

Drury Infrastructure Funding and Financing (DIFF) - Cost Allowances

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Version 5

Document Status

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Executive Summary

Purpose: The indicative cost allowances provided in this document have been prepared to inform Auckland Council considerations of funding and financing options for the infrastructure needed to support the plan changes in Drury. As such they are considered sufficient for them to consider a range of funding options. Project scope definitions (especially opportunities for interim stages) used to inform the cost estimates are indicative only, and not based on design. Subsequently, cost estimates are also indicative only, based on judgement and simplified unit rates, rather than from design and quantity measurements.

This report contains all costs included in the DIFF analysis including updates from the initial analysis, although only some of these are applicable to the Development Contributions. The proportion of costs to be allocated to each project to inform the Development Contributions has been provided by Auckland Council, and basis of the inputs is set out in the “Drury Developer Contributions Policy - Transport Assessment” report.

The following table sets out the cost allowances that have been developed for the Drury Infrastructure Funding and Financing Programme. In some cases, the options will be staged over time. Where there is an ‘Interim’ cost, the ‘Ultimate’ cost allowance has been developed on the basis that the interim option had already been constructed. Where there is no ‘Interim’ option, the ‘Ultimate’ cost allowance is based on the current environment as being the base situation.

The cost allowances have been verified by an “independent” person within Te Tupu Ngātahi (i.e. separate from the originator) with appropriate skills and experience to undertake the activities required. This review process was approved by Waka Kotahi for application on Te Tupu Ngātahi as construction funding was not being sought for the Drury Arterial Network projects. The review process included an independent review workshop with Alta Consulting to test and challenge the assumptions that were used to develop the cost allowances.

Table 1: Project Cost Allowance Summary for Updated DIFF Programme

Ref	Description	Stage	Indicative Cost Allowance (\$M)
1a	GSR improvements - Waihoehoe Rd to Drury Interchange	Interim	11
1b	GSR improvements - Waihoehoe Rd to Drury Interchange	Ultimate	16
2a	GSR improvements - From Drury School to Waihoehoe Rd	Interim	10
2b	GSR improvements - From Drury School to Waihoehoe Rd	Ultimate	28

Ref	Description	Stage	Indicative Cost Allowance (\$M)
3	Intersection upgrade on GSR/Karaka Rd intersection	Ultimate	5
4a	Waihoehoe Rd East upgrades- from Fitzgerald Rd to before Cossey Rd (development boundary)	Interim	8
4b	Waihoehoe Rd East upgrades- from Fitzgerald Rd to before Cossey Rd (development boundary)	Ultimate	35
4	Waihoehoe Rd East upgrades- from Fitzgerald Rd to before Cossey Rd (development boundary)	Ultimate	29
7	Fitzgerald Rd upgrades (from Waihoehoe Rd to development boundary)	Ultimate	6
8	Fielding Rd upgrades (from Waihoehoe Rd to development boundary)	Ultimate	6
9a	Upgrade in Norrie Rd/GSR/Waihoehoe intersection (2-lane)	Interim	11
9b	Upgrade in Norrie Rd/GSR/Waihoehoe intersection (multi-lane)	Ultimate	14
10a	New intersection on Waihoehoe Rd/Fitzgerald Rd (including approach cross-sections)	Interim	6
10b	New intersection on Waihoehoe Rd/Fitzgerald Rd (including approach cross-sections)	Ultimate	18
11	Intersection upgrade Waihoehoe Rd/Fielding Rd/Appleby Rd	Ultimate	8
12	Interim walking, cycling and bus connections within Drury Centre (includes Bremner/Norrie/Firth Intersection upgrades, active mode on Norrie) -overlap with project 36 and 46	Interim	15
13a	N-S Ōpāheke Arterial across development (up to Waihoehoe Stream)	Interim	32
13b	N-S Ōpāheke Arterial across development (up to Waihoihoi Stream)	Ultimate	11
14	Upgrade Brookfield Road from Fitzgerald to Quarry Rd+ New connection + Intersections on Quarry & Fitzgerald	Ultimate	40
14a	Western tie in of Brookfield Road extension with Quarry Road	Ultimate	17
14b	Brookfield Road Upgrade	Ultimate	24
15	New Collector road E-W from Fitzgerald Rd (collector 1) + Intersections	Ultimate	29
16a	2-lane bridge over Bremner/Waihoehoe Rd (included in project 19-1)	Interim	14
16b	4-lane bridge over Bremner/Waihoehoe Rd	Ultimate	11
17	Oira Road to Jesmond Road Collector	Ultimate	18

Ref	Description	Stage	Indicative Cost Allowance (\$M)
20a	Upgrade Fitzgerald Rd from Brookfield to Cossey Rd for active modes	Interim	23
21	Fielding Rd upgrades for active modes (from Fitzgerald Rd to development boundary)	Ultimate	3
22	Upgrade Intersection at Quarry/ GSR	Ultimate	5
23a	Waihoehoe Rd West upgrades- between GSR & Kath Henry Lane	Interim	5
23b	Waihoehoe Rd West upgrades- between GSR & Kath Henry Lane	Ultimate	34
23c	Waihoehoe Rd West upgrades- between Kath Henry Lane & Fitzgerald Rd	Interim	3
23d	Waihoehoe Rd West upgrades- between Kath Henry Lane & Fitzgerald Rd	Ultimate	12
23	Waihoehoe Rd West upgrades- between GSR & Fitzgerald Rd, including bridge replacement over the rail corridor	Ultimate	48
24	Upgrades on Waihoehoe Rd east- from project 4 to Drury Hills + Drury Hills Intersection	Ultimate	38
25	Upgrades on Drury Hills from Waihoehoe Rd to Macwhinney Dr	Ultimate	9
27a	Active mode facilities from Drury hills and Fitzgerald to Quarry Rd (2 links and intersections)	Interim	9
28	New collector in N-S direction parallel to Fitzgerald Rd	Ultimate	34
28a	Northern End of new collector in N-S direction parallel to Fitzgerald Rd	Ultimate	10
29	New collector in E-W direction between Flanagan & Fitzgerald Rd (collector 2)	Ultimate	23
30	2-lane internal collector between Fitzgerald & Drury Hills E-W direction	Ultimate	54
30-1	2-lane internal collector between Fitzgerald & Fielding Road E-W direction	Ultimate	18
30-2	2-lane internal collector between Fielding Road & Drury Hills E-W direction	Ultimate	37
31	Upgrades on Cossey Rd between Fitzgerald & Waihoehoe Rd	Ultimate	9
32	New Intersection on Cossey Rd/Waihoehoe Rd	Ultimate	10
33	Upgrade Fitzgerald Rd from project 7 to Brookfield Rd	Ultimate	4
36	Complete Bremner-Norrie Road 4-lane connection	Ultimate	68

Ref	Description	Stage	Indicative Cost Allowance (\$M)
36a	Bremner-Norrie Road – 2-lane interim option	Interim	32
36b	Complete Bremner-Norrie Road connection to 4-lanes	Ultimate	23
36c	Complete Bremner-Norrie Road connection to 4-lanes (bridge Structure)	Ultimate	23
37a(i)	N-S Ōpāheke Arterial from development to Ponga Rd	Interim	118
37a(ii)	N-S Ōpāheke Arterial from development to Ponga Rd (interim bridge)	Interim	43
37b(i)	N-S Ōpāheke Arterial from development to Ponga Rd	Ultimate	20
37b(ii)	N-S Ōpāheke Arterial from development to Ponga Rd (bridge widening)	Ultimate	26
39b	New Bremner Rd arterial from SH1 to Auranga development	Ultimate	7
39c	New Bremner Rd arterial from SH1 to Auranga development (bridge)	Ultimate	5
40a	New intersection on Jesmond/ Bremner Rd	Interim	19
40b	Upgrade intersection on Jesmond/ Bremner Rd	Ultimate	5
41a	Jesmond Rd upgrades from SH22 to Waipupuke development boundary	Interim	12
41b	Jesmond Rd from SH22 to Waipupuke development boundary	Ultimate	19
42a	Jesmond Rd upgrades from project 41 to New Bremner Rd	Interim	4
42b	Jesmond Rd upgrades from project 41 to New Bremner Rd	Ultimate	19
42c	Jesmond Rd upgrades from project 41 to New Bremner Rd	Ultimate	19
43a	Intersection upgrade on Jesmond Rd/SH22 Rd	Interim	10
43b	Intersection upgrade on Jesmond Rd/SH22 Rd	Ultimate	5
44	Intersection at SH22/Burberry Rd (likely to close entirely)	Ultimate	5
45	Upgrade intersection at SH22/Victoria Rd	Interim	5
46	Upgrades in GSR/Firth Rd intersection (overlap with project12)	Interim	5
49	SH22 improvements from GSR Intersection to Jesmond Rd	Ultimate	50
50a	SH22 improvements from Jesmond Rd to Oira Rd- active mode upgrades on the northern section	Interim	2
50b	SH22 improvements from Jesmond Rd to Oira Rd	Ultimate	29
51	SH22 improvements from Oira Rd to Oira Creek	Interim	31

Ref	Description	Stage	Indicative Cost Allowance (\$M)
52	Intersection upgrade- on SH22/ McPherson Rd/Karaka Rd (Auranga B1)	Ultimate	5
53	New intersection east of Jesmond Rd (Auranga B1 main street)	Ultimate	4
54	New N-S collectors internal to Auranga B1 (2 links) + Intersections	Ultimate	38
55	New E-W collector Jesmond Rd to SH22	Ultimate	29
55a	New E-W collector Jesmond Rd to Burberry Rd	Ultimate	23
56	Burberry Rd north connection to Auranga Precinct	Ultimate	18
58	Oira Rd upgrades from SH22 to proposed east-west collector	Ultimate	43
59	New Intersection on Jesmond Rd/collector (PC61)	Ultimate	6
60a	SH22 Intersection upgrade - Oira Rd (3 leg)	Interim	10
60b	SH22 Intersection upgrade - Oira Rd (4 leg)	Ultimate	3
63	New collectors internal to Waipupuke PC61 (3 links) + Intersections	Ultimate	58
65a(i)	New Bremner Rd arterial from Auranga development to Jesmond Rd	Interim	27
65a(ii)	New Bremner Rd arterial from Auranga development to Jesmond Rd Bridge)	Interim	5
65b(i)	New Bremner Rd arterial from Auranga development to Jesmond Rd	Ultimate	8
65b(ii)	New Bremner Rd arterial from Auranga development to Jesmond Rd (bridge widening)	Ultimate	2
66	SH22 improvements - west of SH1 interchange to GSR	Ultimate	43
67	Active Mode Corridor Drury Central to GSR		33
68	Active Mode Corridor GSR to Drury West		40
69	walk/cycle bridges on Quarry Road bridge (over SH1)		5
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Appendices

Appendix 1 - Drury Arterial Network DBC Cost Estimate Report

Appendix 2 - Drury Arterial DBC - Cost Estimate Detail

Appendix 3 - Estimates for Generic Cross Sections

Acronym/Term	Description
AEE	Assessment of Environmental Effects
CEM	SM014 Cost Evaluation Manual
DBC	Detailed Business Case
DIFF	Drury Infrastructure Funding and Financing
FTN	Frequent Transit Network
FUZ	Future Urban Zone
MSQA	Management, Surveillance and Quality Assurance
NoR	Notice of Requirement
NZUP	New Zealand Upgrade Programme
PBC	Programme Business Case
PBE	Programme Business Case Estimate
PWA	Public Works Act Costs
P&G	Preliminary and General
SH22	State Highway 22
SM014	SM014 Cost Evaluation Manual

1 Introduction

1.1 Purpose

The purpose of this report is to set out the process adopted to determine the cost allowances that were developed to inform Auckland Council considerations of funding and financing options for the transport infrastructure needed to enable land development in accordance with Councils Structure Plan. As such they are considered sufficient for consideration of a range of funding options.

The transport network used for the DIFF programme is set out in Figure 1 below. The scope definition, assumptions and cost allowances for each project are set out in Section 3. Project scope definitions (especially opportunities for interim stages) are indicative only to inform the cost allowances, and have not been based on design. Therefore, cost allowances are based on judgement and simplified unit rates, rather than from design and quantity measurements. This document sets out the assumptions used in developing those cost allowances.

The funding and financing options will require consideration of project-specific, rather than just area-wide aggregate totals. Options could include levies, developer contributions or developer-provided infrastructure. As such, options could involve commercial/financial agreements and/or procurement processes. The assumed scope and resultant cost allowances are not considered sufficiently accurate to form the basis of any such commercial agreements.



