000.00	3.48%	16,000.00	48.53
1.11	Spoil Disposal	2,520,000.00	3.04%	14,000.00	42.47
1.12	Contractors Preliminary & General	0.00	0.00%	0.00	0.00
1.13	Contractors Overheads & Profit	0.00	0.00%	0.00	0.00
		82,850,000.00	100.00%	460,277.78	1,396.14

COST MODEL INPUTS

Ref	Item Description	Unit	Measured Value
1.00	Key Metric Data		
1.01	Cavern Length	m	180.00
1.02	Cavern Width	m	23.32
1.03	Cavern Height	m	18.00
1.04	Cavern Face Area	m ²	329.68
1.05	Cavern Perimeter Length	m	129.81
1.06	Cavern Wall Area	m ²	23,365.89
1.07	Cavern Volume (Gross)	m ³	59,342.12

SUMMARY OF PRODUCTIVITY

Ref	Item Description	Unit	Measured Value
1.00	Construction Sequencing		
1.01	Construction Sections Required	No.	23.00
1.02	Number of Construction Work Faces (Completed in 2 Halves)	No.	2.00
1.03	Length of Section	m	8.00
1.04	Construction Stages Per Section Required	No.	7.00
1.05	Total Number of Construction Stages Required	No.	161.00
1.06	Stages in Constructed Simultaneously	No.	80.50
2.00	Working Hours		
2.01	Working Hours/Day	No.	15.00
2.02	Shifts/Day	No.	2.00
2.03	Working Hours/Shift	No.	7.50
2.04	Working Days/Week	No.	6.00
2.05	Working Hours/Week	No.	90.00
3.00	Base Production Rates		
3.01	Estimated Average Advance Rate/Week	m	2.22
3.02	Estimated Duration (Total In Hours)	Hour	7,303.88
3.03	Estimated Duration (Total In Days)	Day	486.93
3.04	Estimated Duration (Total In Weeks)	Week	81.15
3.05	Estimated Duration (Total In Months)	Month	18.73
3.06	Estimated Duration (Total In Years)	Year	1.56

SUMMARY OF BULK QUANTITIES

Ref	Item Description	Unit	Measured Value
1.00	Bulk Quantities		
1.01	Canopy Pipes	No.	1,679.00
1.02	Excavation	m3	59,342.12
1.03	Disposal	m3	59,342.12
1.04	Shotcrete Work	m3	8,905.44
1.05	Tanking Membranes	m2	23,365.89
1.06	Concrete Work	m3	21,856.54
1.07	Bar Reinforcement	t	6,833.95
1.08	Lattice Girders	No.	45.00
1.09	Rock Bolts	No.	2,592.00
1.10	Glass Fibre Bolts	No.	1,296.00
1.11	Glass Fibre Spot Bolts	No.	184.00

BULK MATERIAL MEASURES

Ref	Item Description	Unit	Measured Value
1.00	Canopy Pipe Works		
1.01	Canopy Pipe Length (Gross)	m	12.00
1.02	Canopy Pipe Lap Distance (Top & Bottom)	m	4.00
1.03	Canopy Pipe Length (Net)	m	8.00
1.04	Total Canopy Pipes Required (Per Roof Section)	No.	73.00
1.05	Total Roof Sections Required	No.	23.00
1.06	Total Number of Canopy Pipes	No.	1,679.00
1.07	Total Length of Canopy Pipes	m	20,148.00
1.08	Total Injected Grout Volume	m3	206.73
2.00	Excavation & Disposal		
2.01	Road Header Excavation Works	m3	59,342.12
2.02	Spoil (Solid State)	m3	59,342.12
2.03	Spoil (Bulked State)	m3	89,013.18
2.04	Total Spoil Disposal (Assumed 95% Clean)	m3	56,375.02
2.05	Total Spoil Disposal (Assumed 5% Clean)	m3	2,967.11
3.00	Rock Bolts		
3.01	Rock Bolt Length	m	6.00
3.02	Rock Bolt Spacing Centres	m	1.25
3.03	Rock Bolts Required (Per Cross Section)	No.	18.00
3.04	Total Number of Rock Bolts	No.	2,592.00
3.05	Total Length of Rock Bolts	m	15,552.00
4.00	Glass Fibre Bolts		
4.01	Glass Fibre Bolt Length	m	3.00
4.02	Glass Fibre Bolt Spacing Centres	m	1.25
4.03	Glass Fibre Bolts Required (Per Cross Section)	No.	9.00
4.04	Total Number of Glass Fibre Bolts	No.	1,296.00
4.05	Total Length of Glass Fibre Bolts	m	3,888.00
5.00	Primary Wall Linings		
5.01	Primary Lining Thickness	m	0.25
5.02	Total Primary Lining Shotcrete Volume	m3	8,526.31
5.03	Primary Lining Reinforcement Ratio	t/m3	0.10
5.04	Total Primary Lining Reinforcement	t/m3	852.63
6.00	Tunnel Face Support		
6.01	Tunnel Face Support Thickness	m	0.05
6.02	Total Tunnel Face Support Shotcrete Volume	m3	379.13
6.03	Tunnel Face Support Reinforcement Ratio	t/m3	0.00
6.04	Total Tunnel Face Support Reinforcement	t	0.00
7.00	Glass Fibre Spot Bolts		
7.01	Glass Fibre Spot Bolt Length	m	6.00
7.02	Glass Fibre Spot Bolt Spacing Centres	m	-
7.03	Glass Fibre Spot Bolts Required (Per Cross Section)	No.	8.00
7.04	Total Number of Glass Fibre Spot Bolts	No.	184.00
7.05	Total Length of Glass Fibre Spot Bolts	m	1,104.00
8.00	Lattice Girders		
8.01	Lattice Girder Spacing	m	4.00
8.02	Total Lattice Girders	No.	45.00
9.00	Temporary Backfill		
9.01	Temporary Backfill	m3	6,120.00
10.00	Tanking Membranes		
10.01	Total Tanking Membranes Required	m2	23,365.89
11.00	Secondary (Permanent) Wall Linings		
11.01	Secondary Lining Thickness	m	0.75
11.02	Total Secondary Lining Concrete Volume	m3	18,018.94
11.03	Secondary Lining Reinforcement Ratio	t/m3	0.30
11.04	Total Secondary Lining Reinforcement	t/m3	5,405.68
12.00	Invert Slab		
12.01	Invert Slab Thickness	m	1.00
12.02	Total Invert Slab Concrete Volume	m3	3,837.60
12.03	Invert Slab Reinforcement Ratio	t/m3	0.15
12.04	Total Invert Slab Reinforcement	t/m3	575.64

SEQUENTIALLY EXCAVATED METHOD (SEM) CAVERN COST MODEL

Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Labour Resources						
1.01	Attendant Labour						2,220,000.00
a	Yard Forman	Year	1.00	1.56	260,000.00	405,802.18	
b	Pit Bottom Labourer	Year	2.00	1.56	120,000.00	374,586.63	
c	Tunnel Crane Operator	Year	1.00	1.56	140,000.00	218,508.87	
d	Banksman / Pit Top Labourer	Year	2.00	1.56	100,000.00	312,155.52	
e	Plant / Equipment Operator	Year	2.00	1.56	110,000.00	343,371.08	
f	Fitter	Year	1.00	1.56	160,000.00	249,724.42	
g	Electrician	Year	1.00	1.56	200,000.00	312,155.52	
h	Rounding adjustment	LS	1	1	3,695.78	3,695.78	
1.02	Excavation Face Labour						4,310,000.00
a	Pit Boss	Year	1.00	1.56	320,000.00	499,448.84	
b	Leading Miner	Year	1.00	1.56	200,000.00	312,155.52	
c	Miner / Excavator Driver	Year	2.00	1.56	160,000.00	499,448.84	
d	Spray Machine Operator	Year	1.00	1.56	110,000.00	171,685.54	
e	Spray Pump Operator	Year	1.00	1.56	110,000.00	171,685.54	
f	Canopy Pipe Rig Operator	Year	2.00	1.56	110,000.00	343,371.08	
g	Canopy Pipe Rig Assistant	Year	2.00	1.56	110,000.00	343,371.08	
h	Drill Rig Operator	Year	2.00	1.56	110,000.00	343,371.08	
i	Drill Rig Assistant	Year	2.00	1.56	110,000.00	343,371.08	
j	Dumper / Forklift Driver	Year	2.00	1.56	110,000.00	343,371.08	
k	Tunnel Labourer	Year	2.00	1.56	120,000.00	374,586.63	
l	Electrician	Year	1.00	1.56	200,000.00	312,155.52	
m	Fitter	Year	1.00	1.56	160,000.00	249,724.42	
n	Rounding adjustment	LS	1	1	2,253.78	2,253.78	
1.03	Concreting Gang						2,360,000.00
a	Chargehand	Year	1.00	1.56	160,000.00	249,724.42	
b	Concreter / Lining Labourer	Year	1.00	1.56	160,000.00	249,724.42	
c	Joiner	Year	2.00	1.56	160,000.00	499,448.84	
d	Shutter Hand / Concrete Finisher	Year	2.00	1.56	160,000.00	499,448.84	
e	Steelfixer	Year	2.00	1.56	160,000.00	499,448.84	
f	Dumper / Forklift Driver	Year	1.00	1.56	110,000.00	171,685.54	
g	Tunnel Labourer	Year	1.00	1.56	120,000.00	187,293.31	
h	Rounding adjustment	LS	1	1	3,225.80	3,225.80	
2.00	Plant Resources						
2.01	Excavation Face Plant						10,530,000.00
a	Canopy Pipe Rig	No.	1.00	1.00	500,000.00	500,000.00	
b	135 Tonne Hard Ground Road Header including spares (NDC Group Advice - \$2,750,000 USD Conv. to NZD @ 1.45)	No.	1.00	1.00	4,000,000.00	4,000,000.00	
c	ITC 312 Tunnel Excavator	No.	1.00	1.00	350,000.00	350,000.00	
d	Brokk	No.	1.00	1.00	250,000.00	250,000.00	
e	Drilling Rig	No.	1.00	1.00	100,000.00	100,000.00	
f	Shotcrete Robot	No.	1.00	1.00	250,000.00	250,000.00	
g	Shotcrete Pump	No.	1.00	1.00	50,000.00	50,000.00	
h	Small Wheeled Agitator	No.	1.00	1.00	50,000.00	50,000.00	
i	Access Basket	No.	2.00	1.00	50,000.00	100,000.00	
j	Mini Excavator	No.	1.00	1.00	50,000.00	50,000.00	

SEQUENTIALLY EXCAVATED METHOD (SEM) CAVERN COST MODEL							
Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
k	Dumper	No.	2.00	1.00	60,000.00	120,000.00	
l	Allowance for Plant Consumables & Maintenance	Day	13.00	486.93	150.00	949,504.06	
m	Sundry Plant / Ventilation and Safety Equipment	Day	1.00	486.93	1,200.00	584,310.19	
n	Ground Monitoring Equipment / Forward Probing	Day	1.00	486.93	6,285.71	3,060,672.42	
o	Air Pipe	m	1.00	360.00	125.00	45,000.00	
p	Water Pipe	m	1.00	360.00	200.00	72,000.00	
q	Rounding adjustment	LS	1	1	-1,486.67	-1,486.67	
2.02	Concreting Plant						5,340,000.00
a	Dumper	No.	1.00	1.00	60,000.00	60,000.00	
b	Forklift	No.	1.00	1.00	30,000.00	30,000.00	
c	Access Basket	No.	1.00	1.00	50,000.00	50,000.00	
d	Static Concrete Pump	No.	1.00	1.00	50,000.00	50,000.00	
e	Allowance for Plant Consumables & Maintenance	Day	4.00	486.93	100.00	194,770.06	
f	Sundry Plant / Ventilation and Safety Equipment	LS	1.00	1.00	100,000.00	100,000.00	
g	Sundry Concrete Plant	LS	1.00	1.00	30,000.00	30,000.00	
h	Tunnel Invert Forms (Ceresola TLS quotation - \$897,000 EUR Conv. to NZD @	LS	1.00	1.00	1,562,000.00	1,562,000.00	
i	Tunnel Arch Forms (Ceresola TLS quotation - \$1,759,000 EUR Conv. to NZD @	LS	1.00	1.00	3,064,000.00	3,064,000.00	
j	Temporary propping equipment	LS	1.00	1.00	200,000.00	200,000.00	
k	Rounding adjustment	LS	1	1	-770.06	-770.06	
2.03	General Plant						8,590,000.00
a	Hoists	Day	1.00	486.93	228.57	111,297.18	
b	Man Hoists	Day	1.00	486.93	828.57	403,452.27	
c	Cranes	Day	1.00	486.93	1,942.86	946,026.02	
d	Pump Main	m	1.00	360.00	125.00	45,000.00	
e	Vent Ducting	m	1.00	360.00	150.00	54,000.00	
f	Booster Fans	Day	1.00	486.93	285.71	139,121.47	
g	Surface Fans	Day	2.00	486.93	1,085.71	1,057,323.20	
h	Grout Mixer	Day	1.00	486.93	2,000.00	973,850.32	
i	Grout Pumps	Day	1.00	486.93	1,428.57	695,607.37	
j	Grout Hoses and Pipes	Day	1.00	486.93	114.29	55,648.59	
k	Compressors	Day	1.00	486.93	400.00	194,770.06	
l	Loaders	Day	1.00	486.93	457.14	222,594.36	
m	Vertical Conveyor	Day	1.00	486.93	2,428.57	1,182,532.53	
n	Dewatering During Works	Day	1.00	486.93	1,428.57	695,607.37	
o	Batching Plant including Bins / Silos	Day	1.00	486.93	2,400.00	1,168,620.38	
p	6m3 Agitator	Day	1.00	486.93	420.00	204,508.57	
q	Static Concrete Pump	Day	2.00	486.93	450.00	438,232.64	
r	Rounding adjustment	LS	1	1	1,807.68	1,807.68	
3.00	Material Resources						
3.01	Canopy Pipe Materials						6,230,000.00
a	Canopy pipes & pilot bits (Ceresola TLS quotation - \$2,093/No. EUR Conv. to NZD @	No.	1.00	1,679.00	3,646.01	6,121,644.07	
b	Injected Grout	m3	1.00	206.73	520.00	107,502.18	
c	Rounding adjustment	LS	1	1	853.75	853.75	
3.02	Primary Lining Materials						16,250,000.00
a	Fibre reinforced shotcrete primary lining	m3	1.00	8,526.31	780.00	6,650,523.11	
b	Fibre reinforced shotcrete temporary face support	m3	1.00	379.13	780.00	295,721.57	
c	Lattice girders	No.	1.00	45.00	40,241.25	1,810,856.46	

ALIGNMENT COST SUMMARY

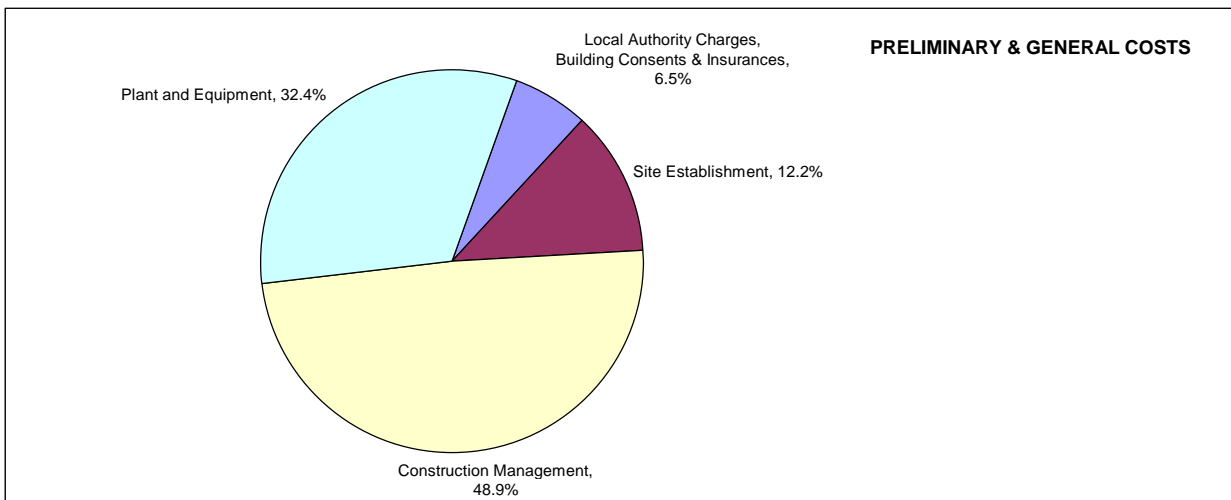
Ref	Location	Section Type Description	CH Fm (km)	CH To (km)	Dist. (km)	Dist. (m)	Sub-Total (NZD \$)	Total (NZD \$)	Line Side Services																														
									OLE			Track Works							Drainage Services			Electrical Services				Fire Protection Services				Communications Systems				Accessibility					
									OH Conductor Rail	Cable & Catenary Mast (IT)	Cable & Catenary Mast (OR)	EBSFS Track (DBL)	EBS Track (DBL)	Standard Slab Track (DBL)	Ballasted Track (DBL)	Turn-Out	Diamond Crossing	Track Sundries Allow.	200mm Cast in Pipe	150mm Wall Mntd. Pipe	Pump Station	LV Power Supply	General Lighting (5m Crs)	Emerg. Lighting (5m Crs)	120mm Conduits (4 No.)	Cable Carriers	Linear Fire Detection	150mm Fire Main	Hose Reels & Exting.	Hydrants (50m Crs)	CCTV (50m Crs)	Emerg. Phone (50m Crs)	Comms Cabling (12 No.)	Cable Carrier	Handrails	Painted Markings	Signage Allow.		
									Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	
									Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)									
									1,290	1,560	2,610	11,100	6,100	5,200	2,500	160,000	420,000	50,000	400	500	40,000	160	160	300	560	400	1,000	1,200	15,000	5,000	2,000	480	300	250	40	50			
									Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)	Cost (NZD \$)				
									3,270,150	-	-	11,100,000	9,363,500	-	-	50,000	1,014,000	1,267,500	240,000	405,600	405,600	760,500	1,419,600	1,014,000	2,535,000	3,042,000	1,014,000	760,500	253,500	101,400	1,216,800	760,500	633,750	101,400	126,750				
									-	156,000	-	-	-	520,000	-	-	-	-	-	50,000	40,000	50,000	-	16,000	16,000	30,000	56,000	40,000	100,000	120,000	40,000	30,000	10,000	4,000	48,000	30,000	-	4,000	5,000
									-	202,800	-	-	-	676,000	-	-	-	-	50,000	52,000	65,000	-	20,800	20,800	39,000	72,800	52,000	130,000	156,000	52,000	39,000	13,000	5,200	62,400	39,000	-	5,200	6,500	
									-	249,600	-	-	-	832,000	-	-	-	-	50,000	64,000	80,000	40,000	25,600	25,600	48,000	89,600	64,000	160,000	192,000	64,000	48,000	16,000	6,400	76,800	48,000	-	6,400	8,000	
									3,270,150	-	-	11,100,000	9,363,500	-	-	50,000	1,014,000	1,267,500	240,000	405,600	405,600	760,500	1,419,600	1,014,000	2,535,000	3,042,000	1,014,000	760,500	253,500	101,400	1,216,800	760,500	633,750	101,400	126,750				
									-	39,000	-	-	-	130,000	-	-	-	-	50,000	10,000	12,500	-	4,000	4,000	7,500	14,000	10,000	25,000	30,000	10,000	7,500	2,500	1,000	12,000	7,500	-	1,000	1,250	
									-	78,000	-	-	-	260,000	-	-	420,000	50,000	20,000	25,000	40,000	8,000	8,000	15,000	28,000	20,000	50,000	60,000	20,000	15,000	5,000	2,000	24,000	15,000	-	2,000	2,500		
									-	234,000	-	-	-	780,000	-	-	-	50,000	60,000	75,000	-	24,000	24,000	45,000	84,000	60,000	150,000	180,000	60,000	45,000	15,000	6,000	72,000	45,000	-	6,000	7,500		
									-	117,000	195,750	-	-	390,000	187,500	320,000	-	50,000	30,000	37,500	-	12,000	12,000	22,500	42,000	30,000	75,000	90,000	30,000	22,500	7,500	3,000	36,000	22,500	-	3,000	3,750		
									-	-	913,500	-	-	-	875,000	-	-	50,000	70,000	-	-	28,000	28,000	-	98,000	70,000	-	-	-	-	17,500	7,000	84,000	52,500	-	7,000	8,750		
									-	-	783,000	-	-	-	750,000	-	-	50,000	60,000	-	-	24,000	24,000	-	84,000	60,000	-	-	-	15,000	6,000	72,000	45,000	-	-	7,500			
									-	-	717,750	-	-	-	687,500	320,000	-	50,000	110,000	-	-	44,000	44,000	-	154,000	110,000	-	-	-	27,500	-	-	82,500	-	-	13,750			
									-	195,000	-	-	-	650,000	-	-	-	50,000	50,000	62,500	-	20,000	20,000	37,500	70,000	50,000	125,000	150,000	50,000	37,500	12,500	5,000	60,000	37,500	-	5,000	6,250		
									-	156,000	-	-	-	520,000	250,000	-	-	50,000	40,000	50,000	-	16,000	16,000	30,000	56,000	40,000	100,000	120,000	40,000	30,000	10,000	4,000	48,000	30,000	-	4,000	5,000		
									-	234,000	391,500	-	-	780,000	375,000	320,000	-	50,000	60,000	75,000	-	24,000	24,000	45,000	84,000	60,000	150,000	180,000	60,000	45,000	15,000	6,000	72,000	45,000	-	6,000	7,500		
									-	-	965,700	-	-	-	925,000	-	-	50,000	74,000	-	-	29,600	29,600	-	103,600	74,000	-	-	74,000	-	18,500	7,400	88,800	55,500	-	-	9,250		
									-	-	783,000	-	-	-	750,000	-	-	50,000	60,000	-	-	24,000	24,000	-	84,000	60,000	-	-	60,000	-	15,000	6,000	72,000	45,000	-	-	7,500		
									-	-	1,044,000	-	-	-	1,000,000	320,000	-	50,000	160,000	-	-	64,000	64,000	-	224,000	160,000	-	-	160,000	-	40,000	-	-	120,000	-	-	20,000		
									3,270,150	1,661,400	5,794,200	11,100,000	9,363,500	5,538,000	5,800,000	1,280,000	420,000	850,000	1,974,000	1,800,000	320,000	789,600	789,600	1,080,000	2,763,600	1,974,000	3,600,000	4,320,000	1,734,000	1,080,000	493,500	170,400	2,044,800	1,480,500	633,750	151,000	246,750		
									Sub-Total			10,725,750.00			34,351,500.00			4,094,000.00			7,396,800.00			10,734,000.00			4,189,200.00			1,031,500.00									
									Rounding Adjustment			4,250.00			-1,500.00			6,000.00			3,200.00			-4,000.00			800.00			-1,500.00									
												4,100,000.00			7,400,000.00			10,730,000.00			4,190,000.00			1,030,000.00															
									Total			10,730,000.00			34,350,000.00						27,450,000.00																		
									OLE Quantities			Track Works Quantities			Drainage Services Quantities			Electrical Services Quantities			Fire Protection Services Quantities			Communications Systems Quantities			Accessibility Quantities												
									2,535.00	1,065.00	2,220.00	1,000.00	1,535.00	1,065.00	2,320.00	8.00	1.00	17.00	4,935.00	3,600.00	8.00	4,935.00	4,935.00	3,600.00	4,935.00	4,935.00	3,600.00	3,600.00	4,335.00	72.00	98.70	85.20	4,260.00	4,935.00	2,535.00	3,775.00	4,935.00		

PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

A	Britomart Station/CPO	\$23,970,000	NZD	\$8,582,717	NZD P&G Allocation
B	Queen Street to Westfield Cut & Cover Section	\$24,450,000	NZD	\$8,754,586	NZD P&G Allocation
C	Westfield to Albert Street Cut & Cover Section	\$29,900,000	NZD	\$10,706,017	NZD P&G Allocation
D	Total Construction Cost Value (Measured Works)	\$78,320,000	NZD	\$28,043,320	NZD Total P&G
E	Programme (Duration)	4.00	In Years		
F	Programme (Duration)	48.00	In Months	Input Duration Here	
G	Programme (Duration)	207.98	In Weeks		
H	Total Estimated Value of Contractors Preliminary & General Costs	\$28,043,320	NZD		
I	Approximate % Value of Construction Cost	35.81%	%		
J	Maximum Number of Management & Support Personnel on Site	36	No.		

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	1,823,040	6.5%	
1.01	Local Authority Charges & Building Consents	391,600	1.4%	
1.02	Notification of Work to Department of Labour	469,920	1.7%	
1.03	Insurances & Bonds	961,520	3.4%	
2.00	Site Establishment	3,424,395	12.2%	
2.01	Site Signage	13,000	0.0%	
2.02	Temporary Water, Plumbing and Drainage	61,435	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	574,500	2.0%	
2.04	Temporary Power & Lighting	417,200	1.5%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gentries, etc	498,000	1.8%	
2.06	Site Accommodation	1,289,194	4.6%	
2.07	Office Furniture & Equipment	110,200	0.4%	
2.08	Security	460,866	1.6%	
3.00	Construction Management	13,707,180	48.9%	
3.01	Management Personnel	9,860,000	35.2%	
3.02	General Labour & Support Personnel	2,720,000	9.7%	
3.03	Vehicles	1,000,000	3.6%	
3.04	Protective Clothing & Accessories	17,140	0.1%	
3.05	Sundries & General Expenses	110,040	0.4%	
4.00	Plant and Equipment	9,088,705	32.4%	
4.01	Plant and Equipment	9,088,705	32.4%	
	Total	28,043,320	100.0%	



PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						391,600.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	78,320,000.00	LS	0.50%	391,600.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						469,920.00
a	Building Research Levy	100%	78,320,000.00	LS	0.10%	78,320.00	
b	Local Body Reserve Contribution	100%	78,320,000.00	LS	0.50%	391,600.00	
1.03	Insurances & Bonds						961,520.00
a	Contractors All Risk	100%	78,320,000.00	LS	0.80%	626,560.00	
b	Public Liability (\$5,000,000)	100%	78,320,000.00	LS	0.30%	234,960.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						61,434.93
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	207.98	Week	67.00	13,934.93	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						574,500.00
a	Telephone line connection fees	100%	1.00	LS	1,500.00	1,500.00	
b	Telephone rental (30 Lines)	100%	48.00	Month	1,200.00	57,600.00	
c	Telephone toll charges	100%	48.00	Month	3,000.00	144,000.00	
d	Fax line connection fees (3 Lines)	100%	1.00	LS	300.00	300.00	
e	Fax rental (3 Lines)	100%	48.00	Month	150.00	7,200.00	
f	Data line connection fees (30 Lines)	100%	1.00	LS	1,500.00	1,500.00	
g	Data rental (30 Lines)	100%	48.00	Month	1,500.00	72,000.00	
h	Cell phone charges	100%	48.00	Month	6,000.00	288,000.00	

PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	48.00	Month	50.00	2,400.00	
2.04	Temporary Power & Lighting						417,200.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	5.00	No	10,000.00	50,000.00	
d	Main Switch Board	100%	5.00	No	5,000.00	25,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	48.00	Month	2,000.00	96,000.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	48.00	Month	200.00	9,600.00	
l	Sundries	100%	48.00	Month	200.00	9,600.00	
m	Allowance for repairs	100%	48.00	Month	500.00	24,000.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						498,000.00
a	Footpaths	100%	800.00	m2	100.00	80,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	4.00	No	5,000.00	20,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	100%	1.00	LS	200,000.00	200,000.00	
j	Canopies	100%	200.00	m	200.00	40,000.00	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						1,289,193.60
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
f	Site Office 6 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	100%	207.98	Week	200.00	41,596.80	
l	Toilet Block 2 - (4 Pan Unit)	100%	207.98	Week	200.00	41,596.80	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
o	Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						110,200.00
a	Desks	100%	28.00	No	500.00	14,000.00	
b	Chairs	100%	28.00	No	150.00	4,200.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	3.00	No	5,000.00	15,000.00	
f	Computers	100%	28.00	No	1,500.00	42,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	3.00	No	500.00	1,500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						460,866.40
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	48.00	Month	200.00	9,600.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	207.98	Week	2,100.00	436,766.40	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						9,860,000.00
a	Commercial Manager	30%	4.00	Year	250,000.00	300,000.00	
b	Site Manager	100%	4.00	Year	220,000.00	880,000.00	
c	Project Manager (Senior)	100%	4.00	Year	180,000.00	720,000.00	
d	Project Managers (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
e	Project Managers (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
f	Quantity Surveyor (Senior)	100%	4.00	Year	160,000.00	640,000.00	
g	Quantity Surveyors (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
h	Quantity Surveyors (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
i	Services Engineer (Senior)	100%	4.00	Year	160,000.00	640,000.00	
j	Services Engineers (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
k	Services Engineers (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
l	Construction Planner/Programmer	100%	4.00	Year	150,000.00	600,000.00	
m	Surveyor	50%	4.00	Year	150,000.00	300,000.00	
n	Construction Manager	100%	4.00	Year	150,000.00	600,000.00	
o	Construction Foreman 1	100%	4.00	Year	130,000.00	520,000.00	
p	Construction Foreman 2	100%	4.00	Year	130,000.00	520,000.00	
q	Construction Supervisor 1	100%	4.00	Year	120,000.00	480,000.00	
r	Construction Supervisor 2	100%	4.00	Year	120,000.00	480,000.00	
s	Services Manager	100%	4.00	Year	160,000.00	640,000.00	
t	Services Foreman	100%	4.00	Year	130,000.00	520,000.00	
u	Services Supervisor	100%	4.00	Year	120,000.00	480,000.00	
v	Health & Safety Officer	50%	4.00	Year	130,000.00	260,000.00	
w	Quality Control Manager	50%	4.00	Year	130,000.00	260,000.00	
3.02	General Labour & Support Personnel						2,720,000.00
a	General Labourer 1	100%	4.00	Year	50,000.00	200,000.00	
b	General Labourer 2	100%	4.00	Year	50,000.00	200,000.00	

PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

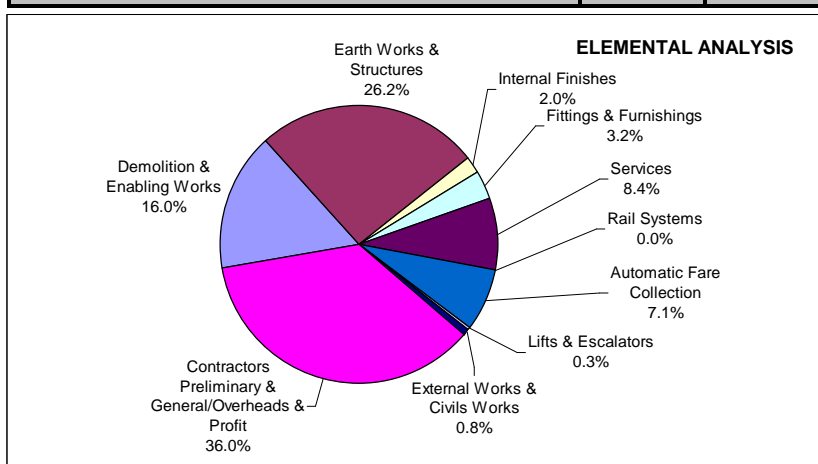
Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	4.00	Year	50,000.00	200,000.00	
d	General Labourer 4	100%	4.00	Year	50,000.00	200,000.00	
e	General Labourer 5	100%	4.00	Year	50,000.00	200,000.00	
f	Storeman	100%	4.00	Year	70,000.00	280,000.00	
g	Clerk of Works	100%	4.00	Year	100,000.00	400,000.00	
h	Traffic Supervisor	50%	4.00	Year	80,000.00	160,000.00	
i	Office Receptionist	100%	4.00	Year	40,000.00	160,000.00	
j	Secretary/PA	100%	4.00	Year	60,000.00	240,000.00	
k	General Office Administrator 1	100%	4.00	Year	40,000.00	160,000.00	
l	General Office Administrator 2	100%	4.00	Year	40,000.00	160,000.00	
m	General Office Administrator 3	100%	4.00	Year	40,000.00	160,000.00	
3.03	Vehicles						1,000,000.00
a	Lease car	100%	10.00	No.	35,000.00	350,000.00	
b	Lease station wagon	100%	6.00	No.	40,000.00	240,000.00	
c	Lease utility vehicle	100%	6.00	No.	50,000.00	300,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						17,140.00
a	Hard Hats	100%	36.00	No	100.00	3,600.00	
b	High visibility vests	100%	36.00	No	60.00	2,160.00	
c	Trousers	100%	36.00	No	80.00	2,880.00	
d	Boots	100%	36.00	No	200.00	7,200.00	
e	Sundries	100%	36.00	No	25.00	900.00	
f	First Aid Kits	100%	4.00	No	100.00	400.00	
3.05	Sundries & General Expenses						110,040.00
a	Petty cash	100%	48.00	Month	100.00	4,800.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	48.00	Month	100.00	4,800.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	48.00	Month	500.00	24,000.00	
e	Photographs	100%	48.00	Month	30.00	1,440.00	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						9,088,704.99
a	Mobile crane (100 tonne)	20%	207.98	Week	35,000.00	1,455,888.00	
b	Forklift	50%	207.98	Week	3,920.00	407,648.64	
c	Scissor platform	40%	207.98	Week	1,645.00	136,853.47	
d	Boom type platform	40%	207.98	Week	3,500.00	291,177.60	
e	Cheery Picker 1	40%	207.98	Week	1,750.00	145,588.80	
f	Cheery Picker 2	40%	207.98	Week	1,750.00	145,588.80	
g	Scaffolding (In place)	40%	207.98	Week	3,000.00	249,580.80	
h	Scaffolding (mobile)	40%	207.98	Week	1,000.00	83,193.60	
i	Dumper (6 ton 4 x 4)	50%	207.98	Week	6,160.00	640,590.72	
j	Road sweeper	25%	207.98	Week	6,160.00	320,295.36	
k	Concrete batching plant	50%	207.98	Week	2,500.00	259,980.00	

PRELIMINARY & GENERAL - ZONE 1 - BRITOMART CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	207.98	Week	5,600.00	582,355.20	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	50%	48	Month	133,000.00	3,192,000.00	
q	Diesel bowser	100%	207.98	Week	1,000.00	207,984.00	
r	Temporary generator (100 kVA)	50%	207.98	Week	500.00	51,996.00	
s	Small tools allowance	50%	207.98	Week	500.00	51,996.00	
t	Skips	50%	207.98	Week	1,000.00	103,992.00	
u	Compressors	50%	207.98	Week	500.00	51,996.00	
	Total					28,043,319.92	28,043,319.92

CH0 TO CH100 - BRITOMART STATION

SUMMARY OF COST		Value	Total
Ref	Item Description	%	(NZD \$)
1.00	Demolition & Enabling Works	16.0%	5,990,000
1.01	Demolition & Enabling Works	13.2%	4,940,000
1.02	Utilities Diversions	2.8%	1,050,000
2.00	Earth Works & Structures	26.2%	9,820,000
2.01	Earth Works	2.6%	980,000
2.02	Substructure	3.1%	1,160,000
2.03	Frame	5.8%	2,160,000
2.04	External Walls	6.6%	2,460,000
2.05	Ground Slab	1.5%	560,000
2.06	Columns	0.7%	250,000
2.07	Beams	1.4%	510,000
2.08	Upper Floors	0.0%	0
2.09	Roof Slab	1.5%	570,000
2.10	Internal Walls	0.3%	100,000
2.11	Stairs	0.0%	0
2.12	Internal Doors	0.2%	70,000
2.13	Surface Level Structures	2.7%	1,000,000
3.00	Internal Finishes	2.0%	750,000
3.01	Floor Finishes	0.7%	250,000
3.02	Wall Finishes	0.7%	250,000
3.03	Ceiling Finishes	0.7%	250,000
4.00	Fittings & Furnishings	3.2%	1,180,000
4.01	Fittings & Furnishings	3.2%	1,180,000
5.00	Services	8.4%	3,150,000
5.01	Tunnel & Trackway Ventilation	4.0%	1,500,000
5.02	Station HVAC	1.3%	500,000
5.03	Electrical Services	1.3%	500,000
5.04	Fire Protection Services	0.7%	250,000
5.05	Building Management Systems	0.1%	50,000
5.06	Communications Systems	0.3%	100,000
5.07	Security Systems	0.4%	150,000
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.1%	50,000
5.09	Drainage Services	0.1%	50,000
6.00	Rail Systems	0.0%	0
6.01	Rail Systems	0.0%	0
7.00	Automatic Fare Collection	7.1%	2,670,000
7.01	Automatic Fare Collection	7.1%	2,670,000
8.00	Lifts & Escalators	0.3%	110,000
8.01	Lifts	0.0%	0
8.02	Escalators	0.3%	110,000
9.00	External Works & Civils Works	0.8%	300,000
9.01	External Works	0.5%	200,000
9.02	Civil Works	0.3%	100,000
10.00	Contractors Preliminary & General/Overheads & Profit	36.0%	13,460,000
10.01	Contractors Preliminary & General	22.9%	8,580,000
10.01	Contractors Overheads & Profit	13.0%	4,880,000
Total		100.0%	37,430,000
			23,970,000
			Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA		Dimension			
Ref	Item Description	Unit	East Line	West Line	Total
1.00	Trench Length Under CPO	m	50.00	50.00	-
2.00	Trench Width	m	8.00	8.00	-
3.00	Trench Height	m	8.00	8.00	-
4.00	Trench Cross Section Area	m2	64.00	64.00	128.00
5.00	Trench Volume	m3	3,200.00	3,200.00	6,400.00
6.00	Tunnel Box Width	m	7.20	7.20	-
7.00	Tunnel Box Height	m	7.20	7.20	-
8.00	Tunnel Box Cross Section Area	m2	51.84	51.84	103.68
9.00	Tunnel Box Perimeter Length	m	28.80	28.80	57.60
10.00	Tunnel Box Volume	m3	2,592.00	2,592.00	5,184.00