Figure 1: Drury Transport Network – DIFF Programme Referencing

2 Methodology for Developing Cost Allowances

The process for developing the cost allowances for each project within the DIFF programme involved utilising recent cost estimates where information was available. Primarily, the development of the cost allowances followed completion of the Detailed Business Case (DBC) prepared for the Drury Arterial Network¹, and therefore this information was used as the basis of the cost allowances where possible. Where formal cost estimates were not available to form the basis of the cost allowances, generic linear unit rates have been applied.

The cost allowances that have been developed are consistent with the requirements of the Cost Estimation Manual (CEM)² for preparation of a Programme Business Case Estimate (PBE). These are normally prepared as part of a Programme Business Case (PBC) and used to provide budgets for forward works programming. Usually, the PBE is based on limited knowledge of the project, with a broad range. The estimate life cycle of a project is illustrated below (Figure 2), together with the perceived amount of risk at each stage.

The cost allowances provide an indication of infrastructure funding requirements at a base date and do not reflect programming over time. Therefore, escalation is not included directly in these cost allowances.

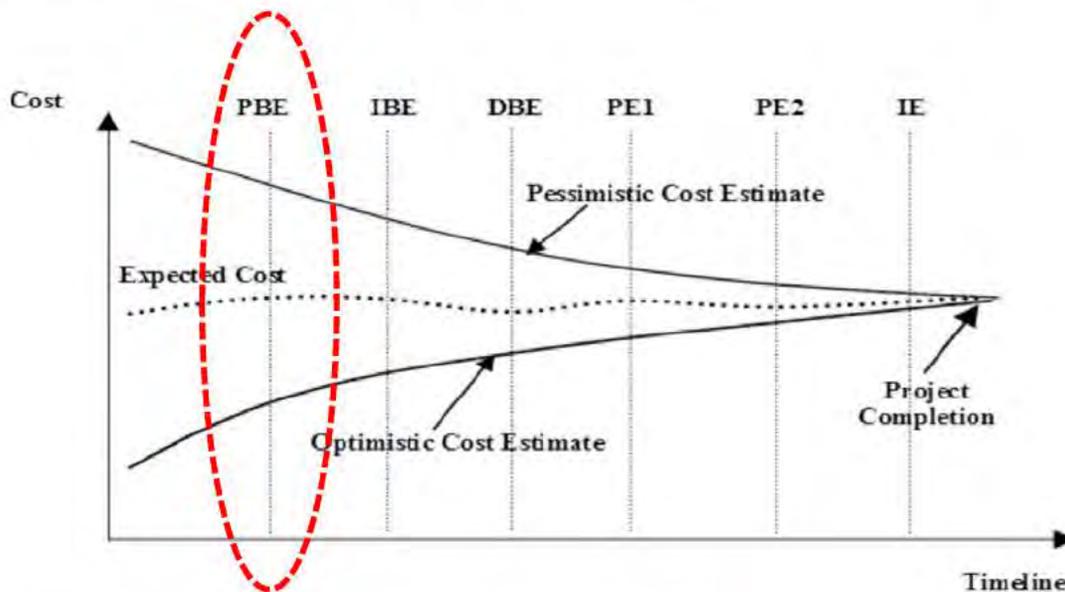


Figure 2: Estimate Lifecycle (extracted from section 3.4.1 of the CEM)

In some cases, the options will be staged over time. Where there is an 'Interim' cost, the 'Ultimate' cost allowance has been developed on the basis that the interim works were completed. Where there is no 'Interim' option, the 'Ultimate' cost allowance is based on the current environment. It would be

¹ "Supporting Growth South Area - Drury Local Package Detailed Business Case", Te Tupu Ngātahi, 9th November 2020

² "Cost Estimation Manual", Waka Kotahi, version 2 - August 2021

reasonable to expect the cost for full construction initially would be cheaper than a staged approach due to redundancy and tie in works associated with the interim option, additional site set up costs and project duration, as well as increased costs in designing and developing options with associated approvals.

2.1 Determination of Project Scope

The accuracy of a cost estimate is dependant on the level of design detail that is available. For the DIFF programme, the final design solution is not known, and therefore the cost allowances have been based on a number of assumptions as described in the following sections.

2.1.1 Project Extent

Development of the transport network is expected to occur in line with development of the adjacent land, and therefore the actual extent of each project will not be determined until the Auckland Council Plan Change process and possibly even the subsequent Resource Consent process is completed.

The extent of the DIFF projects has been based on the known Plan Changes consistent with those adopted in the initial transport assessment (Figure 3 below). Where the definition of a project is to upgrade a road corridor 'to the development boundary', the principle applied to the cost allowance is to extend the works to the furthest end of the development from the arterial road. More detail of the extent of each individual project is outlined in Section 3 below.

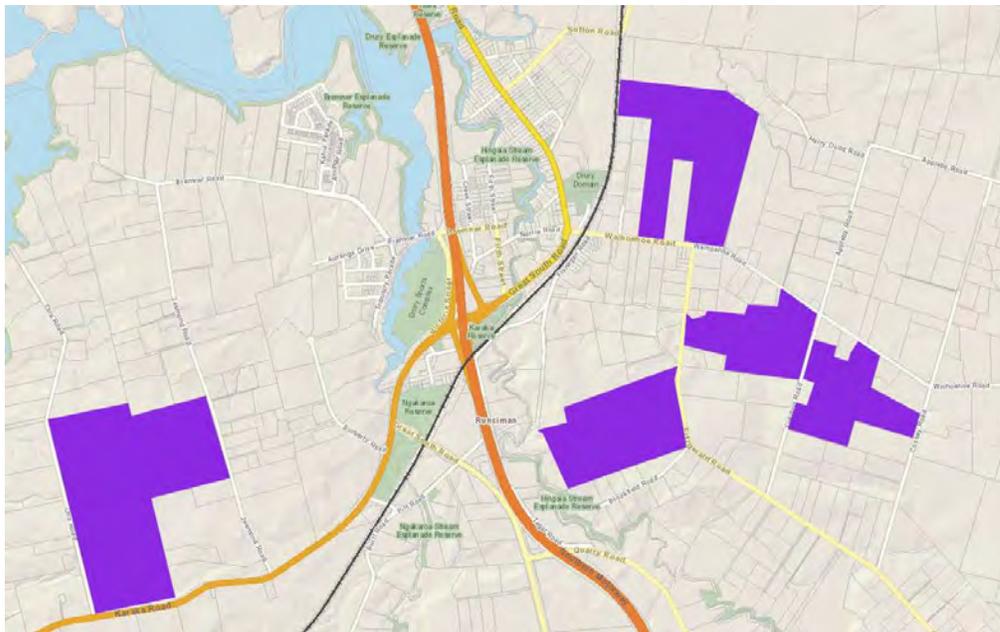


Figure 3: Assumed extent of development

2.1.2 Application of Drury Arterial Network DBC Cost Estimates

Cost estimates have been developed for the Drury Arterial Network DBC. These were based on the preferred solution included in the DBC and are sufficient to support the Notice of Requirement (NoR). The extent of the Drury Arterial Network is provided in Figure 4 below.

The cost estimates have been developed to a level appropriate for completing a business case for route protection, and are not at a sufficient level of detail to obtain funding for the pre-implementation phase. The cost estimates have not been based on any investigations or design detail (e.g. geotechnical investigations, retaining walls, bridge/ pile design, etc) and further design would be required to provide greater cost certainty. The estimates would also be subject to a 'Peer Review' or 'Parallel Estimate' process before funding for the next stage can be confirmed. Therefore it is envisaged that a subsequent 'Implementation DBC' will be prepared in future to secure design and implementation funding for the next phase. It is likely that projects will be implemented in conjunction with adjacent development and the final out-turn cost will depend on the level of development at that time and the extent of earthworks that would have been carried out (i.e. the pricing for the Drury Arterial Network DBC assumes that the existing greenfields environment will be in existence at the time, although this may not be the case).

The Cost Estimate Report from the Drury Arterials DBC is included in Appendix 1. This sets out the extent of each project included within each estimate, and provides a summary of the breakdown of costs for each project element. This report should be read in conjunction with the Drury Arterial Network drawings that were lodged with Council for the Notice of Requirement and are available on the Auckland Council website³.

The cost estimates for the Drury Arterial Network DBC have been developed based on a 2048+ scenario. This reflects the full arterial network buildout and does not take into account potential staging or interim works. Therefore, the cost estimates produced for the DBC can only be used directly where the projects in the DIFF programme are aligned with the scope and extent of the DBC projects.

In order to provide an indication of a cost allowance for DIFF projects, the costs in the Drury Arterial Network DBC have been proportioned based on relative length and/or scope. The detailed assumptions for each of the relevant projects is included in Section 3 below.

The DBE cost estimates developed for the Drury Arterial Network DBC were based on Version 1 of the CEM prior to the recent release. The 'Base Date' for the DBC estimates was July 2020 and escalation has not been applied. The detailed breakdown of the estimates is included in Appendix 2 (to be read in conjunction with the Drury Arterial Network Cost Estimate report included in Appendix 1)

³ <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-by-laws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/notices-of-requirement-to-designate-land/Pages/default.aspx>

2.1.3 Use of Generic Cross Sections

The DIFF programme includes a number of transport corridors that were not included in the Drury Arterial Network DBC and therefore no cost information was available. For these corridors, generic linear rates were developed and applied across the length of the projects (development of the generic rates is set out in Section 0 below).

The application of linear rates can be subjective and requires an assessment of potential project scope. As there is minimal scope definition for each of the projects, a number of assumptions have been made, which can have a significant impact on the overall cost allowance. An example of this is in relation to the condition of the existing pavement. Many of the roads in the Drury area are currently rural and are likely to have been designed for low traffic volumes. The ability of the existing pavement to accommodate the increase in traffic flows would require extensive pavement testing as well as a more detailed assessment of the volume of heavy vehicles likely to use the transport corridor. This assessment is expected to be carried out to inform the detailed design (or potentially the implementation DBC) when construction is imminent.

In the absence of any specific design, there are a number of other design elements that are unknown, each with varying degrees of influence on the overall cost allowance. These include (but are not limited to):

- Extent, height, and form of retaining walls
- Desired cross sectional elements
- Realignment/ protection of utility services
- Stormwater treatment requirements such as wetlands
- Pavement Design
- Extent of subgrade stabilisation

The assumptions applied to each individual project within the DIFF programme are set out in the respective cost descriptions included in Section 3 below.

2.2 Elements of Cost Allowances

The cost allowances have been developed to align with the requirements of the CEM and includes an assessment of the total sum of all the elements that make up the estimate. This value includes:

- Property Costs
- Project Development Phase
- Pre-Implementation Phase
- Implementation Phase Costs -Physical Works Costs
- Construction Management and supervision (MSQA)
- Environmental Compliance
- Traffic Management and Temporary Works
- Preliminary and General (P&G)

2.2.1 Property Costs

The property cost allowance is influenced by several specific elements that are difficult to quantify at a concept level.

- Value of the land (\$/m)
- Zoning of the land at the time of acquisition
- Extent of land that will need to be acquired
- Extent of land that could be temporarily leased during construction
- Duration of temporary lease for construction
- Opportunities for land to be vested in Council
- Public Works Act process (consultant and legal fees, etc)
- Compensation
- Injurious affection where there is an adverse effect on the land that will not be acquired

The basis of the cost allowances adopted for the specific projects included within the DIFF programme is set out in more detail in Section 2.4 below.

2.2.2 Client Managed Costs

Client managed costs are incurred throughout the project lifecycle and would vary depending on each project. Basic elements that make up Client Managed Costs include:

- **Reviews:** Economics Peer Review, Cost Estimate Peer Review / Parallel Estimate, Technical Peer Reviews, Constructability Review, O&M Review, Road Safety Audit
- **Investigations:** Geotechnical Investigations, Utility Location, Pavement Investigations
- **Third Party Physical Works:** Enabling Works such as utilities
- **Communications and Engagement:** Open Days, Production of Engagement Collateral, Iwi Engagement, Communications Consultant
- **Third Party Professional Services:** Procurement Support, Property acquisition support, Investigation and Design, Specialist Advisors, Legal Review, Engineer to Contract, etc
- **Consenting:** Council lodgement and hearing fees, Environment Court / EPA Costs, Legal Advice, Consent Monitoring by Council, Building Consent
- **Post Construction Monitoring:** Noise Monitoring, Traffic counts, speed surveys, consent conditions
- **Miscellaneous Costs:** Insurances, Procurement Disbursements, Statutory Compliance, Revocation costs

For the DIFF Programme, an allowance has been included for these costs at each phase for each project. As the scope of the project is yet to be determined, the specific requirements are as yet unknown, and therefore these allowances are based on an percentage of the physical works allowance.

Table 2: Allowances for Client Managed Costs

Phase	Description	Allowance % of Physical Works
Project Development	Preliminary Design, Implementation Business Case, Investigations, Engagement	2%
Pre-Implementation	Specimen/Detailed Design, Investigations, Statutory Applications	9%
Implementation	Procurement, Construction Monitoring and Supervision	6%

2.2.3 Physical Works

The physical works allowance includes both the construction costs for the project, as well as costs for setting up and managing the site. The allowances for physical works have been determined by the scope for each project as set out in Section 3 below. The additional components that are required for managing the site are:

- **Environmental Compliance:** Management of environmental compliance requirements, preparation and management of compliance management plans, construction of permanent erosion and sediment control measures, maintenance and monitoring, noise attenuation and earthworks bunds.
- **Traffic Management and Temporary Works:** Implementation of traffic management plans, public notification, lane changeovers, road diversions, temporary roads, plant, and equipment hire costs, temporary construction.
- **Preliminary and General (P&G):** Site establishment, operation, disestablishment, and clean-up; site management, bonds, and insurances, preparing and maintaining quality, health & safety, security, temporary erosion and sediment control, temporary traffic management plans, programming, and reporting.

The specific allowances that have been adopted for the DIFF programme are set out in the table below.

Table 3: Physical Works Allowances

Phase	Allowance % of Physical Works
Environmental Compliance	3%
Traffic Management and Temporary Works	2% - greenfields 13% - brownfields
Preliminary and General	22%

2.3 Unit Rates for Generic Cross sections

As set out in Section 2.1.3 above, there is minimal scope definition for each of the projects, so several assumptions have been made. In the absence of any specific design, there are a number of design elements that are unknown, each with varying degrees of influence on the overall cost allowance. Therefore, generic unit rates have been developed to inform the cost allowances. The basis for each of the rates is set out in this section.

These rates reflect the cost to be allowed for physical construction works only, excluding any allowance for Traffic Management, Environmental Compliance or P&G (additional allowances for these items are identified in Section 2.2.3 above). Client managed costs are also excluded from these linear rates (additional allowances identified in Section 2.2.2 above).

The detailed assumptions, quantities and rates used to develop these cost allowances are included in Appendix 3. The Base Date for these cost allowances is July 2021.

2.3.1 2-Lane Transport Corridor

The linear unit rate for construction of a new 2-lane corridor is based on the cost estimate prepared for the Ponga Road upgrade included within the Drury Arterial Network DBC. The cost estimate was based on a preliminary design, with specific quantities measured and costed. This was also independently Peer Reviewed (as set out in Section 0 below).

The Ponga Road upgrade project included a 24m wide transport corridor, with the typical cross section identified in Figure 5 below.



Figure 5: Typical Cross Section for Ponga Road included within the Drury Arterial Network DBC

As the Drury Arterial Network DBC was focussed on a future transport Network with construction beyond a 10-year period, there is little certainty around the scope. Therefore, specific assumptions were made in developing the DBC costs estimates. An example is the removal of the existing pavement. As site investigations have not been carried out, a conservative assumption is that the existing pavement will need to be removed, with potential stabilisation of the subgrade required.

The resultant physical works cost for the 2-lane Ponga Road Upgrade (excluding bridges, environmental compliance, temporary traffic management, and P&G) was determined to be \$9,290 per linear metre. However, the topography for the Ponga Road Corridor is generally level, so an additional 10% allowance was added for potential retaining walls that may be required in other projects.

The unit rate adopted for a 2-lane corridor is \$10,220 per linear metre.

2.3.2 Staged Construction of 4-lane Corridor

The Drury Arterial Network DBC has identified the future network for the area, which mostly involves provision of a 4-lane network with high quality bus services (Frequent Transit Network – FTN).

The transport network generally develops alongside adjacent land development. Therefore, staging can impact on the cost forecast, and in some instances, it will be preferable to construct a 2-lane transport corridor initially.

Interim 2-lane Transport Corridor

The concept would be to construct 2 lanes in the interim period such that the additional 2 lanes can be added in future without the need to reconstruct the pavement. An example of how this can be achieved is identified in Figure 6.

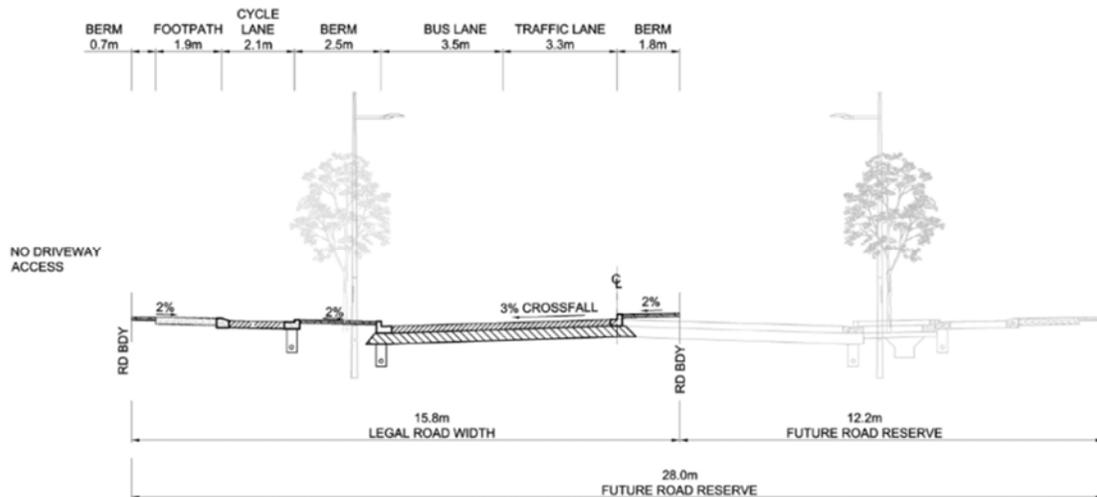


Figure 6: Indicative Cross section for interim 2-lane construction

A high-level cost estimate was prepared based on a typical linear metre length. This included rates for specific roading elements that could be expected in the road corridor. The resultant physical works cost for the interim 2-lane corridor was determined to be \$11,483 per linear metre as included in Appendix 3a (calculated at April 2021).

While this provides an indication of the cost, there are likely to be other contributing factors, such as retaining walls and additional earthworks. Therefore, an additional 10% allowance was added, and the unit rate adopted for a 2-lane interim corridor was \$12,630 per linear metre.

Extra over for future 4-lane corridor

There are many unknown factors that would influence the cost to upgrade an interim 2-lane corridor to a 4-lane corridor. This would depend on the extent of redundant works, and consistency with future requirements, as well as the ability to integrate with future land use. Therefore, a specific cost estimate has not been prepared for this scenario. Rather an allowance of \$5,000 per linear metre has been adopted.

This allowance reflects the fact that the earthworks are likely to have been carried out for the corridor, and the berm area is likely to have been completed on one side. Physical works would be limited to removal of an interim swale and footpath, site clearance, construction of a 2-lane pavement with associated kerb and channel, and formation of a new berm area with walking/cycling.

Therefore, the unit rate adopted for upgrading an interim 2-lane corridor to a 4-lane corridor was \$5,000 per linear metre.

2.3.3 4-lane transport corridor (greenfields)

Construction of a 4-lane transport corridor within a 'greenfields' environment would involve construction of a new pavement, where there is no existing pavement formation. While these projects wouldn't require removal of an existing pavement and infrastructure, they are likely to involve greater earthworks and ground improvements. To enable a consistent approach for cost allowances, the cost for a 4-lane transport corridor in a greenfields environment was developed based on the interim scenario set out in 2.3.2 above.

The assumption made was that the initial cost to construct an interim 2-lane corridor could be applied, together with a portion of the cost allocated to complete the future stage 4-laning. A 50% portion was adopted as this would reflect the savings that could be expected if the final project was constructed rather than being staged.

Therefore, the unit rate adopted for constructing a 4-lane corridor in a greenfields environment was \$15,130 per linear metre.

2.3.4 4-lane transport corridor (brownfields)

Construction of a 4-lane transport corridor within a 'brownfields' environment would involve removal of an existing pavement and associated infrastructure. They are also likely to involve relocation of services and integration with existing land use. In comparison with 'greenfields' construction, there is likely to be less earthworks and ground improvements.

The linear rate for a 4-lane transport corridor in a brownfields environment was developed from the cost estimate prepared for the State Highway 22 (SH22) project included within the Drury Arterial Network DBC. The resultant physical works allowance for a 4-lane corridor in a brownfields environment (excluding bridges, environmental compliance, temporary traffic management, and P&G) was determined to be \$14,080 per linear metre.

An additional 10% allowance was added for potential retaining walls, and therefore, the unit rate adopted for a 4-lane brownfields corridor was \$15,490 per linear metre.

2.3.5 Roadside Berm Construction (active modes)

In some circumstances, it may be feasible to retain the existing road pavement and limit construction works to the road berm, where upgraded pedestrian and cyclist facilities can be provided.

For these projects, it is assumed that the existing road edge is rural with side drains provided. The scope of works would include provision of a new kerb and channel, as well as provision of a more urbanised area with walking and cycling facilities and related infrastructure such as light poles. An indication of the typical cross section based on that developed for the Drury Arterial Network DBC is provided in Figure 7 below.

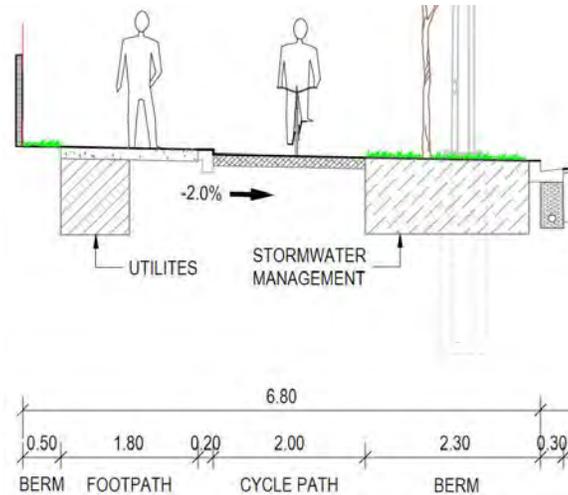


Figure 7: Indicative layout for walking and cycling facilities within the Berm area

A high-level cost allowance was prepared based on a typical linear metre length. This included rates for specific roading elements that could be expected in the road corridor, such as earthworks, provision of new kerb and channel and associated drainage, and utilities relocation. The resultant physical works cost to provide active modes in the berm was determined to be \$2,020 per linear metre as indicated in Appendix 3b (calculated at April 2021).

This cross section would apply where the adjacent topography is level. However, there are circumstances where the adjoining land is rolling or steep and retaining walls may be required to accommodate the new berm areas. To reflect these scenarios, the linear rate has been increased to reflect the larger amount of earthworks anticipated and the provision of a retaining wall. Two additional scenarios have been developed (Appendix 3c and 3d):

- i. Rolling terrain with 1.0m high retaining walls - \$2,850/m
- ii. Steep terrain with 2.0m high retaining walls - \$4,290/m

A further scenario has been identified where there may be a requirement to retrofit walking and cycling facilities to an existing urban berm area. The assumption here is that the existing kerb and channel can be remain in place, and all works occur within the existing berm. Minimal earthworks would be required with a new 2m cycleway and 1.8m footpath provided.

The resultant unit rate adopted for providing active mode facilities within an existing berm was \$960 per linear metre.

2.3.6 Generic Unit Rates

There are some design elements that are difficult to scope individually, although these will add costs to any project. This includes bridge construction and installation of new intersections. Where appropriate, the linear rates applied to each corridor (identified above) would need to be supplemented with additional allowances for intersections or bridges as these will affect the final cost allowance.

Based on experienced judgement from Quantity Surveyors, generic unit rates have been developed that can be applied in addition to the linear corridor rates where applicable. These rates are set out in Table 4 below. Application of these rates needs to be considered for each project within the DIFF programme.