CH0 TO CH100 - BRITOMART STATION

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						4,940,000.00
a	Form opening in CPO building wall for construction access including all structural strengthening & reinstatement work on completion	1.00	1	LS	100,000.00	100,000.00	
b	Form opening in CPO building wall for temporary tenancy access including all structural strengthening & reinstatement work on	1.00	1	LS	100,000.00	100,000.00	
c	Construct temporary external access stairs (covered) to provide temporary tenancy access to 1st floor	1.00	1	LS	30,000.00	30,000.00	
d	Form opening in CPO building slab for construction access including all structural strengthening & reinstatement work on completion	2.00	2	LS	100,000.00	200,000.00	
e	Remove to client store, existing steel feature forest	2.00	2	LS	30,000.00	60,000.00	
f	Demolish existing feature wall (adjacent forest)	2.00	2	LS	50,000.00	100,000.00	
g	Demolish existing stair 11 and reinstate on completion of the civil works	1.00	1	LS	100,000.00	100,000.00	
h	Construct temporary scissor stairs from existing access bridge to platform level	2.00	2	LS	20,000.00	40,000.00	
i	Decommission and remove to client store existing escalator B1 & B2	2.00	2	LS	25,000.00	50,000.00	
j	Allow for salvaging heritage items (i.e. mosaic tiles, timber floor and other) and reinstating on completion of the civil works	1.00	1	LS	100,000.00	100,000.00	
k	Demolish existing CPO entrance steps and reinstate on completion of the civil works	1.00	1	LS	50,000.00	50,000.00	
l	Form 10,000 x 10,000mm opening in existing 1,200mm dia secant pile wall	4.00	4	LS	50,000.00	200,000.00	
m	Form access to allow construction of ground floor load transfer gantries	40.00	40	LS	25,000.00	1,000,000.00	
n	Form access to allow construction of CPO facade load transfer gantry	1.00	1	LS	150,000.00	150,000.00	
o	Modification works to existing glazed atrium structure and pedestrian bridge for temporary public access	1.00	1	LS	100,000.00	100,000.00	
p	Hoarding to tracks 1 & 5	2.00	2	LS	20,000.00	40,000.00	
q	Hoarding to front of CPO	1.00	1	LS	30,000.00	30,000.00	
r	Break out and remove existing platform slab adjacent tracks 1 & 5 (Chainage 0.00 to 50.00)	800.00	800	m2	100.00	80,000.00	
s	Break out and remove existing basement slab (Chainage 50.00 to 100.00)	800.00	800	m2	200.00	160,000.00	
t	Demolish existing RC tunnel link to Westfield (Chainage 50.00 to 100.00 only)	1.00	1	LS	50,000.00	50,000.00	
u	Allowance for temporary propping equipment to take existing ground floor	1.00	1	LS	150,000.00	150,000.00	
v	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
w	Allowance for traffic management	-	-	Month	-	Included elsewhere	
x	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
y	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	350,000.00	350,000.00	
z	Allowance for delayed productivity as a result of restricted working hours and working in confined spaces	1.00	1	LS	1,000,000.00	1,000,000.00	
aa	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						1,050,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	200,000.00	200,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	100,000.00	100,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	150,000.00	150,000.00	

CH0 TO CH100 - BRITOMART STATION

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	500,000.00	500,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						980,000.00
a	Allowance for exploratory bores	6.00	6	No.	3,000.00	18,000.00	
b	Steel shoring equipment to retain face of trench excavation	1.00	1	LS	50,000.00	50,000.00	
c	Machine excavation in made ground (hit & miss trench excavation)	3,200.00	3,200	m3	70.00	224,000.00	
d	Machine excavation in soft rock (hit & miss trench excavation)	3,200.00	3,200	m3	100.00	320,000.00	
e	Machine excavation in hard rock	-	-	m3	100.00	-	
f	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	6,080.00	6,080	m3	40.00	243,200.00	
g	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	320.00	320	m3	90.00	28,800.00	
h	Imported engineering fill	1,216.00	1,216	m3	75.00	91,200.00	
i	Rounding adjustment	1.00	1	LS	4,800.00	4,800.00	
2.02	Substructure						1,160,000.00
a	Allowance for piling rig establishment/disestablishment; commissioning; test piles; relocation, etc	1.00	1	LS	150,000.00	150,000.00	
b	800 x 800 x 800mm reinforced concrete pile cap	46.08	47	m3	2,235.03	105,046.18	
c	140mm dia (22m long) Ishcebek Titan Micropile System (52/26 bar)	90.00	90	No.	10,000.00	900,000.00	
d	Rounding adjustment	1.00	1	LS	4,953.83	4,953.83	
2.03	Frame						2,160,000.00
a	Load transfer gantry for CPO ground floor space constructed from UC sections (approx 9.0m long x 4.0m high); 4.400kg/gantry (16 No.	70.40	71	tonne	6,000.00	426,000.00	
b	Load transfer gantry for temporary support of CPO entrance lobby constructed from UC sections; 20,000kg/gantry (1 No. required)	20.00	20	tonne	6,000.00	120,000.00	
c	Allowance for traverse secondary members, connections and clamping accessories (15%)	13.56	14	tonne	8,500.00	119,000.00	
d	25mm Dywidag bar lateral clamping member (existing columns to trusses)	200.00	200	m	500.00	100,000.00	
e	Load transfer system - 40 tonne adjustable pressurisation flat jacks (25mm stroke) to façade walls and main entrance	40.00	40	No.	25,000.00	1,000,000.00	
f	Load transfer system - 400 tonne adjustable pressurisation flat jacks (25mm stroke) to interior column supports	6.00	6	No.	50,000.00	300,000.00	
g	Allowance for other miscellaneous plant & equipment to allow construction of the load transfer system	6.00	6	Month	15,000.00	90,000.00	
h	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
2.04	External Walls						2,460,000.00
a	100mm thick, grout curtain ground improvement works (4m high to excavated face)	200.00	200	m3	400.00	80,000.00	
b	250mm thick, cast insitu reinforced shotcrete wall	400.00	400	m3	852.00	340,800.00	
c	125mm thick, cast insitu reinforced shotcrete wall	200.00	200	m3	672.00	134,400.00	
d	2,000 x 2,000 x 300mm thick cast insitu shotcrete bearing pads	144.00	144	m3	924.00	133,056.00	
e	200 UC 52 temporary propping (struts) @ 2.5m horizontal crs (in 3 rows vertically)	49.92	50	tonne	4,500.00	225,000.00	
f	200 UC 52 temporary propping (whaling beam)	10.40	11	tonne	4,500.00	49,500.00	
g	Allowance for bolted steel plate connections	6.03	7	tonne	7,000.00	49,000.00	
h	Tanking/Waterproof Membranes	1,600.00	1,600	m2	100.00	160,000.00	
i	500mm thick, cast insitu reinforced concrete wall	800.00	800	m3	1,613.45	1,290,760.00	
j	Rounding adjustment	1.00	1	LS	-2,516.00	-2,516.00	
2.05	Ground Slab						560,000.00
a	300mm thick, reinforced concrete blinding layer	240.00	240	m3	784.30	188,232.00	
b	Tanking/waterproof membranes	800.00	800	m2	100.00	80,000.00	
c	500mm thick, cast insitu reinforced concrete slab	360.00	360	m3	799.48	287,812.80	
d	Rounding adjustment	1.00	1	LS	3,955.20	3,955.20	
2.06	Columns						250,000.00
a	Allowance for reinforced concrete columns (not defined)	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	

CH0 TO CH100 - BRITOMART STATION

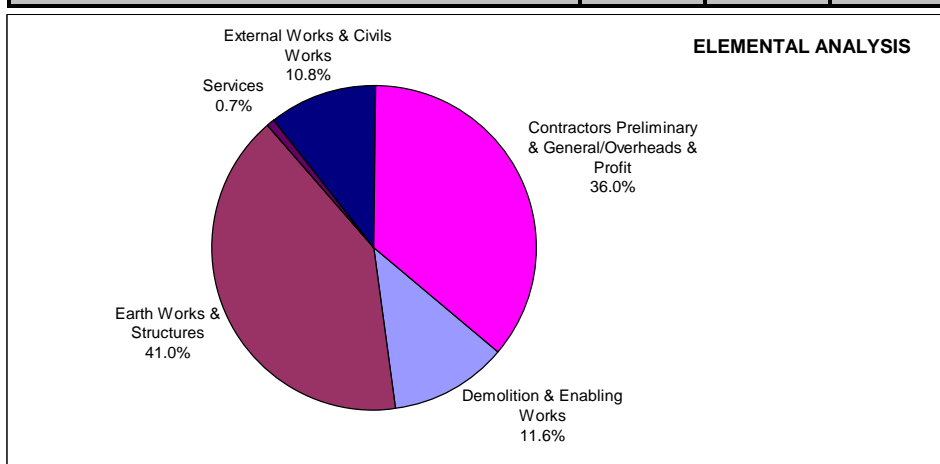
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
2.07	Beams						510,000.00
a	1,000 x 1,000mm reinforced concrete beam (Lintels over openings in Secant pile wall)	56.00	56	m3	2,274.70	127,383.20	
b	1,000 x 500mm reinforced concrete beam (Subfloor upstand beam to support columns over rail box)	70.00	70	m3	1,904.40	133,308.00	
c	Allowance for reinforced concrete beams (not defined)	1.00	1	LS	250,000.00	250,000.00	
d	Rounding adjustment	1.00	1	LS	-691.20	-691.20	
2.08	Upper Floors						0.00
-	-	-	-	-	-	Included elsewhere	
2.09	Roof Slab						570,000.00
a	500mm thick, cast insitu reinforced concrete roof slab	360.00	360	m3	1,364.82	491,335.20	
b	Tanking/waterproof membranes	800.00	800	m2	100.00	80,000.00	
c	Rounding adjustment	1.00	1	LS	-1,335.20	-1,335.20	
2.10	Internal Walls						100,000.00
a	Allowance for block walls in basement areas (not defined)	1.00	1	LS	100,000.00	100,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.11	Stairs						0.00
-	-	-	-	-	-	Included elsewhere	
2.12	Internal Doors						70,000.00
a	Single FRR door (not defined)	5.00	10	No.	2,500.00	25,000.00	
b	Double FRR door (not defined)	5.00	10	No.	4,500.00	45,000.00	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.13	Surface Level Structures						1,000,000.00
a	Allowance for ventilation building (integrated into existing)	1.00	1	LS	1,000,000.00	1,000,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						
3.01	Floor Finishes						250,000.00
a	Allowances for new and replacement floor finishes to areas affected by the construction works	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.02	Wall Finishes						250,000.00
a	Allowances for new and replacement wall finishes to areas affected by the construction works	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.03	Ceiling Finishes						250,000.00
a	Allowances for new and replacement ceiling finishes to areas affected by the construction works	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						1,180,000.00
a	Allowance for sundry furniture (i.e. barriers, bins, seating, notice boards, staff furniture, etc)	1.00	1	LS	100,000.00	100,000.00	
b	Allowance for station & direction signage (illuminated)	1.00	1	LS	25,000.00	25,000.00	
c	Toughened glass platform partitioning with automated doors	-	-	m2	3,500.00	N/A	
d	Allowance for balustrades and handrails (assumed high specification, i.e. toughened glass with stainless steel frame members)	1.00	1	LS	50,000.00	50,000.00	
e	Stainless steel balustrades and handrails	-	-	m	500.00	N/A	
f	Stainless steel handrails and brackets fixed to wall	-	-	m	250.00	N/A	
g	Heavy duty aluminium stair treads	-	-	m	120.00	N/A	
h	Allowance for interior & exterior artwork	1.00	1	LS	1,000,000.00	1,000,000.00	
i	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
5.00	Services						

CH0 TO CH100 - BRITOMART STATION

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
5.01	Tunnel & Trackway Ventilation						1,500,000.00
a	Allowance for Tunnel & Trackway reconfiguration works	1.00	1	No.	1,500,000.00	1,500,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.02	Station HVAC						500,000.00
a	Allowance for Station HVAC reconfiguration works	1.00	1	LS	500,000.00	500,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.02	Electrical Services						500,000.00
a	Allowance for Electrical Services reconfiguration works	1.00	1	LS	500,000.00	500,000.00	
ah	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.03	Fire Protection Services						250,000.00
a	Allowance for Fire Protection Services reconfiguration works	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.04	Building Management Systems						50,000.00
a	Allowance for Building Management Services reconfiguration works	1.00	1	LS	50,000.00	50,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.05	Communications Systems						100,000.00
a	Allowance for Communications Systems reconfiguration works	1.00	1	LS	100,000.00	100,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.06	Security Systems						150,000.00
a	Allowance for Security Systems reconfiguration works	1.00	1	LS	150,000.00	150,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.07	Hydraulics/Sanitary Plumbing & Fittings						50,000.00
a	Allowance for Hydraulics/Sanitary Plumbing & Fittings reconfiguration works (minor only)	1.00	1	LS	50,000.00	50,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
5.08	Drainage Services						50,000.00
a	Allowance for Drainage Services reconfiguration works (minor only)	1.00	1	LS	50,000.00	50,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						2,670,000.00
a	Ticket vending machine	-	-	No.	85,000.00	Excluded Exist. re-used	
b	Gate line end stanchion	6.00	6	No.	85,000.00	510,000.00	
c	Gate line intermediate stanchion	12.00	12	No.	119,000.00	1,428,000.00	
d	Manually operated stanchion	3.00	3	No.	25,500.00	76,500.00	
e	Allowance for interface to BMS & Control Centre	1.00	1	LS	500,000.00	500,000.00	
f	Allowance for BWIC with installations	2,514,500.00	2,514,500	LS	5.0%	125,725.00	
g	Testing & commissioning	2,514,500.00	2,514,500	LS	1.0%	25,145.00	
h	Rounding adjustment	1.00	1	LS	4,630.00	4,630.00	

CH100 TO CH230 - CUT & COVER SECTION (QUEEN ST/WESTFIELD)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	11.6%	4,430,000	34,077	
1.01	Demolition & Enabling Works	8.9%	3,380,000	26,000	
1.02	Utilities Diversions	2.8%	1,050,000	8,077	
2.00	Earth Works & Structures	41.0%	15,660,000	120,462	
2.01	Earth Works	5.8%	2,200,000	16,923	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	21.8%	8,310,000	63,923	
2.05	Ground Slab	4.8%	1,820,000	14,000	
2.06	Columns	0.0%	0	0	
2.07	Beams	1.3%	480,000	3,692	
2.08	Upper Floors	1.6%	620,000	4,769	
2.09	Roof Slab	4.5%	1,730,000	13,308	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	1.3%	500,000	3,846	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.7%	250,000	1,923	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.7%	250,000	1,923	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	10.8%	4,110,000	31,615	
9.01	External Works	6.9%	2,620,000	20,154	
9.02	Civil Works	3.9%	1,490,000	11,462	
10.00	Contractors Preliminary & General/Overheads & Profit	36.0%	13,730,000	105,615	
10.01	Contractors Preliminary & General	22.9%	8,750,000	67,308	
10.01	Contractors Overheads & Profit	13.0%	4,980,000	38,308	
Total		100.0%	38,180,000	293,692	
				24,450,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	130.00
2.00	Trench Width (Min)	m	17.00
3.00	Trench Width (Max)	m	21.00
4.00	Trench Width (Average)	m	19.00
5.00	Trench Height	m	11.00
6.00	Trench Footprint Area (Average)	m2	2,470.00
7.00	Trench Cross Section Area (Average)	m2	209.00
8.00	Trench Volume (Average)	m3	27,170.00

CH100 TO CH230 - CUT & COVER SECTION (QUEEN ST/WESTFIELD)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						3,380,000.00
a	Demolish existing Westfield building (Assumed portion paid by ARTA/Ontrack is 20% - Based on area)	1.00	1	LS	200,000.00	200,000.00	
b	Demolish existing RC tunnel link to Westfield (Chainage 100 to 130)	1.00	1	LS	150,000.00	150,000.00	
c	Allowance for underpinning works to corner of AMP building	1.00	1	LS	2,000,000.00	2,000,000.00	
d	Remove existing bus shelters and other surface level structures	1.00	1	LS	150,000.00	150,000.00	
e	Decommission and remove to client store existing lift	1.00	1	LS	25,000.00	25,000.00	
f	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
g	Allowance for traffic management	-	-	Month	-	Included elsewhere	
h	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
i	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	150,000.00	150,000.00	
j	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						1,050,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	200,000.00	200,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	100,000.00	100,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	150,000.00	150,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	500,000.00	500,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,200,000.00
a	Break up existing roads & footpaths	2,470.00	2,470	m2	40.00	98,800.00	
b	Machine excavation in made ground	9,880.00	9,880	m3	35.00	345,800.00	
c	Machine excavation in soft rock	17,290.00	17,290	m3	35.00	605,150.00	
d	Machine excavation in hard rock	-	-	m3	100.00	Not Required	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	25,811.50	25,812	m3	40.00	1,032,480.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,358.50	1,359	m3	90.00	122,310.00	
g	Imported engineering fill	-	-	m3	75.00	Not Required	
h	Rounding adjustment	1.00	1	LS	-4,540.00	-4,540.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						8,310,000.00

CH100 TO CH230 - CUT & COVER SECTION (QUEEN ST/WESTFIELD)

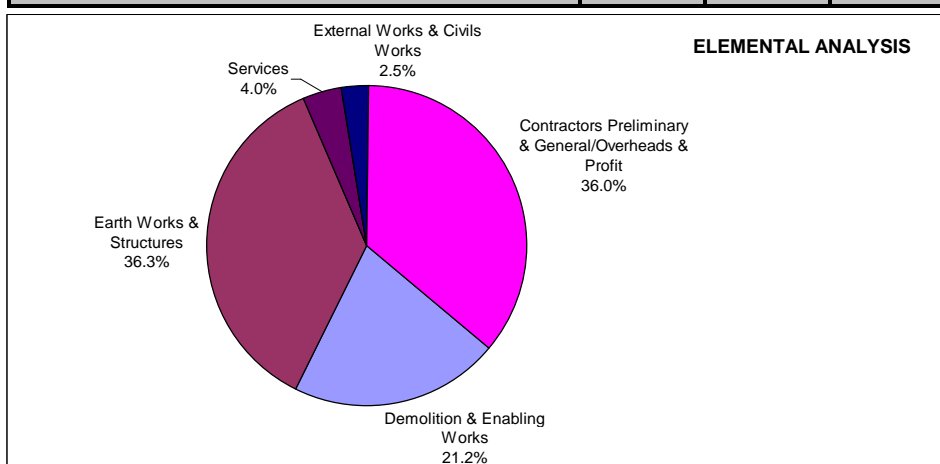
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	210.60	211	m3	1,984.50	418,729.50	
b	900mm (DIA) contiguous bored piles - 13m (AVG L) @ 1,000mm horizontal crs	3,225.39	3,225	m3	1,315.60	4,242,810.00	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	249.60	250	m3	1,748.86	437,215.63	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	97.81	98	tonne	4,500.00	441,000.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	102.96	103	tonne	4,500.00	463,500.00	
f	Allowance for bolted steel plate connections	20.08	21	tonne	7,000.00	147,000.00	
g	Tanking/Waterproof Membranes	5,720.00	5,720	m2	100.00	572,000.00	
h	300mm thick, cast insitu reinforced shotcrete wall	1,716.00	1,716	m3	924.00	1,585,584.00	
i	Rounding adjustment	1.00	1	LS	2,160.88	2,160.88	
2.05	Ground Slab						1,820,000.00
a	300mm thick, reinforced concrete blinding layer	741.00	741	m3	784.30	581,166.30	
b	Tanking/waterproof membranes	2,470.00	2,470	m2	100.00	247,000.00	
c	500mm thick, cast insitu reinforced concrete slab	1,235.00	1,235	m3	799.48	987,357.80	
d	Rounding adjustment	1.00	1	LS	4,475.90	4,475.90	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						480,000.00
a	800 x 500mm cast insitu, reinforced concrete beam (East Line - Concourse Deck)	86.67	87	m3	2,274.70	197,898.90	
b	750 x 750mm cast insitu, reinforced concrete beam/strut (East Line - Concourse Deck)	146.25	147	m3	1,938.20	284,914.99	
b	Rounding adjustment	1.00	1	LS	-2,813.89	-2,813.89	
2.08	Upper Floors						620,000.00
a	200mm thick, precast hollow core floor with 75mm thick, reinforced concrete topping slab	2,470.00	2,470	m2	250.00	617,500.00	
b	Rounding adjustment	1.00	1	LS	2,500.00	2,500.00	
2.09	Roof Slab						1,730,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take HN-HO-72 traffic loading)	2,470.00	2,470	m2	600.00	1,482,000.00	
b	Tanking/waterproof membranes	2,470.00	2,470	m2	100.00	247,000.00	
c	Rounding adjustment	1.00	1	LS	1,000.00	1,000.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	Included Elsewhere	
2.11	Stairs						0.00
-	-	-	-	-	-	Included Elsewhere	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						500,000.00
a	Allowance for new pedestrian tunnel complete constructed in rail tunnel concourse (Westfield to Britomart)	1.00	1	LS	500,000.00	500,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	

CH100 TO CH230 - CUT & COVER SECTION (QUEEN ST/WESTFIELD)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						250,000.00
a	Allowance for drainage services in base of trench	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems		-	LS	-	Included elsewhere	
b	Track works		-	LS	-	Included elsewhere	
c	Track side services		-	LS	-	Included elsewhere	
d	Overhead line electrification		-	LS	-	Included elsewhere	
e	Traction power		-	LS	-	Included elsewhere	
f	Signalling		-	LS	-	Included elsewhere	
g	SCADA		-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	Included Elsewhere	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	Included Elsewhere	
8.02	Escalators						0.00
-	-	-	-	-	-	N/A	
9.00	External Works & Civils Works						
9.01	External Works						2,620,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	2,470.00	2,470	m2	50.00	123,500.00	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	2,470.00	2,470	m2	200.00	494,000.00	
c	Allowance for landscaping enhancements	1.00	1	LS	1,500,000.00	1,500,000.00	
d	Allowance for landscaping monuments and artwork to Queen Elizabeth Square	1.00	1	LS	500,000.00	500,000.00	

CH230 TO CH390 - CUT & COVER SECTION (WESTFIELD/ALBERT ST)

SUMMARY OF COST		Value	Total	Cost/Length		
Ref	Item Description	%	(NZD \$)	(NZD \$)		
1.00	Demolition & Enabling Works	21.2%	9,900,000	61,875		
1.01	Demolition & Enabling Works	5.1%	2,400,000	15,000		
1.02	Utilities Diversions	16.1%	7,500,000	46,875		
2.00	Earth Works & Structures	36.3%	16,960,000	106,000		
2.01	Earth Works	5.6%	2,600,000	16,250		
2.02	Substructure	0.0%	0	0		
2.03	Frame	0.0%	0	0		
2.04	External Walls	18.9%	8,840,000	55,250		
2.05	Ground Slab	3.7%	1,710,000	10,688		
2.06	Columns	0.0%	0	0		
2.07	Beams	3.1%	1,440,000	9,000		
2.08	Upper Floors	0.0%	0	0		
2.09	Roof Slab	3.5%	1,620,000	10,125		
2.10	Internal Walls	0.0%	0	0		
2.11	Stairs	0.0%	0	0		
2.12	Internal Doors	0.0%	0	0		
2.13	Sub-Surface/Surface Level Structures	1.6%	750,000	4,688		
3.00	Internal Finishes	0.0%	0	0		
3.01	Floor Finishes	0.0%	0	0		
3.02	Wall Finishes	0.0%	0	0		
3.03	Ceiling Finishes	0.0%	0	0		
4.00	Fittings & Furnishings	0.0%	0	0		
4.01	Fittings & Furnishings	0.0%	0	0		
5.00	Services	4.0%	1,850,000	11,563		
5.01	Tunnel & Trackway Ventilation	3.2%	1,500,000	9,375		
5.02	Station HVAC	0.0%	0	0		
5.03	Electrical Services	0.0%	0	0		
5.04	Fire Protection Services	0.0%	0	0		
5.05	Building Management Systems	0.0%	0	0		
5.06	Communications Systems	0.0%	0	0		
5.07	Security Systems	0.0%	0	0		
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0		
5.09	Drainage Services	0.7%	350,000	2,188		
6.00	Rail Systems	0.0%	0	0		
6.01	Rail Systems	0.0%	0	0		
7.00	Automatic Fare Collection	0.0%	0	0		
7.01	Automatic Fare Collection	0.0%	0	0		
8.00	Lifts & Escalators	0.0%	0	0		
8.01	Lifts	0.0%	0	0		
8.02	Escalators	0.0%	0	0		
9.00	External Works & Civils Works	2.5%	1,190,000	7,438		
9.01	External Works	0.6%	260,000	1,625		
9.02	Civil Works	2.0%	930,000	5,813		
10.00	Contractors Preliminary & General/Overheads & Profit	36.0%	16,790,000	104,937		
10.01	Contractors Preliminary & General	22.9%	10,700,000	66,875		
10.01	Contractors Overheads & Profit	13.0%	6,090,000	38,063		
Total		100.0%	46,690,000	291,812	29,900,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	160.00
2.00	Trench Width (Min)	m	13.00
3.00	Trench Width (Max)	m	16.00
4.00	Trench Width (Average)	m	14.50
5.00	Trench Height (Min)	m	11.00
6.00	Trench Height (Max)	m	15.00
7.00	Trench Height (Average)	m	13.00
8.00	Trench Footprint Area (Average)	m2	2,320.00
9.00	Trench Cross Section Area (Average)	m2	188.50
10.00	Trench Volume (Average)	m3	30,160.00

CH230 TO CH390 - CUT & COVER SECTION (WESTFIELD/ALBERT ST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						2,400,000.00
a	Demolish existing pump station	1.00	1	LS	100,000.00	100,000.00	
b	Injected grout, ground improvement works - TBM breakout box North (Box surround for TBMS only)	2,100.00	2,100	m3	500.00	1,050,000.00	
c	Demolish existing shop awnings on Albert Street West	1,000.00	1,000	m2	50.00	50,000.00	
d	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
e	Allowance for traffic management	-	-	Month	-	Included elsewhere	
f	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	500,000.00	500,000.00	
g	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	500,000.00	500,000.00	
h	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						7,500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	2,000,000.00	2,000,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	2,000,000.00	2,000,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	1,000,000.00	1,000,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	500,000.00	500,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,600,000.00
a	Break up existing roads & footpaths	2,320.00	2,320	m2	40.00	92,800.00	
b	Machine excavation in made ground	9,280.00	9,280	m3	35.00	324,800.00	
c	Machine excavation in soft rock	20,880.00	20,880	m3	35.00	730,800.00	
d	Machine excavation in hard rock	-	-	m3	100.00	Not Required	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	28,652.00	28,652	m3	40.00	1,146,080.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,508.00	1,508	m3	90.00	135,720.00	
g	Imported engineering fill	2,320.00	2,320	m3	75.00	174,000.00	
h	Rounding adjustment	1.00	1	LS	-4,200.00	-4,200.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						8,840,000.00

CH230 TO CH390 - CUT & COVER SECTION (WESTFIELD/ALBERT ST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	Side Walls - 300mm (W) x 900mm (H) cast insitu concrete guide wall	172.80	173	m3	1,984.50	343,318.50	
b	Side Walls - 900mm (DIA) contiguous bored piles - 17.5m (AVG L) @ 1,000mm horizontal crs	3,562.57	3,563	m3	1,315.60	4,687,482.80	
c	Side Walls - 800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	204.80	205	m3	1,748.86	358,516.81	
d	TBM Reception Wall - 300mm (W) x 900mm (H) cast insitu concrete guide wall	17.28	18	m3	1,984.50	35,721.00	
e	TBM Reception Wall - 900mm (DIA) contiguous bored piles - 19m (L) @ 1,000mm horizontal crs	386.79	387	m3	1,315.60	509,137.20	
f	TBM Reception Wall - 800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	10.24	10	m3	1,748.86	17,488.63	
g	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	91.87	92	tonne	4,500.00	414,000.00	
h	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	126.72	127	tonne	4,500.00	571,500.00	
i	Allowance for bolted steel plate connections	21.86	22	tonne	7,000.00	154,000.00	
j	Side Walls - Tanking/Waterproof Membranes	4,160.00	4,160	m2	100.00	416,000.00	
k	TBM Reception Wall - Tanking/Waterproof Membranes	480.00	480	m2	100.00	48,000.00	
l	Side Walls - 300mm thick, cast insitu reinforced shotcrete wall	1,248.00	1,248	m3	924.00	1,153,152.00	
m	TBM Reception Wall - 300mm thick, cast insitu reinforced shotcrete wall	144.00	144	m3	924.00	133,056.00	
n	Rounding adjustment	1.00	1	LS	-1,372.94	-1,372.94	
2.05	Ground Slab						1,710,000.00
a	300mm thick, reinforced concrete blinding layer	696.00	696	m3	784.30	545,872.80	
b	Tanking/waterproof membranes	2,320.00	2,320	m2	100.00	232,000.00	
c	500mm thick, cast insitu reinforced concrete slab	1,160.00	1,160	m3	799.48	927,396.80	
d	Rounding adjustment	1.00	1	LS	4,730.40	4,730.40	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						1,440,000.00
a	1,500 x 600mm post tensioned, reinforced concrete beam (D1)	93.60	94	m3	1,927.69	181,202.63	
b	1,500 x 600mm post tensioned, reinforced concrete beam (D3)	93.60	94	m3	1,927.69	181,202.63	
c	1,700 x 750mm post tensioned, reinforced concrete beam (D2)	326.40	327	m3	1,756.66	574,427.44	
d	750 x 750mm cast insitu, reinforced concrete beam/strut (East Line - Concourse Deck)	261.00	261	m3	1,938.20	505,869.48	
e	Rounding adjustment	1.00	1	LS	-2,702.16	-2,702.16	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						1,620,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take HN-HO-72 traffic loading)	2,320.00	2,320	m2	600.00	1,392,000.00	
b	Tanking/waterproof membranes	2,320.00	2,320	m2	100.00	232,000.00	
c	Rounding adjustment	1.00	1	LS	-4,000.00	-4,000.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						750,000.00
a	Allowance for pressurised fire escape shaft and stairs	1.00	1	LS	250,000.00	250,000.00	
b	Reinstate shop awnings on Albert Street West	1,000.00	1,000	m2	500.00	500,000.00	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						0.00
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00

CH230 TO CH390 - CUT & COVER SECTION (WESTFIELD/ALBERT ST)

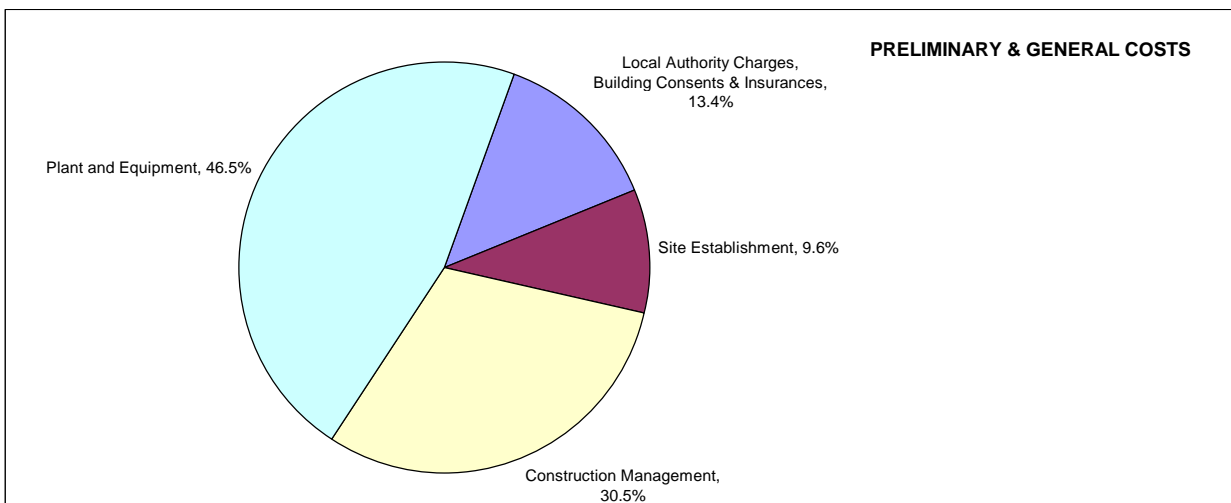
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						1,500,000.00
a	Saccardo nozzel & damper	2.00	2	No.	100,000.00	200,000.00	
b	1.8m dia station/tunnel ventilation fan - Supply (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
c	1.8m dia station/tunnel ventilation fan - Exhaust (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
d	Attenuator (Fire rated, 4.5m x 4.5m x 3m)	2.00	2	No.	75,000.00	150,000.00	
e	Exhaust grille (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
f	Damper - Exhaust stack (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
g	Damper - Above Trackway (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
h	Damper - To Saccardo nozzels (Fire rated, 10m2)	2.00	2	No.	30,000.00	60,000.00	
i	Damper (Fire rated, 5m2)	-	-	No.	15,000.00	-	
j	Allowance for electrical services connections	1.00	1	LS	100,000.00	100,000.00	
k	Allowance for pipework, ductwork & grilles, controls, interface with SCADA & BMS, etc	1,010,000.00	1,010,000	LS	30.0%	303,000.00	
l	Allowance for BWIC with installations	1,413,000.00	1,413,000	LS	5.0%	70,650.00	
m	Testing & commissioning	1,413,000.00	1,413,000	LS	1.0%	14,130.00	
n	Rounding adjustment	1.00	1	LS	2,220.00	2,220.00	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						350,000.00
a	Allowance for drainage services in base of trench	1.00	1	LS	350,000.00	350,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems		-	LS	-	Included elsewhere	
b	Track works		-	LS	-	Included elsewhere	
c	Track side services		-	LS	-	Included elsewhere	

PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

A	Construction Cost Value (Measured Works)	\$153,080,000	NZD
B	Programme (Duration)	4.42	In Years
C	Programme (Duration)	53.00	In Months <input type="text" value="Input Duration Here"/>
D	Programme (Duration)	229.65	In Weeks
E	Total Estimated Value of Contractors Preliminary & General Costs	\$25,965,093	NZD
F	Approximate % Value of Construction Cost	16.96%	%
G	Maximum Number of Management & Support Personnel on Site	16	No.