Table 4: Generic Rates for Transport Elements

Description	Unit Rate
Bridge Construction	\$4,500/m ²
2-lane roundabout	\$2.5M
4-lane roundabout	\$4.5M
New signalised intersection – simple	\$2M
New signalised intersection – complex	\$4.5M

2.3.7 Summary of Generic Rates adopted for Diff Cost Allowances

A summary of the unit rates adopted for the DIFF programme is included in Table 5.

Table 5: Generic Rates adopted for Diff Cost Allowances

Ref	Description	Unit Rate
1	2-lane transport corridor	\$10,220/m
2	2-lane interim transport corridor	\$12,630/m
3	Extra over for future 4-lane corridor	\$5,000/m
4	4-lane transport corridor (greenfields)	\$15,130/m
5	4-lane transport corridor (brownfields)	\$15,490/m
6	Roadside Berm Construction – level topography	\$2,020/m
7	Roadside Berm Construction – rolling topography	\$2,850/m
8	Roadside Berm Construction – steep topography	\$4,290/m
9	Footpath Retrofit	\$960/m
10	Bridge Construction	\$4,500/m ²
11	2-lane roundabout	\$2.5M
12	4-lane roundabout	\$4.5M
13	New signalised intersection – simple	\$2M
14	New signalised intersection – complex	\$4.5M

2.4 Allowance for Property Costs

There were two approaches adopted for developing the property costs.

- Unit rates for area based on the land use at the time of development
- Proportional assessment or adoption of the Drury Arterial DBC Cost estimates.

2.4.1 Unit rates for area required for acquisition

Given the lack of scope and design for the DIFF programme, it is difficult to determine the actual land area required for each project. An assessment has been made on the final acquisition area to determine an allowance that can be used for property costs.

Where property costs were not available from the DBC, a standard cost per square metre based on expert valuation advice has been used. This uses a generic rate of \$175/m² for a Future Urban Zone. It is possible that the land cost will change as development occurs, and that at the time of construction, a greater level of development may have occurred. This will result in the cost allowances provided in this report being higher.

2.4.2 Costs based on Drury Arterials DBC

The property costs developed for the Drury Arterial Network DBC have been used to inform the property allowances to be included within the DIFF programme. The Drury Arterial Network DBC was developed to enable a Notice of Requirement (NoR) to be lodged for the future network. Therefore the property costs for the DBC were developed to provide a reasonable indication of the property liability that could be expected as a result of the designation. They were not developed for the purpose of property acquisition.

As the DIFF programme has been developed to reflect construction over time, there are a number of limitations on the accuracy of the property costs that can be achieved at this stage. The final property acquisition cost will depend on the following:

- The final design – this will determine the actual extent of land that will be impacted by the works.
- The construction method will determine the actual extent of land that will be occupied on a temporary basis (rather than fully acquired), and will be subject to a lease agreement over the period of the works.
- A Property Strategy will be prepared at the time of implementation to understand the impacts on each individual property, including site operations and commercial arrangements (e.g. lease agreements).
- If there is an adverse effect on the land that is retained following the works, there may be a requirement to provide additional compensation (e.g. injurious affection).
- Risk of loss of business or potential for business relocation
- There may be opportunities to integrate road construction with adjacent development, whereby land can be vested with Council.
- Opportunities to use easements for access rather than acquisition (e.g. culvert maintenance).

- Some properties may benefit from betterment – this will be considered at the time of formal acquisition when compensation under the PWA is considered.
- Changing land use – the value of property will vary depending on the underlying zoning, and as the costs for the DIFF programme are incurred over a period of time, an assumption needs to be made over the actual underlying land use (e.g. cost of property within a Future Urban Zone would cost more than rural zoned land).
- Property Escalation Rates

The property costs for the Drury Arterial Network DBC were prepared in July 2020 by the Auckland Transport Property team. These estimates included consideration of the following:

- Permanent/ Temporary occupation
- Land Use Zoning
- Injurious Affection
- PWA costs (s66 and s72 costs)
- Ancillary Costs

The property costs extracted from the DBC have not been escalated (i.e. they were prepared in July 2020 and were based on desktop valuation completed in December 2019).

2.5 Contingency and Risk Allowance

A contingency is required for cost estimation in accordance with the CEM and is added to the 'Base Estimate' to provide for uncertainty in relation to the estimate inputs and specific project related threats and opportunities with a cost impact. For the DIFF programme, the cost estimates have been developed using linear rates and proportional assessment of earlier cost estimates prepared for the Drury Arterial Network DBC. Therefore, they reflect a programme wide approach where the specific scope and extent of works is undefined, resulting in significant uncertainty in quantities. Therefore, the physical works cost allowances for the updated DIFF programme' include a 40% contingency, reflecting the uncertainty in the final form of the projects.

The property cost allowances for the updated DIFF programme include a 15% contingency for the property valuation and an additional 15% for the uncertainty in project scope. The factors influencing property cost and informing this contingency allowance are outlined in Section 2.4.2 above. The actual extent of land acquisition and temporary lease required for the programme will be determined as each project moves into the detailed design phase.

The costs reflect the Expected Estimate as defined in the CEM for a programme level Business Case (PBE).

2.6 Review and Verification

2.6.1 Drury Arterial Network DBC Cost Estimates

The cost estimates prepared for the DBC were subject to verification by an "independent" person within Te Tupu Ngātahi (i.e. separate from the originator) with appropriate skills and experience to undertake the activities required. This review process was approved by Waka Kotahi as construction funding was not being sought for the Drury Arterial Network projects.

The verification activities included the following:

- Gain a satisfactory understanding of the project to permit the verification to proceed.
- Review the estimate scope for adequacy and completeness.
- Check that a bulk quantity check has been carried out by a suitably experienced person.
- Review the appropriateness of the rates and prices used.
- Verify that an arithmetical check has been undertaken.
- If the project has similarities to previous projects, undertake comparisons of estimate outputs with known costs.
- Verify that the checklist has been worked through.
- Review the estimate inclusions and exclusions.

2.6.2 DIFF Cost Allowances

The process for reviewing the cost allowances prepared for the DIFF schedule involved a comparative test of the cost allocations based on experience. This review was carried out by qualified Quantity Surveyors working within Te Tupu Ngātahi. This included a review workshop with Alta Consulting to test and challenge the assumptions that were used to develop the cost allowances.

The following process was adopted:

- Review of quantities and rates that make up the generic rates
- Comparative review of the final unit rates that are to be applied to check consistency
- Review of the cost allowance spreadsheet
- Detailed review of a sample of the projects to check assumptions and applications
- Workshop to test comparative costs and assumptions for individual projects.

3 Basis of Specific Project Cost Allowances

Utilising the methodology set out in 2 above, this section sets out the assumptions that inform the cost allowances for each individual project included within the updated DIFF programme. For ease of reference, the section numbering relates to the reference numbering included within the DIFF programme and identified in the summary table.

1 - Great South Road Improvements: Waihoehoe Road to Drury Interchange

This project extends from the intersection with Waihoehoe Road to the Drury Interchange as shown in Figure 8. There are two stages proposed for this corridor:

- 1a. 2-lane urban- existing road layout with active modes on both sides
- 1b. 4-lane urban- existing road layout with active modes on both sides



Figure 8: Drury Locality Map – Great South Road, Waihoehoe Rd to Drury Interchange

1a - Interim Option: Existing 2-lanes with active modes provided

Scope Definition:

There has been no design carried out for provision of active modes in the existing environment. Therefore, linear rates are used to estimate the active mode upgrade for the existing 2-lanes.

The active mode facilities would extend from the Firth St intersection to the Waihoehoe Road intersection. The Papakura to Drury project being implemented as part of the New Zealand Upgrade Programme (NZUP) includes provision of a new cycle path on the western side of Hingaia Stream Bridge.

East of the Hingaia Stream bridge, the existing road is generally level with a wide pavement formation. For the interim option, it is assumed that the existing 2-lane road pavement would be retained, and the pavement would be cut with new kerb and channel provided. The berm area would accommodate a separated walking and cycling facility. The length of the upgrade would be 445m. This includes 40m long shared path bridges provided on each side of the existing Hingaia Stream bridge.

There is an existing large culvert that passes beneath Great South Road approximately 100m east of the Hingaia Stream Bridge. It is assumed that active mode facilities on south side can be provided without the need to extend the culvert.

The following cost allowances are included:

- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side (Section 2.3.5, reference 6 in Table 5). This has been applied over a length of 810m to reflect an upgrade to both sides of the road.
- New pedestrian bridge added to both sides of the Hingaia Stream Bridge. Each shared path bridge is 40m long and 3m wide.
- Signalisation of the Firth St intersection – included as a 'Simple Signalised intersection)

Property Cost Allowance Assumptions:

No property required in the Interim as footpaths can be provided within existing road corridor

1b - Future Option: 4-lane option with active modes provided

Scope Definition:

A cost allowance has been prepared for the 4-lane upgrade of this section of Great South Road (March 2020). This was based on measure and value of a set of preliminary design drawings prepared by Te Tupu Ngātahi.

As the condition of the existing pavement is unknown, the scope of the cost allowance included removal of the existing pavement and berm areas. The allowance also included demolition of the existing bridge over Hingaia Stream and construction of a new bridge 20m long by 25m wide. An allowance was also included for the upgrade of the Great South Road/ Waihoehoe Road intersection.

The cost allowance was based on a 4-lane upgrade with active modes from the existing layout. It has been assumed that a portion of the interim layout would be in the permanent position and would not need to be removed or reconstructed. Therefore, it is assumed that 60% of the cost of the full build out works would still be required to provide the final 4-lane scenario if an interim option were constructed.

Property Cost Allowance Assumptions:

The existing road corridor is approx. 28-30m wide which is sufficient to accommodate the future 4-lane corridor. Therefore, it is assumed that no property acquisition would be required for these works.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
1a	GSR improvements - Waihoehoe Rd to Drury Interchange	Interim	0	0.2	0.8	1	9	11
1b	GSR improvements - Waihoehoe Rd to Drury Interchange	Ultimate	0	0.3	1.3	1	14	16

2 Great South Rd Improvements: Waihoehoe Rd to Drury School

This project extends from the intersection with Waihoehoe Road, north to the Drury School as shown in Figure 9. There are two stages proposed for this corridor:

- 2a. 2-lane urban- existing road layout with active modes on both sides
- 2b. 4-lane urban- existing road layout with active modes on both sides



Figure 9: Drury Locality Map – Great South Road: Waihoehoe Rd to Drury School

2a - Interim Option: Existing 2-lanes with active modes provided

Scope Definition:

There has been no design carried out for provision of active modes in the existing environment. Therefore, linear rates are used to estimate the active mode upgrade for the existing 2-lanes.

The active mode facilities would extend from the Waihoehoe Road intersection to the northern boundary of the Drury School site, approximately 600m. The existing berm width varies considerably along this length and is generally between 2m and 5m in width.

Therefore, it is not considered reasonable to provide a high-quality active mode corridor within the existing berm area, and it is assumed that the existing kerb and channel would need to be removed and a new drainage system installed. This would require the road cross section to be reduced to avoid land acquisition.

The following cost allowances are included:

- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side (Section 2.3.5, reference 6 in Table 5). This has been applied over a length of 1200m to reflect an upgrade to both sides of the road.
- Signalisation of the Great South Road/ Waihoehoe Road intersection – included as a 'Simple Signalised intersection'

Property Cost Allowance Assumptions:

As an interim option, it is assumed that property acquisition would be avoided. This would require a reduction in road width and installation of kerb and channel. Therefore, it is assumed that all works can be accommodated within existing boundary and no land acquisition would be required.

2b - Future Option: 4-lane option with active modes provided

Scope Definition:

There has been no design carried out for provision of a 4-lane corridor with active modes. Therefore, linear rates are used.

As the condition of the existing pavement is unknown, the scope of the estimate included removal of the existing pavement and berm areas. An allowance was also included for the further upgrade of the Great South Road/ Waihoehoe Road intersection.

The following cost allowances are included:

- Linear rate for '4-lane transport corridor brownfields' for the reconstruction of the existing road and provision of a full width 4-lane corridor with active modes on each side (reference 5 in Table 5). This has been applied over the full length of 600m.
- Upgrade of the Great South Road/ Waihoehoe Road intersection which was signalised as part of the interim works – included as a 'Simple Signalised intersection'

Property Cost Allowance Assumptions:

The extent of property acquisition along the length would vary. An assessment of the areas has been made to identify the area that should be allowed for acquisition.

- Existing cross section is 20m at southern end. Assume that 4m would be required from each side over a length of 380m up to East Street (i.e., 3,040m²)
- Existing Cross section north of East Street is 25m wide. Assume that 3m would be required over a length of 70m (210m²)
- Existing Cross Section is 20m up to school's northern boundary. Assume 8m acquisition over length of 170m (1,360m²)

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
2a	GSR improvements - From Drury School to Waihoehoe Rd	Interim	0	0.2	0.8	0.5	9	10
2b	GSR improvements - From Drury School to Waihoehoe Rd	Ultimate	1.8	0.4	2.0	1.3	22	28

3 SH22 Great South Road/Karaka Rd Intersection Upgrade

This project includes an upgrade of the intersection and provision of an active mode facility as shown in Figure 10.



Figure 10: Drury Locality Map – SH22 Great South Road/ Karaka Road intersection

The cost includes an allowance to signalise the existing intersection including active mode upgrade and provides additional turn lanes. There has been no design for this specific project. On the basis that this intersection is currently rural and unsignalised, with no existing active mode facilities, the elemental cost for a complex signalisation project has been allowed for (reference 13 in Table 5)..

Property Cost Allowance Assumptions:

The existing road reserve is wide in this location. Therefore, it is assumed that signalisation can occur within the existing road corridor available, and no property acquisition is required.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
3	Intersection upgrade on GSR/Karaka Rd intersection	Ultimate	0.0	0.1	0.4	0.2	4	5

4 Waihoehoe Rd Upgrade: Fitzgerald Rd to Cossey Rd

This project extends from the intersection with Fitzgerald Road, to the end of the proposed development boundary, west of Cossey Road (as shown in Figure 11). This covers a length of approximate 900m. The assumed development boundary is outlined in Section 2.1.1 and indicated in Figure 12 below.

There are two stages proposed for this corridor, as well as the cost for initial full construction:

- 4 Full final 2 lane corridor with active modes built straight away
- 4a. Interim active modes upgrade
- 4b. Upgraded 2-lane corridor with separated active mode facilities on both sides (24m corridor)



Figure 11: Drury Locality Map – Waihoehoe Rd Upgrade: Fitzgerald Rd to Cossey Rd



Figure 12: Extent of Development Boundary on Waihoehoe Road

4 - Full Construction Option: Final 24m 2-lane corridor with active modes

Scope Definition:

The existing transport corridor is 20m wide. The Drury Arterials network includes a future upgrade of the corridor to a 24m corridor with 2 lanes and a high-quality active mode connection. The extent of the Waihoehoe Road East upgrade included in the Drury Arterials DBC is from a point approximately 150m east of the Fitzgerald Road intersection to Drury Hills Road in the east, being a total length of 1.8km (Figure 13).

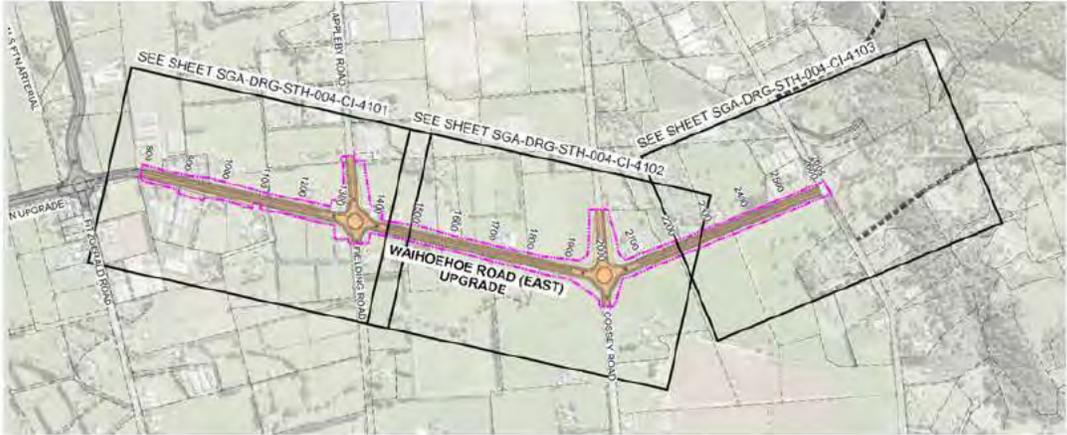


Figure 13: Extent of Waihoehoe Road East Upgrade included in the Drury Arterial Network DBC

The section of Waihoehoe Road that would be upgraded in line with development extends for a length of 900m (as identified earlier in this section). This represents 50% of the total length included in the Drury Arterial Network Business Case, and a proportional cost allowance would equate to 50% of the DBC cost. However, the scope of the recommended option in the business case included a major upgrade of the Appleby intersection to accommodate a roundabout. This adds significant cost, and therefore it is considered that an allowance of 45% would better reflect the scope of the western section.

The base cost for the physical works for the Waihoehoe Road East upgrade was determined to be \$39.9M (as set out in in the Cost Estimate Summary Form for 'Segment 10' included in Appendix 1). Therefore, the physical works cost for this project has been assumed to be \$15.2M.

Property Cost Allowance Assumptions:

The cost estimate prepared for the detailed business case reviewed the specific impacts on land, including temporary use and permanent acquisition. The total area impacted by the designation was determined to be approximately 23,000m², with a resultant cost of \$9.4M (excluding contingency, risk, and escalation). The total area identified for permanent acquisition was determined to be approximate 6,300m².

4a - Interim Staged Option: active mode upgrade

Scope Definition:

This project is based on upgrading active mode facilities along the existing corridor, which is approximately 20m wide. There has been no design carried out for provision of active modes in the existing environment. Therefore, linear rates are used to estimate the cost allowance for provision of active modes.

The active mode facilities would extend from the Fitzgerald Road intersection to the western boundary of the proposed development, approximately 1000m. The existing berm is generally level and the width from the property boundary to the sealed road is about 6.5 – 7.0m. Therefore, it is assumed that active the generic active mode berm area can be accommodated in conjunction with the installation of kerb and channel along the length.

As this is an interim measure, there has been no allowance for upgrading intersections, and it is assumed that they would remain as priority controlled intersections. IT is expected that appropriate crossing treatments will be provided at the intersections.

The following cost allowances are included:

- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side (Section 2.3.5, reference 6 in Table 5). This has been applied over a length of 2000m to reflect an upgrade to both sides of the road.

Property Cost Allowance Assumptions:

The intent of this option is to retrofit active mode facilities within the existing road corridor. As an interim option, it is assumed that property acquisition would be avoided. Therefore, it is assumed that all works can be accommodated within existing boundary and no land acquisition would be required.

4b - Future Option: 4-lane option with active modes provided

This option would require a shift in the road to the north to accommodate high quality active mode facilities on both the north and south side of the road. It is assumed that the berm area on the southern side, including kerb and channel has been constructed in its final form, so is not required for this final construction. Therefore, works are limited to the reconstruction of the pavement and formation of the berm area on the northern side to an overall width of 24m.

The intersection of Waihoehoe Road/ Fielding Road/ Appleby Road will be upgraded to form a single lane roundabout.

It is assumed that the works will involve construction of a new 2-lane corridor in a brownfields area with active modes provided on the berm areas. Therefore, the elemental cost for a 2-lane transport corridor has been allowed for (reference 1 in Table 5 above). As the berm area on the southern side is assumed to have been constructed as part of the interim option, a 20% reduction in this rate has been applied to the costs.

An allowance for a single lane roundabout at the Waihoehoe Road/Appleby intersection has also been included (reference 11 in Table 5 above).

The property cost allowed for this option is as set out for option 4 above.

Property Cost Allowance Assumptions:

Property as per SGA for each property along the north side of this section - both temporary and permanent

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
4a	Waihoehoe Rd East upgrades - from Fitzgerald Rd to before Cossey Rd (development boundary)	Interim	0.0	0.1	0.6	0.4	7	8
4b	Waihoehoe Rd East upgrades - from Fitzgerald Rd to before Cossey Rd (development boundary)	Ultimate	12.3	0.4	1.8	1.2	20	35
4	Waihoehoe Rd East upgrades - from Fitzgerald Rd to before Cossey Rd (development boundary)	Ultimate	0.0	0.5	2.3	1.5	25	29

7 Fitzgerald Rd upgrades

This project includes an upgrade of the existing Fitzgerald Road corridor to a 2-lane urban environment with walking and cycling facilities on both sides of the road. The extent of the project is from Waihoehoe Rd to the first stage development boundary north of Brookfield Road (as shown in Figure 14) This covers a length of approximate 600m. The assumed development boundary is outlined in Section 2.1.1 and indicated in Figure 12 below.



Figure 14: Drury Locality Map – Fitzgerald Road Upgrade



Figure 15: Extent of Development Boundary on Fitzgerald Road

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade has been allowed for (reference 6 in Table 5 above).

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
7	Fitzgerald Rd upgrades (from Waihoehoe Rd to development boundary)	Ultimate	0.0	0.1	0.4	0.3	5	6

8 Fielding Road upgrade

This project includes an upgrade of the existing Fielding Road corridor to a 2-lane urban environment with walking and cycling facilities on both sides of the road. The extent of the project is from Waihoehoe Rd to the first stage development boundary. The assumed development boundary is outlined in Section 2.1.1 and as indicated in Figure 12. This covers a length of approximate 600m.



Figure 16: Drury Locality Map – Fielding Road Upgrade

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade has been allowed for (reference 6 in Table 5 above).

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
8	Fielding Rd upgrades (from Waihoehoe Rd to development boundary)	Ultimate	0.0	0.1	0.4	0.3	5	6

9 Great South Rd/ Waihoehoe Rd/ Norrie Rd Intersection

This project includes an upgrade of the intersection and provision of an active mode facility. The location of the intersection is shown in Figure 10.

There are two stages proposed for this corridor

- 9a. Upgrade of the existing roundabout to traffic signals
- 9b. Upgraded of the interim signalised intersection to accommodate future growth



Figure 17: Drury Locality Map – Great South Rd/ Waihoehoe Rd/ Norrie Rd intersection

9a - Interim Signalisation of existing intersection

Scope Definition:

The scope of these works would involve the full signalisation of the intersection in its current location. Additional traffic lanes would be required on all approaches, requiring greater pavement area. The intersection would include full pedestrian/ cycle phasing on all legs of the intersection.

As the existing intersection is a roundabout, it is assumed that the full intersection would need to be demolished and the pavement for the signalised intersection totally reconstructed. Traffic signal infrastructure such as ducts and cables would need to be provided as well as signal poles and new lighting.

For the interim signalisation, it is assumed that the existing rail over bridge on Waihoehoe Road would remain as is, with the additional lanes tapering into the bridge width.

Given the extent of works, an allowance has been made for a 'complex' signalisation (reference 14 in Table 5 above).

Property Cost Allowance Assumptions:

It is assumed that the installation of signals will impact on adjacent property on the southeastern corner of the intersection. Land acquisition will be required to accommodate the 6-lane approach proposed. This would only be required temporarily for final layout, although acquisition would be required in the interim as the position of the final intersection would be further to the north.

The area required for the interim signals is estimated to be 515m².

9b Upgrade of the signalised intersection to align with future growth

Scope Definition:

The location of the future intersection is positioned further to the north to align with the construction of a new bridge on Waihoehoe Road over the rail line. To enable traffic on Waihoehoe Road to remain operating, a new bridge will need to be constructed on the northern side of the existing bridge. This results in the additional pavement for the intersection being required on the north side of the interim signalised intersection.

Further, additional traffic lanes will be required to accommodate the future traffic demands and for the Frequent transit Bus route. Norrie Road will also undergo a major upgrade, with 4-traffic lanes provided on the approach.

The access for Tui Road will need to be realigned to connect directly with Great South Road. The costs for this have also been included in the estimate.

The extent of the works included in the DBC estimate is indicated in Figure 18 below.

A cost estimate was prepared for the upgrade of the intersection as part of the Detailed Business Case for the Drury Arterials project (estimate dated 27 July 2020). Based on a measure of quantities from that DBC, the physical works cost was determined to be \$6.3M.

As this cost was developed based on the existing roundabout still being present, there are likely to be some cost savings associated with the construction of the interim signals. Therefore, it was assumed that 30% of the cost can be offset from retaining existing infrastructure works. This reflects the fact that the intersection will need to be repositioned to the north in line with the new bridge over the rail line, increased pavement on the approaches and the realignment of Tui St.