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	3,467,760	13.4%	
1.01	Local Authority Charges & Building Consents	765,400	2.9%	
1.02	Notification of Work to Department of Labour	918,480	3.5%	
1.03	Insurances & Bonds	1,783,880	6.9%	
2.00	Site Establishment	2,489,399	9.6%	
2.01	Site Signage	13,000	0.1%	
2.02	Temporary Water, Plumbing and Drainage	62,886	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	337,720	1.3%	
2.04	Temporary Power & Lighting	386,700	1.5%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc	198,000	0.8%	
2.06	Site Accommodation	918,930	3.5%	
2.07	Office Furniture & Equipment	64,800	0.2%	
2.08	Security	507,363	2.0%	
3.00	Construction Management	7,931,747	30.5%	
3.01	Management Personnel	6,117,083	23.6%	
3.02	General Labour & Support Personnel	1,413,333	5.4%	
3.03	Vehicles	280,000	1.1%	
3.04	Protective Clothing & Accessories	7,640	0.0%	
3.05	Sundries & General Expenses	113,690	0.4%	
4.00	Plant and Equipment	12,076,187	46.5%	
4.01	Plant and Equipment	12,076,187	46.5%	
	Total	25,965,093	100.0%	



PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						765,400.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	153,080,000.00	LS	0.50%	765,400.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						918,480.00
a	Building Research Levy	100%	153,080,000.00	LS	0.10%	153,080.00	
b	Local Body Reserve Contribution	100%	153,080,000.00	LS	0.50%	765,400.00	
1.03	Insurances & Bonds						1,783,880.00
a	Contractors All Risk	100%	153,080,000.00	LS	0.80%	1,224,640.00	
b	Public Liability (\$5,000,000)	100%	153,080,000.00	LS	0.30%	459,240.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						62,886.48
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	229.65	Week	67.00	15,386.48	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						337,720.00
a	Telephone line connection fees	100%	1.00	LS	800.00	800.00	
b	Telephone rental (16 Lines)	100%	53.00	Month	640.00	33,920.00	
c	Telephone toll charges	100%	53.00	Month	1,600.00	84,800.00	
d	Fax line connection fees (1 Lines)	100%	1.00	LS	100.00	100.00	
e	Fax rental (1 Lines)	100%	53.00	Month	50.00	2,650.00	
f	Data line connection fees (16 Lines)	100%	1.00	LS	800.00	800.00	
g	Data rental (16 Lines)	100%	53.00	Month	800.00	42,400.00	
h	Cell phone charges	100%	53.00	Month	3,200.00	169,600.00	

PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	53.00	Month	50.00	2,650.00	
2.04	Temporary Power & Lighting						386,700.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	2.00	No	10,000.00	20,000.00	
d	Main Switch Board	100%	2.00	No	5,000.00	10,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	53.00	Month	2,000.00	106,000.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	53.00	Month	200.00	10,600.00	
l	Sundries	100%	53.00	Month	200.00	10,600.00	
m	Allowance for repairs	100%	53.00	Month	500.00	26,500.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						198,000.00
a	Footpaths	100%	300.00	m2	100.00	30,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	2.00	No	5,000.00	10,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	-	-	LS	200,000.00	-	
j	Canopies	-	-	m	200.00	-	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						918,929.80
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	-	-	m2	1,500.00	-	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	-	-	m2	1,500.00	-	
f	Site Office 6 - (12 x 8)	-	-	m2	1,500.00	-	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	-	-	m2	1,000.00	-	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	-	-	Week	200.00	-	
l	Toilet Block 2 - (4 Pan Unit)	100%	229.65	Week	200.00	45,929.80	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
	o Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						64,800.00
a	Desks	100%	12.00	No	500.00	6,000.00	
b	Chairs	100%	12.00	No	150.00	1,800.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	1.00	No	5,000.00	5,000.00	
f	Computers	100%	12.00	No	1,500.00	18,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	1.00	No	500.00	500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						507,362.90
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	53.00	Month	200.00	10,600.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	229.65	Week	2,100.00	482,262.90	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						6,117,083.33
a	Commercial Manager	30%	4.42	Year	250,000.00	331,250.00	
b	Site Manager	100%	4.42	Year	220,000.00	971,666.67	
c	Project Manager (Senior)	100%	4.42	Year	180,000.00	795,000.00	
d	Project Managers (Intermediate)	-	-	Year	100,000.00	-	
e	Project Managers (Graduate)	-	-	Year	70,000.00	-	
f	Quantity Surveyor (Senior)	100%	4.42	Year	160,000.00	706,666.67	
g	Quantity Surveyors (Intermediate)	-	-	Year	100,000.00	-	
h	Quantity Surveyors (Graduate)	-	-	Year	70,000.00	-	
i	Services Engineer (Senior)	100%	4.42	Year	160,000.00	706,666.67	
j	Services Engineers (Intermediate)	-	-	Year	100,000.00	-	
k	Services Engineers (Graduate)	-	-	Year	70,000.00	-	
l	Construction Planner/Programmer	100%	4.42	Year	150,000.00	662,500.00	
m	Surveyor	-	-	Year	150,000.00	-	
n	Construction Manager	100%	4.42	Year	150,000.00	662,500.00	
o	Construction Foreman 1	-	-	Year	130,000.00	-	
p	Construction Foreman 2	-	-	Year	130,000.00	-	
q	Construction Supervisor 1	-	-	Year	120,000.00	-	
r	Construction Supervisor 2	-	-	Year	120,000.00	-	
s	Services Manager	100%	4.42	Year	160,000.00	706,666.67	
t	Services Foreman	-	-	Year	130,000.00	-	
u	Services Supervisor	-	-	Year	120,000.00	-	
v	Health & Safety Officer	50%	4.42	Year	130,000.00	287,083.33	
w	Quality Control Manager	50%	4.42	Year	130,000.00	287,083.33	
3.02	General Labour & Support Personnel						1,413,333.33
a	General Labourer 1	100%	4.42	Year	50,000.00	220,833.33	
b	General Labourer 2	100%	4.42	Year	50,000.00	220,833.33	

PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	4.42	Year	50,000.00	220,833.33	
d	General Labourer 4	-	-	Year	50,000.00	-	
e	General Labourer 5	-	-	Year	50,000.00	-	
f	Storeman	100%	4.42	Year	70,000.00	309,166.67	
g	Clerk of Works	-	-	Year	100,000.00	-	
h	Traffic Supervisor	-	-	Year	80,000.00	-	
i	Office Receptionist	100%	4.42	Year	40,000.00	176,666.67	
j	Secretary/PA	100%	4.42	Year	60,000.00	265,000.00	
k	General Office Administrator 1	-	-	Year	40,000.00	-	
l	General Office Administrator 2	-	-	Year	40,000.00	-	
m	General Office Administrator 3	-	-	Year	40,000.00	-	
3.03	Vehicles						280,000.00
a	Lease car	100%	2.00	No.	35,000.00	70,000.00	
b	Lease station wagon	-	-	No.	40,000.00	-	
c	Lease utility vehicle	100%	2.00	No.	50,000.00	100,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						7,640.00
a	Hard Hats	100%	16.00	No	100.00	1,600.00	
b	High visibility vests	100%	16.00	No	60.00	960.00	
c	Trousers	100%	16.00	No	80.00	1,280.00	
d	Boots	100%	16.00	No	200.00	3,200.00	
e	Sundries	100%	16.00	No	25.00	400.00	
f	First Aid Kits	100%	2.00	No	100.00	200.00	
3.05	Sundries & General Expenses						113,690.00
a	Petty cash	100%	53.00	Month	100.00	5,300.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	53.00	Month	100.00	5,300.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	53.00	Month	500.00	26,500.00	
e	Photographs	100%	53.00	Month	30.00	1,590.00	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						12,076,186.76
a	Mobile crane (100 tonne)	20%	229.65	Week	35,000.00	1,607,543.00	
b	Forklift	50%	229.65	Week	3,920.00	450,112.04	
c	Scissor platform	40%	229.65	Week	1,645.00	151,109.04	
d	Boom type platform	40%	229.65	Week	3,500.00	321,508.60	
e	Cheery Picker 1	40%	229.65	Week	1,750.00	160,754.30	
f	Cheery Picker 2	40%	229.65	Week	1,750.00	160,754.30	
g	Scaffolding (In place)	40%	229.65	Week	3,000.00	275,578.80	
h	Scaffolding (mobile)	40%	229.65	Week	1,000.00	91,859.60	
i	Dumper (6 ton 4 x 4)	50%	229.65	Week	6,160.00	707,318.92	
j	Road sweeper	25%	229.65	Week	6,160.00	353,659.46	
k	Concrete batching plant	50%	229.65	Week	2,500.00	287,061.25	

PRELIMINARY & GENERAL - ZONE 5 - TBM OPERATIONS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	229.65	Week	5,600.00	643,017.20	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	80%	53	Month	133,000.00	5,639,200.00	
q	Diesel bowser	100%	229.65	Week	1,000.00	229,649.00	
r	Temporary generator (100 kVA)	50%	229.65	Week	500.00	57,412.25	
s	Small tools allowance	50%	229.65	Week	500.00	57,412.25	
t	Skips	50%	229.65	Week	1,000.00	114,824.50	
u	Compressors	50%	229.65	Week	500.00	57,412.25	
	Total					25,965,092.61	25,965,092.61

CH390 TO CH2925 - BORED TUNNELLING

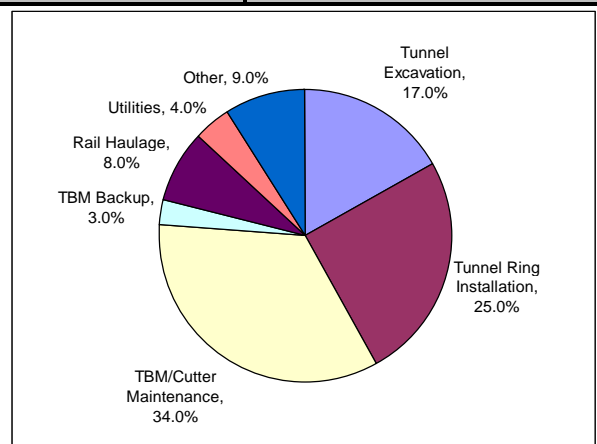
SUMMARY OF COST		Total	Ratio	Cost/Length Single Tunnel	Cost/Length Double Tunnel	
Ref	Item Description	(NZD \$)	%	(NZD \$)	(NZD \$)	
1.00	Labour, Plant & Material Costs					
1.01	TBM & Mining Works Attendant Labour	5,670,000.00	2.75%	1,303.45	2,606.90	
1.02	TBM Labour	8,160,000.00	3.96%	1,875.86	3,751.72	
1.03	Cross Passage Excavation Labour	1,740,000.00	0.85%	400.00	800.00	
1.04	Cross Passage Concreting Gang	1,890,000.00	0.92%	434.48	868.97	
1.05	TBM Plant & Support Equipment	23,360,000.00	11.35%	5,370.11	10,740.23	
1.06	Temporary Electrics	14,690,000.00	7.13%	3,377.01	6,754.02	
1.07	Temporary Works/ Site Consumables/ Surveying Equipment/ Monitoring	19,600,000.00	9.52%	4,505.75	9,011.49	
1.08	Cross Passage Equipment	1,670,000.00	0.81%	383.91	767.82	
1.09	Bored Tunnel - Primary Lining Materials	45,310,000.00	22.01%	10,416.09	20,832.18	
1.10	Bored Tunnel - Secondary Lining Materials	10,840,000.00	5.26%	2,491.95	4,983.91	
1.11	Bored Tunnel - Invert Slab	6,530,000.00	3.17%	1,501.15	3,002.30	
1.12	Cross Passage - Primary Linings Materials	600,000.00	0.29%	137.93	275.86	
1.13	Cross Passage - Secondary Lining Materials	380,000.00	0.18%	87.36	174.71	
1.14	Cross Passage - Invert Slab	40,000.00	0.02%	9.20	18.39	
1.15	Cross Passage - Fitout	750,000.00	0.36%	172.41	344.83	
1.16	Bored Tunnel - Spoil Disposal	11,790,000.00	5.73%	2,710.34	5,420.69	
1.17	Cross Passage - Spoil Disposal	60,000.00	0.03%	13.79	27.59	
1.18	Contractors Preliminary & General	25,970,000.00	12.61%	5,970.11	11,940.23	
1.19	Contractors Overheads & Profit	26,850,000.00	13.04%	6,172.41	12,344.83	
	Total	205,900,000.00	100.00%	47,333.33	94,666.67	153,080,000.00 Total Excl. P&G/OH&P

COST MODEL INPUTS			
Ref	Item Description	Unit	Measured Value
1.00	Key Metric Data - Bored Tunnelling		
1.01	Bored Tunnel Length (Single)	m	4,350.00
1.02	Bored Tunnel Length (Double)	m	2,175.00
1.03	Bored Tunnel Diameter (External Face)	m	6.90
1.04	Bored Tunnel Diameter (Inside Face)	m	6.00
1.05	Bored Tunnel Perimeter (External Face)	m	21.68
1.06	Bored Tunnel Wall Area	m2	94,294.90
1.07	Bored Tunnel Cross Sectional Area	m2	37.39
1.08	Bored Tunnel Volume	m3	162,658.71
2.00	Key Metric Data - Cross Passages		
2.01	Cross Passage Length	m	8.00
2.02	Cross Passage Diameter	m	5.00
2.03	Cross Passage Perimeter	m	15.71
2.04	Cross Passage Wall Area	m2	125.66
2.05	Cross Passage Cross Sectional Area	m2	19.63
2.06	Cross Passage Volume	m3	157.08
2.07	Total Number of Cross Passages	No.	5.00
2.08	Total Wall Area of Cross Passages	m2	628.32
2.09	Total Volume of Cross Passages	m3	785.40

SUMMARY OF PRODUCTIVITY			Bored Tunnelling	Cross Passages
Ref	Item Description	Unit	Measured Value	Measured Value
1.00	Average Advance Rates			
1.01	Anticipated Average Advance Rate per Hour	m	0.40	0.01
1.02	Anticipated Average Advance Rate per Shift	m	3.22	0.11
1.03	Anticipated Average Advance Rate per Day	m	6.44	0.22
1.04	Anticipated Average Advance Rate per Week	m	38.61	1.32
1.05	Anticipated Average Advance Rate per Month	m	167.31	5.71
2.00	Working Hours			
2.01	Total Working Hours / Day	Hours	16.00	16.00
2.02	Total Shifts / Day	No.	2.00	2.00
2.03	Total Working Hours / Shift	Hours	8.00	8.00
2.04	Total Working Days / Week	Days	6.00	6.00
2.05	Total Working Hours / Week	Hours	96.00	96.00
2.06	Total Working Shifts / Week	Shifts	12.00	12.00
2.07	Total Working Weeks / Month	Weeks	4.33	4.33
2.08	Total Working Hours / Month	Hours	415.68	415.68
2.09	Total Working Shifts / Month	Shifts	51.96	51.96
3.00	Anticipated Duration Required			
3.01	Anticipated Total Duration Required (In Hours)	Hours	14,964.48	6,235.20
3.02	Anticipated Total Duration Required (In Shifts)	Shifts	1,870.56	779.40
3.03	Anticipated Total Duration Required (In Days)	Days	935.28	389.70
3.04	Anticipated Total Duration Required (In Weeks)	Weeks	155.88	64.95
3.05	Anticipated Total Duration Required (In Months)	Months	36.00	15.00
3.06	Anticipated Total Duration Required (In Years)	Years	3.00	1.25

ASSESSED PROGRAMME DURATIONS							
Ref	Item Description	Date From (Month)	Date To (Month)	Month Total	CH From (m)	CH To (m)	Distance (m)
0.00	TBM Procurement						
0.01	Procurement (ROI, RFT, Tender Evaluation, Contract Award)	0.00	6.00	6.00	-	-	-
0.02	Lead Time (Based on New EPBTBM Supply)	6.00	18.00	12.00	-	-	-
0.03	Delivery (Freight by Ship to Auckland Sea Port)	18.00	20.00	2.00	-	-	-
	Total TBM Procurement Duration	20.00			0.00		
1.00	1st TBM Drive						
1.01	Installation & Commissioning of TBM at Mt Eden Portal	20.00	22.00	2.00	-	-	-
1.02	Mt Eden Portal to Newton Station	22.00	23.00	1.00	2,925.00	2,793.00	132.00
1.03	Newton Station to K Road Station	23.00	28.00	5.00	2,793.00	1,923.00	870.00
1.04	TBM Maintenance	28.00	29.00	1.00	-	-	-
1.05	K Road Station to Aotea Station	29.00	35.00	6.00	1,923.00	963.00	960.00
1.06	TBM Maintenance	35.00	36.00	1.00	-	-	-
1.07	Aotea Station to Albert St Portal	36.00	38.00	2.00	783.00	390.00	393.00
1.08	Decommission, Dismantle and Relocate TBM back to Mt Eden Portal	38.00	39.00	1.00	-	-	-
	Total 1st TBM Drive (Duration/Distance)	19.00			2,355.00		
2.00	2nd TBM Drive						
2.01	Installation & Commissioning of TBM at Mt Eden Portal for 2nd Drive	39.00	40.00	1.00	-	-	-
2.02	Mt Eden Portal to Newton Station	40.00	41.00	1.00	2,925.00	2,793.00	132.00
2.03	Newton Station to K Road Station	41.00	45.00	4.00	2,613.00	1,923.00	690.00
2.04	TBM Maintenance	45.00	46.00	1.00	-	-	-
2.05	K Road Station to Aotea Station	46.00	51.00	5.00	1,743.00	963.00	780.00
2.06	TBM Maintenance	51.00	52.00	1.00	-	-	-
2.07	Aotea Station to Albert St Portal	52.00	54.00	2.00	783.00	390.00	393.00
2.08	Decommission, Dismantle and Remove TBM from Site to Store	54.00	55.00	1.00	-	-	-
2.08	Final Decommissioning of Logistics Site	55.00	56.00	1.00	-	-	-
	Total 2nd TBM Drive (Duration/Distance)	17.00			1,995.00		
	Total 1st & 2nd TBM Drives (Duration/Distance)	36.00			4,350.00		
3.00	Cross Passages						
3.01	Excavate Cross Passage	55.00	62.00	7.00	-	-	-
3.02	Rock Bolt Works	62.00	63.00	1.00	-	-	-
3.03	Shotcrete Primary Lining	63.00	65.00	2.00	-	-	-
3.04	Insitu Concrete Secondary Lining	65.00	69.00	4.00	-	-	-
3.05	Insitu Concrete Invert Slab	69.00	70.00	1.00	-	-	-
	Total Cross Passage (Duration/Distance)	15.00			0.00		

TBM PRODUCTIVITY BASIS		
Ref	Item Description	%
1.00	Work Breakdown Assessment:	
1.01	Tunnel Excavation	17.0%
1.02	Tunnel Ring Installation	25.0%
1.03	TBM/Cutter Maintenance	34.0%
1.04	TBM Backup	3.0%
1.05	Rail Haulage	8.0%
1.06	Utilities	4.0%
1.07	Other	9.0%
	Total	100.0%



SUMMARY OF BULK QUANTITIES

Ref	Item Description	Unit	Measured Value
1.00	Bulk Quantities		
1.01	PCC Tunnel in Rings (1.2m wide rings)	No.	3,625.00
1.02	PCC Tunnel in Segments (6 No. segments per ring)	No.	21,750.00
1.03	Grout	m3	14,144.24
1.04	Shotcrete	m3	157.08
1.05	Rock Bolts	No.	268.15
1.06	Lattice Girders	No.	20.00
1.07	Tanking Membranes	m2	628.32
1.08	Insitu Concrete	m3	9,074.16
1.09	Bar Reinforcement	t	1,420.96
1.10	Excavation	m3	162,658.71
1.11	Disposal	m3	162,658.71

BULK MATERIAL MEASURES

Ref	Item Description	Unit	Measured Value
1.00	Bored Tunnelling - Primary Lining		
1.01	PCC Ring - Thickness	m	0.30
1.02	PCC Ring - Width	m	1.20
1.03	PCC Ring - Total Number	No.	3,625
1.04	PCC Ring - Volume/Number	m3	7.80
1.05	PCC Ring - Total Volume	m3	28,288.47
1.06	PCC Ring Segments - Number Segments/Number Ring	No.	6.00
1.07	PCC Ring Segments - Total Number Segments	No.	21,750.00
2.00	Bored Tunnelling - Secondary Lining		
2.01	Grout - Thickness	m	0.15
2.02	Grout - Total Volume	m3	14,144.24
3.00	Bored Tunnelling - Excavation & Disposal		
3.01	Excavation & Disposal Volume (Before Bulking)	m3	162,658.71
3.02	Excavation & Disposal Volume (After Bulking)	m3	243,988.06
4.00	Cross Passages - Invert Slab		
4.01	Invert Slab Length	m	4,350.00
4.02	Invert Slab Width	m	4.00
4.03	Invert Slab Depth	m	0.50
4.04	Total Invert Slab Concrete Volume	m3	8,700.00
4.05	Invert Slab Reinforcement Ratio	t/m3	0.15
4.06	Total Invert Slab Reinforcement	t	1,305.00
5.00	Cross Passages - Excavation & Disposal		
5.01	Excavation & Disposal Volume (Before Bulking)	m3	785.40
5.02	Excavation & Disposal Volume (After Bulking)	m3	1,178.10
6.00	Cross Passages - Primary Wall Linings		
6.01	Primary Lining Thickness	m	0.25
6.02	Total Primary Lining Shotcrete Volume	m3	157.08
6.03	Primary Lining Reinforcement Ratio	t/m3	0.10
6.04	Total Primary Lining Reinforcement	t	15.71
7.00	Cross Passages - Rock Bolts		
7.01	Rock Bolt Length	m	6.00
7.02	Rock Bolts Required (Based on 1.25m grid centres)	No.	268.15
7.03	Total Length of Rock Bolts	m	1,608.90
8.00	Cross Passages - Lattice Girders		
8.01	Lattice Girder Spacing	m	2.00
8.02	Total Lattice Girders	No.	20.00
9.00	Cross Passages - Tanking Membranes		
9.01	Total Tanking Membranes Required	m2	628.32
10.00	Cross Passages - Secondary Wall Linings		
10.01	Secondary Lining Thickness	m	0.50
10.02	Total Secondary Lining Concrete Volume	m3	314.16
10.03	Secondary Lining Reinforcement Ratio	t/m3	0.30
10.04	Total Secondary Lining Reinforcement	t	94.25
11.00	Cross Passages - Invert Slab		
11.01	Invert Slab Length	m	40.00
11.02	Invert Slab Width	m	3.00
11.03	Invert Slab Depth	m	0.50
11.04	Total Invert Slab Concrete Volume	m3	60.00
11.05	Invert Slab Reinforcement Ratio	t/m3	0.10
11.06	Total Invert Slab Reinforcement	t	6.00

CH390 TO CH2925 - BORED TUNNELLING

Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Labour Resources						
1.01	TBM & Mining Works Attendant Labour						5,670,000.00
a	Yard Forman	Year	1.00	3.00	260,000.00	780,000.00	
b	Pit Bottom Labourer	Year	2.00	3.00	120,000.00	720,000.00	
c	Tunnel Crane Operator	Year	1.00	3.00	140,000.00	420,000.00	
d	Banksman / Pit Top Labourer	Year	4.00	3.00	100,000.00	1,200,000.00	
e	Plant / Equipment Operator	Year	3.00	3.00	110,000.00	990,000.00	
f	Fitter	Year	2.00	3.00	160,000.00	960,000.00	
g	Electrician	Year	1.00	3.00	200,000.00	600,000.00	
h	Rounding adjustment	LS	1	1	0.00	0.00	
1.02	TBM Labour						8,160,000.00
a	Tunnel Pit Boss	Year	1.00	3.00	320,000.00	960,000.00	
b	Tunnel TBM Operator	Year	1.00	3.00	200,000.00	600,000.00	
c	Tunnel Miner (First Class) - Including Drillers and Rock Support Specialists, Ring Builder etc	Year	2.00	3.00	200,000.00	1,200,000.00	
d	Tunnel Miner (Second Class) - Including Bull Gang; Drillers Assistant, Brakeman; Services Installation, etc	Year	4.00	3.00	160,000.00	1,920,000.00	
e	Tunnel Labourer	Year	4.00	3.00	120,000.00	1,440,000.00	
f	Tunnel Loco Driver	Year	1.00	3.00	160,000.00	480,000.00	
g	Tunnel Fitter	Year	2.00	3.00	160,000.00	960,000.00	
h	Tunnel Electrician	Year	1.00	3.00	200,000.00	600,000.00	
i	Rounding adjustment	LS	1	1	0.00	0.00	
1.03	Cross Passage Excavation Labour						1,740,000.00
a	Leading Miner	Year	1.00	1.25	200,000.00	250,000.00	
b	Miner / Excavator Driver	Year	1.00	1.25	160,000.00	200,000.00	
c	Spray Machine Operator	Year	1.00	1.25	110,000.00	137,500.00	
d	Spray Pump Operator	Year	1.00	1.25	110,000.00	137,500.00	
e	Drill Rig Operator	Year	1.00	1.25	110,000.00	137,500.00	
f	Drill Rig Assistant	Year	1.00	1.25	110,000.00	137,500.00	
g	Dumper / Forklift Driver	Year	1.00	1.25	110,000.00	137,500.00	
h	Tunnel Labourer	Year	1.00	1.25	120,000.00	150,000.00	
i	Electrician	Year	1.00	1.25	200,000.00	250,000.00	
j	Fitter	Year	1.00	1.25	160,000.00	200,000.00	
k	Rounding adjustment	LS	1	1	2,500.00	2,500.00	
1.04	Cross Passage Concreting Gang						1,890,000.00
a	Chargehand	Year	1.00	1.25	160,000.00	200,000.00	
b	Concreter / Lining Labourer	Year	1.00	1.25	160,000.00	200,000.00	
c	Joiner	Year	2.00	1.25	160,000.00	400,000.00	
d	Shutter Hand / Concrete Finisher	Year	2.00	1.25	160,000.00	400,000.00	
e	Steelfixer	Year	2.00	1.25	160,000.00	400,000.00	
f	Dumper / Forklift Driver	Year	1.00	1.25	110,000.00	137,500.00	
g	Tunnel Labourer	Year	1.00	1.25	120,000.00	150,000.00	
h	Rounding adjustment	LS	1	1	2,500.00	2,500.00	
2.00	Plant Resources						

CH390 TO CH2925 - BORED TUNNELLING

Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
2.01	TBM Plant & Support Equipment						23,360,000.00
a	TBM	-	-	-	-	Included elsewhere	
b	Allowance for TBM set-up (Robbins advice 03-10-2007 - \$400,000 USD Conv. To NZD @ 1.445)	No.	2.00	1.00	578,000.00	1,156,000.00	
c	Allowance for TBM dismantle (Robbins advice 03-10-2007 - \$260,000 USD Conv. To NZD @ 1.445)	No.	2.00	1.00	376,000.00	752,000.00	
d	Allowance for works to support TBM transition through station	No.	1.00	4.00	100,000.00	400,000.00	
e	Allowance for sundry TBM maintenance works	LS	1.00	1.00	500,000.00	500,000.00	
f	Allowance for TBM spares other sundry support materials (Robbins advice 01-10-2007 - \$3.5/m3 USD Conv. To NZD @ 1.445)	LS/m3	1.00	162,658.71	5.06	822,646.42	
g	Allowance for TBM cutters (Robbins advice 01-10-2007 - \$1.5/m3 USD Conv. To NZD @ 1.445)	LS/m3	1.00	162,658.71	2.17	352,562.75	
h	Allowance for spoil conveyor pit bottom installation	LS	1.00	1.00	500,000.00	500,000.00	
i	Spoil Conveyor System	m	1.00	4,350.00	1,000.00	4,350,000.00	
j	Locomotives (Tennix Projects Sydney - City West Cable Tunnel)	No.	2.00	1.00	235,000.00	470,000.00	
k	Muck Cars (Tennix Projects Sydney - City West Cable Tunnel)	No.	-	-	45,000.00	Excluded Not Required	
l	Grout Cars (Tennix Projects Sydney - City West Cable Tunnel)	No.	2.00	1.00	40,000.00	80,000.00	
m	Segment Cars (Tennix Projects Sydney - City West Cable Tunnel)	No.	5.00	1.00	20,000.00	100,000.00	
n	Flat Cars (Tennix Projects Sydney - City West Cable Tunnel)	No.	5.00	1.00	25,000.00	125,000.00	
o	Manriders (Tennix Projects Sydney - City West Cable Tunnel)	No.	1.00	1.00	30,000.00	30,000.00	
p	Supplier Buy Back of Rail Equipment	LS	-	-	-	Excluded	
q	Track (Including Passing Points) (Tennix Projects Sydney - City West Cable Tunnel)	m	1.00	4,350.00	800.00	3,480,000.00	
r	Small Tools	Month	2.00	36.00	7,794.00	561,168.00	
s	Other Plant	Month	2.00	36.00	22,516.00	1,621,152.00	
t	Hoists	Month	1.00	36.00	6,928.00	249,408.00	
u	Man Hoists	Month	1.00	36.00	25,114.00	904,104.00	
v	Cranes	Month	1.00	36.00	58,888.00	2,119,968.00	
w	Pump Main	m	1.00	4,350.00	200.00	870,000.00	
x	Vent Ducting	m	1.00	4,350.00	240.00	1,044,000.00	
y	Booster Fans	No.	4.00	1.00	100,000.00	400,000.00	
z	Surface Fans	No.	2.00	1.00	250,000.00	500,000.00	
aa	Grout Mixer	-	-	-	-	Refer TBM Costs	
ab	Grout Pumps	-	-	-	-	Refer TBM Costs	
ac	Grout Hoses and Pipes	Month	1.00	36.00	3,464.00	124,704.00	
ad	Compressors	Month	1.00	36.00	12,124.00	436,464.00	
ae	Loaders	Month	1.00	36.00	13,856.00	498,816.00	
af	Vertical Conveyor	LS	1.00	1.00	500,000.00	500,000.00	
ag	Dewatering System 1,000L/min, suction pump, discharge pump, settling tank	No.	4.00	1.00	104,000.00	416,000.00	
ah	Rounding adjustment	LS	1	1	-3,993.17	-3,993.17	
2.02	Temporary Electrics						14,690,000.00
a	4MVA Transformer, Switchgear, Controls & Building	LS	1.00	1.00	1,000,000.00	1,000,000.00	
b	11kV Primary Power Supply - TBM & Equipment	LS	1.00	1.00	350,000.00	350,000.00	
c	600V Secondary Power Supply - Power & Lighting	LS	1.00	1.00	250,000.00	250,000.00	
d	Cabling	m	1.00	4,350.00	300.00	1,305,000.00	
e	Tunnel Lighting	m	1.00	4,350.00	340.00	1,479,000.00	
f	Average Allowance for Other Lighting	Month	1.00	36.00	8,660.00	311,760.00	
g	Power Consumption for TBM Drives (Based on 3,200kWh @ 25 cents per kWh)	Month	1.00	26.00	332,544.00	8,646,144.00	
h	Average Power Consumption for Backup Systems (Based on 500kWh @ 25cents per kWh)	Month	1.00	26.00	51,960.00	1,350,960.00	

CH390 TO CH2925 - BORED TUNNELLING

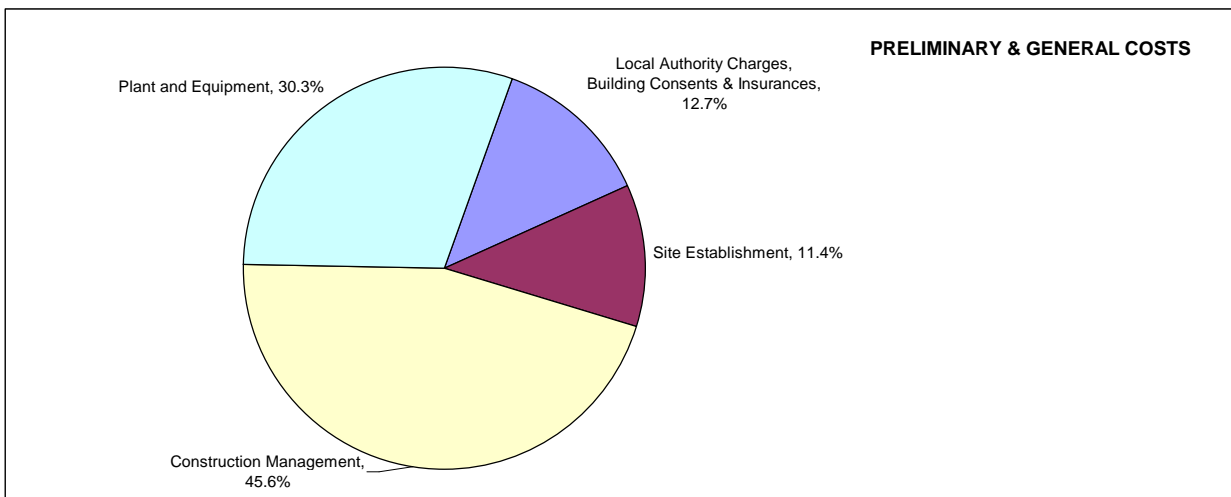
Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
i	Rounding adjustment	LS	1	1	-2,864.00	-2,864.00	
2.03	Temporary Works/ Site Consumables/ Surveying Equipment/ Monitoring						19,600,000.00
a	General Site Consumables	Month	1.00	36.00	86,600.00	3,117,600.00	
b	Gas and Oil	Week	1.00	155.88	2,000.00	311,760.00	
c	Lubrication Materials	Week	1.00	155.88	10,000.00	1,558,800.00	
d	Filters	Week	1.00	155.88	10,000.00	1,558,800.00	
e	Hydraulic Oil	Week	1.00	155.88	10,000.00	1,558,800.00	
f	Foam	Week	1.00	155.88	10,000.00	1,558,800.00	
g	Other Consumables	Week	1.00	155.88	10,000.00	1,558,800.00	
h	Ground Monitoring Equipment / Forward Probing	Week	1.00	155.88	44,000.00	6,858,720.00	
i	Air Pipe	m	1.00	4,350.00	200.00	870,000.00	
j	Water Pipe	m	1.00	4,350.00	150.00	652,500.00	
k	Rounding adjustment	LS	1	1	-4,580.00	-4,580.00	
2.04	Cross Passage Equipment						1,670,000.00
a	25 Tonne Hard Ground Road Header including spares (NDC Group Advice - \$200,000 USD Conv. to NZD @ 1.45)	No.	1.00	1.00	300,000.00	300,000.00	
b	5 No. Cross Passage Forms including: (Ceresola TLS quotation - \$784,000 EUR Conv. To NZD @ 1.742)	LS	1.00	1.00	1,365,000.00	1,365,000.00	
	Traveler to run on concrete invert (self driven)	-	-	-	-	Included	
	Formwork skin (8m long)	-	-	-	-	Included	
	2 x transition forms to running tunnels	-	-	-	-	Included	
	Bulk head on transition forms	-	-	-	-	Included	
	Tail skin on both ends of arch form	-	-	-	-	Included	
	Vibration equipment by pneumatic vibration	-	-	-	-	Included	
	Complete hydraulic equipment	-	-	-	-	Included	
c	Rounding adjustment	LS	1	1	5,000.00	5,000.00	
3.00	Material Resources						
3.01	Bored Tunnel - Primary Lining Materials						45,310,000.00
a	Bored Tunnel Primary Lining - Precast reinforced concrete tunnel rings (1200mm wide)	No.	1.00	3,625.00	12,500.00	45,312,500.00	
	Rounding adjustment	LS	1	1	-2,500.00	-2,500.00	
3.02	Bored Tunnel - Secondary Lining Materials						10,840,000.00
b	Bored Tunnel Secondary Lining - Injected Grout	m3	1.00	14,144.24	520.00	7,355,002.47	
c	Allowance for Grout Plugs	m	1.00	4,350.00	250.00	1,087,500.00	
d	Allowance for Void Filler	m	1.00	4,350.00	250.00	1,087,500.00	
e	Allowance for Other Sundry Materials	m	1.00	4,350.00	300.00	1,305,000.00	
f	Rounding adjustment	LS	1	1	4,997.53	4,997.53	
3.03	Bored Tunnel - Invert Slab						6,530,000.00
a	500mm thick, cast insitu invert slab	m3	1.00	8,700.00	300.00	2,610,000.00	
b	Bar reinforcement	m	1.00	1,305.00	3,000.00	3,915,000.00	
c	Rounding adjustment	LS	1	1	5,000.00	5,000.00	
3.04	Cross Passage - Primary Linings Materials						600,000.00
a	Injected grout, ground improvement works	m3	3.00	87.96	500.00	131,943.00	
b	250mm thick, fibre reinforced shotcrete wall	m3	1.00	157.08	780.00	122,522.11	
c	Lattice girders	No.	1.00	20.00	5,000.00	100,000.00	
d	Bar reinforcement	t	1.00	15.71	3,000.00	47,123.89	

PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

A	SEM Mined Tunnel	\$8,870,000	NZD	\$1,578,530	NZD P&G Allocation
B	Cut & Cover Tunnel (NAL Cross Over Box)	\$21,120,000	NZD	\$3,758,574	NZD P&G Allocation
C	Cut & Cover Tunnel Type 4 (NAL West)	\$16,360,000	NZD	\$2,911,471	NZD P&G Allocation
D	Retained Cut Section/Cut & Cover Tunnel Type 3 (NAL West)	\$7,940,000	NZD	\$1,413,025	NZD P&G Allocation
E	Retained Cut Section Type 2 (NAL West)	\$20,780,000	NZD	\$3,698,067	NZD P&G Allocation
F	Retained Cut Section Type 1 (NAL West)	\$4,160,000	NZD	\$740,325	NZD P&G Allocation
G	Temporary Works (NAL West)	\$610,000	NZD	\$108,557	NZD P&G Allocation
H	Cut & Cover Tunnel Type 4 (NAL East)	\$15,370,000	NZD	\$2,735,288	NZD P&G Allocation
I	SEM Mined Tunnel (NAL East)	\$23,620,000	NZD	\$4,203,481	NZD P&G Allocation
J	Retained Cut Section/Cut & Cover Tunnel Type 3 (NAL East)	\$22,860,000	NZD	\$4,068,229	NZD P&G Allocation
K	Retained Cut Section Type 2 (NAL East)	\$20,520,000	NZD	\$3,651,796	NZD P&G Allocation
L	Retained Cut Section Type 1 (NAL East)	\$4,430,000	NZD	\$788,375	NZD P&G Allocation
M	Temporary Works (NAL East)	\$2,120,000	NZD	\$377,281	NZD P&G Allocation
N	Construction Cost Value (Measured Works)	\$168,760,000	NZD	\$30,033,000	NZD Total P&G
O	Programme (Duration)	4.00	In Years		
P	Programme (Duration)	48.00	In Months	Input Duration Here	
Q	Programme (Duration)	207.98	In Weeks		
R	Total Estimated Value of Contractors Preliminary & General Costs	\$30,033,000	NZD		
S	Approximate % Value of Construction Cost	17.80%	%		
T	Maximum Number of Management & Support Personnel on Site	36	No.		