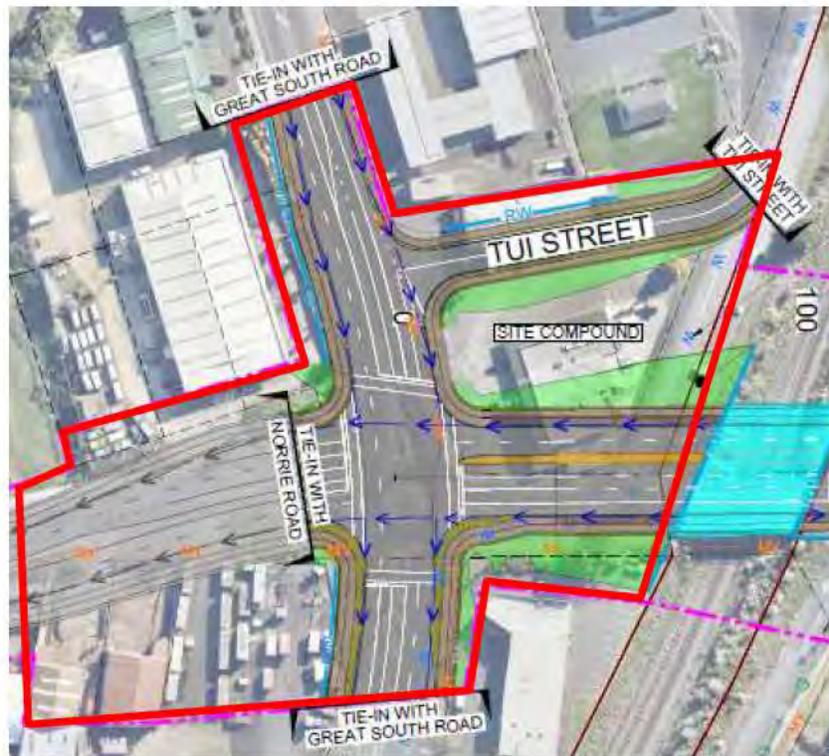


Figure 18: Extent of Works for Great South Road intersection

Property Cost Allowance Assumptions:

There will be additional land required to accommodate the final form of the intersection, particularly on the eastern side of the intersection. The cost of each property was evaluated during the DBC phase, in accordance with the methodology set out in Section 2.4 above. For this intersection, the total property cost evaluated from the DBC has been adopted.

Signals will impact on adjacent property on the southeastern corner. Land acquisition will be required to accommodate the 6-lane approach proposed. This was only required temporarily for final layout, although would be required in the interim.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
9a	Upgrade in Norrie Rd/GSR/Waihoehoe Intersection	Interim	0.3	0.2	0.8	0.5	9	11
9b	Upgrade in Norrie Rd/GSR/Waihoehoe Intersection	Ultimate	7.0	0.1	0.6	0.4	6	14

10 Waihoehoe Road/ Fitzgerald Road intersection

This project includes an upgrade of the intersection and provision of an active mode facility. The location of the intersection is shown in Figure 19.

There are two stages proposed for this corridor

- 10a. Upgrade of the existing priority intersection to a signalised intersection
- 10b. Upgrade of the interim signals to a multilane roundabout to accommodate future growth

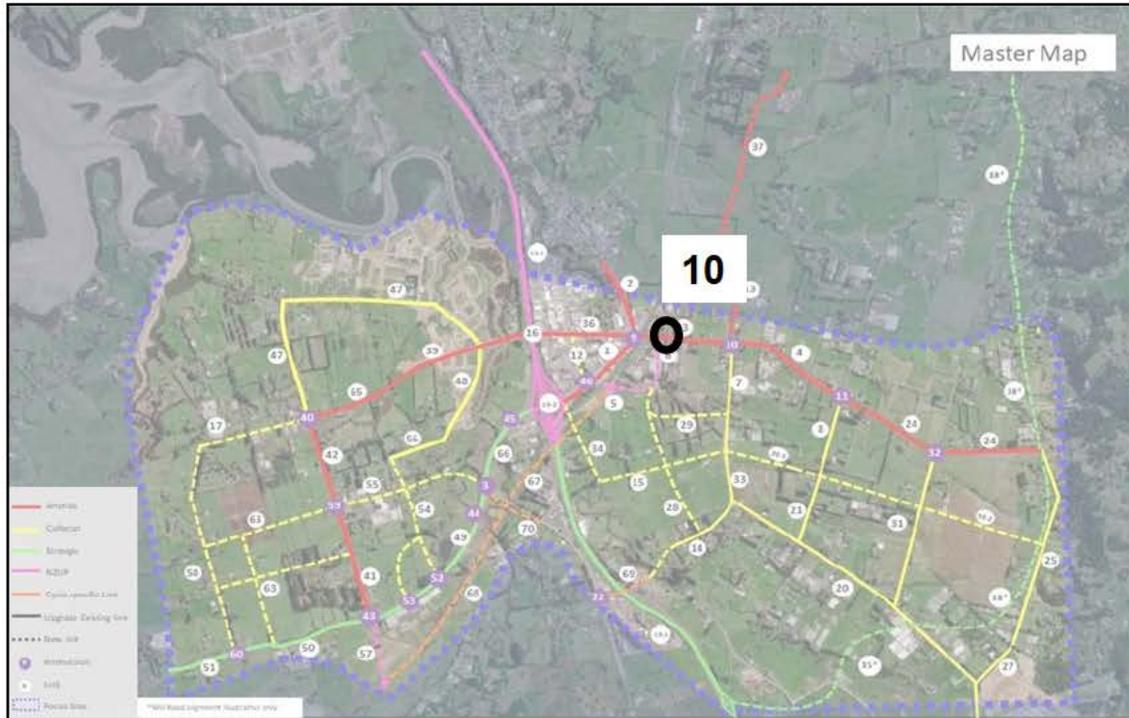


Figure 19: Drury Locality Map – Waihoehoe Rd/ Fitzgerald Rd intersection

10a Interim Signalisation of existing intersection

Scope Definition:

The scope of these works would involve the signalisation of the intersection in its current location. Additional traffic lanes would be required on all approaches, requiring greater pavement area. The intersection would include full pedestrian/ cycle phasing on all legs of the intersection.

As the existing intersection is a rural crossroads, it is assumed that the scope would involve the provision of additional lanes on the approaches, and traffic signal infrastructure such as ducts and cables would need to be provided as well as signal poles and new lighting.

Given the extent of works, an allowance has been made for a 'simple' signalisation (reference 13 in Table 5 above).

Property Cost Allowance Assumptions:

It is assumed that the installation of signals will generally be constructed within the existing road reserve. However, the land on the northern side of the intersection forms part of the Oyster Capital development, and some additional land would need to be acquired on the northern side to accommodate the new connection, turning lanes and active modes into the new Collector road

The area required for the interim signals is estimated to be 3,300m².

10b New multilane roundabout to replace interim signals

Scope Definition:

The scope of these works would involve conversion of the interim signals into a future multilane roundabout with active mode crossings (including approach cross-sections). This would involve remove of the traffic signal infrastructure and creation of a new central roundabout with new pavement for the circulating lanes.

A cost estimate was prepared for the upgrade of the intersection as part of the Detailed Business Case for the Drury Arterials project. Based on a measure of quantities from that DBC, the physical works cost was determined to be \$8.7M. The extent of works for this cost estimate include the approach roads as indicated in Figure 20 below.

The scope of this project involved the conversion of the existing rural crossroads intersection to a full multilane roundabout, and therefore it is considered that there would be some cost savings resulting from the interim signalisation construction. Therefore, it was assumed that 20% of the cost can be offset from retaining existing infrastructure works, such as the pavement for the approach lanes (i.e., 80% of the DBC cost was allocated to this project).



Figure 20: Extent of Cost Estimate for the Drury Arterials DBC

Property Cost Allowance Assumptions:

Construction of a roundabout would require land to be acquired from the southern side of the intersection. Therefore, the total property included in the DBC, less the cost to acquire the northern land for the interim option was used for the future upgrade (Section 11 included in Appendix A)

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
10a	New intersection on Waihoehoe Rd/Fitzgerald Rd (including approach cross-sections)	Interim	1.1	0.1	0.4	0.2	4	6
10b	New intersection on Waihoehoe Rd/Fitzgerald Rd (including approach cross-sections)	Ultimate	1.6	0.3	1.2	0.8	14	18

11 Waihoehoe Rd/Fielding Rd/Appleby Rd Intersection upgrade

This project includes an upgrade of the existing priority-controlled intersection to a single lane roundabout with walking and cycling facilities. The elemental cost for a 2-lane roundabout has been allowed for (reference 11 in Table 5 above).



Figure 21: Drury Locality Map – Fielding Road Upgrade

Property Cost Allowance Assumptions:

Construction of a roundabout will require permanent acquisition of land from the adjoining corner properties. The total area required has been calculated to be 3,435m². This includes land that may be required on the approach roads, particularly Appleby Road.

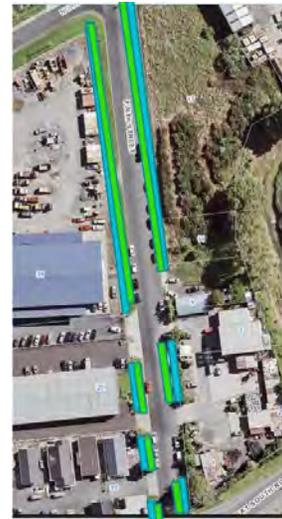
Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
11	Intersection upgrade Waihoehoe Rd/Fielding Rd/Appleby Rd	Ultimate	1.7	0.1	0.4	0.3	5	8

12 Walking, cycling and bus connections within Drury Centre

The purpose of this project is to provide an interim improvement to the walking and cycling connections within the existing Drury Network from Bremner Road in the west to Great South Road intersection in the south. The extent of works is from the Creek Street intersection, along Bremner Road, south down Firth St to the Great South Road intersection. The works include provision of a 1.8m footpath and a 2.0m unidirectional cycleway on each side of the road (670m total length), as well as signalised upgrades to the following intersections with improved walking and cycling facilities provided:

- Bremner Road/Norrie Road
- Firth Street/ Norrie Road
- Firth Street/ Great South Road



• Legend:

- 1.8m footpath -
- 2.0m cycleway

Property Cost Allowance Assumptions:

All these interim upgrade works can be carried out within the existing road reserve, and therefore not allowance for property acquisition is provided.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
12	Interim walking, cycling and bus connections within Drury Centre (includes Bremner/Norrie/Firth Intersection upgrades, active mode on Norrie) -overlap with project 36 and 46	Interim	0.0	0.3	1.2	0.8	13	15

13 N-S Ōpāheke Arterial (Southern Extent)

This project involves the construction of a new arterial extending north from the Waihoehoe Road / Fitzgerald Road intersection. The project extends over a length of 550m up to Waihoehoe Stream. The location of the intersection is shown in Figure 22.

There are two stages proposed for this corridor

- 13a. Interim 2-lane upgrade
- 13b. Future 4-lane Frequent Transit Corridor



Figure 22: Drury Locality Map – Ōpāheke N-S Arterial (Southern Extent)

13a Interim 2-lane Urban Arterial

Scope Definition:

The scope of these works would involve the construction of a new 2-lane urban arterial with active modes on both sides. It is assumed that the 2-lane corridor would be constructed to enable a 4-lane upgrade to be constructed in future (reference 2 in Table 5 above). Signalisation of the Waihoehoe Road intersection has also been included as that would be required for a new arterial to safely connect. The intersection would include full pedestrian/ cycle phasing on all legs of the intersection.

Property Cost Allowance Assumptions:

Construction of a new arterial will require permanent acquisition of land along the full corridor. It is assumed that the future land requirement for the full 4-lane corridor is acquired at the interim stage. The total area required has been calculated to be 43,800m².

13b N-S Ōpāheke Arterial across development (up to Waihoihoi Stream)

Scope Definition:

The scope of these works would involve the construction of 2 additional traffic lanes (over the length of 550m) to accommodate the future bus network (FTN). These would be constructed in the centre of the road where sufficient width had been left from the interim works (reference 3 in Table 5 above for works over and above the 2-lane construction to provide for 4 lanes). Therefore, works are limited to formation of the new pavement, provision of a median, and associated intersection upgrades along the corridor. There would also be a further upgrade to the signals at the Waihoehoe Road/ Fitzgerald Road intersection.