SUMMARY

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.00	Local Authority Charges, Building Consents & Insurances	3,812,720	12.7%	
1.01	Local Authority Charges & Building Consents	843,800	2.8%	
1.02	Notification of Work to Department of Labour	1,012,560	3.4%	
1.03	Insurances & Bonds	1,956,360	6.5%	
2.00	Site Establishment	3,424,395	11.4%	
2.01	Site Signage	13,000	0.0%	
2.02	Temporary Water, Plumbing and Drainage	61,435	0.2%	
2.03	Temporary Telephones/Fax/Data/Cell Phones	574,500	1.9%	
2.04	Temporary Power & Lighting	417,200	1.4%	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gentries, etc	498,000	1.7%	
2.06	Site Accommodation	1,289,194	4.3%	
2.07	Office Furniture & Equipment	110,200	0.4%	
2.08	Security	460,866	1.5%	
3.00	Construction Management	13,707,180	45.6%	
3.01	Management Personnel	9,860,000	32.8%	
3.02	General Labour & Support Personnel	2,720,000	9.1%	
3.03	Vehicles	1,000,000	3.3%	
3.04	Protective Clothing & Accessories	17,140	0.1%	
3.05	Sundries & General Expenses	110,040	0.4%	
4.00	Plant and Equipment	9,088,705	30.3%	
4.01	Plant and Equipment	9,088,705	30.3%	
	Total	30,033,000	100.0%	



PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Local Authority Charges, Building Consents & Insurances						
1.01	Local Authority Charges & Building Consents						843,800.00
a	Water Connection and Disconnection Fees						
b	Builders Road Fee						
c	Ground & Air Space Rental						
d	Light/Heavy Duty Crossing						
e	Access Guarantee (Bond/Deposit)	100%	168,760,000.00	LS	0.50%	843,800.00	
f	Drainage Charge - Fees						
g	Plumbing Charge - Fees						
h	Site Establishment Permit						
i	Other Local Authority Charges						
1.02	Notification of Work to Department of Labour						1,012,560.00
a	Building Research Levy	100%	168,760,000.00	LS	0.10%	168,760.00	
b	Local Body Reserve Contribution	100%	168,760,000.00	LS	0.50%	843,800.00	
1.03	Insurances & Bonds						1,956,360.00
a	Contractors All Risk	100%	168,760,000.00	LS	0.80%	1,350,080.00	
b	Public Liability (\$5,000,000)	100%	168,760,000.00	LS	0.30%	506,280.00	
c	Plant and Equipment	100%	10,000,000.00	LS	1.00%	100,000.00	
e	Performance Bond	-	-	-	-	N/A	
2.00	Site Establishment						
2.01	Site Signage						13,000.00
a	Site signboard (Large)	100%	1.00	LS	3,000.00	3,000.00	
b	Allowance for work site signage	100%	1.00	LS	10,000.00	10,000.00	
2.02	Temporary Water, Plumbing and Drainage						61,434.93
a	Water tank and collection system	100%	1.00	LS	10,000.00	10,000.00	
b	Water connection	100%	1.00	LS	1,500.00	1,500.00	
c	Water reticulation	100%	1.00	LS	3,500.00	3,500.00	
d	Water consumption (Based on average 50,000L or 50m3/week @ \$1.34/m3 = \$67/week)	100%	207.98	Week	67.00	13,934.93	
e	Plumbing to site toilets	100%	2.00	No	2,500.00	5,000.00	
f	Plumbing to Mess Facilities	100%	1.00	No	1,500.00	1,500.00	
g	Plumbing to offices	100%	6.00	No	1,500.00	9,000.00	
h	Drainage connection	100%	1.00	LS	2,000.00	2,000.00	
i	Drainage reticulation	100%	1.00	LS	5,000.00	5,000.00	
j	Removal of services on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.03	Temporary Telephones/Fax/Data/Cell Phones						574,500.00
a	Telephone line connection fees	100%	1.00	LS	1,500.00	1,500.00	
b	Telephone rental (30 Lines)	100%	48.00	Month	1,200.00	57,600.00	
c	Telephone toll charges	100%	48.00	Month	3,000.00	144,000.00	
d	Fax line connection fees (3 Lines)	100%	1.00	LS	300.00	300.00	
e	Fax rental (3 Lines)	100%	48.00	Month	150.00	7,200.00	
f	Data line connection fees (30 Lines)	100%	1.00	LS	1,500.00	1,500.00	
g	Data rental (30 Lines)	100%	48.00	Month	1,500.00	72,000.00	
h	Cell phone charges	100%	48.00	Month	6,000.00	288,000.00	

PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
i	Sundries	100%	48.00	Month	50.00	2,400.00	
2.04	Temporary Power & Lighting						417,200.00
a	HV connection to site	100%	1.00	LS	15,000.00	15,000.00	
b	Transformer	100%	1.00	No	50,000.00	50,000.00	
c	Step-Down Transformer	100%	5.00	No	10,000.00	50,000.00	
d	Main Switch Board	100%	5.00	No	5,000.00	25,000.00	
e	HV/LV Reticulation	100%	1.00	LS	100,000.00	100,000.00	
f	Lighting	100%	1.00	LS	20,000.00	20,000.00	
g	Power leads	100%	1.00	LS	5,000.00	5,000.00	
h	Public Address Systems	100%	1.00	LS	3,000.00	3,000.00	
i	Power Consumption	100%	48.00	Month	2,000.00	96,000.00	
j	Line Charges	-	-	-	-	Included Above	
k	Allowance for lamp replacement	100%	48.00	Month	200.00	9,600.00	
l	Sundries	100%	48.00	Month	200.00	9,600.00	
m	Allowance for repairs	100%	48.00	Month	500.00	24,000.00	
n	Allowance for removal on project completion	100%	1.00	LS	10,000.00	10,000.00	
2.05	Site Access, Footpaths, Fencing, Hoardings & Gantries, etc						498,000.00
a	Footpaths	100%	800.00	m2	100.00	80,000.00	
b	Access roads	100%	1.00	LS	10,000.00	10,000.00	
c	Vehicle crossings	100%	4.00	No	5,000.00	20,000.00	
d	Site preparation and hard stand area	100%	500.00	m2	30.00	15,000.00	
e	Fencing	100%	400.00	m	50.00	20,000.00	
f	Temporary Screens	100%	200.00	m	100.00	20,000.00	
g	Hoardings	100%	400.00	m2	100.00	40,000.00	
h	Guard Rails	100%	400.00	m	20.00	8,000.00	
i	Gantries	100%	1.00	LS	200,000.00	200,000.00	
j	Canopies	100%	200.00	m	200.00	40,000.00	
k	Traffic signs, cones and barriers (For construction site only. Not traffic management)	100%	1.00	LS	25,000.00	25,000.00	
l	Sundries	100%	1.00	LS	5,000.00	5,000.00	
m	Allowance for removal on project completion	100%	1.00	LS	15,000.00	15,000.00	
2.06	Site Accommodation						1,289,193.60
a	Site Office 1 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
b	Site Office 2 - (6 x 3)	100%	18.00	m2	1,500.00	27,000.00	
c	Site Office 3 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
d	Site Office 4 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
e	Site Office 5 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
f	Site Office 6 - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
g	Mess Shed - (12 x 8)	100%	96.00	m2	1,500.00	144,000.00	
h	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
i	Locker Room 1 - (6 x 3)	100%	18.00	m2	1,000.00	18,000.00	
j	Store Room - (12 x 8)	100%	96.00	m2	1,000.00	96,000.00	
k	Toilet Block 1 - (4 Pan Unit)	100%	207.98	Week	200.00	41,596.80	
l	Toilet Block 2 - (4 Pan Unit)	100%	207.98	Week	200.00	41,596.80	
m	Delivery to site & return	100%	10.00	No.	10,000.00	100,000.00	
n	Setting up, connections, disconnecting	100%	10.00	No.	15,000.00	150,000.00	

PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
o	Maintenance	100%	1.00	LS	50,000.00	50,000.00	
2.07	Office Furniture & Equipment						110,200.00
a	Desks	100%	28.00	No	500.00	14,000.00	
b	Chairs	100%	28.00	No	150.00	4,200.00	
c	Tables	100%	6.00	No	750.00	4,500.00	
d	Filing Cabinets	100%	8.00	No	500.00	4,000.00	
e	Copier	100%	3.00	No	5,000.00	15,000.00	
f	Computers	100%	28.00	No	1,500.00	42,000.00	
g	Plan Printer	100%	1.00	No	20,000.00	20,000.00	
h	Facsimile Machine	100%	3.00	No	500.00	1,500.00	
i	Sundries	100%	1.00	LS	5,000.00	5,000.00	
2.08	Security						460,866.40
a	Alarm system for offices and sheds	100%	9.00	No	500.00	4,500.00	
b	Monitoring	100%	48.00	Month	200.00	9,600.00	
c	Security Patrol (Based on 7 days from 7pm to 7am = 84hours @ \$25/hour)	100%	207.98	Week	2,100.00	436,766.40	
d	CCTV	100%	1.00	LS	10,000.00	10,000.00	
3.00	Construction Management						
3.01	Management Personnel						9,860,000.00
a	Commercial Manager	30%	4.00	Year	250,000.00	300,000.00	
b	Site Manager	100%	4.00	Year	220,000.00	880,000.00	
c	Project Manager (Senior)	100%	4.00	Year	180,000.00	720,000.00	
d	Project Managers (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
e	Project Managers (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
f	Quantity Surveyor (Senior)	100%	4.00	Year	160,000.00	640,000.00	
g	Quantity Surveyors (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
h	Quantity Surveyors (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
i	Services Engineer (Senior)	100%	4.00	Year	160,000.00	640,000.00	
j	Services Engineers (Intermediate)	50%	4.00	Year	100,000.00	200,000.00	
k	Services Engineers (Graduate)	50%	4.00	Year	70,000.00	140,000.00	
l	Construction Planner/Programmer	100%	4.00	Year	150,000.00	600,000.00	
m	Surveyor	50%	4.00	Year	150,000.00	300,000.00	
n	Construction Manager	100%	4.00	Year	150,000.00	600,000.00	
o	Construction Foreman 1	100%	4.00	Year	130,000.00	520,000.00	
p	Construction Foreman 2	100%	4.00	Year	130,000.00	520,000.00	
q	Construction Supervisor 1	100%	4.00	Year	120,000.00	480,000.00	
r	Construction Supervisor 2	100%	4.00	Year	120,000.00	480,000.00	
s	Services Manager	100%	4.00	Year	160,000.00	640,000.00	
t	Services Foreman	100%	4.00	Year	130,000.00	520,000.00	
u	Services Supervisor	100%	4.00	Year	120,000.00	480,000.00	
v	Health & Safety Officer	50%	4.00	Year	130,000.00	260,000.00	
w	Quality Control Manager	50%	4.00	Year	130,000.00	260,000.00	
3.02	General Labour & Support Personnel						2,720,000.00
a	General Labourer 1	100%	4.00	Year	50,000.00	200,000.00	
b	General Labourer 2	100%	4.00	Year	50,000.00	200,000.00	

PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
c	General Labourer 3	100%	4.00	Year	50,000.00	200,000.00	
d	General Labourer 4	100%	4.00	Year	50,000.00	200,000.00	
e	General Labourer 5	100%	4.00	Year	50,000.00	200,000.00	
f	Storeman	100%	4.00	Year	70,000.00	280,000.00	
g	Clerk of Works	100%	4.00	Year	100,000.00	400,000.00	
h	Traffic Supervisor	50%	4.00	Year	80,000.00	160,000.00	
i	Office Receptionist	100%	4.00	Year	40,000.00	160,000.00	
j	Secretary/PA	100%	4.00	Year	60,000.00	240,000.00	
k	General Office Administrator 1	100%	4.00	Year	40,000.00	160,000.00	
l	General Office Administrator 2	100%	4.00	Year	40,000.00	160,000.00	
m	General Office Administrator 3	100%	4.00	Year	40,000.00	160,000.00	
3.03	Vehicles						1,000,000.00
a	Lease car	100%	10.00	No.	35,000.00	350,000.00	
b	Lease station wagon	100%	6.00	No.	40,000.00	240,000.00	
c	Lease utility vehicle	100%	6.00	No.	50,000.00	300,000.00	
d	Lease van	100%	2.00	No.	55,000.00	110,000.00	
3.04	Protective Clothing & Accessories						17,140.00
a	Hard Hats	100%	36.00	No	100.00	3,600.00	
b	High visibility vests	100%	36.00	No	60.00	2,160.00	
c	Trousers	100%	36.00	No	80.00	2,880.00	
d	Boots	100%	36.00	No	200.00	7,200.00	
e	Sundries	100%	36.00	No	25.00	900.00	
f	First Aid Kits	100%	4.00	No	100.00	400.00	
3.05	Sundries & General Expenses						110,040.00
a	Petty cash	100%	48.00	Month	100.00	4,800.00	
b	Completion shouts	100%	2.00	No	10,000.00	20,000.00	
c	Sundry sanitary cleaning equipment	100%	48.00	Month	100.00	4,800.00	
d	General office consumables (i.e. printing cartridges, copy paper, tea/coffee, toilet paper, etc)	100%	48.00	Month	500.00	24,000.00	
e	Photographs	100%	48.00	Month	30.00	1,440.00	
f	As-Built Drawings (Hard Copy & Electronic Versions)	100%	1.00	LS	50,000.00	50,000.00	
g	Warranties	100%	1.00	LS	5,000.00	5,000.00	
4.00	Plant & Equipment						
4.01	Plant and Equipment						9,088,704.99
a	Mobile crane (100 tonne)	20%	207.98	Week	35,000.00	1,455,888.00	
b	Forklift	50%	207.98	Week	3,920.00	407,648.64	
c	Scissor platform	40%	207.98	Week	1,645.00	136,853.47	
d	Boom type platform	40%	207.98	Week	3,500.00	291,177.60	
e	Cheery Picker 1	40%	207.98	Week	1,750.00	145,588.80	
f	Cheery Picker 2	40%	207.98	Week	1,750.00	145,588.80	
g	Scaffolding (In place)	40%	207.98	Week	3,000.00	249,580.80	
h	Scaffolding (mobile)	40%	207.98	Week	1,000.00	83,193.60	
i	Dumper (6 ton 4 x 4)	50%	207.98	Week	6,160.00	640,590.72	
j	Road sweeper	25%	207.98	Week	6,160.00	320,295.36	
k	Concrete batching plant	50%	207.98	Week	2,500.00	259,980.00	

PRELIMINARY & GENERAL - ZONE 5 - NAL CONNECTION

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
l	Concrete pump	50%	207.98	Week	5,600.00	582,355.20	
m	Bentonite equipment purchase	100%	1	LS	100,000.00	100,000.00	
n	Bentonite setup for mixing	100%	1	LS	200,000.00	200,000.00	
o	Bentonite pipeworks	100%	1	LS	410,000.00	410,000.00	
p	Bentonite operation costs	50%	48	Month	133,000.00	3,192,000.00	
q	Diesel bowser	100%	207.98	Week	1,000.00	207,984.00	
r	Temporary generator (100 kVA)	50%	207.98	Week	500.00	51,996.00	
s	Small tools allowance	50%	207.98	Week	500.00	51,996.00	
t	Skips	50%	207.98	Week	1,000.00	103,992.00	
u	Compressors	50%	207.98	Week	500.00	51,996.00	
	Total					30,032,999.92	30,032,999.92

CH2925 TO CH2950 - SEM MINED TUNNEL

SUMMARY OF COST				Double	Single	
Ref	Item Description	Total (NZD \$)	%	Cost/m (NZD \$)	Cost/m (NZD \$)	Cost/m3 (NZD \$)
1.00	Labour, Plant & Material Costs					
1.01	Attendant Labour	730,000.00	6.08%	14,600.00	7,300.00	229.50
1.02	Excavation Face Labour	1,150,000.00	9.58%	23,000.00	11,500.00	361.54
1.03	Concreting Gang	690,000.00	5.75%	13,800.00	6,900.00	216.92
1.04	Excavation Face Plant	470,000.00	3.92%	9,400.00	4,700.00	147.76
1.05	Concreting Plant	2,250,000.00	18.75%	45,000.00	22,500.00	707.36
1.06	General Plant	1,040,000.00	8.67%	20,800.00	10,400.00	326.96
1.07	Canopy Pipe Materials	1,000,000.00	8.33%	20,000.00	10,000.00	314.38
1.08	Primary Lining Materials	560,000.00	4.67%	11,200.00	5,600.00	176.05
1.09	Secondary Lining Materials	490,000.00	4.08%	9,800.00	4,900.00	154.05
1.10	Invert Slab Materials	250,000.00	2.08%	5,000.00	2,500.00	78.60
1.11	TBM Launching Ring Beam	100,000.00	0.83%	2,000.00	1,000.00	31.44
1.12	Spoil Disposal	140,000.00	1.17%	2,800.00	1,400.00	44.01
1.13	Contractors Preliminary & General	1,570,000.00	13.08%	31,400.00	15,700.00	493.58
1.14	Contractors Overheads & Profit	1,560,000.00	13.00%	31,200.00	15,600.00	490.43
		12,000,000.00	100.00%	240,000.00	120,000.00	3,772.56
						8,870,000.00

COST MODEL INPUTS			Dimension			Total Excl. P&G/OH&P
Ref	Item Description	Unit	East Line	West Line	Total	
1.00	Key Metric Data					
1.01	Tunnel Length	m	25.00	25.00	50.00	
1.02	Tunnel Width	m	9.00	9.00	-	
1.03	Tunnel Height	m	9.00	9.00	-	
1.04	Tunnel Footprint Area	m ²	225.00	225.00	450.00	
1.05	Tunnel Face Area	m ²	63.62	63.62	127.23	
1.06	Tunnel Perimeter Length	m	36.00	36.00	72.00	
1.07	Tunnel Wall Area	m ²	900.00	900.00	1,800.00	
1.08	Tunnel Volume (Gross)	m ³	1,590.43	1,590.43	3,180.86	

SUMMARY OF PRODUCTIVITY			Measured Value		
Ref	Item Description	Unit	East Line	West Line	Total
2.00	Working Hours				
2.01	Working Hours/Day	No.	15.00	15.00	-
2.02	Shifts/Day	No.	2.00	2.00	-
2.03	Working Hours/Shift	No.	7.50	7.50	-
2.04	Working Days/Week	No.	6.00	6.00	-
2.05	Working Hours/Week	No.	90.00	90.00	-
3.00	Base Production Rates				
3.01	Estimated Average Advance Rate/Week	m	2.85	2.85	5.70
3.02	Estimated Duration (Total In Hours)	Hour	789.47	789.47	1,578.95
3.03	Estimated Duration (Total In Days)	Day	52.63	52.63	105.26
3.04	Estimated Duration (Total In Weeks)	Week	8.77	8.77	17.54
3.05	Estimated Duration (Total In Months)	Month	2.02	2.02	4.05
3.06	Estimated Duration (Total In Years)	Year	0.34	0.34	0.67

SUMMARY OF BULK QUANTITIES		Measured Value			
Ref	Item Description	Unit	East Line	West Line	Total
1.00	Bulk Quantities				
1.01	Canopy Pipes	No.	135.00	135.00	270.00
1.02	Excavation	m3	1,590.43	1,590.43	3,180.86
1.03	Disposal	m3	1,590.43	1,590.43	3,180.86
1.04	Shotcrete Work	m3	7.20	7.20	14.40
1.05	Tanking Membranes	m2	900.00	900.00	1,800.00
1.06	Concrete Work	m3	438.75	438.75	877.50
1.07	Bar Reinforcement	t	80.03	80.03	160.07
1.08	Lattice Girders	No.	6.00	6.00	12.00
1.09	Rock Bolts	No.	180.00	180.00	360.00
1.10	Glass Fibre Bolts	No.	0.00	0.00	0.00
1.11	Glass Fibre Spot Bolts	No.	0.00	0.00	0.00
BULK MATERIAL MEASURES		Measured Value			
Ref	Item Description	Unit	East Line	West Line	Total
1.00	Canopy Pipe Works				
1.01	Canopy Pipe Length (Gross)	m	12.00	12.00	-
1.02	Canopy Pipe Lap Distance (Top & Bottom)	m	4.00	4.00	-
1.03	Canopy Pipe Length (Net)	m	8.00	8.00	-
1.04	Total Canopy Pipes Required (Per Roof Section)	No.	45.00	45.00	90.00
1.05	Total Roof Sections Required	No.	3.00	3.00	6.00
1.06	Total Number of Canopy Pipes	No.	135.00	135.00	270.00
1.07	Total Length of Canopy Pipes	m	1,620.00	1,620.00	3,240.00
1.08	Total Injected Grout Volume	m3	16.62	16.62	33.25
2.00	Excavation & Disposal				
2.01	Road Header Excavation Works	m3	1,590.43	1,590.43	3,180.86
2.02	Spoil (Solid State)	m3	1,590.43	1,590.43	3,180.86
2.03	Spoil (Bulked State)	m3	2,385.64	2,385.64	4,771.29
2.04	Total Spoil Disposal (Assumed 95% Clean)	m3	1,510.91	1,510.91	3,021.82
2.05	Total Spoil Disposal (Assumed 5% Clean)	m3	79.52	79.52	159.04
3.00	Rock Bolts				
3.01	Rock Bolt Length	m	6.00	6.00	-
3.02	Rock Bolt Spacing Centres	m	1.25	1.25	-
3.03	Rock Bolts Required (Per Cross Section)	No.	9.00	9.00	18.00
3.04	Total Number of Rock Bolts	No.	180.00	180.00	360.00
3.05	Total Length of Rock Bolts	m	1,080.00	1,080.00	2,160.00
4.00	Glass Fibre Bolts				
4.01	Glass Fibre Bolt Length	m	0.00	0.00	0.00
4.02	Glass Fibre Bolt Spacing Centres	m	0.00	0.00	0.00
4.03	Glass Fibre Bolts Required (Per Cross Section)	No.	0.00	0.00	0.00
4.04	Total Number of Glass Fibre Bolts	No.	0.00	0.00	0.00
4.05	Total Length of Glass Fibre Bolts	m	0.00	0.00	0.00
5.00	Primary Wall Linings				
5.01	Primary Lining Thickness	m	0.20	0.20	-
5.02	Total Primary Lining Shotcrete Volume	m3	7.20	7.20	14.40
5.03	Primary Lining Reinforcement Ratio	t/m3	0.10	0.10	-
5.04	Total Primary Lining Reinforcement	t/m3	0.72	0.72	1.44
6.00	Tunnel Face Support				
6.01	Tunnel Face Support Thickness	m	0.00	0.00	0.00
6.02	Total Tunnel Face Support Shotcrete Volume	m3	0.00	0.00	0.00
6.03	Tunnel Face Support Reinforcement Ratio	t/m3	0.00	0.00	0.00
6.04	Total Tunnel Face Support Reinforcement	t	0.00	0.00	0.00
7.00	Glass Fibre Spot Bolts				
7.01	Glass Fibre Spot Bolt Length	m	0.00	0.00	0.00
7.02	Glass Fibre Spot Bolt Spacing Centres	m	0.00	0.00	0.00
7.03	Glass Fibre Spot Bolts Required (Per Cross Section)	No.	0.00	0.00	0.00
7.04	Total Number of Glass Fibre Spot Bolts	No.	0.00	0.00	0.00
7.05	Total Length of Glass Fibre Spot Bolts	m	0.00	0.00	0.00
8.00	Lattice Girders				
8.01	Lattice Girder Spacing	m	4.00	4.00	-
8.02	Total Lattice Girders	No.	6.00	6.00	12.00
9.00	Temporary Backfill				
9.01	Temporary Backfill	m3	225.00	225.00	450.00
10.00	Tanking Membranes				
10.01	Total Tanking Membranes Required	m2	900.00	900.00	1,800.00
11.00	Secondary (Permanent) Wall Linings				
11.01	Secondary Lining Thickness	m	0.30	0.30	-
11.02	Total Secondary Lining Concrete Volume	m3	270.00	270.00	540.00
11.03	Secondary Lining Reinforcement Ratio	t/m3	0.20	0.20	-
11.04	Total Secondary Lining Reinforcement	t/m3	54.00	54.00	108.00
12.00	Invert Slab				
12.01	Invert Slab Thickness	m	0.75	0.75	1.50
12.02	Total Invert Slab Concrete Volume	m3	168.75	168.75	337.50
12.03	Invert Slab Reinforcement Ratio	t/m3	0.15	0.15	0.30
12.04	Total Invert Slab Reinforcement	t/m3	25.31	25.31	50.63

CH2925 TO CH2950 - SEM MINED TUNNEL

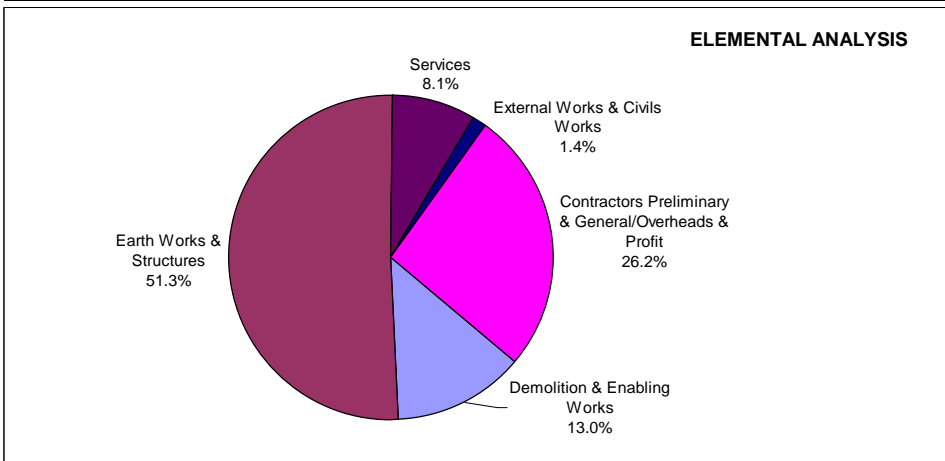
Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Labour Resources						
1.01	Attendant Labour						730,000.00
a	Yard Forman	Year	1.00	0.67	260,000.00	175,452.09	
b	Pit Bottom Labourer	Year	1.00	0.67	120,000.00	80,977.89	
c	Tunnel Crane Operator	Year	1.00	0.67	140,000.00	94,474.20	
d	Banksman / Pit Top Labourer	Year	1.00	0.67	100,000.00	67,481.57	
e	Plant / Equipment Operator	Year	1.00	0.67	110,000.00	74,229.73	
f	Fitter	Year	1.00	0.67	160,000.00	107,970.52	
g	Electrician	Year	1.00	0.67	200,000.00	134,963.15	
h	Rounding adjustment	LS	1	1	-5,549.16	-5,549.16	
1.02	Excavation Face Labour						1,150,000.00
a	Pit Boss	Year	1.00	0.67	320,000.00	215,941.04	
b	Leading Miner	Year	1.00	0.67	200,000.00	134,963.15	
c	Miner / Excavator Driver	Year	1.00	0.67	160,000.00	107,970.52	
d	Spray Machine Operator	Year	1.00	0.67	110,000.00	74,229.73	
e	Spray Pump Operator	Year	1.00	0.67	110,000.00	74,229.73	
f	Canopy Pipe Rig Operator	Year	0.00	0.67	110,000.00	0.00	
g	Canopy Pipe Rig Assistant	Year	0.00	0.67	110,000.00	0.00	
h	Drill Rig Operator	Year	1.00	0.67	110,000.00	74,229.73	
i	Drill Rig Assistant	Year	1.00	0.67	110,000.00	74,229.73	
j	Dumper / Forklift Driver	Year	1.00	0.67	110,000.00	74,229.73	
k	Tunnel Labourer	Year	1.00	0.67	120,000.00	80,977.89	
l	Electrician	Year	1.00	0.67	200,000.00	134,963.15	
m	Fitter	Year	1.00	0.67	160,000.00	107,970.52	
n	Rounding adjustment	LS	1	1	-3,934.92	-3,934.92	
1.03	Concreting Gang						690,000.00
a	Chargehand	Year	1.00	0.67	160,000.00	107,970.52	
b	Concreter / Lining Labourer	Year	1.00	0.67	160,000.00	107,970.52	
c	Joiner	Year	1.00	0.67	160,000.00	107,970.52	
d	Shutter Hand / Concrete Finisher	Year	1.00	0.67	160,000.00	107,970.52	
e	Steelfixer	Year	1.00	0.67	160,000.00	107,970.52	
f	Dumper / Forklift Driver	Year	1.00	0.67	110,000.00	74,229.73	
g	Tunnel Labourer	Year	1.00	0.67	120,000.00	80,977.89	
h	Rounding adjustment	LS	1	1	-5,060.21	-5,060.21	
2.00	Plant Resources						
2.01	Excavation Face Plant						470,000.00
a	Canopy Pipe Rig	-	-	-	-	Included Elsewhere	
b	Dosco Mk2BP 55 Tonne Hard Ground Road Header incl. spares	-	-	-	-	Included Elsewhere	
c	ITC 312 Tunnel Excavator	-	-	-	-	Included Elsewhere	
d	Brokk	-	-	-	-	Included Elsewhere	
e	Drilling Rig	-	-	-	-	Included Elsewhere	
f	Shotcrete Robot	-	-	-	-	Included Elsewhere	
g	Shotcrete Pump	-	-	-	-	Included Elsewhere	
h	Small Wheeled Agitator	-	-	-	-	Included Elsewhere	
i	Access Basket	-	-	-	-	Included Elsewhere	
j	Mini Excavator	-	-	-	-	Included Elsewhere	

CH2925 TO CH2950 - SEM MINED TUNNEL

Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
k	Dumper	-	-	-	-	Included Elsewhere	
l	Allowance for Plant Consumables & Maintenance	Day	0.00	105.26	150.00	0.00	
m	Sundry Plant / Ventilation and Safety Equipment	Day	1.00	105.26	1,200.00	126,315.79	
n	Ground Monitoring Equipment / Forward Probing	Day	1.00	105.26	3,000.00	315,789.47	
o	Air Pipe	m	1.00	100.00	125.00	12,500.00	
p	Water Pipe	m	1.00	100.00	200.00	20,000.00	
q	Rounding adjustment	LS	1	1	-4,605.26	-4,605.26	
2.02	Concreting Plant						2,250,000.00
a	Dumper	-	-	-	-	Included Elsewhere	
b	Forklift	-	-	-	-	Included Elsewhere	
c	Access Basket	-	-	-	-	Included Elsewhere	
d	Static Concrete Pump	-	-	-	-	Included Elsewhere	
e	Allowance for Plant Consumables & Maintenance	-	-	-	-	Included Elsewhere	
f	Sundry Plant / Ventilation and Safety Equipment	-	-	-	-	Included Elsewhere	
g	Sundry Concrete Plant	-	-	-	-	Included Elsewhere	
h	Tunnel Invert Forms	LS	1.00	1.00	750,000.00	750,000.00	
i	Tunnel Arch Forms	LS	1.00	1.00	1,500,000.00	1,500,000.00	
j	Temporary propping equipment	-	-	-	-	Included Elsewhere	
k	Rounding adjustment	LS	1	1	0.00	0.00	
2.03	General Plant						1,040,000.00
a	Hoists	Day	1.00	105.26	228.57	24,060.15	
b	Man Hoists	Day	1.00	105.26	828.57	87,218.05	
c	Cranes	Day	1.00	105.26	1,942.86	204,511.28	
d	Pump Main	m	1.00	100.00	125.00	12,500.00	
e	Vent Ducting	m	1.00	100.00	150.00	15,000.00	
f	Booster Fans	Day	1.00	105.26	285.71	30,075.19	
g	Surface Fans	Day	1.00	105.26	1,085.71	114,285.71	
h	Grout Mixer	Day	1.00	105.26	2,000.00	210,526.32	
i	Grout Pumps	Day	1.00	105.26	1,428.57	150,375.94	
j	Grout Hoses and Pipes	Day	1.00	105.26	114.29	12,030.08	
k	Compressors	Day	1.00	105.26	400.00	42,105.26	
l	Loaders	Day	1.00	105.26	457.14	48,120.30	
m	Vertical Conveyor	Day	-	-	2,428.57	Included Elsewhere	
n	Dewatering During Works	Day	-	-	1,428.57	Included Elsewhere	
o	Batching Plant including Bins / Silos	Day	-	-	2,400.00	Included Elsewhere	
p	6m3 Agitator	Day	1.00	105.26	420.00	44,210.53	
q	Static Concrete Pump	Day	1.00	105.26	450.00	47,368.42	
r	Rounding adjustment	LS	1	1	-2,387.22	-2,387.22	
3.00	Material Resources						
3.01	Canopy Pipe Materials						1,000,000.00
a	Canopy pipes & pilot bits (Ceresola TLS quotation - \$2,093/No. EUR Conv. to NZD @	No.	1.00	270.00	3,646.01	984,421.62	
b	Injected Grout	m3	1.00	33.25	520.00	17,287.43	
c	Rounding adjustment	LS	1	1	-1,709.05	-1,709.05	
3.02	Primary Lining Materials						560,000.00
a	Fibre reinforced shotcrete primary linings	m3	1.00	14.40	780.00	11,232.00	
b	Fibre reinforced shotcrete temporary face support	m3	-	-	780.00	-	
c	Lattice girders	No.	1.00	12.00	11,160.00	133,920.00	

CH2950 TO CH3000 - CUT & COVER TUNNEL (NAL CROSS-OVER BOX)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	13.0%	3,730,000	74,600	
1.01	Demolition & Enabling Works	10.2%	2,930,000	58,600	
1.02	Utilities Diversions	2.8%	800,000	16,000	
2.00	Earth Works & Structures	51.3%	14,660,000	293,200	
2.01	Earth Works	12.4%	3,560,000	71,200	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	18.0%	5,160,000	103,200	
2.05	Ground Slab	3.5%	1,010,000	20,200	
2.06	Columns	0.0%	0	0	
2.07	Beams	3.4%	980,000	19,600	
2.08	Upper Floors	2.4%	690,000	13,800	
2.09	Roof Slab	3.5%	1,010,000	20,200	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	7.9%	2,250,000	45,000	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	8.1%	2,330,000	46,600	
5.01	Tunnel & Trackway Ventilation	8.0%	2,280,000	45,600	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.2%	50,000	1,000	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	1.4%	400,000	8,000	
9.01	External Works	0.3%	100,000	2,000	
9.02	Civil Works	1.0%	300,000	6,000	
10.00	Contractors Preliminary & General/Overheads & Profit	26.2%	7,480,000	149,600	
10.01	Contractors Preliminary & General	13.1%	3,750,000	75,000	
10.01	Contractors Overheads & Profit	13.0%	3,730,000	74,600	
Total		100.0%	28,600,000	572,000	
				21,120,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	50.00
2.00	Trench Width (Min)	m	24.00
3.00	Trench Width (Max)	m	31.00
4.00	Trench Width (Average)	m	27.50
5.00	Trench Height (Min)	m	17.00
6.00	Trench Height (Max)	m	27.00
7.00	Trench Height (Average)	m	22.00
8.00	Trench Footprint Area (Average)	m2	1,375.00
9.00	Trench Cross Section Area (Average)	m2	605.00
10.00	Trench Volume (Average)	m3	30,250.00

CH2950 TO CH3000 - CUT & COVER TUNNEL (NAL CROSS-OVER BOX)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						2,930,000.00
a	Demolish existing commercial buildings between Mt Eden Road & Nikau Street (North of NAL)	22,050.00	22,050	m2	100.00	2,205,000.00	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
d	Allowance for traffic management	-	-	Month	-	Included elsewhere	
e	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
f	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						800,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	200,000.00	200,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	100,000.00	100,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	150,000.00	150,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						3,560,000.00
a	Break up existing roads, footpaths & building platforms, etc	1,375.00	1,375	m2	40.00	55,000.00	
b	Machine excavation in made ground	5,500.00	5,500	m3	35.00	192,500.00	
c	Machine excavation in soft rock	6,875.00	6,875	m3	35.00	240,625.00	
d	Machine excavation in hard rock	17,875.00	17,875	m3	100.00	1,787,500.00	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	28,737.50	28,738	m3	40.00	1,149,520.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,512.50	1,513	m3	90.00	136,170.00	
g	Imported engineering fill	-	-	m3	75.00	Not Required	
h	Rounding adjustment	1.00	1	LS	-1,315.00	-1,315.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						5,160,000.00
	Side Walls						

CH2950 TO CH3000 - CUT & COVER TUNNEL (NAL CROSS-OVER BOX)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	54.00	54	m3	1,984.50	107,163.00	
b	900mm (DIA) contiguous bored piles - 25m (AVG L) @ 1,000mm horizontal crs	1,590.43	1,590	m3	1,315.60	2,091,804.00	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	64.00	64	m3	1,748.86	111,927.20	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	54.45	55	tonne	4,500.00	247,500.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	39.60	40	tonne	4,500.00	180,000.00	
f	Allowance for bolted steel plate connections	9.41	10	tonne	7,000.00	70,000.00	
g	Tanking/Waterproof Membranes	2,200.00	2,200	m2	100.00	220,000.00	
h	300mm thick, cast insitu reinforced shotcrete wall	660.00	660	m3	924.00	609,840.00	
	Face Wall						
i	300mm (W) x 900mm (H) cast insitu concrete guide wall	16.74	17	m3	1,984.50	33,736.50	
j	900mm (DIA) contiguous bored piles - 30m (AVG L) @ 1,000mm horizontal crs	591.64	592	m3	1,315.60	778,835.20	
k	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	19.84	20	m3	1,748.86	34,977.25	
l	Tanking/Waterproof Membranes	930.00	930	m2	100.00	93,000.00	
m	300mm thick, cast insitu reinforced shotcrete wall	279.00	279	m3	924.00	257,796.00	
	Exposed Wall						
n	400mm thick, reinforced concrete wall	148.80	149	m3	1,920.50	286,154.50	
o	Tanking/Waterproof Membranes	372.00	372	m2	100.00	37,200.00	
p	Rounding adjustment	1.00	1	LS	66.35	66.35	
2.05	Ground Slab						1,010,000.00
a	300mm thick, reinforced concrete blinding layer	412.50	413	m3	784.30	323,915.90	
b	Tanking/waterproof membranes	1,375.00	1,375	m2	100.00	137,500.00	
c	500mm thick, cast insitu reinforced concrete slab	687.50	688	m3	799.48	550,042.24	
d	Rounding adjustment	1.00	1	LS	-1,458.14	-1,458.14	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						980,000.00
a	2,000 x 750mm post tensioned, reinforced concrete beam	206.25	207	m3	1,528.35	316,368.45	
b	750 x 750mm cast insitu, reinforced concrete beam/strut (1st Row - 5m Centres)	154.69	155	m3	1,938.20	300,420.57	
c	750 x 750mm cast insitu, reinforced concrete beam/strut (2nd Row - 10m Centres)	77.34	78	m3	1,938.20	151,179.38	
d	500 x 500mm cast insitu, reinforced concrete stability tie	75.00	75	m3	2,770.64	207,797.81	
e	Rounding adjustment	1.00	1	LS	4,233.78	4,233.78	
2.08	Upper Floors						690,000.00
a	400mm thick, precast concrete floor system (solid flat slab)	1,375.00	1,375	m2	500.00	687,500.00	
b	Rounding adjustment	1.00	1	LS	2,500.00	2,500.00	
2.09	Roof Slab						1,010,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take 5kPa notional building load)	1,375.00	1,375	m2	600.00	825,000.00	
b	Tanking/waterproof membranes	1,375.00	1,375	m2	100.00	137,500.00	
c	Imported engineering fill - 500mm thick	687.50	688	m3	75.00	51,600.00	
d	Rounding adjustment	1.00	1	LS	-4,100.00	-4,100.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						2,250,000.00
a	Allowance for pressurised fire escape shaft and stairs	1.00	1	LS	250,000.00	250,000.00	

CH2950 TO CH3000 - CUT & COVER TUNNEL (NAL CROSS-OVER BOX)

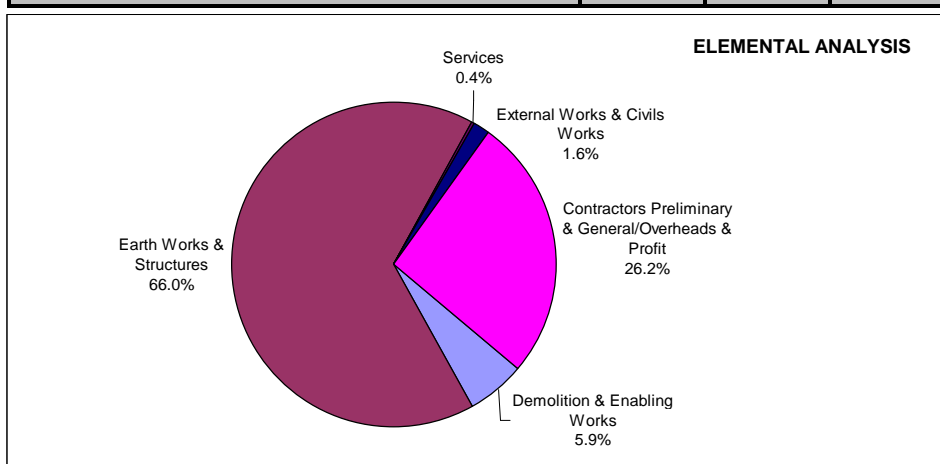
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	Allowance for ventilation building	1.00	1	LS	2,000,000.00	2,000,000.00	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						2,280,000.00
a	Saccardo nozzel & damper	4.00	4	No.	100,000.00	400,000.00	
b	1.8m dia station/tunnel ventilation fan - Supply (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
c	1.8m dia station/tunnel ventilation fan - Exhaust (Fire rated, 75 m3/s, 190 kw)	1.00	1	No.	150,000.00	150,000.00	
d	Attenuator (Fire rated, 4.5m x 4.5m x 3m)	2.00	2	No.	75,000.00	150,000.00	
e	Exhaust grille (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
f	Damper - Exhaust stack (Fire rated, 15m2)	2.00	2	No.	50,000.00	100,000.00	
g	Damper - Above Trackway (Fire rated, 15m2)	6.00	6	No.	50,000.00	300,000.00	
h	Damper - To Saccardo nozzels (Fire rated, 10m2)	2.00	2	No.	30,000.00	60,000.00	
i	Damper (Fire rated, 5m2)	6.00	6	No.	15,000.00	90,000.00	
j	Allowance for electrical services connections	1.00	1	LS	200,000.00	200,000.00	
k	Allowance for pipework, ductwork & grilles, controls, interface with SCADA & BMS, etc	1,500,000.00	1,500,000	LS	30.0%	450,000.00	
l	Allowance for BWIC with installations	2,150,000.00	2,150,000	LS	5.0%	107,500.00	
m	Testing & commissioning	2,150,000.00	2,150,000	LS	1.0%	21,500.00	
n	Rounding adjustment	1.00	1	LS	1,000.00	1,000.00	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						50,000.00
a	Allowance for drainage services in base of trench	100.00	100	LS	500.00	50,000.00	

CH2950 TO CH3000 - CUT & COVER TUNNEL (NAL CROSS-OVER BOX)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	
8.02	Escalators						0.00
-	-	-	-	-	-	N/A	
9.00	External Works & Civils Works						
9.01	External Works						100,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	400.00	400	m2	50.00	20,000.00	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	400.00	400	m2	200.00	80,000.00	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
9.02	Civil Works						300,000.00
a	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	1,000.00	1,000	m2	300.00	300,000.00	
b	Road works (major - main roads & highways) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	-	-	m2	400.00	N/A	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
10.00	Contractors Preliminary & General/Overheads & Profit						
10.01	Contractors Preliminary & General						3,750,000.00
a	Contractors preliminary & general	21,120,000.00	21,120,000	LS	17.8%	3,758,574.06	
b	Rounding adjustment	1.00	1	LS	-8,574.06	-8,574.06	
10.02	Contractors Overheads & Profit						3,730,000.00
a	Contractors overheads & profit	24,870,000.00	24,870,000	LS	15.0%	3,730,500.00	
b	Rounding adjustment	1.00	1	LS	-500.00	-500.00	
	Total					28,600,000.00	28,600,000.00
				Cost/Length (m)			572,000.00

CH3000 TO CH3150 - CUT & COVER TUNNEL TYPE 4 (NAL WEST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	5.9%	1,300,000	8,667	
1.01	Demolition & Enabling Works	3.4%	750,000	5,000	
1.02	Utilities Diversions	2.5%	550,000	3,667	
2.00	Earth Works & Structures	66.0%	14,620,000	97,467	
2.01	Earth Works	11.8%	2,610,000	17,400	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	37.7%	8,350,000	55,667	
2.05	Ground Slab	5.0%	1,100,000	7,333	
2.06	Columns	0.0%	0	0	
2.07	Beams	4.8%	1,070,000	7,133	
2.08	Upper Floors	1.7%	380,000	2,533	
2.09	Roof Slab	5.0%	1,110,000	7,400	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.4%	80,000	533	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.4%	80,000	533	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	1.6%	360,000	2,400	
9.01	External Works	0.3%	60,000	400	
9.02	Civil Works	1.4%	300,000	2,000	
10.00	Contractors Preliminary & General/Overheads & Profit	26.2%	5,800,000	38,667	
10.01	Contractors Preliminary & General	13.1%	2,910,000	19,400	
10.01	Contractors Overheads & Profit	13.0%	2,890,000	19,267	
Total		100.0%	22,160,000	147,733	
				16,360,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	150.00
2.00	Trench Width (Min)	m	10.00
3.00	Trench Width (Max)	m	10.00
4.00	Trench Width (Average)	m	10.00
5.00	Trench Height (Min)	m	15.00
6.00	Trench Height (Max)	m	18.00
7.00	Trench Height (Average)	m	16.50
8.00	Trench Footprint Area (Average)	m2	1,500.00
9.00	Trench Cross Section Area (Average)	m2	165.00
10.00	Trench Volume (Average)	m3	24,750.00

CH3000 TO CH3150 - CUT & COVER TUNNEL TYPE 4 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						750,000.00
a	Demolish existing commercial buildings located within construction zone	-	-	m2	100.00	Included elsewhere	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Hoarding to construction zone	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for traffic management	-	-	Month	-	Included elsewhere	
e	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
f	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						550,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	200,000.00	200,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	100,000.00	100,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	150,000.00	150,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	-	-	LS	-	N/A	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,610,000.00
a	Break up existing roads, footpaths & building platforms, etc	1,500.00	1,500	m2	40.00	60,000.00	
b	Machine excavation in made ground	7,500.00	7,500	m3	35.00	262,500.00	
c	Machine excavation in soft rock	7,500.00	7,500	m3	35.00	262,500.00	
d	Machine excavation in hard rock	9,750.00	9,750	m3	100.00	975,000.00	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	23,512.50	23,513	m3	40.00	940,520.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,237.50	1,238	m3	90.00	111,420.00	
g	Imported engineering fill	-	-	m3	75.00	Not Required	
h	Rounding adjustment	1.00	1	LS	-1,940.00	-1,940.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						8,350,000.00
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	162.00	162	m3	1,984.50	321,489.00	

CH3000 TO CH3150 - CUT & COVER TUNNEL TYPE 4 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	900mm (DIA) contiguous bored piles - 19.5m (AVG L) @ 1,000mm horizontal crs	3,721.61	3,722	m3	1,315.60	4,896,663.20	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	192.00	192	m3	1,748.86	335,781.60	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	59.40	60	tonne	4,500.00	270,000.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	118.80	119	tonne	4,500.00	535,500.00	
f	Allowance for bolted steel plate connections	17.82	18	tonne	7,000.00	126,000.00	
g	Tanking/Waterproof Membranes	4,950.00	4,950	m2	100.00	495,000.00	
h	300mm thick, cast insitu reinforced shotcrete wall	1,485.00	1,485	m3	924.00	1,372,140.00	
i	Rounding adjustment	1.00	1	LS	-2,573.80	-2,573.80	
2.05	Ground Slab						1,100,000.00
a	300mm thick, reinforced concrete blinding layer	450.00	450	m3	784.30	352,935.00	
b	Tanking/waterproof membranes	1,500.00	1,500	m2	100.00	150,000.00	
c	500mm thick, cast insitu reinforced concrete slab	750.00	750	m3	799.48	599,610.00	
d	Rounding adjustment	1.00	1	LS	-2,545.00	-2,545.00	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						1,070,000.00
a	1,500 x 600mm post tensioned, reinforced concrete beam	270.00	270	m3	1,927.69	520,475.63	
b	750 x 750mm cast insitu, reinforced concrete beam/strut	281.25	282	m3	1,938.20	546,571.62	
c	Rounding adjustment	1.00	1	LS	2,952.76	2,952.76	
2.08	Upper Floors						380,000.00
a	200mm thick, precast hollow core floor with 75mm thick, reinforced concrete topping slab	1,500.00	1,500	m2	250.00	375,000.00	
b	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
2.09	Roof Slab						1,110,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take 20kPa notional building load)	1,500.00	1,500	m2	600.00	900,000.00	
b	Tanking/waterproof membranes	1,500.00	1,500	m2	100.00	150,000.00	
c	Imported engineering fill - 500mm thick	750.00	750	m3	75.00	56,250.00	
d	Rounding adjustment	1.00	1	LS	3,750.00	3,750.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	

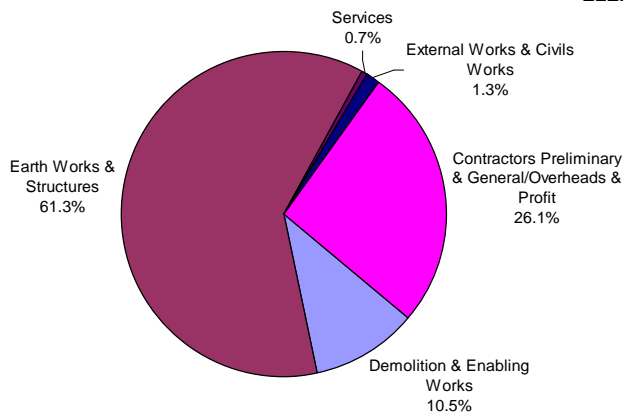
CH3000 TO CH3150 - CUT & COVER TUNNEL TYPE 4 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						80,000.00
a	Allowance for drainage services in base of trench	150.00	150	LS	500.00	75,000.00	
b	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	
8.02	Escalators						0.00
-	-	-	-	-	-	N/A	
9.00	External Works & Civils Works						
9.01	External Works						60,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	-	-	m2	50.00	N/A	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	300.00	300	m2	200.00	60,000.00	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
9.02	Civil Works						300,000.00
a	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	1,000.00	1,000	m2	300.00	300,000.00	

CH3150 TO CH3225 - RETAINED CUT SECTION/CUT & COVER TUNNEL TYPE 3 (NAL WEST)

SUMMARY OF COST		Value	Total	Cost/Length		
Ref	Item Description	%	(NZD \$)	(NZD \$)		
1.00	Demolition & Enabling Works	10.5%	1,130,000	15,067		
1.01	Demolition & Enabling Works	5.9%	630,000	8,400		
1.02	Utilities Diversions	4.7%	500,000	6,667		
2.00	Earth Works & Structures	61.3%	6,590,000	87,867		
2.01	Earth Works	8.1%	870,000	11,600		
2.02	Substructure	0.0%	0	0		
2.03	Frame	0.0%	0	0		
2.04	External Walls	34.8%	3,740,000	49,867		
2.05	Ground Slab	4.5%	480,000	6,400		
2.06	Columns	0.0%	0	0		
2.07	Beams	6.5%	700,000	9,333		
2.08	Upper Floors	0.0%	0	0		
2.09	Roof Slab	5.1%	550,000	7,333		
2.10	Internal Walls	0.0%	0	0		
2.11	Stairs	0.0%	0	0		
2.12	Internal Doors	0.0%	0	0		
2.13	Sub-Surface/Surface Level Structures	2.3%	250,000	3,333		
3.00	Internal Finishes	0.0%	0	0		
3.01	Floor Finishes	0.0%	0	0		
3.02	Wall Finishes	0.0%	0	0		
3.03	Ceiling Finishes	0.0%	0	0		
4.00	Fittings & Furnishings	0.0%	0	0		
4.01	Fittings & Furnishings	0.0%	0	0		
5.00	Services	0.7%	80,000	1,067		
5.01	Tunnel & Trackway Ventilation	0.0%	0	0		
5.02	Station HVAC	0.0%	0	0		
5.03	Electrical Services	0.0%	0	0		
5.04	Fire Protection Services	0.0%	0	0		
5.05	Building Management Systems	0.0%	0	0		
5.06	Communications Systems	0.0%	0	0		
5.07	Security Systems	0.0%	0	0		
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0		
5.09	Drainage Services	0.7%	80,000	1,067		
6.00	Rail Systems	0.0%	0	0		
6.01	Rail Systems	0.0%	0	0		
7.00	Automatic Fare Collection	0.0%	0	0		
7.01	Automatic Fare Collection	0.0%	0	0		
8.00	Lifts & Escalators	0.0%	0	0		
8.01	Lifts	0.0%	0	0		
8.02	Escalators	0.0%	0	0		
9.00	External Works & Civils Works	1.3%	140,000	1,867		
9.01	External Works	1.3%	140,000	1,867		
9.02	Civil Works	0.0%	0	0		
10.00	Contractors Preliminary & General/Overheads & Profit	26.1%	2,810,000	37,467		
10.01	Contractors Preliminary & General	13.1%	1,410,000	18,800		
10.01	Contractors Overheads & Profit	13.0%	1,400,000	18,667		
Total		100.0%	10,750,000	143,333	7,940,000	Total Construction Value (Excl. P&G/OH&P)

ELEMENTAL ANALYSIS



KEY METRIC DATA			Outer Trench	Inner Trench
Ref	Item Description	Unit	Total	Total
1.00	Trench Length	m	75.00	75.00
2.00	Trench Width (Min)	m	10.00	10.00
3.00	Trench Width (Max)	m	22.00	10.00
4.00	Trench Width (Average)	m	16.00	10.00
5.00	Trench Height (Min)	m	0.00	7.00
6.00	Trench Height (Max)	m	5.70	13.00
7.00	Trench Height (Average)	m	2.85	10.00
8.00	Trench Footprint Area (Average)	m2	1,200.00	750.00
9.00	Trench Cross Section Area (Average)	m2	45.60	100.00
10.00	Trench Volume (Average)	m3	3,420.00	7,500.00

CH3150 TO CH3225 - RETAINED CUT SECTION/CUT & COVER TUNNEL TYPE 3 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						630,000.00
a	Demolish existing commercial buildings located within construction zone	-	-	m2	100.00	Included elsewhere	
c	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
d	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
e	Allowance for traffic management	-	-	Month	-	Included elsewhere	
f	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
g	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	150,000.00	150,000.00	
h	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						870,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	3,420.00	3,420	m3	35.00	119,700.00	
c	Machine excavation in soft rock	7,500.00	7,500	m3	35.00	262,500.00	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	10,374.00	10,374	m3	40.00	414,960.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	546.00	546	m3	90.00	49,140.00	
g	Imported engineering fill - 600mm thick, GAP 65	270.00	270	m3	75.00	20,250.00	
h	Rounding adjustment	1.00	1	LS	3,450.00	3,450.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						3,740,000.00
	Outer Walls						

**CH3150 TO CH3225 - RETAINED CUT SECTION/CUT & COVER TUNNEL
TYPE 3 (NAL WEST)**

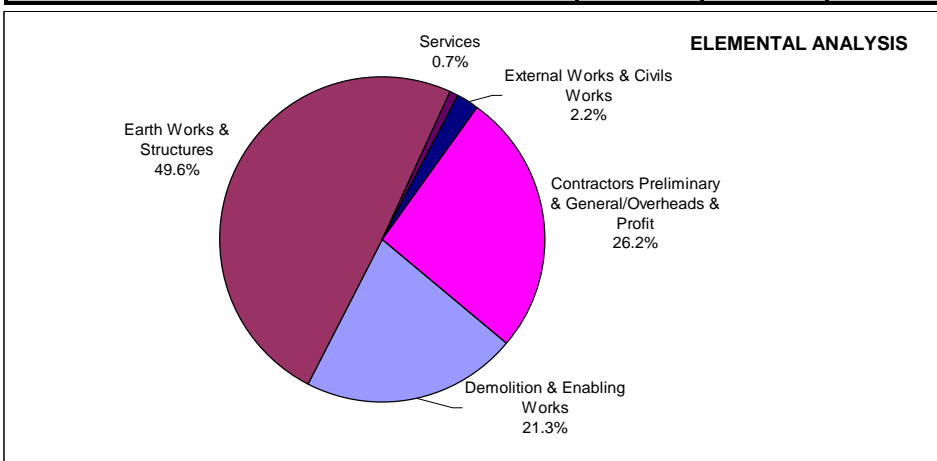
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	81.00	81	m3	1,984.50	160,744.50	
b	Allowance for establishment, setting out and removal of piling rig	1.00	1	LS	20,000.00	20,000.00	
c	750mm (DIA) bored piles - 6m (AVG L) @ 1,500mm horizontal crs	265.07	265	m3	1,018.33	269,856.13	
d	Belling to base of pile	100.00	100	No.	900.00	90,000.00	
e	Temporary steel pile liners	600.00	600	m	120.00	72,000.00	
f	Cut down piles 150mm	100.00	100	No.	150.00	15,000.00	
g	900mm (W) x 350mm (H) cast insitu, reinforced concrete pile capping	47.25	47	m3	1,695.10	79,669.70	
h	125mm thick, cast insitu reinforced shotcrete wall	53.44	53	m3	672.00	35,616.00	
	Inner Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	81.00	81	m3	1,984.50	160,744.50	
b	900mm (DIA) contiguous bored piles - 13m (AVG L) @ 1,000mm horizontal crs	1,240.54	1,241	m3	1,315.60	1,632,659.60	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	96.00	96	m3	1,748.86	167,890.80	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	29.70	30	tonne	4,500.00	135,000.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	59.40	60	tonne	4,500.00	270,000.00	
f	Allowance for bolted steel plate connections	8.91	9	tonne	7,000.00	63,000.00	
g	Tanking/Waterproof Membranes	1,500.00	1,500	m2	100.00	150,000.00	
h	300mm thick, cast insitu reinforced shotcrete wall	450.00	450	m3	924.00	415,800.00	
i	Rounding adjustment	1.00	1	LS	2,018.78	2,018.78	
2.05	Ground Slab						480,000.00
a	300mm thick, reinforced concrete blinding layer	225.00	225	m3	784.30	176,467.50	
b	Tanking/waterproof membranes	-	-	m2	100.00	N/A	
c	500mm thick, cast insitu reinforced concrete slab	375.00	375	m3	799.48	299,805.00	
d	Rounding adjustment	1.00	1	LS	3,727.50	3,727.50	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						700,000.00
a	1,800 x 600mm post tensioned, reinforced concrete beam	253.13	254	m3	1,745.13	443,261.75	
b	750 x 750mm cast insitu, reinforced concrete beam/strut	131.84	132	m3	1,938.20	255,842.03	
c	Rounding adjustment	1.00	1	LS	896.22	896.22	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						550,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take 2 track heavy rail)	750.00	750	m2	600.00	450,000.00	
b	Tanking/Waterproof Membranes	750.00	750	m2	100.00	75,000.00	
c	Imported engineering fill - 500mm thick	375.00	375	m3	75.00	28,125.00	
d	Rounding adjustment	1.00	1	LS	-3,125.00	-3,125.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						250,000.00
a	Allowance for Mt Eden Station extension including new platform fit-out & services	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
3.00	Internal Finishes						0.00
3.01	Floor Finishes						0.00

CH3150 TO CH3225 - RETAINED CUT SECTION/CUT & COVER TUNNEL
TYPE 3 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						80,000.00
a	Allowance for drainage services	160.00	160	m	500.00	80,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	

CH3225 TO CH3400 - RETAINED CUT SECTION TYPE 2 (NAL WEST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	21.3%	5,990,000	34,229	
1.01	Demolition & Enabling Works	19.5%	5,490,000	31,371	
1.02	Utilities Diversions	1.8%	500,000	2,857	
2.00	Earth Works & Structures	49.6%	13,970,000	79,829	
2.01	Earth Works	7.5%	2,100,000	12,000	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	38.2%	10,760,000	61,486	
2.05	Ground Slab	3.9%	1,110,000	6,343	
2.06	Columns	0.0%	0	0	
2.07	Beams	0.0%	0	0	
2.08	Upper Floors	0.0%	0	0	
2.09	Roof Slab	0.0%	0	0	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.7%	190,000	1,086	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.7%	190,000	1,086	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	2.2%	630,000	3,600	
9.01	External Works	1.2%	330,000	1,886	
9.02	Civil Works	1.1%	300,000	1,714	
10.00	Contractors Preliminary & General/Overheads & Profit	26.2%	7,360,000	42,057	
10.01	Contractors Preliminary & General	13.1%	3,690,000	21,086	
10.01	Contractors Overheads & Profit	13.0%	3,670,000	20,971	
Total		100.0%	28,140,000	160,800	
				20,780,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA			Outer Trench	Inner Trench
Ref	Item Description	Unit	Total	Total
1.00	Trench Length	m	175.00	175.00
2.00	Trench Width (Min)	m	22.00	10.00
3.00	Trench Width (Max)	m	22.00	10.00
4.00	Trench Width (Average)	m	22.00	10.00
5.00	Trench Height (Min)	m	4.80	0.00
6.00	Trench Height (Max)	m	5.70	6.50
7.00	Trench Height (Average)	m	5.25	3.25
8.00	Trench Footprint Area (Average)	m2	3,850.00	1,750.00
9.00	Trench Cross Section Area (Average)	m2	115.50	32.50
10.00	Trench Volume (Average)	m3	20,212.50	5,687.50

CH3225 TO CH3400 - RETAINED CUT SECTION TYPE 2 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						5,490,000.00
a	Demolish existing apartment buildings adjacent Porters Avenue	6,000.00	6,000	m2	100.00	600,000.00	
b	Demolish existing commercial buildings adjacent Porters Avenue	3,900.00	3,900	m2	100.00	390,000.00	
c	Partial demolition works of existing commercial buildings	300.00	300	m2	100.00	30,000.00	
d	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
e	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
g	Allowance for traffic management	-	-	Month	-	Included elsewhere	
f	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
g	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
h	Temporary 'up & over' pedestrian bridge	1.00	1	LS	100,000.00	100,000.00	
i	Porters Avenue bridge structure and abutments - Precast Double T Type (2 vehicle lanes & 1 pedestrian footpath)	900.00	900	m2	3,600.00	3,240,000.00	
j	Allowance for reconfiguring roading network and signalling	1.00	1	LS	250,000.00	250,000.00	
k	Allowance for temporary works to maintain traffic flow (temp roads & crossings, etc)	1.00	1	LS	150,000.00	150,000.00	
l	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,100,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	20,212.50	20,213	m3	35.00	707,455.00	
c	Machine excavation in soft rock	5,687.50	5,688	m3	35.00	199,080.00	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	24,605.00	24,605	m3	40.00	984,200.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,295.00	1,295	m3	90.00	116,550.00	
g	Imported engineering fill - 600mm thick, GAP 65	1,260.00	1,260	m3	75.00	94,500.00	
h	Rounding adjustment	1.00	1	LS	-1,785.00	-1,785.00	

CH3225 TO CH3400 - RETAINED CUT SECTION TYPE 2 (NAL WEST)

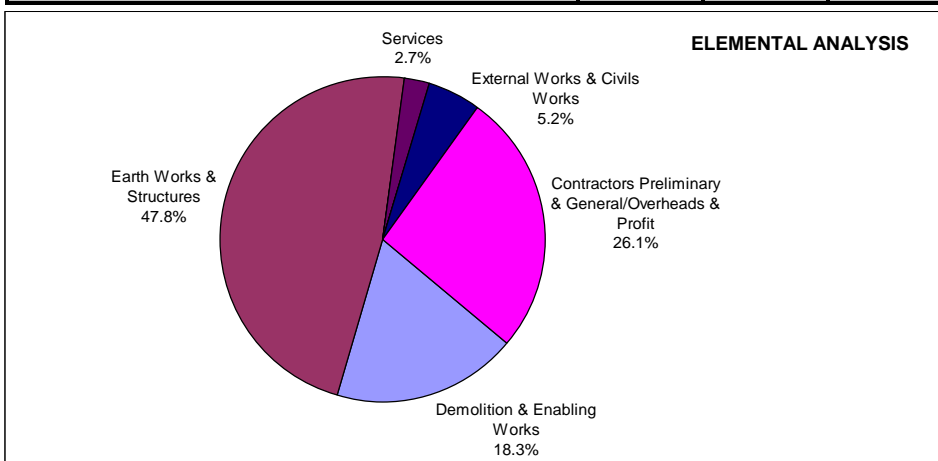
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						10,760,000.00
	Outer Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	189.00	189	m3	1,984.50	375,070.50	
b	900mm (DIA) contiguous bored piles - 13.2m (AVG L) @ 1,000mm horizontal crs	2,939.12	2,939	m3	1,315.60	3,866,548.40	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	224.00	224	m3	1,748.86	391,745.20	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	-	-	tonne	4,500.00	N/A	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	-	-	tonne	4,500.00	N/A	
f	Allowance for bolted steel plate connections	-	-	tonne	7,000.00	N/A	
g	Tanking/Waterproof Membranes	-	-	m2	100.00	N/A	
h	300mm thick, cast insitu reinforced shotcrete wall	551.25	551	m3	924.00	509,124.00	
	Inner Walls						
i	300mm (W) x 900mm (H) cast insitu concrete guide wall	189.00	189	m3	1,984.50	375,070.50	
j	900mm (DIA) contiguous bored piles - 15.5m (AVG L) @ 1,000mm horizontal crs	3,451.24	3,451	m3	1,315.60	4,540,135.60	
k	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	224.00	224	m3	1,748.86	391,745.20	
l	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	-	-	tonne	4,500.00	N/A	
m	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	-	-	tonne	4,500.00	N/A	
n	Allowance for bolted steel plate connections	-	-	tonne	7,000.00	N/A	
o	Tanking/Waterproof Membranes	-	-	m2	100.00	N/A	
p	300mm thick, cast insitu reinforced shotcrete wall	341.25	341	m3	924.00	315,084.00	
q	Rounding adjustment	1.00	1	LS	-4,523.40	-4,523.40	
2.05	Ground Slab						1,110,000.00
a	300mm thick, reinforced concrete blinding layer	525.00	525	m3	784.30	411,757.50	
b	Tanking/waterproof membranes	-	-	m2	100.00	N/A	
c	500mm thick, cast insitu reinforced concrete slab	875.00	875	m3	799.48	699,545.00	
d	Rounding adjustment	1.00	1	LS	-1,302.50	-1,302.50	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						0.00
-	-	-	-	-	-	N/A	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						0.00
-	-	-	-	-	-	N/A	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00

CH3225 TO CH3400 - RETAINED CUT SECTION TYPE 2 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						190,000.00
a	Allowance for drainage services	372.00	372	m	500.00	186,000.00	
b	Rounding adjustment	1.00	1	LS	4,000.00	4,000.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	

CH3400 TO CH3550 - RETAINED CUT SECTION TYPE 1 (NAL WEST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	18.3%	1,030,000	6,867	
1.01	Demolition & Enabling Works	9.4%	530,000	3,533	
1.02	Utilities Diversions	8.9%	500,000	3,333	
2.00	Earth Works & Structures	47.8%	2,690,000	17,933	
2.01	Earth Works	13.9%	780,000	5,200	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	33.9%	1,910,000	12,733	
2.05	Ground Slab	0.0%	0	0	
2.06	Columns	0.0%	0	0	
2.07	Beams	0.0%	0	0	
2.08	Upper Floors	0.0%	0	0	
2.09	Roof Slab	0.0%	0	0	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	2.7%	150,000	1,000	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	2.7%	150,000	1,000	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	5.2%	290,000	1,933	
9.01	External Works	5.2%	290,000	1,933	
9.02	Civil Works	0.0%	0	0	
10.00	Contractors Preliminary & General/Overheads & Profit	26.1%	1,470,000	9,800	
10.01	Contractors Preliminary & General	13.1%	740,000	4,933	
10.01	Contractors Overheads & Profit	13.0%	730,000	4,867	
Total		100.0%	5,630,000	37,533	
				4,160,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	150.00
2.00	Trench Width (Min)	m	10.00
3.00	Trench Width (Max)	m	22.00
4.00	Trench Width (Average)	m	16.00
5.00	Trench Height (Min)	m	2.40
6.00	Trench Height (Max)	m	4.80
7.00	Trench Height (Average)	m	3.60
8.00	Trench Footprint Area (Average)	m2	2,400.00
9.00	Trench Cross Section Area (Average)	m2	57.60
10.00	Trench Volume (Average)	m3	8,640.00

CH3400 TO CH3550 - RETAINED CUT SECTION TYPE 1 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						530,000.00
a	Demolish existing commercial buildings located within construction zone	-	-	m2	100.00	Included elsewhere	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
d	Allowance for traffic management	-	-	Month	-	Included elsewhere	
e	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
f	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	50,000.00	50,000.00	
g	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						780,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	8,640.00	8,640	m3	35.00	302,400.00	
c	Machine excavation in soft rock	-	-	m3	35.00	N/A	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	8,208.00	8,208	m3	40.00	328,320.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	432.00	432	m3	90.00	38,880.00	
g	Imported engineering fill - 600mm thick, GAP 65	1,440.00	1,440	m3	75.00	108,000.00	
h	Rounding adjustment	1.00	1	LS	2,400.00	2,400.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						1,910,000.00
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	162.00	162	m3	1,984.50	321,489.00	

CH3400 TO CH3550 - RETAINED CUT SECTION TYPE 1 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	Allowance for establishment, setting out and removal of piling rig	1.00	1	LS	20,000.00	20,000.00	
c	750mm (DIA) bored piles - 9.7m (AVG L) @ 1,500mm horizontal crs	857.07	857	m3	1,018.33	872,704.53	
d	Belling to base of pile	200.00	200	No.	900.00	180,000.00	
e	Temporary steel pile liners	1,940.00	1,940	m	120.00	232,800.00	
f	Cut down piles 150mm	200.00	200	No.	150.00	30,000.00	
g	900mm (W) x 350mm (H) cast insitu, reinforced concrete pile capping	94.50	95	m3	1,695.10	161,034.50	
h	125mm thick, cast insitu reinforced shotcrete wall	135.00	135	m3	672.00	90,720.00	
i	Rounding adjustment	1.00	1	LS	1,251.98	1,251.98	
2.05	Ground Slab						0.00
-	-	-	-	-	-	N/A	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						0.00
-	-	-	-	-	-	N/A	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						0.00
-	-	-	-	-	-	N/A	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	

CH3400 TO CH3550 - RETAINED CUT SECTION TYPE 1 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						150,000.00
a	Allowance for drainage services	300.00	300	m	500.00	150,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						0.00
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						0.00
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						0.00
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	
8.02	Escalators						0.00
-	-	-	-	-	-	N/A	
9.00	External Works & Civils Works						290,000.00
9.01	External Works						290,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	300.00	300	m2	50.00	15,000.00	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	600.00	600	m2	200.00	120,000.00	
c	Aesthetic steel barrier fence (2.0m high)	300.00	300	m	500.00	150,000.00	
d	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
9.02	Civil Works						0.00
a	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	-	-	m2	300.00	N/A	
b	Road works (major - main roads & highways) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	-	-	m2	400.00	N/A	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
10.00	Contractors Preliminary & General/Overheads & Profit						740,000.00
10.01	Contractors Preliminary & General						740,000.00
a	Contractors preliminary & general	4,160,000.00	4,160,000	LS	17.8%	740,325.19	
b	Rounding adjustment	1.00	1	LS	-325.19	-325.19	

CH3400 TO CH3550 - RETAINED CUT SECTION TYPE 1 (NAL WEST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)	
10.02	Contractors Overheads & Profit						730,000.00	
a	Contractors overheads & profit	4,900,000.00	4,900,001	LS	15.0%	735,000.15		
b	Rounding adjustment	1.00	1	LS	-5,000.15	-5,000.15		
	Total					5,630,000.00	5,630,000.00	
Cost/Length (m)								37,533.33

Project: **AUCKLAND CBD RAIL LINK**
 Doc: **PHASE 2 - CONCEPT DESIGN COST ESTIMATE**
 Rev: Draft Version (For Verification)
 Job No: 3310302
 Date: 2 August 2010

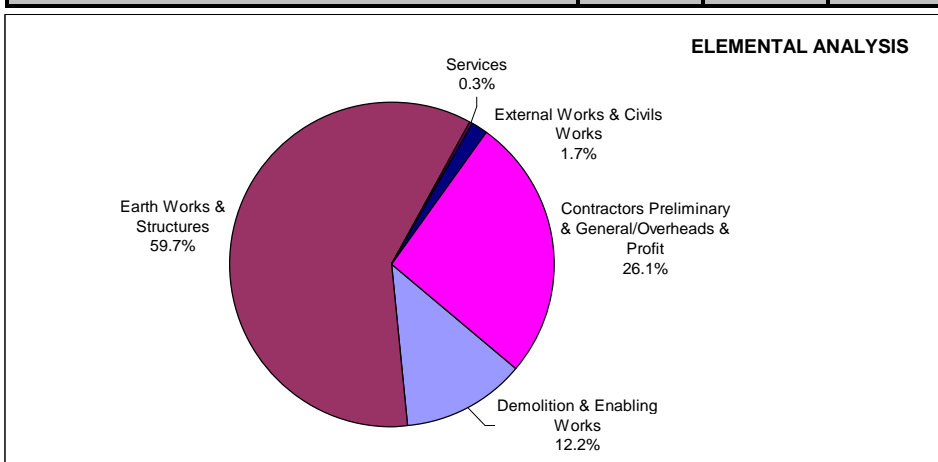


CH10500 TO CH10775 - TEMPORARY WORKS (NAL WEST)

CH10500 TO CH10775 - TEMPORARY WORKS (NAL WEST)							
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Civil Works						
1.01	Temporary Works						610,000.00
a	Site clearance; break up existing roads & footpaths, etc	2,750.00	2,750	m2	40.00	110,000.00	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Machine excavation in made ground (Average 0.5m deep)	1,375.00	1,375	m3	35.00	48,125.00	
d	Disposal of recyclable excavated material Spoil disposed at tip site by lorry within 50km radius	1,375.00	1,375	m3	40.00	55,000.00	
e	Backfill site area with suitable material from tunnelling excavations after completion of the main NAL connection	-	-	m3	15.00	Not Required	
f	Imported engineering fill - 300mm thick, GAP 65	825.00	825	m3	75.00	61,875.00	
g	Precast concrete post & panel retaining wall - Single depth 1500 series (Chainage 10,825 to 10,10925 - Average 1.5m high)	100.00	100	m2	400.00	40,000.00	
h	Allowance for temporary drainage services connected to existing	275.00	275	m	350.00	96,250.00	
i	Rounding adjustment	1.00	1	LS	-1,250.00	-1,250.00	
2.00	Contractors Preliminary & General/Overheads & Profit						
2.01	Contractors Preliminary & General						100,000.00
a	Contractors preliminary & general	610,000.00	610,000	LS	17.8%	108,557.30	
b	Rounding adjustment	1.00	1	LS	-8,557.30	-8,557.30	
2.02	Contractors Overheads & Profit						100,000.00
a	Contractors overheads & profit	710,000.00	710,001	LS	15.0%	106,500.15	
b	Rounding adjustment	1.00	1	LS	-6,500.15	-6,500.15	
	Total					810,000.00	810,000.00

CH3000 TO CH3125 - CUT & COVER TUNNEL TYPE 4 (NAL EAST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	12.2%	2,540,000	20,320	
1.01	Demolition & Enabling Works	9.6%	1,990,000	15,920	
1.02	Utilities Diversions	2.6%	550,000	4,400	
2.00	Earth Works & Structures	59.7%	12,420,000	99,360	
2.01	Earth Works	10.5%	2,180,000	17,440	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	34.6%	7,200,000	57,600	
2.05	Ground Slab	4.4%	920,000	7,360	
2.06	Columns	0.0%	0	0	
2.07	Beams	4.3%	890,000	7,120	
2.08	Upper Floors	1.5%	310,000	2,480	
2.09	Roof Slab	4.4%	920,000	7,360	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.3%	60,000	480	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.3%	60,000	480	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	1.7%	350,000	2,800	
9.01	External Works	0.2%	50,000	400	
9.02	Civil Works	1.4%	300,000	2,400	
10.00	Contractors Preliminary & General/Overheads & Profit	26.1%	5,440,000	43,520	
10.01	Contractors Preliminary & General	13.1%	2,730,000	21,840	
10.01	Contractors Overheads & Profit	13.0%	2,710,000	21,680	
Total		100.0%	20,810,000	166,480	
				15,370,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	125.00
2.00	Trench Width (Min)	m	10.00
3.00	Trench Width (Max)	m	10.00
4.00	Trench Width (Average)	m	10.00
5.00	Trench Height (Min)	m	15.00
6.00	Trench Height (Max)	m	18.00
7.00	Trench Height (Average)	m	16.50
8.00	Trench Footprint Area (Average)	m2	1,250.00
9.00	Trench Cross Section Area (Average)	m2	165.00
10.00	Trench Volume (Average)	m3	20,625.00