Property Cost Allowance Assumptions:

As it is assumed that the property required for the full 4-lane corridor has already been acquired, there is no further allocation of property included in the future construction of additional lanes for the FTN.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
13a	N-S Opaheke Arterial across development (upto Waihoehoe Stream)	Interim	13.0	0.3	1.4	1.0	16	32
13b	N-S Opaheke Arterial across development (upto Waihoihoi Stream)	Ultimate	0.0	0.2	0.8	0.6	9	11

14 Brookfield Road Upgrade

This project provides a 2-lane urban connection along Brookfield Road connection Fitzgerald Road in the east with Quarry Road it the west. The works involve an upgrade of the existing section of Brookfield Road with active modes on both sides, along with associated intersection improvements. A new connection across the stream to Quarry Road is also required.

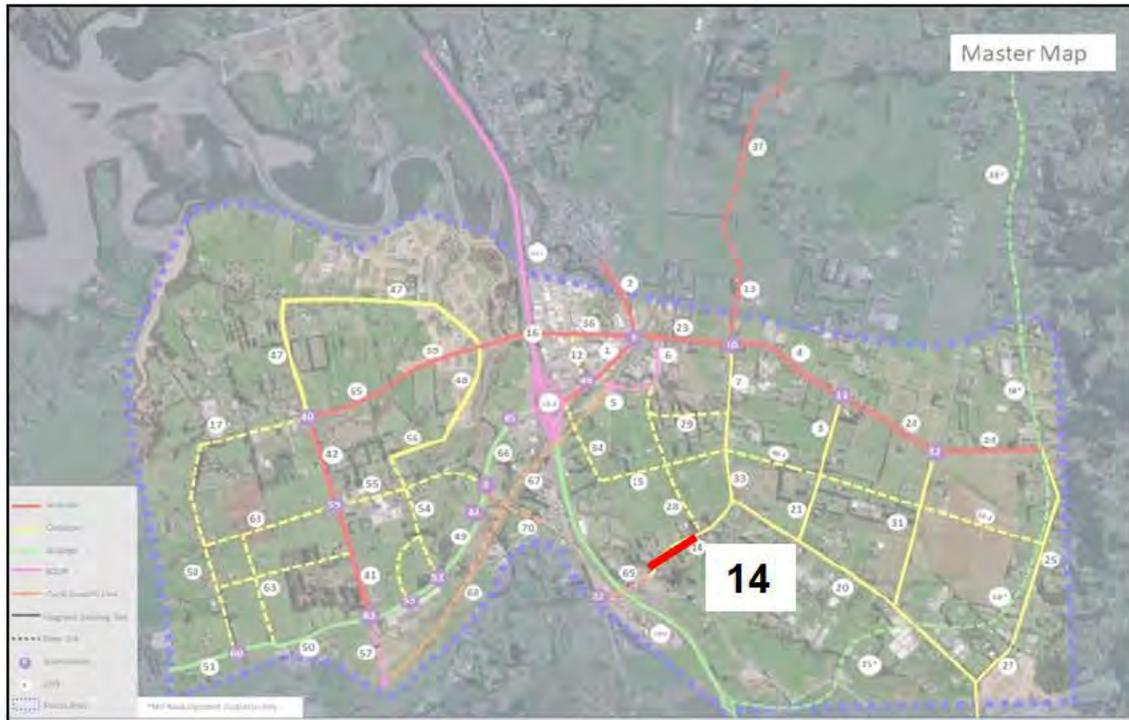


Figure 23: Drury Locality Map – Brookfield Road Upgrade

The scope includes a full reconstruction of the existing section of Brookfield Road (520m), and provision of a 20m urban cross section. The total length of road has been measured to be 750m, including a 50m section of new bridge (18m wide). A new signalised intersection would be provided at the Quarry Road intersection and at the Fitzgerald Road intersection.

The cost allowance has been developed using a Brownfields 2-lane rate (reference 1 in Table 5 above) over a length of 700m, and a 2-lane bridge at 50m long x 18m wide (reference 10 in Table 5 above). An allowance for the simple upgrade of 2 signalised intersections has also been included.

Property Cost Allowance Assumptions:

Properties need to be acquired to complete a new connection between Quarry Rd and Brookfield Rd. It is assumed that the existing Brookfield Road corridor is wide enough to accommodate future road,

so no land acquisition to accommodate 20m cross section. While land is not required for the existing section of Brookfield Road, construction of a new arterial at the western end will require permanent acquisition of land. It is assumed that the total area required has been calculated to be 16,600m².

14a Brookfield Road Upgrade – Western Tie in with Quarry Road

This project provides a 2-lane urban connection at the western end of the New Brookfield Road link where the road alignment crosses the stream. The works involve a new connection across the stream to Quarry Road with active modes on both sides, is also required.



The total length of road has been measured to be 120m, including a 50m section of new bridge (18m wide). A new signalised intersection would be provided at the Quarry Road intersection.

The cost allowance has been developed using a Brownfields 2-lane rate (reference 1 in Table 5 above) over a length of 70m, and a 2-lane bridge at 50m long x 18m wide (reference 10 in Table 5 above). An allowance for the simple upgrade of a signalised intersection has also been included.

Property Cost Allowance Assumptions:

Properties need to be acquired to complete new connection between Quarry Road and Brookfield Road. Construction of a new arterial at the western end and bridge connection will require permanent acquisition of land. It is assumed that the total area required has been calculated to be 3,350m².

14b Brookfield Road Upgrade – Existing corridor

This project provides a 2-lane urban upgrade to the existing section of Brookfield Road, to tie in with the new connection outlined in Section 14a above where the road alignment crosses the stream. The total length of road has been measured to be 630m.

The cost allowance has been developed using a Brownfields 2-lane rate (reference 1 in Table 5 above) over a length of 630m.

It is assumed that the existing Brookfield Road corridor is wide enough to accommodate future road, so no land acquisition to accommodate 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
14	Upgrade Brookfield Road from Fitzgerald to Quarry Rd+ New connection + Intersections on Quarry & Fitzgerald	Ultimate	4.9	0.6	2.7	1.8	30	40
14a	Western end of Brookfield Road Extension tie in with Quarry Rd	Ultimate	1.2	0.3	1.2	0.8	13	17
14b	Brookfield Road Upgrade	Ultimate	3.9	0.3	1.5	1.0	17	24

15 New East-West collector road from Fitzgerald Rd

This project provides a new 2-lane urban connection extending west from Fitzgerald Road to tie in with a new road connecting to the Drury Central Station. The works involve formation of a new collector road in greenfields environment, with active modes on both sides. A new roundabout is proposed on Fitzgerald Road, and also a new intersection to serve a future collector road running

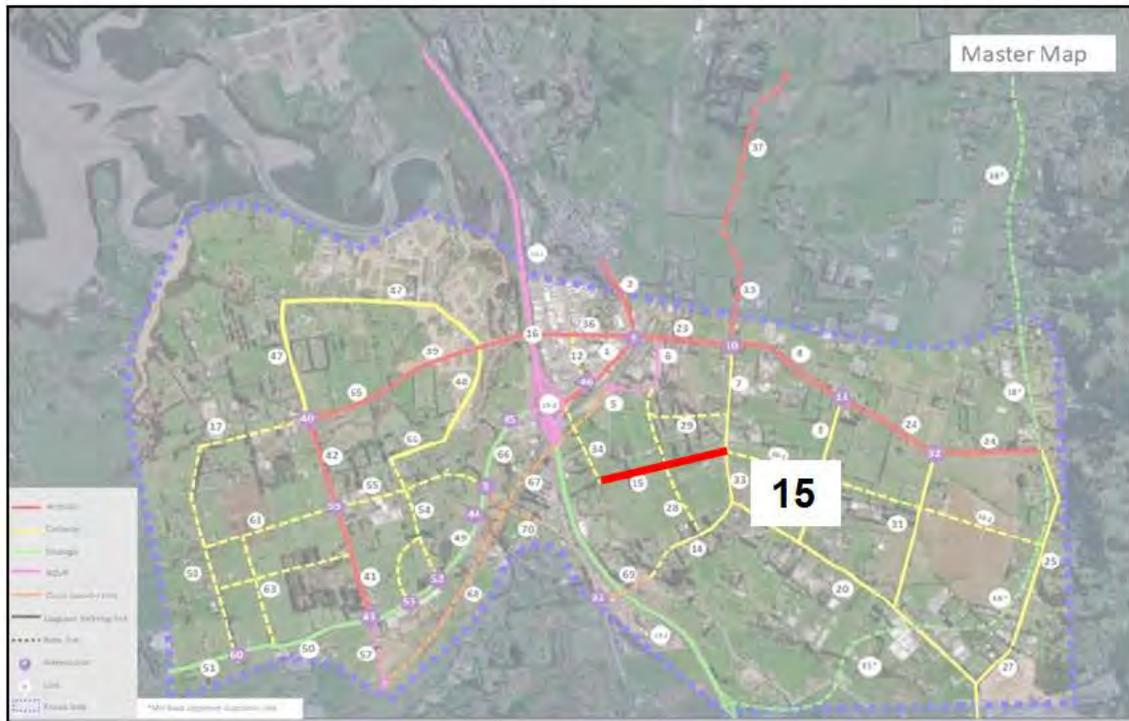


Figure 24: Drury Locality Map – New East West Collector Road, east of Fitzgerald Road

The scope includes construction of a new 2-lane road over a length of 700m. A small roundabout is proposed at the Fitzgerald Road connection and at a potential future tie in with another collector road about halfway along the corridor. The cost allowance has been developed using a Brownfields 2-lane rate (reference 1 in Table 5 above) over a length of 700m, and two small 2-lane roundabouts (reference 11 in Table 5 above). An allowance for the simple upgrade of 2 signalised intersections has also been included.

Property Cost Allowance Assumptions:

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for a 700m long road with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
15	New Collector road E-W from Fitzgerald Rd (collector 1) + Intersections	Ultimate	4.0	0.4	2.0	1.3	22	29

16 Bremner Road Bridge over State Highway 1

The Bremner Road bridge over State Highway 1 (SH1) is currently being replaced with a new 2-lane bridge as part of the NZ Upgrade Programme (NZUP). This project involves the widening of the bridge to four lanes to provide for a Frequent Transit Network (FTN) following completion of the current NZUP project.



Figure 25: Drury Locality Map – Bremner Road Bridge over SH1

The extent of works for this project is limited to widening of the existing bridge over a length of 60m with an allowance for reconstructing the road between Victoria Street in the west and Creek Street in the east (a total of 100m). It is assumed that the current bridge is being designed so that future widening is feasible.

The existing road is only 2-lanes, and it is assumed that a full reconstruction will be carried out over a 100m length to upgrade the road to 4-lanes with associated walking and cycling facilities. Therefore, the rate for a 4-lane road in a brownfields environment has been used to determine this cost allowance (reference 5 in Table 5 above).

Property Cost Allowance Assumptions:

To enable this, a portion of the property on the southeastern corner of the bridge would need to be acquired. No property would be required on north side of Bremner Road as works on this side would have been constructed as part of stage 1. The cost allowance has been based on the property assessment carried out as part of the Drury arterials DBC.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
16	Widen Bremner Road Bridge ove SH1 to 4-lanes	Ultimate	0.7	0.2	0.8	0.5	8	11

17 New Collector Road from Oira Road to Jesmond Road

This project provides a new 2-lane urban connection extending west from Jesmond Road to tie in with Oira Road in the west. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.