CH3000 TO CH3125 - CUT & COVER TUNNEL TYPE 4 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						1,990,000.00
a	Demolish existing commercial buildings located within construction zone	3,750.00	3,750	m2	100.00	375,000.00	
b	Remove existing Mt Eden Station footbridge; salvage and store reusable bridge sections	1.00	1	LS	50,000.00	50,000.00	
c	Construct temporary Mt Eden Station - 100m long (i.e. slab on grade type including all platform furniture and services)	1,000.00	1,000	m2	750.00	750,000.00	
d	Construct access from temporary Mt Eden Station to Mt Eden Road (i.e. concrete footpaths and side hoardings - 100m)	300.00	300	m2	200.00	60,000.00	
e	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
f	Hoarding to construction zone	1.00	1	LS	50,000.00	50,000.00	
g	Allowance for traffic management	-	-	Month	-	Included elsewhere	
h	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
i	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
j	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						550,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	200,000.00	200,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	100,000.00	100,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	150,000.00	150,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	-	-	LS	-	N/A	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,180,000.00
a	Break up existing roads, footpaths & building platforms, etc	1,250.00	1,250	m2	40.00	50,000.00	
b	Machine excavation in made ground	6,250.00	6,250	m3	35.00	218,750.00	
c	Machine excavation in soft rock	6,250.00	6,250	m3	35.00	218,750.00	
d	Machine excavation in hard rock	8,125.00	8,125	m3	100.00	812,500.00	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	19,593.75	19,594	m3	40.00	783,760.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,031.25	1,032	m3	90.00	92,880.00	
g	Imported engineering fill	-	-	m3	75.00	Not Required	
h	Rounding adjustment	1.00	1	LS	3,360.00	3,360.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00

CH3000 TO CH3125 - CUT & COVER TUNNEL TYPE 4 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
2.04	External Walls						7,200,000.00
	Side Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	135.00	135	m3	1,984.50	267,907.50	
b	900mm (DIA) contiguous bored piles - 19.5m (AVG L) @ 1,000mm horizontal crs	3,101.34	3,101	m3	1,315.60	4,079,675.60	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	160.00	160	m3	1,748.86	279,818.00	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	49.50	50	tonne	4,500.00	225,000.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	99.00	99	tonne	4,500.00	445,500.00	
f	Allowance for bolted steel plate connections	14.85	15	tonne	7,000.00	105,000.00	
g	Tanking/Waterproof Membranes	4,125.00	4,125	m2	100.00	412,500.00	
h	300mm thick, cast insitu reinforced shotcrete wall	1,237.50	1,238	m3	924.00	1,143,912.00	
	Face Wall						
i	300mm (W) x 900mm (H) cast insitu concrete guide wall	5.40	6	m3	1,984.50	11,907.00	
j	900mm (DIA) contiguous bored piles - 18m (AVG L) @ 1,000mm horizontal crs	114.51	115	m3	1,315.60	151,294.00	
k	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	6.40	6	m3	1,748.86	10,493.18	
l	Tanking/Waterproof Membranes	180.00	180	m2	100.00	18,000.00	
m	300mm thick, cast insitu reinforced shotcrete wall	54.00	54	m3	924.00	49,896.00	
n	Rounding adjustment	1.00	1	LS	-903.28	-903.28	
2.05	Ground Slab						920,000.00
a	300mm thick, reinforced concrete blinding layer	375.00	375	m3	784.30	294,112.50	
b	Tanking/waterproof membranes	1,250.00	1,250	m2	100.00	125,000.00	
c	500mm thick, cast insitu reinforced concrete slab	625.00	625	m3	799.48	499,675.00	
d	Rounding adjustment	1.00	1	LS	1,212.50	1,212.50	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						890,000.00
a	1,500 x 600mm post tensioned, reinforced concrete beam	225.00	225	m3	1,927.69	433,729.69	
b	750 x 750mm cast insitu, reinforced concrete beam/strut	234.38	235	m3	1,938.20	455,476.35	
c	Rounding adjustment	1.00	1	LS	793.97	793.97	
2.08	Upper Floors						310,000.00
a	200mm thick, precast hollow core floor with 75mm thick, reinforced concrete topping slab	1,250.00	1,250	m2	250.00	312,500.00	
b	Rounding adjustment	1.00	1	LS	-2,500.00	-2,500.00	
2.09	Roof Slab						920,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take 20kPa notional building load)	1,250.00	1,250	m2	600.00	750,000.00	
b	Tanking/waterproof membranes	1,250.00	1,250	m2	100.00	125,000.00	
c	Imported engineering fill - 500mm thick	625.00	625	m3	75.00	46,875.00	
d	Rounding adjustment	1.00	1	LS	-1,875.00	-1,875.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00

CH3000 TO CH3125 - CUT & COVER TUNNEL TYPE 4 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						60,000.00
a	Allowance for drainage services in base of trench	125.00	125	LS	500.00	62,500.00	
b	Rounding adjustment	1.00	1	LS	-2,500.00	-2,500.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	

CH3125 TO CH3225 - SEM MINED TUNNEL (NAL EAST)

SUMMARY OF COST

Ref	Item Description	Total (NZD \$)	%	Cost/m (NZD \$)	Cost/m3 (NZD \$)	
1.00	Labour, Plant & Material Costs					
1.01	Attendant Labour	720,000.00	2.25%	7,200.00	127.32	
1.02	Excavation Face Labour	1,270,000.00	3.97%	12,700.00	224.59	
1.03	Concreting Gang	680,000.00	2.13%	6,800.00	120.25	
1.04	Excavation Face Plant	5,130,000.00	16.04%	51,300.00	907.18	
1.05	Concreting Plant	3,600,000.00	11.25%	36,000.00	636.62	
1.06	General Plant	3,640,000.00	11.38%	36,400.00	643.69	
1.07	Canopy Pipe Materials	2,070,000.00	6.47%	20,700.00	366.06	
1.08	Primary Lining Materials	4,040,000.00	12.63%	40,400.00	714.43	
1.09	Secondary Lining Materials	1,480,000.00	4.63%	14,800.00	261.72	
1.10	Invert Slab Materials	750,000.00	2.34%	7,500.00	132.63	
1.11	Spoil Disposal	240,000.00	0.75%	2,400.00	42.44	
1.12	Contractors Preliminary & General	4,200,000.00	13.13%	42,000.00	742.72	
1.13	Contractors Overheads & Profit	4,170,000.00	13.04%	41,700.00	737.42	
		31,990,000.00	100.00%	319,900.00	5,657.08	23,620,000.00 Total Excl. P&G/OH&P

COST MODEL INPUTS

Ref	Item Description	Unit	Measured Value
1.00	Key Metric Data		
1.01	Tunnel Length	m	100.00
1.02	Tunnel Width	m	10.00
1.03	Tunnel Height	m	7.20
1.04	Tunnel Footprint Area	m2	1,000.00
1.05	Tunnel Face Area	m2	56.55
1.06	Tunnel Perimeter Length	m	54.04
1.07	Tunnel Wall Area	m2	5,403.53
1.08	Tunnel Volume (Gross)	m3	5,654.86

SUMMARY OF PRODUCTIVITY

Ref	Item Description	Unit	Measured Value
1.00	Construction Sequencing		
1.01	Construction Sections Required	No.	13.00
1.02	Number of Construction Work Faces	No.	1.00
1.03	Length of Section	m	8.00
1.04	Construction Stages Per Section Required	No.	3.00
1.05	Total Number of Construction Stages Required	No.	39.00
2.00	Working Hours		
2.01	Working Hours/Day	No.	15.00
2.02	Shifts/Day	No.	2.00
2.03	Working Hours/Shift	No.	7.50
2.04	Working Days/Week	No.	6.00
2.05	Working Hours/Week	No.	90.00
3.00	Base Production Rates		
3.01	Estimated Average Advance Rate/Week	m	2.91
3.02	Estimated Duration (Total In Hours)	Hour	3,092.78
3.03	Estimated Duration (Total In Days)	Day	206.19
3.04	Estimated Duration (Total In Weeks)	Week	34.36
3.05	Estimated Duration (Total In Months)	Month	7.93
3.06	Estimated Duration (Total In Years)	Year	0.66

SUMMARY OF BULK QUANTITIES

Ref	Item Description	Unit	Measured Value
1.00	Bulk Quantities		
1.01	Canopy Pipes	No.	559.00
1.02	Excavation	m3	5,654.86
1.03	Disposal	m3	5,654.86
1.04	Shotcrete Work	m3	2,260.08
1.05	Tanking Membranes	m2	5,403.53
1.06	Concrete Work	m3	2,654.99
1.07	Bar Reinforcement	t	703.33
1.08	Lattice Girders	No.	25.00
1.09	Rock Bolts	No.	720.00
1.10	Glass Fibre Bolts	No.	320.00
1.11	Glass Fibre Spot Bolts	No.	52.00

BULK MATERIAL MEASURES

Ref	Item Description	Unit	Measured Value
1.00	Canopy Pipe Works		
1.01	Canopy Pipe Length (Gross)	m	12.00
1.02	Canopy Pipe Lap Distance (Top & Bottom)	m	4.00
1.03	Canopy Pipe Length (Net)	m	8.00
1.04	Total Canopy Pipes Required (Per Roof Section)	No.	43.00
1.05	Total Roof Sections Required	No.	13.00
1.06	Total Number of Canopy Pipes	No.	559.00
1.07	Total Length of Canopy Pipes	m	6,708.00
1.08	Total Injected Grout Volume	m3	68.83
2.00	Excavation & Disposal		
2.01	Road Header Excavation Works	m3	5,654.86
2.02	Spoil (Solid State)	m3	5,654.86
2.03	Spoil (Bulked State)	m3	8,482.29
2.04	Total Spoil Disposal (Assumed 95% Clean)	m3	5,372.12
2.05	Total Spoil Disposal (Assumed 5% Clean)	m3	282.74
3.00	Rock Bolts		
3.01	Rock Bolt Length	m	6.00
3.02	Rock Bolt Spacing Centres	m	1.25
3.03	Rock Bolts Required (Per Cross Section)	No.	9.00
3.04	Total Number of Rock Bolts	No.	720.00
3.05	Total Length of Rock Bolts	m	4,320.00
4.00	Glass Fibre Bolts		
4.01	Glass Fibre Bolt Length	m	3.00
4.02	Glass Fibre Bolt Spacing Centres	m	1.25
4.03	Glass Fibre Bolts Required (Per Cross Section)	No.	4.00
4.04	Total Number of Glass Fibre Bolts	No.	320.00
4.05	Total Length of Glass Fibre Bolts	m	960.00
5.00	Primary Wall Linings		
5.01	Primary Lining Thickness	m	0.20
5.02	Total Primary Lining Shotcrete Volume	m3	2,223.33
5.03	Primary Lining Reinforcement Ratio	t/m3	0.10
5.04	Total Primary Lining Reinforcement	t/m3	222.33
6.00	Tunnel Face Support		
6.01	Tunnel Face Support Thickness	m	0.05
6.02	Total Tunnel Face Support Shotcrete Volume	m3	36.76
6.03	Tunnel Face Support Reinforcement Ratio	t/m3	0.00
6.04	Total Tunnel Face Support Reinforcement	t	0.00
7.00	Glass Fibre Spot Bolts		
7.01	Glass Fibre Spot Bolt Length	m	6.00
7.02	Glass Fibre Spot Bolt Spacing Centres	m	-
7.03	Glass Fibre Spot Bolts Required (Per Cross Section)	No.	4.00
7.04	Total Number of Glass Fibre Spot Bolts	No.	52.00
7.05	Total Length of Glass Fibre Spot Bolts	m	312.00
8.00	Lattice Girders		
8.01	Lattice Girder Spacing	m	4.00
8.02	Total Lattice Girders	No.	25.00
9.00	Temporary Backfill		
9.01	Temporary Backfill	m3	1,500.00
10.00	Tanking Membranes		
10.01	Total Tanking Membranes Required	m2	5,403.53
11.00	Secondary (Permanent) Wall Linings		
11.01	Secondary Lining Thickness	m	0.30
11.02	Total Secondary Lining Concrete Volume	m3	1,654.99
11.03	Secondary Lining Reinforcement Ratio	t/m3	0.20
11.04	Total Secondary Lining Reinforcement	t/m3	331.00
12.00	Invert Slab		
12.01	Invert Slab Thickness	m	1.00
12.02	Total Invert Slab Concrete Volume	m3	1,000.00
12.03	Invert Slab Reinforcement Ratio	t/m3	0.15
12.04	Total Invert Slab Reinforcement	t/m3	150.00

CH3125 TO CH3225 - SEM MINED TUNNEL (NAL EAST)

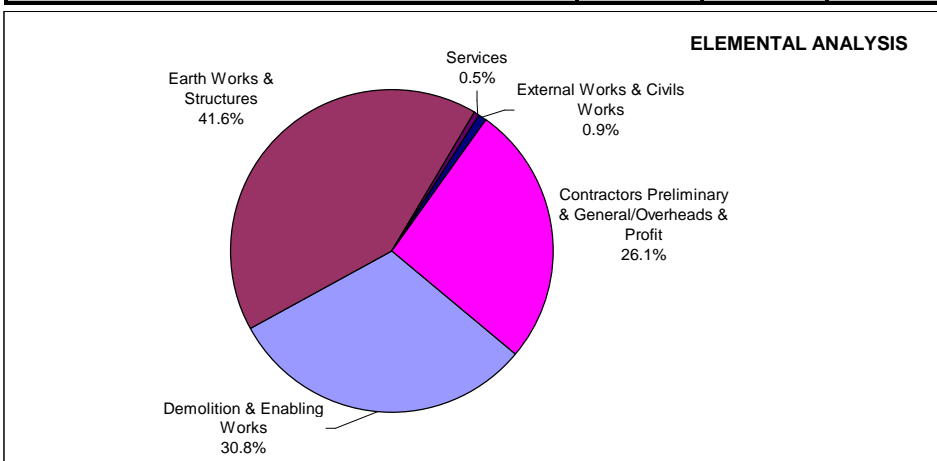
Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Labour Resources						
1.01	Attendant Labour						720,000.00
a	Yard Forman	Year	1.00	0.66	260,000.00	171,834.52	
b	Pit Bottom Labourer	Year	1.00	0.66	120,000.00	79,308.24	
c	Tunnel Crane Operator	Year	1.00	0.66	140,000.00	92,526.28	
d	Banksman / Pit Top Labourer	Year	1.00	0.66	100,000.00	66,090.20	
e	Plant / Equipment Operator	Year	1.00	0.66	110,000.00	72,699.22	
f	Fitter	Year	1.00	0.66	160,000.00	105,744.32	
g	Electrician	Year	1.00	0.66	200,000.00	132,180.40	
h	Rounding adjustment	LS	1	1	-383.20	-383.20	
1.02	Excavation Face Labour						1,270,000.00
a	Pit Boss	Year	1.00	0.66	320,000.00	211,488.64	
b	Leading Miner	Year	1.00	0.66	200,000.00	132,180.40	
c	Miner / Excavator Driver	Year	1.00	0.66	160,000.00	105,744.32	
d	Spray Machine Operator	Year	1.00	0.66	110,000.00	72,699.22	
e	Spray Pump Operator	Year	1.00	0.66	110,000.00	72,699.22	
f	Canopy Pipe Rig Operator	Year	1.00	0.66	110,000.00	72,699.22	
g	Canopy Pipe Rig Assistant	Year	1.00	0.66	110,000.00	72,699.22	
h	Drill Rig Operator	Year	1.00	0.66	110,000.00	72,699.22	
i	Drill Rig Assistant	Year	1.00	0.66	110,000.00	72,699.22	
j	Dumper / Forklift Driver	Year	1.00	0.66	110,000.00	72,699.22	
k	Tunnel Labourer	Year	1.00	0.66	120,000.00	79,308.24	
l	Electrician	Year	1.00	0.66	200,000.00	132,180.40	
m	Fitter	Year	1.00	0.66	160,000.00	105,744.32	
n	Rounding adjustment	LS	1	1	-5,540.89	-5,540.89	
1.03	Concreting Gang						680,000.00
a	Chargehand	Year	1.00	0.66	160,000.00	105,744.32	
b	Concreter / Lining Labourer	Year	1.00	0.66	160,000.00	105,744.32	
c	Joiner	Year	1.00	0.66	160,000.00	105,744.32	
d	Shutter Hand / Concrete Finisher	Year	1.00	0.66	160,000.00	105,744.32	
e	Steelfixer	Year	1.00	0.66	160,000.00	105,744.32	
f	Dumper / Forklift Driver	Year	1.00	0.66	110,000.00	72,699.22	
g	Tunnel Labourer	Year	1.00	0.66	120,000.00	79,308.24	
h	Rounding adjustment	LS	1	1	-729.08	-729.08	
2.00	Plant Resources						
2.01	Excavation Face Plant						5,130,000.00
a	Canopy Pipe Rig	No.	1.00	1.00	500,000.00	500,000.00	
b	Dosco Mk2BP 55 Tonne Hard Ground Road Header incl. spares	No.	1.00	1.00	1,305,000.00	1,305,000.00	
c	ITC 312 Tunnel Excavator	No.	1.00	1.00	350,000.00	350,000.00	
d	Brokk	No.	1.00	1.00	250,000.00	250,000.00	
e	Drilling Rig	No.	1.00	1.00	100,000.00	100,000.00	
f	Shotcrete Robot	No.	1.00	1.00	250,000.00	250,000.00	
g	Shotcrete Pump	No.	1.00	1.00	50,000.00	50,000.00	
h	Small Wheeled Agitator	No.	1.00	1.00	50,000.00	50,000.00	
i	Access Basket	No.	2.00	1.00	50,000.00	100,000.00	
j	Mini Excavator	No.	1.00	1.00	50,000.00	50,000.00	

CH3125 TO CH3225 - SEM MINED TUNNEL (NAL EAST)

Ref	Item Description	Unit	Resource Quantity	Unit Quantity	Rate (NZD \$)	Total (NZD \$)	Element Total (NZD \$)
k	Dumper	No.	2.00	1.00	60,000.00	120,000.00	
l	Allowance for Plant Consumables & Maintenance	Day	13.00	206.19	150.00	402,061.86	
m	Sundry Plant / Ventilation and Safety Equipment	Day	1.00	206.19	1,200.00	247,422.68	
n	Ground Monitoring Equipment / Forward Probing	Day	1.00	206.19	6,285.71	1,296,023.56	
o	Air Pipe	m	1.00	200.00	125.00	25,000.00	
p	Water Pipe	m	1.00	200.00	200.00	40,000.00	
q	Rounding adjustment	LS	1	1	-5,508.10	-5,508.10	
2.02	Concreting Plant						3,600,000.00
a	Dumper	No.	1.00	1.00	60,000.00	60,000.00	
b	Forklift	No.	1.00	1.00	30,000.00	30,000.00	
c	Access Basket	No.	1.00	1.00	50,000.00	50,000.00	
d	Static Concrete Pump	No.	1.00	1.00	50,000.00	50,000.00	
e	Allowance for Plant Consumables & Maintenance	Day	4.00	206.19	100.00	82,474.23	
f	Sundry Plant / Ventilation and Safety Equipment	LS	1.00	1.00	100,000.00	100,000.00	
g	Sundry Concrete Plant	LS	1.00	1.00	30,000.00	30,000.00	
h	Tunnel Invert Forms	LS	1.00	1.00	1,000,000.00	1,000,000.00	
i	Tunnel Arch Forms	LS	1.00	1.00	2,000,000.00	2,000,000.00	
j	Temporary propping equipment	LS	1.00	1.00	200,000.00	200,000.00	
k	Rounding adjustment	LS	1	1	-2,474.23	-2,474.23	
2.03	General Plant						3,640,000.00
a	Hoists	Day	1.00	206.19	228.57	47,128.13	
b	Man Hoists	Day	1.00	206.19	828.57	170,839.47	
c	Cranes	Day	1.00	206.19	1,942.86	400,589.10	
d	Pump Main	m	1.00	200.00	125.00	25,000.00	
e	Vent Ducting	m	1.00	200.00	150.00	30,000.00	
f	Booster Fans	Day	1.00	206.19	285.71	58,910.16	
g	Surface Fans	Day	2.00	206.19	1,085.71	447,717.23	
h	Grout Mixer	Day	1.00	206.19	2,000.00	412,371.13	
i	Grout Pumps	Day	1.00	206.19	1,428.57	294,550.81	
j	Grout Hoses and Pipes	Day	1.00	206.19	114.29	23,564.06	
k	Compressors	Day	1.00	206.19	400.00	82,474.23	
l	Loaders	Day	1.00	206.19	457.14	94,256.26	
m	Vertical Conveyor	Day	1.00	206.19	2,428.57	500,736.38	
n	Dewatering During Works	Day	1.00	206.19	1,428.57	294,550.81	
o	Batching Plant including Bins / Silos	Day	1.00	206.19	2,400.00	494,845.36	
p	6m3 Agitator	Day	1.00	206.19	420.00	86,597.94	
q	Static Concrete Pump	Day	2.00	206.19	450.00	185,567.01	
r	Rounding adjustment	LS	1	1	-9,698.09	-9,698.09	
3.00	Material Resources						
3.01	Canopy Pipe Materials						2,070,000.00
a	Canopy pipes & pilot bits (Ceresola TLS quotation - \$2,093/No. EUR Conv. to NZD @	No.	1.00	559.00	3,646.01	2,038,117.35	
b	Injected Grout	m3	1.00	68.83	520.00	35,791.37	
c	Rounding adjustment	LS	1	1	-3,908.73	-3,908.73	
3.02	Primary Lining Materials						4,040,000.00
a	Fibre reinforced shotcrete primary linings	m3	1.00	2,223.33	780.00	1,734,194.60	
b	Fibre reinforced shotcrete temporary face support	m3	1.00	36.76	780.00	28,670.15	
c	Lattice girders	No.	1.00	25.00	16,750.96	418,773.95	

CH3225 TO CH3375 - RETAINED CUT SECTION/CUT & COVER TUNNEL TYPE 3 (NAL EAST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	30.8%	9,520,000	63,467	
1.01	Demolition & Enabling Works	29.1%	9,020,000	60,133	
1.02	Utilities Diversions	1.6%	500,000	3,333	
2.00	Earth Works & Structures	41.6%	12,890,000	85,933	
2.01	Earth Works	5.6%	1,730,000	11,533	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	24.1%	7,450,000	49,667	
2.05	Ground Slab	3.1%	950,000	6,333	
2.06	Columns	0.0%	0	0	
2.07	Beams	4.5%	1,400,000	9,333	
2.08	Upper Floors	0.0%	0	0	
2.09	Roof Slab	3.6%	1,110,000	7,400	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.8%	250,000	1,667	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.5%	160,000	1,067	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.5%	160,000	1,067	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	0.9%	290,000	1,933	
9.01	External Works	0.9%	290,000	1,933	
9.02	Civil Works	0.0%	0	0	
10.00	Contractors Preliminary & General/Overheads & Profit	26.1%	8,090,000	53,933	
10.01	Contractors Preliminary & General	13.1%	4,060,000	27,067	
10.01	Contractors Overheads & Profit	13.0%	4,030,000	26,867	
Total		100.0%	30,950,000	206,333	
				22,860,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA			Outer Trench	Inner Trench
Ref	Item Description	Unit	Total	Total
1.00	Trench Length	m	150.00	150.00
2.00	Trench Width (Min)	m	10.00	10.00
3.00	Trench Width (Max)	m	22.00	10.00
4.00	Trench Width (Average)	m	16.00	10.00
5.00	Trench Height (Min)	m	0.00	7.00
6.00	Trench Height (Max)	m	5.70	13.00
7.00	Trench Height (Average)	m	2.85	10.00
8.00	Trench Footprint Area (Average)	m2	2,400.00	1,500.00
9.00	Trench Cross Section Area (Average)	m2	45.60	100.00
10.00	Trench Volume (Average)	m3	6,840.00	15,000.00

CH3225 TO CH3375 - RETAINED CUT SECTION/CUT & COVER TUNNEL TYPE 3 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						9,020,000.00
a	Demolish existing commercial buildings between Mt Eden Road & Normanby Road (South)	4,250.00	4,250	m2	100.00	425,000.00	
b	Partial demolition works of existing commercial buildings between Mt Eden Road & Normanby Road (South)	500.00	500	m2	100.00	50,000.00	
c	Demolish existing commercial buildings between Mt Eden Road & Normanby Road (North)	6,200.00	6,200	m2	100.00	620,000.00	
d	Mount Eden Road bridge structure and abutments - Precast Double T Type	2,000.00	2,000	m2	3,600.00	7,200,000.00	
e	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
f	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
g	Allowance for traffic management	-	-	Month	-	Included elsewhere	
h	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
i	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
j	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						1,730,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	6,840.00	6,840	m3	35.00	239,400.00	
c	Machine excavation in soft rock	15,000.00	15,000	m3	35.00	525,000.00	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	20,748.00	20,748	m3	40.00	829,920.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,092.00	1,092	m3	90.00	98,280.00	
g	Imported engineering fill - 600mm thick, GAP 65	540.00	540	m3	75.00	40,500.00	
h	Rounding adjustment	1.00	1	LS	-3,100.00	-3,100.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00

CH3225 TO CH3375 - RETAINED CUT SECTION/CUT & COVER TUNNEL
TYPE 3 (NAL EAST)

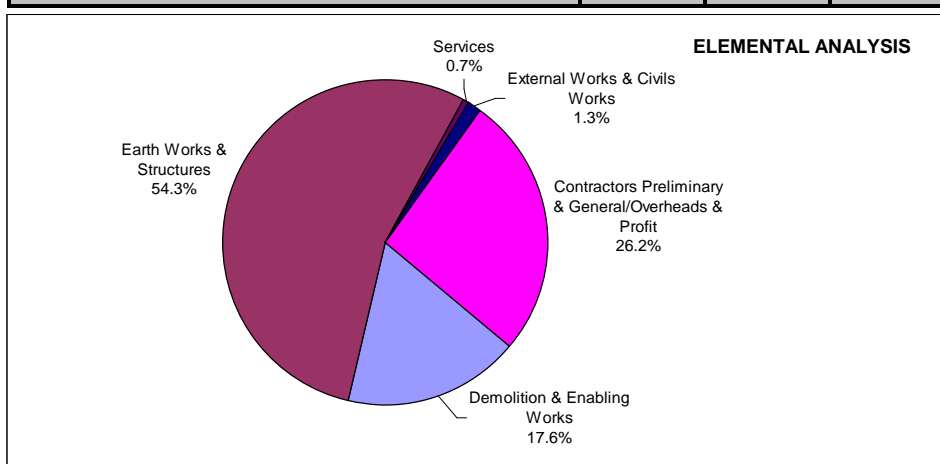
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
-	-	-	-	-	-	N/A	
2.04	External Walls						7,450,000.00
	Outer Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	162.00	162	m3	1,984.50	321,489.00	
b	Allowance for establishment, setting out and removal of piling rig	1.00	1	LS	20,000.00	20,000.00	
c	750mm (DIA) bored piles - 6m (AVG L) @ 1,500mm horizontal crs	530.14	530	m3	1,018.33	539,712.25	
d	Belling to base of pile	200.00	200	No.	900.00	180,000.00	
e	Temporary steel pile liners	1,200.00	1,200	m	120.00	144,000.00	
f	Cut down piles 150mm	200.00	200	No.	150.00	30,000.00	
g	900mm (W) x 350mm (H) cast insitu, reinforced concrete pile capping	94.50	95	m3	1,695.10	161,034.50	
h	125mm thick, cast insitu reinforced shotcrete wall	106.88	107	m3	672.00	71,904.00	
	Inner Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	162.00	162	m3	1,984.50	321,489.00	
b	900mm (DIA) contiguous bored piles - 13m (AVG L) @ 1,000mm horizontal crs	2,481.07	2,481	m3	1,315.60	3,264,003.60	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	192.00	192	m3	1,748.86	335,781.60	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	59.40	59	tonne	4,500.00	265,500.00	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	118.80	119	tonne	4,500.00	535,500.00	
f	Allowance for bolted steel plate connections	17.82	18	tonne	7,000.00	126,000.00	
g	Tanking/Waterproof Membranes	3,000.00	3,000	m2	100.00	300,000.00	
h	300mm thick, cast insitu reinforced shotcrete wall	900.00	900	m3	924.00	831,600.00	
i	Rounding adjustment	1.00	1	LS	1,986.05	1,986.05	
2.05	Ground Slab						950,000.00
a	300mm thick, reinforced concrete blinding layer	450.00	450	m3	784.30	352,935.00	
b	Tanking/waterproof membranes	-	-	m2	100.00	N/A	
c	500mm thick, cast insitu reinforced concrete slab	750.00	750	m3	799.48	599,610.00	
d	Rounding adjustment	1.00	1	LS	-2,545.00	-2,545.00	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						1,400,000.00
a	1,800 x 600mm post tensioned, reinforced concrete beam	506.25	507	m3	1,745.13	884,778.38	
b	750 x 750mm cast insitu, reinforced concrete beam/strut	263.67	264	m3	1,938.20	511,684.07	
c	Rounding adjustment	1.00	1	LS	3,537.56	3,537.56	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						1,110,000.00
a	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take 2 track heavy rail)	1,500.00	1,500	m2	600.00	900,000.00	
b	Tanking/Waterproof Membranes	1,500.00	1,500	m2	100.00	150,000.00	
c	Imported engineering fill - 500mm thick	750.00	750	m3	75.00	56,250.00	
d	Rounding adjustment	1.00	1	LS	3,750.00	3,750.00	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						250,000.00
a	Allowance for pressurised fire escape shaft and stairs	1.00	1	LS	250,000.00	250,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	

CH3225 TO CH3375 - RETAINED CUT SECTION/CUT & COVER TUNNEL
TYPE 3 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						160,000.00
a	Allowance for drainage services	310.00	310	m	500.00	155,000.00	
b	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	

CH3375 TO CH3560 - RETAINED CUT SECTION TYPE 2 (NAL EAST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	17.6%	4,890,000	26,432	
1.01	Demolition & Enabling Works	15.8%	4,390,000	23,730	
1.02	Utilities Diversions	1.8%	500,000	2,703	
2.00	Earth Works & Structures	54.3%	15,080,000	81,514	
2.01	Earth Works	8.0%	2,220,000	12,000	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	42.1%	11,690,000	63,189	
2.05	Ground Slab	4.2%	1,170,000	6,324	
2.06	Columns	0.0%	0	0	
2.07	Beams	0.0%	0	0	
2.08	Upper Floors	0.0%	0	0	
2.09	Roof Slab	0.0%	0	0	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	0.7%	200,000	1,081	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	0.7%	200,000	1,081	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	1.3%	350,000	1,892	
9.01	External Works	1.3%	350,000	1,892	
9.02	Civil Works	0.0%	0	0	
10.00	Contractors Preliminary & General/Overheads & Profit	26.2%	7,270,000	39,297	
10.01	Contractors Preliminary & General	13.1%	3,650,000	19,730	
10.01	Contractors Overheads & Profit	13.0%	3,620,000	19,568	
Total		100.0%	27,790,000	150,216	
				20,520,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA			Outer Trench	Inner Trench
Ref	Item Description	Unit	Total	Total
1.00	Trench Length	m	185.00	185.00
2.00	Trench Width (Min)	m	22.00	10.00
3.00	Trench Width (Max)	m	22.00	10.00
4.00	Trench Width (Average)	m	22.00	10.00
5.00	Trench Height (Min)	m	4.80	0.00
6.00	Trench Height (Max)	m	5.70	6.50
7.00	Trench Height (Average)	m	5.25	3.25
8.00	Trench Footprint Area (Average)	m2	4,070.00	1,850.00
9.00	Trench Cross Section Area (Average)	m2	115.50	32.50
10.00	Trench Volume (Average)	m3	21,367.50	6,012.50

CH3375 TO CH3560 - RETAINED CUT SECTION TYPE 2 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						4,390,000.00
a	Demolish existing commercial buildings located within construction zone	-	-	m2	100.00	Included elsewhere	
b	Temporary 'up & over' pedestrian bridge	1.00	1	LS	100,000.00	100,000.00	
c	Normanby Road bridge structure and abutments - Precast Double T Type	900.00	900	m2	3,600.00	3,240,000.00	
d	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
e	Allowance for reconfiguring roading network and signalling	1.00	1	LS	150,000.00	150,000.00	
f	Allowance for temporary road works to maintain traffic flow (temporary vehicle crossings, etc)	1.00	1	LS	150,000.00	150,000.00	
g	Hoarding to construction zone	1.00	1	LS	50,000.00	50,000.00	
h	Allowance for traffic management	-	-	Month	-	Included elsewhere	
i	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
j	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	250,000.00	250,000.00	
k	Rounding adjustment	1.00	1	LS	0.00	0.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						2,220,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	21,367.50	21,368	m3	35.00	747,880.00	
c	Machine excavation in soft rock	6,012.50	6,013	m3	35.00	210,455.00	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	26,011.00	26,011	m3	40.00	1,040,440.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	1,369.00	1,369	m3	90.00	123,210.00	
g	Imported engineering fill - 600mm thick, GAP 65	1,332.00	1,332	m3	75.00	99,900.00	
h	Rounding adjustment	1.00	1	LS	-1,885.00	-1,885.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	

CH3375 TO CH3560 - RETAINED CUT SECTION TYPE 2 (NAL EAST)

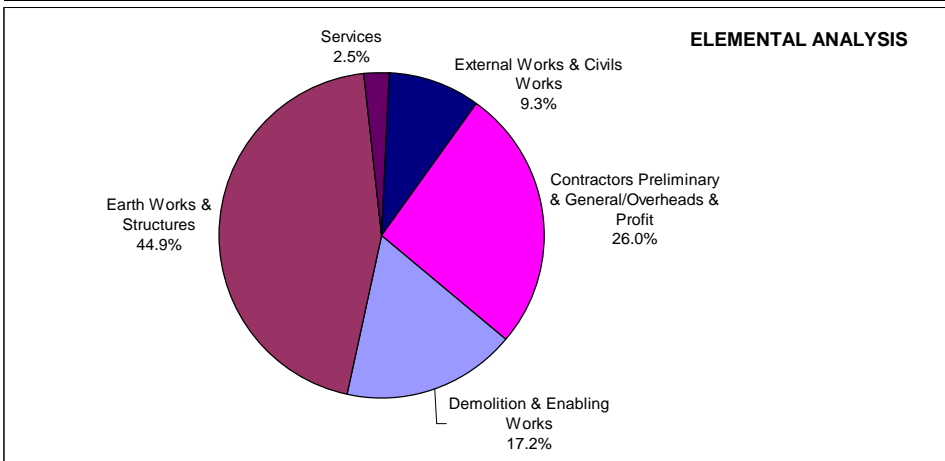
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						11,690,000.00
	Outer Walls						
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	199.80	200	m3	1,984.50	396,900.00	
b	900mm (DIA) contiguous bored piles - 13.2m (AVG L) @ 1,000mm horizontal crs	3,107.07	3,107	m3	1,315.60	4,087,569.20	
c	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	236.80	237	m3	1,748.86	414,480.41	
d	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	-	-	tonne	4,500.00	N/A	
e	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	-	-	tonne	4,500.00	N/A	
f	Allowance for bolted steel plate connections	-	-	tonne	7,000.00	N/A	
g	Tanking/Waterproof Membranes	-	-	m2	100.00	N/A	
h	300mm thick, cast insitu reinforced shotcrete wall	582.75	583	m3	924.00	538,692.00	
	Inner Walls						
i	300mm (W) x 900mm (H) cast insitu concrete guide wall	199.80	200	m3	1,984.50	396,900.00	
j	900mm (DIA) contiguous bored piles - 15.5m (AVG L) @ 1,000mm horizontal crs	3,648.45	3,648	m3	1,315.60	4,799,308.80	
k	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	236.80	237	m3	1,748.86	414,480.41	
l	305 x 305 x 198 UC (198 kg/m) temporary propping (struts) @ 5m vertical & 10m horizontal crs	-	-	tonne	4,500.00	N/A	
m	305 x 305 x 198 UC (198 kg/m) temporary propping (whaling beam)	-	-	tonne	4,500.00	N/A	
n	Allowance for bolted steel plate connections	-	-	tonne	7,000.00	N/A	
o	Tanking/Waterproof Membranes	-	-	m2	100.00	N/A	
p	300mm thick, cast insitu reinforced shotcrete wall	360.75	361	m3	924.00	333,564.00	
	Face Wall						
q	300mm (W) x 900mm (H) cast insitu concrete guide wall	2.70	3	m3	1,984.50	5,953.50	
r	900mm (DIA) contiguous bored piles - 16m (AVG L) @ 1,000mm horizontal crs	203.58	204	m3	1,315.60	268,382.40	
s	800mm (W) x 800mm (H) cast insitu reinforced concrete pile capping beam	6.40	6	m3	1,748.86	10,493.18	
t	Tanking/Waterproof Membranes	65.00	65	m2	100.00	6,500.00	
u	300mm thick, cast insitu reinforced shotcrete wall	19.50	20	m3	924.00	18,480.00	
v	Rounding adjustment	1.00	1	LS	-1,703.90	-1,703.90	
2.05	Ground Slab						1,170,000.00
a	300mm thick, reinforced concrete blinding layer	555.00	555	m3	784.30	435,286.50	
b	Tanking/waterproof membranes	-	-	m2	100.00	N/A	
c	500mm thick, cast insitu reinforced concrete slab	925.00	925	m3	799.48	739,519.00	
d	Rounding adjustment	1.00	1	LS	-4,805.50	-4,805.50	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						0.00
-	-	-	-	-	-	N/A	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						0.00
-	-	-	-	-	-	N/A	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	

CH3375 TO CH3560 - RETAINED CUT SECTION TYPE 2 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						200,000.00
a	Allowance for drainage services	392.00	392	m	500.00	196,000.00	
b	Rounding adjustment	1.00	1	LS	4,000.00	4,000.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00

CH3560 TO CH3710 - RETAINED CUT SECTION TYPE 1 (NAL EAST)

SUMMARY OF COST		Value	Total	Cost/Length	
Ref	Item Description	%	(NZD \$)	(NZD \$)	
1.00	Demolition & Enabling Works	17.2%	1,030,000	6,867	
1.01	Demolition & Enabling Works	8.8%	530,000	3,533	
1.02	Utilities Diversions	8.3%	500,000	3,333	
2.00	Earth Works & Structures	44.9%	2,690,000	17,933	
2.01	Earth Works	13.0%	780,000	5,200	
2.02	Substructure	0.0%	0	0	
2.03	Frame	0.0%	0	0	
2.04	External Walls	31.9%	1,910,000	12,733	
2.05	Ground Slab	0.0%	0	0	
2.06	Columns	0.0%	0	0	
2.07	Beams	0.0%	0	0	
2.08	Upper Floors	0.0%	0	0	
2.09	Roof Slab	0.0%	0	0	
2.10	Internal Walls	0.0%	0	0	
2.11	Stairs	0.0%	0	0	
2.12	Internal Doors	0.0%	0	0	
2.13	Sub-Surface/Surface Level Structures	0.0%	0	0	
3.00	Internal Finishes	0.0%	0	0	
3.01	Floor Finishes	0.0%	0	0	
3.02	Wall Finishes	0.0%	0	0	
3.03	Ceiling Finishes	0.0%	0	0	
4.00	Fittings & Furnishings	0.0%	0	0	
4.01	Fittings & Furnishings	0.0%	0	0	
5.00	Services	2.5%	150,000	1,000	
5.01	Tunnel & Trackway Ventilation	0.0%	0	0	
5.02	Station HVAC	0.0%	0	0	
5.03	Electrical Services	0.0%	0	0	
5.04	Fire Protection Services	0.0%	0	0	
5.05	Building Management Systems	0.0%	0	0	
5.06	Communications Systems	0.0%	0	0	
5.07	Security Systems	0.0%	0	0	
5.08	Hydraulics/Sanitary Plumbing & Fittings	0.0%	0	0	
5.09	Drainage Services	2.5%	150,000	1,000	
6.00	Rail Systems	0.0%	0	0	
6.01	Rail Systems	0.0%	0	0	
7.00	Automatic Fare Collection	0.0%	0	0	
7.01	Automatic Fare Collection	0.0%	0	0	
8.00	Lifts & Escalators	0.0%	0	0	
8.01	Lifts	0.0%	0	0	
8.02	Escalators	0.0%	0	0	
9.00	External Works & Civils Works	9.3%	560,000	3,733	
9.01	External Works	4.8%	290,000	1,933	
9.02	Civil Works	4.5%	270,000	1,800	
10.00	Contractors Preliminary & General/Overheads & Profit	26.0%	1,560,000	10,400	
10.01	Contractors Preliminary & General	13.0%	780,000	5,200	
10.01	Contractors Overheads & Profit	13.0%	780,000	5,200	
Total		100.0%	5,990,000	39,933	
				4,430,000	Total Construction Value (Excl. P&G/OH&P)



KEY METRIC DATA

Ref	Item Description	Unit	Total
1.00	Trench Length	m	150.00
2.00	Trench Width (Min)	m	10.00
3.00	Trench Width (Max)	m	22.00
4.00	Trench Width (Average)	m	16.00
5.00	Trench Height (Min)	m	2.40
6.00	Trench Height (Max)	m	4.80
7.00	Trench Height (Average)	m	3.60
8.00	Trench Footprint Area (Average)	m2	2,400.00
9.00	Trench Cross Section Area (Average)	m2	57.60
10.00	Trench Volume (Average)	m3	8,640.00

CH3560 TO CH3710 - RETAINED CUT SECTION TYPE 1 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Demolition & Enabling Works						
1.01	Demolition & Enabling Works						530,000.00
a	Demolish existing commercial buildings located within construction zone	-	-	m2	100.00	Included elsewhere	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Hoarding to construction zone	1.00	1	LS	25,000.00	25,000.00	
d	Allowance for traffic management	-	-	Month	-	Included elsewhere	
e	Allowance for Environmental Compliance works (noise, dust, vibration & contamination mitigation)	1.00	1	LS	250,000.00	250,000.00	
f	Allowance for land owner accommodation works to adjacent properties	1.00	1	LS	50,000.00	50,000.00	
g	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
1.02	Utilities Diversions						500,000.00
a	Allowance for Electrical Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
b	Allowance for Communications Services diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
c	Allowance for Gas Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
d	Allowance for Storm/Waste Water Drainage diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
e	Allowance for Water Reticulation diversions & disconnections	1.00	1	LS	50,000.00	50,000.00	
f	Allowance for diversions of Transport Services - Miscellaneous works to allow operation of rail & bus services	1.00	1	LS	250,000.00	250,000.00	
g	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Earth Works & Structures						
2.01	Earth Works						780,000.00
a	Break up existing roads & footpaths	-	-	m2	40.00	N/A	
b	Machine excavation in made ground	8,640.00	8,640	m3	35.00	302,400.00	
c	Machine excavation in soft rock	-	-	m3	35.00	N/A	
d	Machine excavation in hard rock	-	-	m3	100.00	N/A	
e	Disposal of recyclable excavated material (say 95%) Spoil disposed at tip site by lorry within 50km radius	8,208.00	8,208	m3	40.00	328,320.00	
f	Disposal of hazardous excavated material (say 5%) Spoil disposed at tip site by lorry within 50km radius	432.00	432	m3	90.00	38,880.00	
g	Imported engineering fill - 600mm thick, GAP 65	1,440.00	1,440	m3	75.00	108,000.00	
h	Rounding adjustment	1.00	1	LS	2,400.00	2,400.00	
2.02	Substructure						0.00
-	-	-	-	-	-	N/A	
2.03	Frame						0.00
-	-	-	-	-	-	N/A	
2.04	External Walls						1,910,000.00
a	300mm (W) x 900mm (H) cast insitu concrete guide wall	162.00	162	m3	1,984.50	321,489.00	

CH3560 TO CH3710 - RETAINED CUT SECTION TYPE 1 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
b	Allowance for establishment, setting out and removal of piling rig	1.00	1	LS	20,000.00	20,000.00	
c	750mm (DIA) bored piles - 9.7m (AVG L) @ 1,500mm horizontal crs	857.07	857	m3	1,018.33	872,704.53	
d	Belling to base of pile	200.00	200	No.	900.00	180,000.00	
e	Temporary steel pile liners	1,940.00	1,940	m	120.00	232,800.00	
f	Cut down piles 150mm	200.00	200	No.	150.00	30,000.00	
g	900mm (W) x 350mm (H) cast insitu, reinforced concrete pile capping	94.50	95	m3	1,695.10	161,034.50	
h	125mm thick, cast insitu reinforced shotcrete wall	135.00	135	m3	672.00	90,720.00	
i	Rounding adjustment	1.00	1	LS	1,251.98	1,251.98	
2.05	Ground Slab						0.00
-	-	-	-	-	-	N/A	
2.06	Columns						0.00
-	-	-	-	-	-	N/A	
2.07	Beams						0.00
-	-	-	-	-	-	N/A	
2.08	Upper Floors						0.00
-	-	-	-	-	-	N/A	
2.09	Roof Slab						0.00
-	-	-	-	-	-	N/A	
2.10	Internal Walls						0.00
-	-	-	-	-	-	N/A	
2.11	Stairs						0.00
-	-	-	-	-	-	N/A	
2.12	Internal Doors						0.00
-	-	-	-	-	-	N/A	
2.13	Sub-Surface/Surface Level Structures						0.00
-	-	-	-	-	-	N/A	
3.00	Internal Finishes						
3.01	Floor Finishes						0.00
-	-	-	-	-	-	N/A	
3.02	Wall Finishes						0.00
-	-	-	-	-	-	N/A	
3.03	Ceiling Finishes						0.00
-	-	-	-	-	-	N/A	
4.00	Fittings & Furnishings						
4.01	Fittings & Furnishings						0.00
-	-	-	-	-	-	N/A	
5.00	Services						
5.01	Tunnel & Trackway Ventilation						0.00
-	-	-	-	-	-	N/A	
5.02	Station HVAC						0.00
-	-	-	-	-	-	N/A	
5.02	Electrical Services						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.03	Fire Protection Services						0.00
-	-	-	-	-	-	Refer Track Side Services	

CH3560 TO CH3710 - RETAINED CUT SECTION TYPE 1 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
5.04	Building Management Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.05	Communications Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.06	Security Systems						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.07	Hydraulics/Sanitary Plumbing & Fittings						0.00
-	-	-	-	-	-	Refer Track Side Services	
5.08	Drainage Services						150,000.00
a	Allowance for drainage services	300.00	300	m	500.00	150,000.00	
b	Rounding adjustment	1.00	1	LS	0.00	0.00	
6.00	Rail Systems						
6.01	Rail Systems						0.00
a	Station rail & control systems	-	-	LS	-	Included elsewhere	
b	Track works	-	-	LS	-	Included elsewhere	
c	Track side services	-	-	LS	-	Included elsewhere	
d	Overhead line electrification	-	-	LS	-	Included elsewhere	
e	Traction power	-	-	LS	-	Included elsewhere	
f	Signalling	-	-	LS	-	Included elsewhere	
g	SCADA	-	-	LS	-	Included elsewhere	
7.00	Automatic Fare Collection						
7.01	Automatic Fare Collection						0.00
-	-	-	-	-	-	N/A	
8.00	Lifts & Escalators						
8.01	Lifts						0.00
-	-	-	-	-	-	N/A	
8.02	Escalators						0.00
-	-	-	-	-	-	N/A	
9.00	External Works & Civils Works						
9.01	External Works						290,000.00
a	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	300.00	300	m2	50.00	15,000.00	
b	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	600.00	600	m2	200.00	120,000.00	
c	Aesthetic steel barrier fence (2.0m high)	300.00	300	m	500.00	150,000.00	
d	Rounding adjustment	1.00	1	LS	5,000.00	5,000.00	
9.02	Civil Works						270,000.00
a	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	900.00	900	m2	300.00	270,000.00	
b	Road works (major - main roads & highways) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	-	-	m2	400.00	N/A	
c	Rounding adjustment	1.00	1	LS	0.00	0.00	
10.00	Contractors Preliminary & General/Overheads & Profit						
10.01	Contractors Preliminary & General						780,000.00
a	Contractors preliminary & general	4,430,000.00	4,430,000	LS	17.8%	788,375.15	
b	Rounding adjustment	1.00	1	LS	-8,375.15	-8,375.15	

CH3560 TO CH3710 - RETAINED CUT SECTION TYPE 1 (NAL EAST)

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)	
10.02	Contractors Overheads & Profit						780,000.00	
a	Contractors overheads & profit	5,210,000.00	5,210,000	LS	15.0%	781,500.00		
b	Rounding adjustment	1.00	1	LS	-1,500.00	-1,500.00		
	Total					5,990,000.00	5,990,000.00	
Cost/Length (m)								39,933.33

CH10075 TO CH10475 - TEMPORARY WORKS (NAL EAST)

CH10075 TO CH10475 - TEMPORARY WORKS (NAL EAST)							
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Civil Works						
1.01	Temporary Works						2,120,000.00
a	Site clearance; break up existing roads & footpaths, etc	4,000.00	4,000	m2	40.00	160,000.00	
b	Dewatering System, suction pump, discharge pump, settling tanks	1	1	No.	200,000.00	200,000.00	
c	Machine excavation in made ground (Average 3.0m deep)	12,000.00	12,000	m3	35.00	420,000.00	
d	Disposal of recyclable excavated material Spoil disposed at tip site by lorry within 50km radius	12,000.00	12,000	m3	40.00	480,000.00	
e	Backfill site area with suitable material from tunnelling excavations after completion of the main NAL connection	12,000.00	12,000	m3	15.00	180,000.00	
f	Imported engineering fill - 300mm thick, GAP 65	1,200.00	1,200	m3	75.00	90,000.00	
g	Precast concrete post & panel retaining wall - Double depth 1500 series (Chainage 3,125 to 3,325 - Average 3.0m high)	600.00	600	m2	750.00	450,000.00	
h	Allowance for temporary drainage services connected to existing	400.00	400	m	350.00	140,000.00	
i	Rounding adjustment	1.00	1	LS	0.00	0.00	
2.00	Contractors Preliminary & General/Overheads & Profit						
2.01	Contractors Preliminary & General						370,000.00
a	Contractors preliminary & general	2,120,000.00	2,120,000	LS	17.8%	377,281.11	
b	Rounding adjustment	1.00	1	LS	-7,281.11	-7,281.11	
2.02	Contractors Overheads & Profit						370,000.00
a	Contractors overheads & profit	2,490,000.00	2,490,000	LS	15.0%	373,500.00	
b	Rounding adjustment	1.00	1	LS	-3,500.00	-3,500.00	
	Total					2,860,000.00	2,860,000.00

SIGNALLING

SIGNALLING							
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Signalling						
1.01	Signalling - Arrangement 1 (Base Costs)						7,280,000.00
a	Signals	1.00	1	LS	480,000.00	480,000.00	
	Britomart - 2 No. departure signals & 2 No. home signals	-	-	-	-	Included	
	Mt Eden - 12 No. departure signals & 6 No. home signals	-	-	-	-	Included	
	Newton - 4 No. intermediate signals	-	-	-	-	Included	
	K Road - 4 No. intermediate signals	-	-	-	-	Included	
	Aotea - 4 No. intermediate signals	-	-	-	-	Included	
b	Points machines	1.00	1	LS	480,000.00	480,000.00	
	Mt Eden - 8 No. main line point machines	-	-	-	-	Included	
	Junction Tunnel - 4 junction point machines	-	-	-	-	Included	
c	Train detection	1.00	1	LS	900,000.00	900,000.00	
	11 No. Up/MainL axle counter heads	-	-	-	-	Included	
	11 No. Down/MainR axle counter heads	-	-	-	-	Included	
	22 No. Mt Eden axle counter heads	-	-	-	-	Included	
d	New locations - 9 No. new signalling location cabinets	1.00	1	LS	720,000.00	720,000.00	
e	Power communications	1.00	1	LS	120,000.00	120,000.00	
	Standard 400V or 600V primary reticulation for power	-	-	-	-	Included	
	Fibre optic communication link	-	-	-	-	Included	
f	Interlocking	1.00	1	LS	40,000.00	40,000.00	
	1 No. Interlocking for Tunnel	-	-	-	-	Included	
	Modify Newmarket - Morningside interlocking for Mt Eden	-	-	-	-	Included	
g	Train control - New control panel with train describer and ARS	1.00	1	LS	600,000.00	600,000.00	
h	Allowance for special requirements (i.e. accurate stopping for platform screen doors)	1.00	1	LS	1,000,000.00	1,000,000.00	
i	Allowance for builders works in connection with signalling installations	3,340,000.00	3,340,000	LS	10.0%	334,000.00	
j	Design	1.00	1	LS	1,000,000.00	1,000,000.00	
k	Testing & commissioning	1.00	1	LS	750,000.00	750,000.00	
l	Contractors preliminary & general	6,424,000.00	6,424,000	LS	8.0%	513,920.00	
m	Contractors overheads & profit	6,937,920.00	6,937,920	LS	5.0%	346,896.00	
n	Rounding adjustment	1.00	1	LS	-4,816.00	-4,816.00	
1.01	Signalling - Arrangement 2 (Additional Costs)						3,540,000.00
a	35+ EMU GSM-R modules & antennas to upgrade on-board systems to ETCS level 2	1.00	1	LS	200,000.00	200,000.00	
b	1-2 RBC's for ETCS level 2 communications	1.00	1	LS	2,000,000.00	2,000,000.00	
c	Allowance for builders works in connection with signalling installations	2,200,000.00	2,200,000	LS	10.0%	220,000.00	
d	ETCS Level 2 design	1.00	1	LS	500,000.00	500,000.00	
e	ETCS Level 3 testing & commissioning	1.00	1	LS	200,000.00	200,000.00	
f	Contractors preliminary & general	3,120,000.00	3,120,000	LS	8.0%	249,600.00	
g	Contractors overheads & profit	3,369,600.00	3,369,600	LS	5.0%	168,480.00	
h	Rounding adjustment	1.00	1	LS	1,920.00	1,920.00	
	Total					10,820,000.00	10,820,000.00

TUNNEL BORING MACHINES & SUPPORT EQUIPMENT

TUNNEL BORING MACHINES & SUPPORT EQUIPMENT							
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Tunnel Boring Machines & Support Equipment						
1.01	Tunnel Boring Machines (TBM)						21,840,000.00
a	LOVAT TBM RME269SE - EPBM (LOVAT quotation 05-02-2010 - \$15,825,000 CAD Conv. to NZD @ 1.38)	1.00	1	No.	21,839,000.00	21,839,000.00	
	Main Drive & Sealing System	-	-	-	-	Included	
	Forward Shell	-	-	-	-	Included	
	Rotary Fluid Joint	-	-	-	-	Included	
	Active Articulation System - Stationary Shell	-	-	-	-	Included	
	Active Articulation System - Operators Station	-	-	-	-	Included	
	Passive Articulation System - Trailing Shield	-	-	-	-	Included	
	Passive Articulation System - Screw Conveyor	-	-	-	-	Included	
	Passive Articulation System - Segment Erector	-	-	-	-	Included	
	Passive Articulation System - Electrical Power Systems	-	-	-	-	Included	
	Trailing Belt Conveyor	-	-	-	-	Included	
	Segment Handling Systems	-	-	-	-	Included	
	Trailing Gantry	-	-	-	-	Included	
	Freight	-	-	-	-	Included	
	Testing Commissioning & Training	-	-	-	-	Included	
b	Lovat Buy Back Option	-	-	-	-	Excluded	
c	Rounding adjustment	1.00	1	LS	1,000.00	1,000.00	
1.02	TBM Accessories						1,510,000.00
a	TACS Automatic Tunnel Guidance System (LOVAT quotation 05-02-2010 - \$286,400 CAD Conv. to NZD @ 1.38)	1.00	1	No.	395,000.00	395,000.00	
b	LOVAT Ground Conditioning System (LOVAT quotation 05-02-2010 - \$229,000 CAD Conv. to NZD @ 1.38)	1.00	1	No.	316,000.00	316,000.00	
c	Two Component Grout Injection System (LOVAT quotation 05-02-2010 - \$356,700 CAD Conv. to NZD @ 1.38)	1.00	1	No.	492,000.00	492,000.00	
d	Grout Tank (LOVAT quotation 05-02-2010 - \$40,000 CAD Conv. to NZD @ 1.38)	1.00	1	No.	55,000.00	55,000.00	
e	Auxiliary Ventilation (LOVAT quotation 05-02-2010 - \$91,800 CAD Conv. to NZD @ 1.38)	1.00	1	No.	126,000.00	126,000.00	
f	Ventilation Cassette Lifting System (LOVAT quotation 05-02-2010 - \$32,400 CAD Conv. to NZD @ 1.38)	1.00	1	No.	44,000.00	44,000.00	
g	Water Hose Reel (LOVAT quotation 05-02-2010 - \$34,000 CAD Conv. to NZD @ 1.38)	1.00	1	No.	46,000.00	46,000.00	
h	Segment Cars (LOVAT quotation 05-02-2010 - \$25,000 CAD Conv. to NZD @ 1.38)	1.00	1	No.	34,000.00	34,000.00	
i	Rounding adjustment	1.00	1	LS	2,000.00	2,000.00	
1.03	TBM Grout Plant						910,000.00
a	Colloidal Mixer Based Grout Plant (TMT quotation - \$260,610 CAD Conv. to NZD @ 1.38)	1.00	1	No.	359,000.00	359,000.00	
b	Silo Screw Conveyor (TMT quotation - \$21,721 CAD Conv. to NZD @ 1.38)	1.00	1	No.	29,000.00	29,000.00	
c	A/B Component Peristaltic Pumps - 25 Bar (TMT quotation - \$156,245 CAD Conv. to NZD @ 1.38)	1.00	1	No.	215,000.00	215,000.00	
d	Allowance for mixer dust collection system	1.00	1	LS	20,000.00	30,000.00	
e	Allowance for storage silos	1.00	1	LS	30,000.00	50,000.00	
f	Allowance for foundations, civil works, sumps, etc	1.00	1	LS	30,000.00	30,000.00	
g	Allowance for water storage tanks and piping to plant and sumps	1.00	1	LS	20,000.00	20,000.00	
h	Allowance for spare parts	1.00	1	LS	20,000.00	20,000.00	
i	Allowance for installation of plant and equipment	1.00	1	LS	30,000.00	30,000.00	
j	Allowance for 3 phase power supply	1.00	1	LS	5,000.00	5,000.00	

CLIENT MANAGEMENT COSTS

A	Construction Cost Value (Measured Works)	\$1,403,070,000
B	Client Management Costs	\$56,980,000
C	Client Management Costs	4.06%

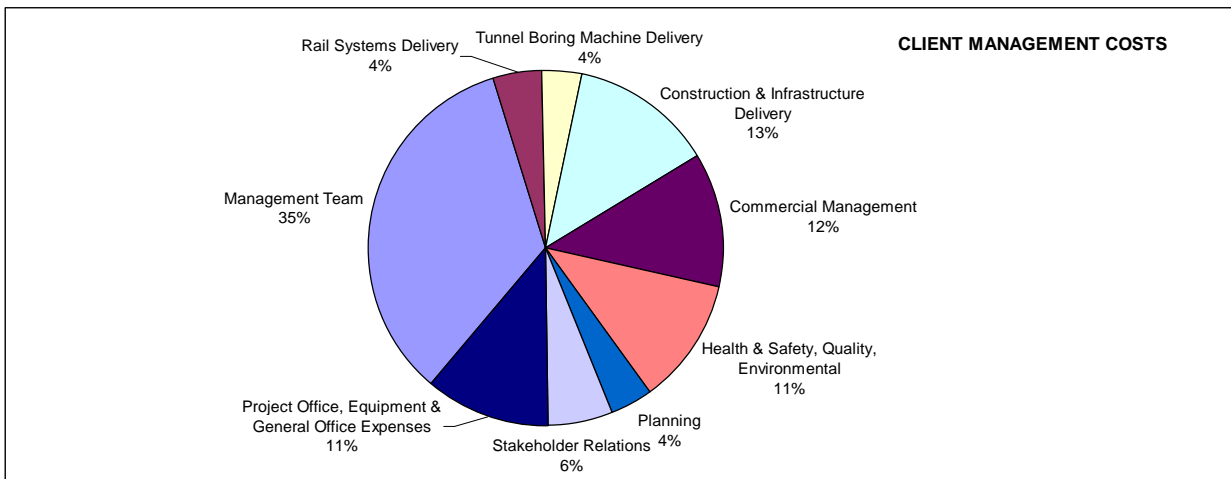
Infrastructure Delivery Programme

Ref	Description	Date From	Date To	Duration (In Years)	Duration (In Months)	Duration (In Weeks)
1.00	Systems Definition Stage (Phase 1 Complete)	-	-	-	-	-
2.00	Reference Design Stage	01-2010	01-2011	1.00	12	52
3.00	Environmental Assessment & Project Planning Approval	01-2011	06-2011	0.50	6	26
4.00	Railway Designation & Resource Consent	06-2011	06-2012	1.00	12	52
5.00	Procurement of Design & Build Contractors - Registrations of Interest, Request for Proposal, Pre-Tender Evaluation	06-2011	06-2012	1.00	12	52
6.00	Detailed Design & Building Consent	06-2012	01-2014	1.50	18	78
7.00	Procurement of TBM's - Design, Manufacture & Delivery	06-2012	01-2014	1.50	18	78
8.00	Construction Period - Civil & Building Related Works	01-2014	06-2018	4.50	54	234
9.00	Construction Period - TBM Drives	01-2015	06-2017	2.50	30	130
10.00	Construction Period - Track Work & Rail Systems	06-2017	06-2019	2.00	24	104
11.00	Construction Period - Testing & Commissioning; Trial Operations	06-2018	01-2019	0.50	6	26
12.00	Total Construction Period (Excluding Commissioning)	01-2014	06-2018	5.50	66	286
13.00	Total Construction Period (Including Commissioning)	06-2014	01-2019	6.00	72	312
Total Project Duration		01-2010	01-2019	10.00	120	520

Construction Start

Summary

Ref	Item Description	Total (NZD \$)	%/Cost (%)	Comments/Notes
1.01	Management Team	19,450,000	34.13%	
1.02	Rail Systems Delivery	2,480,000	4.35%	
1.03	Tunnel Boring Machine Delivery	2,180,000	3.83%	
1.04	Construction & Infrastructure Delivery	7,320,000	12.85%	
1.05	Commercial Management	7,055,000	12.38%	
1.06	Health & Safety, Quality, Environmental	6,460,000	11.34%	
1.07	Planning	2,225,000	3.90%	
1.08	Stakeholder Relations	3,350,000	5.88%	
1.09	Project Office, Equipment & General Office Expenses	6,460,000	11.34%	
Total		56,980,000	100.00%	



CLIENT MANAGEMENT COSTS

Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.00	Client Management						
1.01	Management Team						19,450,000.00
a	ARTA Director	25%	10.00	Year	400,000.00	1,000,000.00	
b	ONTRACK Director	25%	10.00	Year	400,000.00	1,000,000.00	
c	KiwiRail Director	25%	10.00	Year	400,000.00	1,000,000.00	
d	Project Director	100%	10.00	Year	300,000.00	3,000,000.00	
e	Legal Manager	50%	10.00	Year	300,000.00	1,500,000.00	
f	Project Solicitor	50%	10.00	Year	300,000.00	1,500,000.00	
g	Engineering Manager	100%	10.00	Year	250,000.00	2,500,000.00	
h	Architectural Manager	100%	10.00	Year	250,000.00	2,500,000.00	
i	Project Accountant	50%	10.00	Year	200,000.00	1,000,000.00	
j	Support Project Accountant	50%	10.00	Year	150,000.00	750,000.00	
k	Public Relations Manager	50%	10.00	Year	150,000.00	750,000.00	
l	Senior Counsel Member	50%	10.00	Year	200,000.00	1,000,000.00	
m	Support Counsel Member	50%	10.00	Year	150,000.00	750,000.00	
n	Personal Assistant	100%	10.00	Year	75,000.00	750,000.00	
o	Administrator	100%	10.00	Year	45,000.00	450,000.00	
1.02	Rail Systems Delivery						2,480,000.00
a	Rail Systems Manager	100%	4.00	Year	250,000.00	1,000,000.00	
b	Rail Systems Design Reviewer	50%	4.00	Year	200,000.00	400,000.00	
c	Rail Systems Construction Monitor	50%	4.00	Year	150,000.00	300,000.00	
d	Testing and Commissioning Monitor	50%	4.00	Year	150,000.00	300,000.00	
e	Personal Assistant	100%	4.00	Year	75,000.00	300,000.00	
f	Administrator	100%	4.00	Year	45,000.00	180,000.00	
1.03	Tunnel Boring Machine Delivery						2,180,000.00
a	Lead Tunnel Boring Machine Consultant	100%	4.00	Year	250,000.00	1,000,000.00	
b	Support Tunnel Boring Machine Consultant	50%	4.00	Year	200,000.00	400,000.00	
c	Testing & Commissioning Monitor	50%	4.00	Year	150,000.00	300,000.00	
d	Personal Assistant	100%	4.00	Year	75,000.00	300,000.00	
e	Administrator	100%	4.00	Year	45,000.00	180,000.00	
1.04	Construction & Infrastructure Delivery						7,320,000.00
a	Infrastructure Manager	100%	6.00	Year	250,000.00	1,500,000.00	
b	Support Infrastructure Consultant	100%	6.00	Year	200,000.00	1,200,000.00	
c	Construction Monitoring & Certification Engineer 1	100%	6.00	Year	150,000.00	900,000.00	
d	Construction Monitoring & Certification Engineer 2	100%	6.00	Year	150,000.00	900,000.00	
e	Design Reviewer (Civils)	50%	6.00	Year	200,000.00	600,000.00	
f	Design Reviewer (Architecture)	50%	6.00	Year	200,000.00	600,000.00	
g	Testing and Commissioning Monitor	100%	6.00	Year	150,000.00	900,000.00	
h	Personal Assistant	100%	6.00	Year	75,000.00	450,000.00	
i	Administrator	100%	6.00	Year	45,000.00	270,000.00	
1.05	Commercial Management						7,055,000.00
a	Commercial Manager	100%	8.50	Year	250,000.00	2,125,000.00	
b	Project Manager	100%	8.50	Year	180,000.00	1,530,000.00	
c	Cost Manager	100%	8.50	Year	150,000.00	1,275,000.00	
d	Risk & Value Manager	100%	8.50	Year	130,000.00	1,105,000.00	
e	Personal Assistant	100%	8.50	Year	75,000.00	637,500.00	
f	Administrator	100%	8.50	Year	45,000.00	382,500.00	

CLIENT MANAGEMENT COSTS

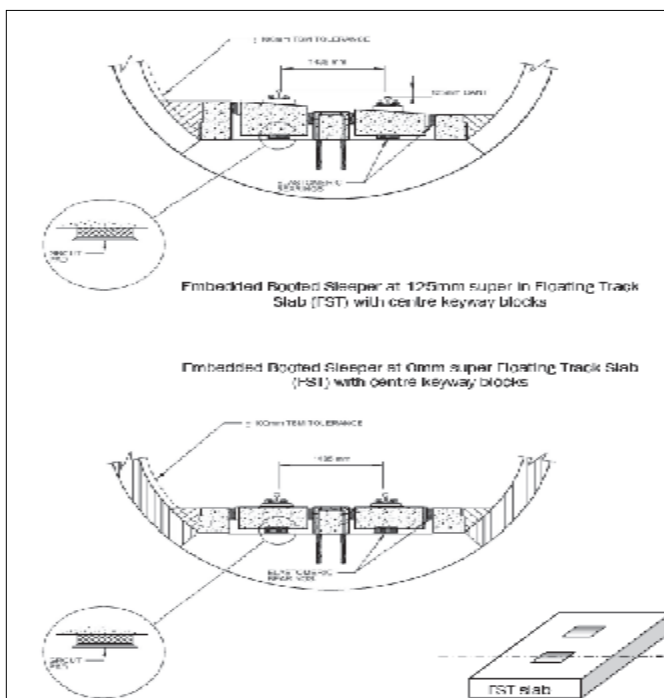
Ref	Item Description	Resource Requirement	QTY	Unit	Rate (NZD\$)	Total (NZD \$)	Element Total (NZD \$)
1.06	Health & Safety, Quality, Environmental						6,460,000.00
a	Health & Safety Manager	75%	8.00	Year	150,000.00	900,000.00	
b	Quality Control Manager	50%	8.00	Year	150,000.00	600,000.00	
c	Environmental manager	75%	8.00	Year	110,000.00	660,000.00	
d	Archaeology Advisor	25%	8.00	Year	160,000.00	320,000.00	
e	Contamination Advisor	25%	8.00	Year	150,000.00	300,000.00	
f	Protected/Heritage Buildings Advisor	25%	8.00	Year	160,000.00	320,000.00	
g	Traffic Management Advisor	100%	8.00	Year	150,000.00	1,200,000.00	
h	Urban Design Landscape Advisor	100%	8.00	Year	150,000.00	1,200,000.00	
i	Personal Assistant	100%	8.00	Year	75,000.00	600,000.00	
j	Administrator	100%	8.00	Year	45,000.00	360,000.00	
1.07	Planning						2,225,000.00
a	Planning Manager	100%	2.50	Year	250,000.00	625,000.00	
b	Senior Planner 1	100%	2.50	Year	150,000.00	375,000.00	
c	Senior Planner 2	100%	2.50	Year	150,000.00	375,000.00	
d	Support Planner 1	100%	2.50	Year	110,000.00	275,000.00	
e	Support Planner 2	100%	2.50	Year	110,000.00	275,000.00	
f	Personal Assistant	100%	2.50	Year	75,000.00	187,500.00	
g	Administrator	100%	2.50	Year	45,000.00	112,500.00	
1.08	Stakeholder Relations						3,350,000.00
a	Stakeholder Manager	50%	10.00	Year	250,000.00	1,250,000.00	
b	Stakeholder Executive	50%	10.00	Year	180,000.00	900,000.00	
c	PR Executive	50%	10.00	Year	120,000.00	600,000.00	
d	Personal Assistant	50%	10.00	Year	75,000.00	375,000.00	
e	Administrator	50%	10.00	Year	45,000.00	225,000.00	
1.09	Project Office, Equipment & General Office Expenses						6,460,000.00
a	Office Space Lease (63 staff @ 20m2/person = 1,260m2 x \$400/m2/annum =	100%	10.00	Year	504,000.00	5,040,000.00	
b	Project Office Fit-Out - Light fit-out including data networks	100%	1,260.00	m2	600.00	756,000.00	
c	Desks	100%	63.00	No	500.00	31,500.00	
d	Chairs	100%	63.00	No	150.00	9,450.00	
e	Tables	100%	10.00	No	750.00	7,500.00	
f	Filing Cabinets	100%	63.00	No	500.00	31,500.00	
g	Copier	100%	3.00	No	5,000.00	15,000.00	
h	Computers	100%	63.00	No	1,500.00	94,500.00	
i	Video Conferencing & Data Projection/Presentation Equipment	100%	1.00	LS	50,000.00	50,000.00	
j	Plan Printer	100%	3.00	No	20,000.00	60,000.00	
k	Facsimile Machine	100%	4.00	No	500.00	2,000.00	
l	Other sundry expenses & consumables	100%	6,097,450.00	%	6%	365,847.00	
m	Rounding adjustment	100%	1.00	LS	-3,297.00	-3,297.00	
	Total					56,980,000.00	56,980,000.00

EMBEDDED BOOT SLEEPER FLOATING SLAB TRACK (DOUBLE)

A	Section Key Metric Information	Unit	Dimension
A1	Track Length	m	100
A2	Track Width (For double track)	m	10
A3	Track Area	m2	1,000

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Stray current collection mat	290.00	290.00	m2	200.00	58,000.00
2.00	400 (W) x 400mm (H) cast insitu, reinforced concrete guide block	96.00	96.00	m3	1,512.00	145,152.00
3.00	6,000 (L) x 1,000 (W) x 400mm (H) precast concrete slab units	400.00	400.00	m	700.00	280,000.00
4.00	Cast insitu mass concrete (25 MPa)	32.00	32.00	m3	280.00	8,960.00
5.00	Steel trowel finish	160.00	160.00	m2	6.00	960.00
6.00	Concrete surface treatments - Dust proof & surface hardener	1,000.00	1,000.00	m2	15.00	15,000.00
7.00	Floating track system - Jacking rods	800.00	800.00	No.	75.00	60,000.00
8.00	Floating track system - Elastometric bearing seats & grout pads	1,200.00	1,200.00	No.	100.00	120,000.00
9.00	600 (L) x 600 (W) x 200mm (H) precast concrete boot sleeper including rubber pads & fasteners	615.38	616.00	No.	100.00	61,600.00
10.00	Rail base plates & pads - Delkor 'compression' type complete with vibration fixings & rail clips	615.38	616.00	No.	200.00	123,200.00
11.00	Flat bottom rails - BS113'A' section; 53kg/m	21.20	22.00	t	2,000.00	44,000.00
12.00	Welded joint	16.67	17.00	No.	100.00	1,700.00
13.00	Insulated joint	4.00	4.00	No.	250.00	1,000.00
14.00	Contractors preliminary & general	919,572.00	919,572.00	LS	15%	137,935.80
15.00	Contractors overheads & profit	1,057,507.80	1,057,508.00	LS	5%	52,875.40
16.00	Rounding adjustment	1.00	1.00	LS	-383.20	-383.20
	Total					1,110,000.00

Cost/m Double	11,100.00
Cost/m Single	5,550.00

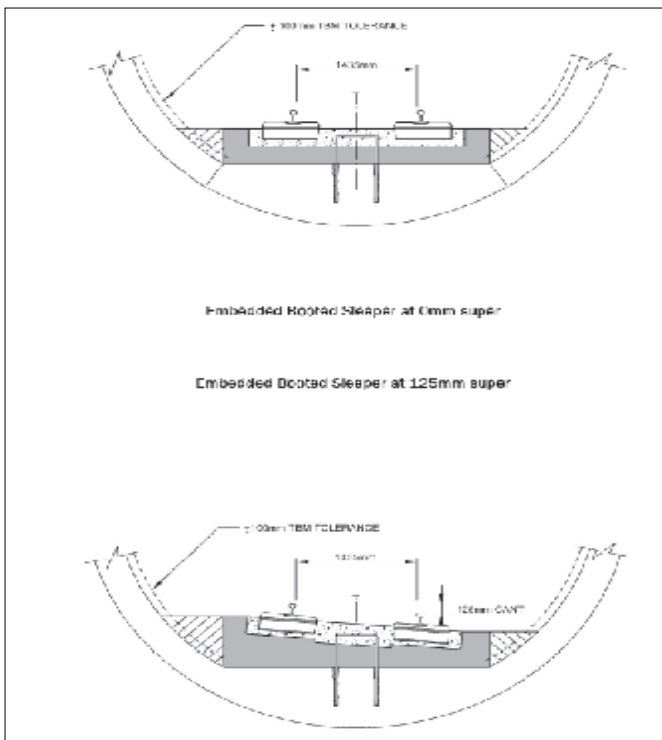


EMBEDDED BOOT SLEEPER TRACK (DOUBLE)

A	Section Key Metric Information	Unit	Dimension
A1	Track Length	m	100.00
A2	Track Width (For double track)	m	10.00
A3	Track Area	m2	1,000.00

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Mesh reinforcing steel (1 layers)	1,000.00	1,000.00	m2	25.00	25,000.00
2.00	Stray current collection mat	290.00	290.00	m2	200.00	58,000.00
3.00	500mm thick, cast insitu concrete slab (32 MPa)	500.00	500.00	m3	300.00	150,000.00
4.00	Steel trowel finish	1,000.00	1,000.00	m2	6.00	6,000.00
5.00	Construction/expansion joints	166.67	167.00	m	100.00	16,700.00
6.00	100mm (DIA) spoon drain formed in slab	200.00	200.00	m	30.00	6,000.00
7.00	Concrete surface treatments - Dust proof & surface hardener	1,000.00	1,000.00	m2	15.00	15,000.00
8.00	600 (L) x 600 (W) x 200mm (H) precast concrete boot sleeper including rubber pads & fasteners	615.38	616.00	No.	100.00	61,600.00
9.00	Rail base plates & pads - Delkor 'egg' type complete with vibration fixings & rail clips	615.38	616.00	No.	200.00	123,200.00
10.00	Flat bottom rails - BS113'A' section; 53kg/m	21.20	22.00	t	2,000.00	44,000.00
11.00	Welded joint	16.67	17.00	No.	100.00	1,700.00
12.00	Insulated joint	4.00	4.00	No.	250.00	1,000.00
13.00	Contractors preliminary & general	508,200.00	508,200.00	LS	15%	76,230.00
14.00	Contractors overheads & profit	584,430.00	584,430.00	LS	5%	29,221.50
15.00	Rounding adjustment	1.00	1.00	LS	-3,651.50	-3,651.50
	Total					610,000.00

Cost/m Double	6,100.00
Cost/m Single	3,050.00



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STANDARD SLAB TRACK (DOUBLE)

A	Section Key Metric Information	Unit	Dimension
A1	Track Length	m	100.00
A2	Track Width (For double track)	m	10.00
A3	Track Area	m2	1,000.00

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Mesh reinforcing steel (3 layers)	3,000.00	3,000.00	m2	35.00	105,000.00
2.00	Stray current collection mat	290.00	290.00	m2	200.00	58,000.00
3.00	400mm thick, cast insitu concrete slab (32 Mpa)	400.00	400.00	m3	300.00	120,000.00
4.00	Steel trowel finish	1,000.00	1,000.00	m2	6.00	6,000.00
5.00	Construction/expansion joints	166.67	167.00	m	100.00	16,700.00
6.00	200mm (DIA) spoon drain formed in slab	100.00	100.00	m	40.00	4,000.00
7.00	Concrete surface treatments - Dust proof & surface hardener	1,000.00	1,000.00	m2	15.00	15,000.00
8.00	Resilient fasteners & attachments - Pandrol Fastclip	615.38	616.00	No.	100.00	61,600.00
9.00	Flat bottom rails - BS113'A' section; 53kg/m	21.20	22.00	t	2,000.00	44,000.00
10.00	Welded joint	16.67	17.00	No.	100.00	1,700.00
11.00	Insulated joint	4.00	4.00	No.	250.00	1,000.00
12.00	Contractors preliminary & general	433,000.00	433,000.00	LS	15%	64,950.00
13.00	Contractors overheads & profit	497,950.00	497,950.00	LS	5%	24,897.50
14.00	Rounding adjustment	1.00	1.00	LS	-2,847.50	-2,847.50
	Total					520,000.00
Cost/m Double						5,200.00
Cost/m Single						2,600.00

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BALLASTED TRACK (DOUBLE)

A	Section Key Metric Information	Unit	Dimension
A1	Track Length	m	100.00
A2	Track Width (For double track)	m	10.00
A3	Track Area	m2	1,000.00

Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	600mm thick, GAP 65 formation layer	600.00	600.00	m3	65.00	39,000.00
3.00	Tensar Triax 170 Geogrid	1,000.00	1,000.00	m2	5.00	5,000.00
4.00	300mm thick, ballast	300.00	300.00	m3	45.00	13,500.00
5.00	2.1m long, pre-cast concrete sleepers at 600 centres including installation, fastenings and tamping	333.33	334.00	No.	297.00	99,198.00
6.00	Flat bottom rails - BS113'A' section; 53kg/m	21.20	22.00	t	2,000.00	44,000.00
7.00	Welded joint	16.67	17.00	No.	100.00	1,700.00
8.00	Insulated joint	4.00	4.00	No.	250.00	1,000.00
9.00	Contractors preliminary & general	203,398.00	203,398.00	LS	15%	30,509.70
10.00	Contractors overheads & profit	233,907.70	233,908.00	LS	5%	11,695.40
11.00	Rounding adjustment	1.00	1.00	LS	4,396.90	4,396.90
	Total					250,000.00

Cost/m Double	2,500.00
Cost/m Single	1,250.00

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OVERHEAD LINE ELECTRIFICATION - OVERHEAD CONDUCTOR RAIL

A Section Key Metric Information		Unit	Dimension			
A1	Length	m	1,000.00			
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Tunnel supports (Assumed every 10m)	200.00	200.00	No.	2,200.00	440,000.00
2.00	Contact wire	2,000.00	2,000.00	m	35.00	70,000.00
3.00	Unallocated allowance	510,000.00	510,000.00	%	10%	51,000.00
4.00	Materials	510,000.00	510,000.00	%	60%	306,000.00
5.00	Labour	510,000.00	510,000.00	%	30%	153,000.00
6.00	General expenses	510,000.00	510,000.00	%	10%	51,000.00
7.00	Contractors preliminary & general	1,071,000.00	1,071,000.00	LS	15%	160,650.00
8.00	Contractors overheads & profit	1,231,650.00	1,231,650.00	LS	5%	61,582.50
9.00	Rounding adjustment	1.00	1.00	LS	-3,232.50	-3,232.50
10.00	Estimate from Austbreck Pty Ltd 02/10/2008 (Phone Quote) AUD \$400 - \$450/single track	-	-	Note	-	-
	Total					1,290,000.00
Cost/m Double						1,290.00
Cost/m Single						645.00

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OVERHEAD LINE ELECTRIFICATION - CABLE & CATENARY MAST (IN TUNNEL)

A Section Key Metric Information		Unit	Dimension			
A1	Length	m	1,000.00			
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Catenary mast structure (30m centres)	66.67	67.00	No.	5,000.00	335,000.00
2.00	Contact wire	2,000.00	2,000.00	m	35.00	70,000.00
3.00	Catenary wire	2,000.00	2,000.00	m	45.00	90,000.00
4.00	Cantilever	66.67	67.00	No.	1,650.00	110,550.00
5.00	Droppers & feeder	200.00	200.00	No.	55.00	11,000.00
6.00	Unallocated allowance	616,550.00	616,550.00	%	10%	61,655.00
7.00	Materials	616,550.00	616,550.00	%	60%	369,930.00
8.00	Labour	616,550.00	616,550.00	%	30%	184,965.00
9.00	General expenses	616,550.00	616,550.00	%	10%	61,655.00
10.00	Contractors preliminary & general	1,294,755.00	1,294,755.00	LS	15%	194,213.25
11.00	Contractors overheads & profit	1,488,968.25	1,488,969.00	LS	5%	74,448.45
12.00	Rounding adjustment	1.00	1.00	LS	-3,416.70	-3,416.70
	Total					1,560,000.00
					Cost/m Double	1,560.00
					Cost/m Single	780.00

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OVERHEAD LINE ELECTRIFICATION - CABLE & CATENARY MAST (OPEN ROUTE)

A	Section Key Metric Information	Unit	Dimension			
A1	Length	m	1,000.00			
Ref	Item Description	Calculation	QTY	Unit	Rate (NZD \$)	Total (NZD \$)
1.00	Catenary mast structure (50m centres)	40.00	40.00	No.	15,000.00	600,000.00
2.00	Foundations	40.00	40.00	No.	3,000.00	120,000.00
3.00	Drop vertical (twin)	8.00	8.00	No.	2,640.00	21,120.00
4.00	Contact wire	2,000.00	2,000.00	m	35.00	70,000.00
5.00	Catenary wire	2,000.00	2,000.00	m	45.00	90,000.00
6.00	Cantilever	40.00	40.00	No.	1,650.00	66,000.00
7.00	BWA	4.00	4.00	No.	13,000.00	52,000.00
8.00	Droppers & feeder	200.00	200.00	No.	55.00	11,000.00
9.00	Unallocated allowance	1,030,120.00	1,030,120.00	%	10%	103,012.00
10.00	Materials	1,030,120.00	1,030,120.00	%	60%	618,072.00
11.00	Labour	1,030,120.00	1,030,120.00	%	30%	309,036.00
12.00	General expenses	1,030,120.00	1,030,120.00	%	10%	103,012.00
13.00	Contractors preliminary & general	2,163,252.00	2,163,252.00	LS	15%	324,487.80
14.00	Contractors overheads & profit	2,487,739.80	2,487,740.00	LS	5%	124,387.00
15.00	Rounding adjustment	1.00	1.00	LS	-2,126.80	-2,126.80
	Total					2,610,000.00
Cost/m Double						2,610.00
Cost/m Single						1,305.00

Project: **AUCKLAND CBD RAIL LINK**
 Doc: **PHASE 2 - CONCEPT DESIGN COST ESTIMATE**
 Rev: Draft Version (For Verification)
 Job No: 3310302
 Date: 2 August 2010



BUILT-UP RATE DATA-BASE

Ref	Item Description	Category (Element)	Engineering Uplift %	Plant/Labour & Sundries %	Rebar Calc's Quantity (t/m3)	Unit	Built-Up Rate (NZD \$)	Excavation (NZD \$)	Spoil Disposal (NZD \$)	Backfill (NZD \$)	Rebar (NZD \$)	Structural Concrete (NZD \$)	Formwork (Vertical) (NZD \$)	Formwork (Horizontal) (NZD \$)	Steel Trowel Finish (NZD \$)	Profile Finish (NZD \$)	Plant/Labour & Sundries (NZD \$)	Engineering Uplift (NZD \$)
1.00	300mm (W) x 900mm (H) cast insitu concrete guide wall	External Walls	0%	5%	0.10	m3	1,984.50	116.67	53.33	100.00	300.00	320.00	1,000.00	-	-	-	94.50	0.00
2.00	800mm thick, reinforced concrete diaphragm wall	External Walls	15%	35%	0.30	m3	2,117.61	112.00	32.00	-	900.00	320.00	-	-	-	-	477.40	276.21
3.00	900mm thick, reinforced concrete diaphragm wall	External Walls	15%	35%	0.12	m3	1,307.21	126.00	36.00	-	360.00	320.00	-	-	-	-	294.70	170.51
4.00	300mm thick, fibre reinforced shotcrete wall	External Walls	0%	20%	0.15	m3	924.00	-	-	-	450.00	320.00	-	-	-	-	154.00	0.00
5.00	250mm thick, fibre reinforced shotcrete wall	External Walls	0%	20%	0.13	m3	852.00	-	-	-	390.00	320.00	-	-	-	-	142.00	0.00
6.00	125mm thick, fibre reinforced shotcrete wall	External Walls	0%	20%	0.08	m3	672.00	-	-	-	240.00	320.00	-	-	-	-	112.00	0.00
7.00	300mm thick, cast insitu reinforced concrete wall	External Walls	15%	15%	0.15	m3	1,679.58	-	-	-	450.00	320.00	500.00	-	-	-	190.50	219.08
8.00	400mm thick, cast insitu reinforced concrete wall	External Walls	0%	15%	0.20	m3	1,920.50	-	-	-	600.00	320.00	750.00	-	-	-	250.50	0.00
9.00	500mm thick, cast insitu reinforced concrete wall	External Walls	15%	15%	0.10	m3	1,613.45	-	-	-	300.00	320.00	600.00	-	-	-	183.00	210.45
10.00	300mm thick, reinforced concrete blinding layer	Floor Slabs	15%	10%	0.10	m3	784.30	-	-	-	300.00	320.00	-	-	-	-	62.00	102.30
11.00	500mm thick, cast insitu reinforced concrete slab	Floor Slabs	15%	10%	0.10	m3	799.48	-	-	-	300.00	320.00	-	-	12.00	-	63.20	104.28
12.00	700mm thick, cast insitu reinforced concrete slab	Floor Slabs	15%	10%	0.15	m3	984.89	-	-	-	450.00	320.00	-	-	8.57	-	77.86	128.46
13.00	1,800mm thick, reinforced concrete invert slab	Floor Slabs	15%	10%	0.15	m3	978.27	-	-	-	450.00	320.00	-	-	3.33	-	77.33	127.60
14.00	500mm thick, reinforced concrete side platforms	Floor Slabs	15%	10%	0.10	m3	799.48	-	-	-	300.00	320.00	-	-	12.00	-	63.20	104.28
15.00	1,000 x 1,000mm reinforced concrete column	Columns	0%	15%	0.30	m3	2,093.00	-	-	-	900.00	320.00	600.00	-	-	-	273.00	0.00
16.00	1,500 x 900mm reinforced concrete column	Columns	0%	15%	0.30	m3	2,016.33	-	-	-	900.00	320.00	533.33	-	-	-	263.00	0.00
17.00	1,000 x 1,000mm reinforced concrete beam	Beams	15%	15%	0.30	m3	2,274.70	-	-	-	900.00	320.00	300.00	200.00	-	-	258.00	296.70
18.00	1,000 x 500mm reinforced concrete beam	Beams	15%	15%	0.14	m3	1,904.40	-	-	-	420.00	320.00	300.00	400.00	-	-	216.00	248.40
19.00	750mm thick, reinforced concrete floor slab	Upper Floors	15%	15%	0.18	m3	1,490.02	-	-	-	540.00	320.00	-	266.67	-	-	169.00	194.35
20.00	400mm thick, reinforced concrete roof slab	Roof	15%	15%	0.18	m3	1,818.44	-	-	-	540.00	320.00	-	500.00	15.00	-	206.25	237.19
21.00	500mm thick, cast insitu reinforced concrete roof slab	Roof	15%	15%	0.10	m3	1,364.82	-	-	-	300.00	320.00	-	400.00	12.00	-	154.80	178.02
22.00	250mm thick, reinforced concrete stairs & landings	Stairs	15%	15%	0.10	m3	2,671.45	-	-	-	300.00	320.00	600.00	800.00	-	-	303.00	348.45
23.00	800mm (DIA) secant bored piles	External Walls	15%	30%	0.30	m3	2,078.05	130.00	40.00	-	900.00	320.00	-	-	-	-	417.00	271.05
24.00	800 x 800 x 800mm reinforced concrete pile cap	Substructure	15%	15%	0.15	m3	2,235.03	130.00	40.00	-	450.00	320.00	750.00	-	-	-	253.50	291.53
25.00	900mm (DIA) contiguous bored piles - 13m (L) @ 1.000mm horizontal crs	External Walls	15%	30%	0.13	m3	1,315.60	130.00	40.00	-	390.00	320.00	-	-	-	-	264.00	171.60
26.00	750 x 600mm cast insitu, reinforced concrete beams	Beams	15%	15%	0.14	m3	2,095.43	-	-	-	420.00	320.00	400.00	444.44	-	-	237.67	273.32
27.00	750 x 750mm cast insitu, reinforced concrete beams	Beams	15%	15%	0.13	m3	1,938.20	-	-	-	390.00	320.00	400.00	355.56	-	-	219.83	252.81
28.00	800 x 500mm cast insitu, reinforced concrete beams	Beams	15%	15%	0.18	m3	2,274.70	-	-	-	525.00	320.00	375.00	500.00	-	-	258.00	296.70

COMPOSITE RATE DATA-BASE

Ref	Item Description	Unit	Rate (NZD \$)
1.00	Site clearance	m2	1.00
2.00	Break up existing roads & footpaths	m2	40.00
3.00	Rotary bore hole drilling for piling (in clay)	m3	130.00
4.00	Machine excavation for diaphragm retaining wall (in clay)	m3	140.00
5.00	Machine excavation to form trench (in made ground)	m3	50.00
6.00	Machine excavation to form trench (in soft rock)	m3	50.00
7.00	Machine excavation to form trench (in hard rock)	m3	120.00
8.00	Machine excavation to reduce levels (in made ground)	m3	35.00
9.00	Machine excavation to reduce levels (in soft rock)	m3	35.00
10.00	Machine excavation to reduce levels (in hard rock)	m3	100.00
11.00	Machine excavation to reduce levels (in made ground) - For shafts	m3	70.00
12.00	Machine excavation to reduce levels (in soft rock) - For shafts	m3	70.00
13.00	Machine excavation to reduce levels (in hard rock) - For shafts	m3	200.00
14.00	Disposal of recyclable excavated material (within 50km radius from site & including bulking, tipping charges & landfill taxes)	m3	40.00
15.00	Disposal of hazardous excavated material (within 50km radius from site & including bulking, tipping charges & landfill taxes)	m3	90.00
16.00	Imported engineering fill, compacted in layers	m3	75.00
17.00	32mm dia pre-tensioned soil nails	m	170.00
18.00	Mechanical grouted rock bolts	m	210.00
19.00	Tension pile anchors	m	230.00
20.00	Structural concrete (25 MPa) - Supply & place	m3	280.00
21.00	Structural concrete (32 MPa) - Supply & place	m3	300.00
22.00	Structural concrete (40 MPa) - Supply & place	m3	320.00
23.00	250mm thick, precast concrete floor system (solid flat slab)	m2	320.00
24.00	400mm thick, precast concrete floor system (solid flat slab)	m2	500.00
25.00	200mm thick, precast hollow core floor with 75mm thick, reinforced concrete topping slab	m2	250.00
26.00	450 DHC roof slab with 100mm thick, reinforced concrete topping slab (To take HN-HO-72 traffic loading)	m2	600.00
27.00	Steel trowel finish	m2	6.00
28.00	200mm thick, block walls - Hollow core	m2	140.00
29.00	200mm thick, block walls - Solid filled with concrete & reinforced with 100kg/m3 bar reinforcement	m2	180.00
30.00	Formwork - Vertical surfaces	m2	150.00
31.00	Formwork - Horizontal surfaces	m2	200.00
32.00	Bar reinforcing steel	t	3,000.00
33.00	Structural steel (universal beams/channels) - Temporary; supply & erect; removal	t	4,500.00
34.00	Structural steel (square/rectangular/circular sections) - Temporary; supply & erect; removal	t	5,500.00
35.00	Structural steel (connections) - Temporary; supply & erect; removal	t	7,000.00
36.00	Structural steel (universal beams/channels) - Permanent; supply & erect	t	6,000.00
37.00	Structural steel (square/rectangular/circular sections) - Permanent; supply & erect	t	7,000.00
38.00	Structural steel (connections) - Permanent; supply & erect	t	8,500.00
39.00	Tanking/waterproof membranes	m2	100.00
40.00	1HR FRR doors (double leaf) including door frame, smoke seals, hardware & finishes etc.	No.	4,500.00
41.00	1HR FRR doors (single leaf) including door frame, smoke seals, hardware & finishes etc.	No.	2,500.00

COMPOSITE RATE DATA-BASE

Ref	Item Description	Unit	Rate (NZD \$)
42.00	Polyester powder coated aluminium louvres & frames including all fixings & brackets	m2	1,300.00
43.00	Galvanised steel doors including door frame, hardware & finishes, etc.	m2	1,000.00
44.00	Terrazzo floor finishes	m2	350.00
45.00	Access floor	m2	200.00
46.00	Anti-static carpet tiles	m2	100.00
47.00	Dust seal painted finish to exposed concrete floor surfaces	m2	35.00
48.00	Pre-finished steel wall linings on proprietary steel framing	m2	600.00
49.00	Plaster & painted wall finishes	m2	100.00
50.00	Dust seal painted finish to exposed concrete wall surfaces	m2	35.00
51.00	Steel framed suspended ceiling with profiled metal tiles	m2	400.00
52.00	Fibrous plaster suspended ceiling system	m2	100.00
53.00	Dust seal painted finish to exposed concrete surfaces	m2	35.00
54.00	Allowance for station & direction signage (illuminated)	m2	15.00
55.00	Toughened glass platform partitioning with automated doors	m2	3,500.00
56.00	Balustrades and handrails (assumed high specification, i.e. toughened glass with stainless steel frame members)	m	1,000.00
57.00	Stainless steel balustrades and handrails	m	500.00
58.00	Stainless steel handrails and brackets fixed to wall	m	250.00
59.00	Heavy duty aluminium stair nosings; plugged and screwed to stair treads	m	120.00
60.00	Ticket vending machine	No.	85,000.00
61.00	Gateline end stanchion	No.	85,000.00
62.00	Gateline intermediate stanchion	No.	119,000.00
63.00	Manually operated stanchion	No.	25,500.00
64.00	Fire fighting lift (27 person)	No.	256,000.00
65.00	Passenger lift (17 person)	No.	243,000.00
66.00	Passenger lift (27 person)	No.	375,000.00
67.00	Passenger lift (40 person)	No.	450,000.00
68.00	Escalators (Conventional type)	No.	200,000.00
69.00	Allowance for 1.8m wide stairs including landings, balustrading & finishes (6m rise)	No.	40,000.00
70.00	Allowance for 2.4m wide stairs including landings, balustrading & finishes (6m rise)	No.	50,000.00
71.00	Allowance for 3.6m wide stairs including landings, balustrading & finishes (6m rise)	No.	60,000.00
72.00	Soft landscaping incl. re-contouring levels, filling, drainage, planting & grassing, etc	m2	50.00
73.00	Hard landscaping incl. re-contouring levels, filling, drainage, footpaths, kerbs & channels, etc	m2	200.00
74.00	Road works (minor - access roads) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	m2	300.00
75.00	Road works (major - main roads & highways) incl. re-contouring levels, filling, bitumen seal, kerbs & channels, drainage, etc	m2	400.00
76.00	Temporary traffic bridge	m2	1,500.00
M1.1	Tunnel & Trackway Ventilation:		
a	Ventilation Fan - (Fire Rated, 120 m3/s, 300 kw, 2.5D)	No.	165,000.00
b	Ventilation Fan - (Fire Rated, 80 m3/s, 190 kw, 1.8D)	No.	140,000.00
c	Damper (Fire Rated, 4.5m x 4.5m)	No.	50,625.00
d	Damper (Fire Rated, 5m2)	No.	12,500.00
e	Damper (Fire Rated, 3m2)	No.	7,500.00

COMPOSITE RATE DATA-BASE

Ref	Item Description	Unit	Rate (NZD \$)
f	Relief Shaft Attenuator - (Fire Rated, 4.5m x 4.5m x 3m)	No.	75,000.00
g	Allowance for pipework ductwork & grilles	%	25%
M1.2	HVAC:		
a	Cooling Tower (975 KW)	No.	150,000.00
b	Chiller (750 KW)	No.	350,000.00
c	Chilled Water Pumps (60 m3/h or 16.67 L/s)	No.	5,000.00
d	Cooled Water Pumps (100 m3/h or 27.78 L/s)	No.	10,000.00
e	Air Handling Unit (20 m3/s)	No.	260,000.00
f	Air Handling Unit (15 m3/s)	No.	195,000.00
g	Air Handling Unit (10 m3/s)	No.	130,000.00
h	Air Handling Unit (0.5 m3/s)	No.	10,000.00
i	Air Handling Unit (0.3 m3/s)	No.	7,000.00
j	Air Handling Unit (0.2 m3/s)	No.	5,000.00
k	Fan Unit (20 m3/s)	No.	40,000.00
l	Fan Unit (10 m3/s)	No.	25,000.00
m	Fan Unit (0.5 m3/s)	No.	3,000.00
n	Fan Unit (0.3 m3/s)	No.	2,500.00
o	Fan Unit (0.2 m3/s)	No.	2,000.00
p	Air Conditioning Unit (25 kW Cooling)	No.	25,000.00
q	Fan Coil Unit (130 L/s, 2kW Cooling)	No.	2,500.00
r	Allowance for pipework ductwork & grilles	%	30%
E1	Electrical services:		
a	Distribution boards	No.	20,000.00
b	Mains cabling	No.	5,000.00
c	UPS	No.	100,000.00
d	Containment	m2	25.00
e	Earthing cables	No.	20,000.00
f	Change over panel (Evacuation lift)	No.	10,000.00
g	Lift power supply	No.	4,000.00
h	Escalator power supply	No.	4,000.00
i	Ventilation fan power supply	No.	15,000.00
j	Cooling tower power supply	No.	15,000.00
k	Chiller power supply	No.	15,000.00
l	Chilled water pump power supply	No.	4,000.00
m	Cooled water pump power supply	No.	4,000.00
n	Air handling unit power supply	No.	4,000.00
o	Fan unit power supply	No.	4,000.00
p	Air conditioning unit power supply	No.	4,000.00
q	Fan coil unit power supply	No.	4,000.00
r	Motorised platform door power supply	No.	4,000.00
s	UPS power supply	No.	4,000.00

COMPOSITE RATE DATA-BASE

Ref	Item Description	Unit	Rate (NZD \$)
T&C1	Allowance for power supply to motorised drainage services	Item	10,000.00
u	Allowance for power supply to fire protection services	Item	25,000.00
v	Allowance for rail systems power supply (i.e. AFC, signalling, communications, etc)	Item	150,000.00
w	Small power	m2	50.00
x	Internal lighting - Front of house/public areas (High quality fittings)	m2	250.00
w	Internal lighting - Back of house/staff accommodation (Medium quality fittings)	m2	100.00
z	Internal lighting - Back of house/plant rooms (Standard plantroom quality fittings)	m2	80.00
aa	Allowance for external lighting	Item	300,000.00
FPS1	Fire protection services		
a	Sprinkler systems	m2	60.00
b	Smoke detection systems	m2	20.00
c	Fire monitoring panels	m2	10.00
d	Fire hydrants connected to mains	m2	15.00
BMS1	Building management systems	Item	500,000.00
COM1	Communications Systems		
a	Communications systems	m2	50.00
SEC1	Security systems		
a	Security systems	m2	30.00
HYD1	Hydraulics/sanitary plumbing & fittings	Item	300,000.00
DRA1	Drainage services	Item	200,000.00
BWC1	Builders work in connection with services	%	5%
T&C1	Full systems/equipment testing & commissioning	%	1%

TUNNELLING RESOURCE DATA-BASE

TUNNELLING RESOURCE DATA-BASE				Hour	Shift	Day	Week	Month	Year
Ref	Item Description	Base Cost Rate (NZD \$)	Unit	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)
1.00	Labour								
1.01	Tunnel Pit Boss	320,000.00	Year	164.12	1,230.86	1,230.86	6,154.32	26,666.67	320,000.00
1.02	Tunnel Working Foreman	260,000.00	Year	133.34	1,000.08	1,000.08	5,000.38	21,666.67	260,000.00
1.03	Tunnel Miner (First Class) - Incl. drillers & rock support specialists, etc	200,000.00	Year	102.57	769.29	769.29	3,846.45	16,666.67	200,000.00
1.04	Tunnel Miner (Second Class) - Incl. bull gang; drillers assistant, brakeman; services installation, etc	160,000.00	Year	82.06	615.43	615.43	3,077.16	13,333.33	160,000.00
1.05	Tunnel Labourer	120,000.00	Year	61.54	461.57	461.57	2,307.87	10,000.00	120,000.00
1.06	Tunnel Loco Driver	160,000.00	Year	82.06	615.43	615.43	3,077.16	13,333.33	160,000.00
1.07	Tunnel TBM Operator	200,000.00	Year	102.57	769.29	769.29	3,846.45	16,666.67	200,000.00
1.08	Tunnel Fitter	160,000.00	Year	82.06	615.43	615.43	3,077.16	13,333.33	160,000.00
1.09	Tunnel Electrician	200,000.00	Year	102.57	769.29	769.29	3,846.45	16,666.67	200,000.00
1.10	Pit Bottom Labourer	120,000.00	Year	61.54	461.57	461.57	2,307.87	10,000.00	120,000.00
1.11	Tunnel Crane Operator	140,000.00	Year	71.80	538.50	538.50	2,692.51	11,666.67	140,000.00
1.12	Pit Top Labourer	100,000.00	Year	51.29	384.64	384.64	1,923.22	8,333.33	100,000.00
1.13	Plant / Equipment Operator	110,000.00	Year	56.41	423.11	423.11	2,115.55	9,166.67	110,000.00
1.14	Tunnel Shotfirers	120,000.00	Year	61.54	461.57	461.57	2,307.87	10,000.00	120,000.00
1.15	Tunnel Shotcreters	160,000.00	Year	82.06	615.43	615.43	3,077.16	13,333.33	160,000.00
1.16	Security	80,000.00	Year	41.03	307.72	307.72	1,538.58	6,666.67	80,000.00
2.00	Plant								
2.01	TBM	25,000,000.00	No.	-	-	-	-	-	-
2.02	TBM Spares & Sundry Support Materials	2,500,000.00	No.	-	-	-	-	-	-
2.03	TBM Recovery and Re-installation	1,500,000.00	No.	-	-	-	-	-	-
2.04	TBM Set-Up	600,000.00	No.	-	-	-	-	-	-
2.05	TBM Dismantle	400,000.00	No.	-	-	-	-	-	-
2.06	Allowance for Major Refurbishment of TBM for Re-use and Spares Restocking	5,000,000.00	No.	-	-	-	-	-	-
2.07	Spoil Conveyor Pit Bottom Installation	1,000,000.00	No.	-	-	-	-	-	-
2.08	Spoil Conveyor	1,000.00	m	-	-	-	-	-	-
2.09	Locomotive	14,000.00	Week	583.33	666.67	2,000.00	14,000.00	60,666.20	727,994.40
2.10	Muck Cars & Grout Cars	5,400.00	Week	225.00	257.14	771.43	5,400.00	23,399.82	280,797.84
2.11	Flat Car	1,000.00	Week	41.67	47.62	142.86	1,000.00	4,333.30	51,999.60
2.12	Manriders	1,000.00	Week	41.67	47.62	142.86	1,000.00	4,333.30	51,999.60
2.13	Track	200.00	m	-	-	-	-	-	-
2.14	Air Pipe	200.00	m	-	-	-	-	-	-
2.15	Water Pipe	300.00	m	-	-	-	-	-	-
2.16	Pump Main	200.00	m	-	-	-	-	-	-
2.17	Cabling	300.00	m	-	-	-	-	-	-
2.18	Lighting	340.00	m	-	-	-	-	-	-
2.19	Vent Ducting	240.00	m	-	-	-	-	-	-
2.20	Booster Fans	2,000.00	Week	11.90	95.24	285.71	2,000.00	8,666.00	103,992.00
2.21	Grout Mixers	14,000.00	Week	83.33	666.67	2,000.00	14,000.00	60,662.00	727,944.00
2.22	Grout Pumps	10,000.00	Week	59.52	476.19	1,428.57	10,000.00	43,330.00	519,960.00

TUNNELLING RESOURCE DATA-BASE				Hour	Shift	Day	Week	Month	Year
Ref	Item Description	Base Cost Rate (NZD \$)	Unit	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)	Rate (NZD \$)
2.23	Grout Houses & Pipes	800.00	Week	4.76	38.10	114.29	800.00	3,466.40	41,596.80
2.24	Transformers & Switchgear	8,000.00	Week	47.62	380.95	1,142.86	8,000.00	34,664.00	415,968.00
2.25	Small Tools	1,800.00	Week	10.71	85.71	257.14	1,800.00	7,799.40	93,592.80
2.26	Other Plant	5,200.00	Week	30.95	247.62	742.86	5,200.00	22,531.60	270,379.20
2.27	Hoists	1,600.00	Week	9.52	76.19	228.57	1,600.00	6,932.80	83,193.60
2.28	Man Hoists	5,800.00	Week	34.52	276.19	828.57	5,800.00	25,131.40	301,576.80
2.29	Cranes	13,600.00	Week	80.95	647.62	1,942.86	13,600.00	58,928.80	707,145.60
2.30	Compressors	2,800.00	Week	16.67	133.33	400.00	2,800.00	12,132.40	145,588.80
2.31	Surface Fans	7,600.00	Week	45.24	361.90	1,085.71	7,600.00	32,930.80	395,169.60
2.32	Loaders	3,200.00	Week	19.05	152.38	457.14	3,200.00	13,865.60	166,387.20
2.33	Other Surface Plant (Including Dumpers and Forklifts)	5,200.00	Week	30.95	247.62	742.86	5,200.00	22,531.60	270,379.20
2.34	Vertical Conveyor	17,000.00	Week	101.19	809.52	2,428.57	17,000.00	73,661.00	883,932.00
2.35	Ground Monitoring Equipment / Forward Probing	44,000.00	Week	261.90	2,095.24	6,285.71	44,000.00	190,652.00	2,287,824.00
2.36	Dewatering during works	10,000.00	Week	59.52	476.19	1,428.57	10,000.00	43,330.00	519,960.00
2.37	Temporary Propping During Works	20,000.00	Week	119.05	952.38	2,857.14	20,000.00	86,660.00	1,039,920.00
2.38	Impact Hammers	4,000.00	Week	23.81	190.48	571.43	4,000.00	17,332.00	207,984.00
2.39	Steel Formwork Shutters for Secondary Lining	50,000.00	Week	297.62	2,380.95	7,142.86	50,000.00	216,650.00	2,599,800.00
2.40	Road Header	600.00	Shift	75.00	600.00	1,800.00	12,600.00	54,595.80	655,149.60
2.41	Small Road Header	400.00	Shift	50.00	400.00	1,200.00	8,400.00	36,397.20	436,766.40
2.42	Brokk	400.00	Shift	50.00	400.00	1,200.00	8,400.00	36,397.20	436,766.40
2.43	ITC 312 Tunnel Excavator	400.00	Shift	50.00	400.00	1,200.00	8,400.00	36,397.20	436,766.40
2.44	Drilling Rig	300.00	Shift	37.50	300.00	900.00	6,300.00	27,297.90	327,574.80
2.45	Shotcrete Robot	200.00	Shift	25.00	200.00	600.00	4,200.00	18,198.60	218,383.20
2.46	Shotcrete Pump	180.00	Shift	22.50	180.00	540.00	3,780.00	16,378.74	196,544.88
2.47	Small Wheeled Agitator (Ultrazazz)	150.00	Shift	18.75	150.00	450.00	3,150.00	13,648.95	163,787.40
2.48	Access Basket	100.00	Shift	12.50	100.00	300.00	2,100.00	9,099.30	109,191.60
2.49	Mini Excavator	180.00	Shift	22.50	180.00	540.00	3,780.00	16,378.74	196,544.88
2.50	Dumper	80.00	Shift	10.00	80.00	240.00	1,680.00	7,279.44	87,353.28
2.51	Sundry SCL Plant / Ventilation and Safety Equipment	400.00	Shift	50.00	400.00	1,200.00	8,400.00	36,397.20	436,766.40
2.52	Batching Plant	800.00	Shift	100.00	800.00	2,400.00	16,800.00	72,794.40	873,532.80
2.53	6m3 Agitator	140.00	Shift	17.50	140.00	420.00	2,940.00	12,739.02	152,868.24
2.54	Static Concrete Pump	150.00	Shift	18.75	150.00	450.00	3,150.00	13,648.95	163,787.40
3.00	Materials								
3.01	Bored Tunnel Primary Lining - Precast reinforced concrete tunnel rings (1200mm wide)	12,500.00	No.	-	-	-	-	-	-
3.02	Bored Tunnel Secondary Lining - Injected Grout	520.00	m3	-	-	-	-	-	-
3.03	Mined Tunnel Primary Lining - Fibre Reinforced Shotcrete	600.00	m3	-	-	-	-	-	-
3.04	Mined Tunnel Primary Lining - Lattice Girder Reinforcement	4,500.00	t	-	-	-	-	-	-
3.05	Mined Tunnel Primary Lining - Rock Bolt Number (6m Long)	600.00	No.	-	-	-	-	-	-
3.06	Mined Tunnel Primary Lining - Waterproofing works such as fleece and fully sealed waterproof membrane	200.00	m2	-	-	-	-	-	-
3.07	Mined Tunnel Primary Lining - Fissure Grouting	60.00	m2	-	-	-	-	-	-
3.08	Mined Tunnel Secondary Lining - Cast Insitu Concrete	260.00	m3	-	-	-	-	-	-
3.09	Mined Tunnel Secondary Lining - Bar Reinforcement	4,500.00	t	-	-	-	-	-	-
3.10	Mined Tunnel End Head Walls - Cast Insitu Concrete	260.00	m3	-	-	-	-	-	-
3.11	Mined Tunnel End Head Walls - Bar Reinforcement	4,500.00	t	-	-	-	-	-	-
3.12	Mined Tunnel Invert Concrete - Cast Insitu Concrete	260.00	m3	-	-	-	-	-	-