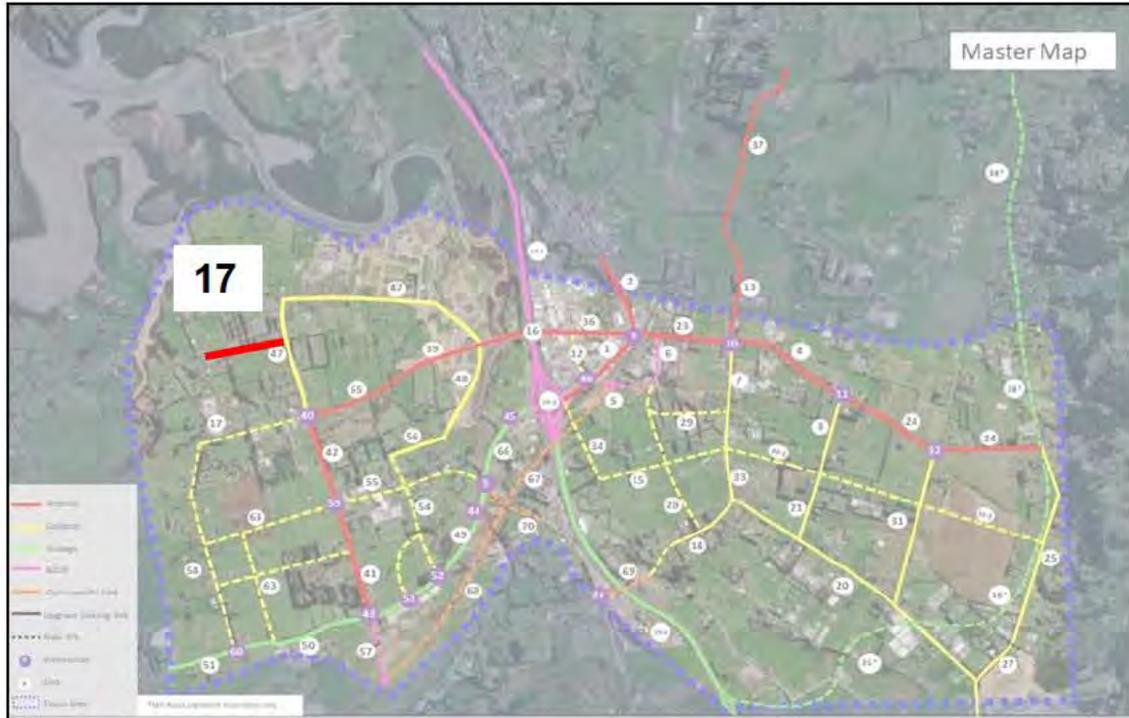


Figure 26: Drury Locality Map – New Collector Road between Oira Road and Jesmond Road

The scope includes construction of a new 2-lane road over a length of 615m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above).

Property Cost Allowance Assumptions:

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for a 615m long road with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
17	Oira Road to Jesmond Road Collector	Ultimate	3.5	0.2	1.1	0.7	12	18

20 Fitzgerald Rd Southern Section Upgrade

The extent of this project is from Brookfield Road to Cossey Road, being a total length of 1,100m. The project involves an upgrade of the existing corridor to provide high quality active mode facilities on both sides of the road.

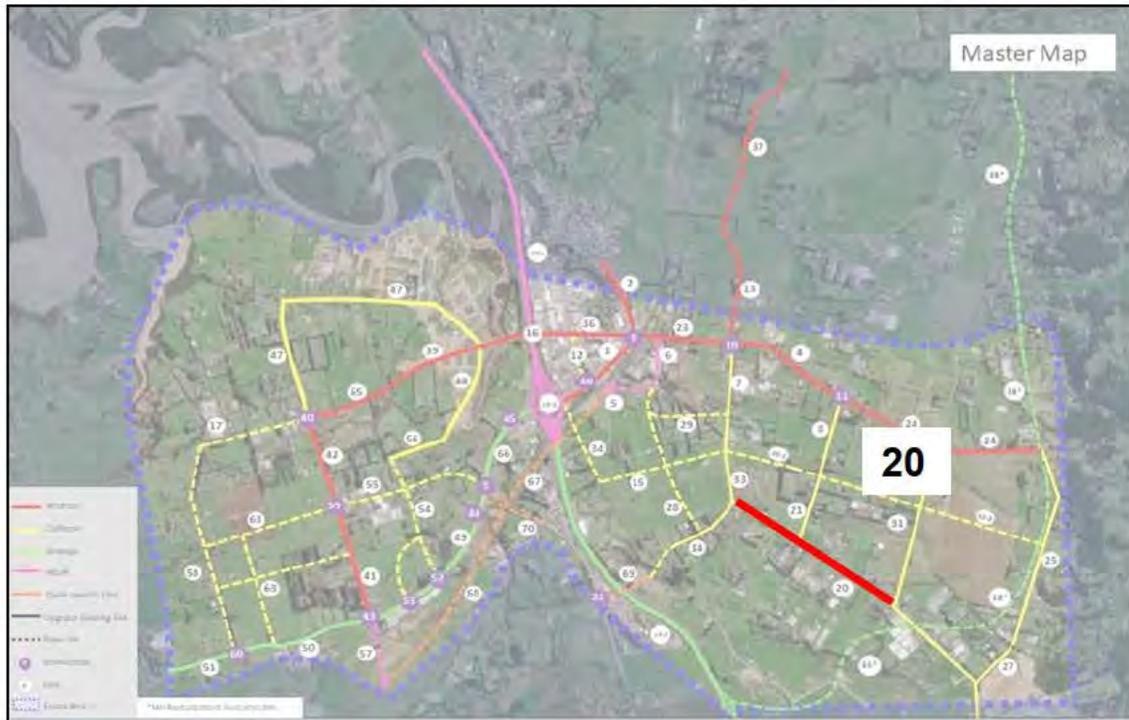


Figure 27: Drury Locality Map – Fitzgerald Road Southern Section

For developing this cost allowance, it is assumed that the existing pavement is of sufficient standard and can remain in place. Therefore, the works are limited to realignment of the kerb and channel, with provision of new active mode facilities in the berm. The works will remain within the existing 20m road reserve.

The corridor is generally level, although there are some locations where low-level retaining walls will be required (<1m). A review of the existing corridor has identified that approximately 300m would require retaining walls. Therefore, the cost allowance has been developed using a berm upgrade over a 1900m length with additional retaining walls provided over a 300m length (references 6 and 7 in Table 5 above). These rates apply to each side of the road (i.e., the total length of works reflects a length twice that of the corridor).

In addition, it is assumed that 2 new roundabouts will be formed at the Brookfield Road and Cossey Road intersections, with priority control remaining at the Fielding Road intersection.

Property Cost Allowance Assumptions:

It is assumed that all works will be carried out within the existing road corridor and any work will be done in conjunction with adjacent development. Therefore, there are no allowances for property acquisition

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
20a	Upgrade Fitzgerald Rd from Brookefield to Cossey Rd for active modes	Interim	0.0	0.4	1.7	1.2	19	23

21 Fielding Rd upgrades for active modes (from Fitzgerald Rd to development)

This project includes an upgrade of the existing Fielding Road corridor to a 2-lane urban environment with walking and cycling facilities on both sides of the road. The extent of the project is from Fitzgerald Road in the south to the first stage development boundary. The assumed development boundary is outlined in Section 2.1.1 and as indicated in Figure 12. This covers a length of approximate 340m.



Figure 28: Drury Locality Map – Fielding Road Southern Upgrade

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade in level topography has been allowed for (reference 6 in Table 5 above).

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
21	Fielding Rd upgrades for active modes (from Fitzgerald Rd to development boundary)	Ultimate	0.0	0.1	0.2	0.2	3	3

22 Upgrade Intersection at Quarry/ GSR

This project includes an upgrade of the existing priority-controlled intersection to a signalised intersection with walking and cycling facilities. The elemental cost for a simple signalised intersection has been allowed for (reference 13 in Table 5 above).



Figure 29: Drury Locality Map – Quarry Road/ Great South Road Intersection

Property Cost Allowance Assumptions:

It is assumed that sufficient width is available within the road corridor to construct the traffic signals. Therefore, there is no allowance for land acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$N)	Indicative Cost (\$N)
22	Upgrade Intersection at Quarry/ GSR	Ultimate	0.0	0.1	0.4	0.2	4	5

23 Waihoehoe Rd Upgrade: Great South Rd to Fitzgerald Rd

This project extends from the intersection with Great South Road to the intersection with Fitzgerald Road (as shown in Figure 11). This covers a length of approximately 670m.

This corridor has been separated into 2 sections, with two stages proposed for each section, as well as the cost for initial full construction:

- 23 Final Layout: full final 4 lane corridor with active modes built straight away
- 23a. Interim active modes upgrade between Great South Road and Kath Henry Lane
- 23b. Staged Upgrade to 4-lane corridor with separated active mode facilities on both sides between Great South Road and Kath Henry Lane
- 23c. Interim active modes upgrade between Kath Henry Lane and Fitzgerald Road
- 23d. Staged Upgrade to 4-lane corridor with separated active mode facilities on both sides between Kath Henry Lane and Fitzgerald Road

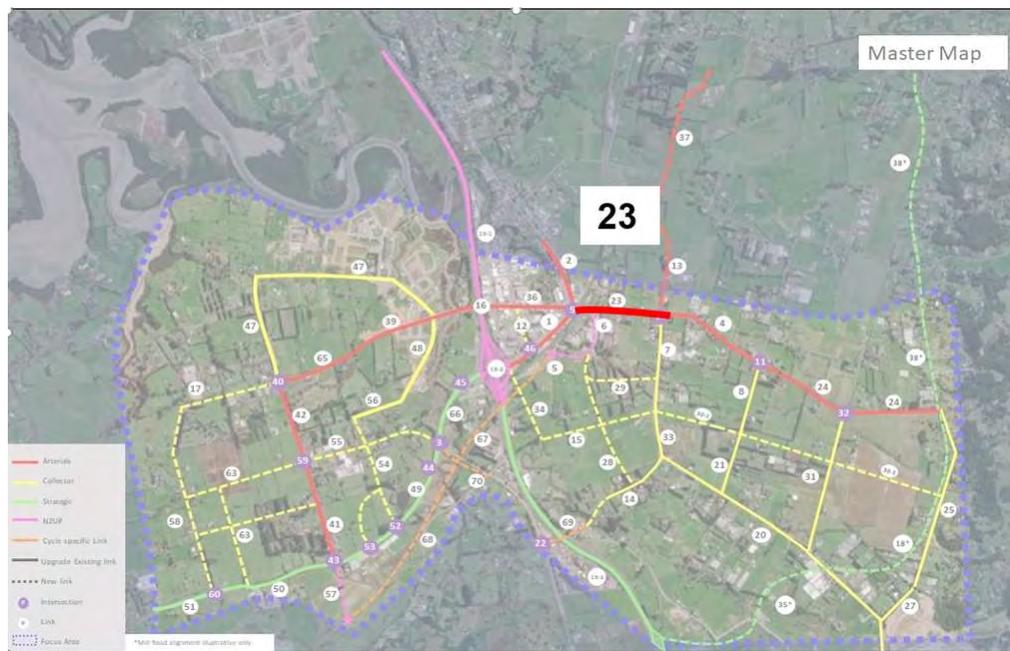


Figure 30: Drury Locality Map – Waihoehoe Rd Upgrade: Great South Road to Fitzgerald Rd

23 - Final Layout: Full final 4 lane corridor with active modes

Scope Definition:

The existing transport corridor is 20m wide. The Drury Arterials network includes a future upgrade of the corridor to a typical 30m wide corridor with 2 lanes in each direction and a high-quality active mode connection. The extent of the project is over a distance of 450m from chainage 50 to chainage 500 as indicated in Figure 31 below. The scope is as set out in the Drury Arterial Network DBC and includes a 6-lane bridge over the NIMT to accommodate the turning lanes for the future Great South Road intersection. There are also additional traffic lanes provided for the future entrance to the Drury Central Station and signalisation of the intersection with Kath Henry Lane.



Figure 31: Extent of Waihoehoe Road Upgrade between GSR and Fitzgerald Road

It was assumed that a full reconstruction of the existing pavement would be required due to the raised vertical profile required to accommodate the electrification requirements of the future 4-tracking of the NIMT.

As part of the DBC, a specific cost has been developed for this section based on a measure and value approach (as set out in the Drury Arterial Network Cost Estimate Report - Appendix 1) and the detailed cost breakdown (Segment 9 in Appendix 2). These numbers have been applied directly.

Property Cost Allowance Assumptions:

The property cost for this section was developed based on an assessment of specific properties impacted by the designation identified in the Drury Arterial Network DBC. This included an allowance for temporary lease and permanent acquisition, as set out in Section 2.4 above.

23a - Interim active modes upgrade – GSR to Kath Henry Lane

This project is based on upgrading active mode facilities along the existing corridor, which is approximately 20m wide. There has been no design carried out for provision of active modes in the existing environment. Therefore, linear rates are used to estimate the cost allowance for provision of active modes.

It is assumed that the existing road pavement would remain, and works would be limited to either side of the road. The active mode facilities would extend from the Kath Henry Lane intersection to the Great South Road intersection (approximately 300m). The existing berm is generally level and the width from the southern property boundary to the centre of the road is about 11m. Therefore, it is assumed that a new kerb and channel would be provided in the final position (6.8m from the southern property boundary) and the final walking and cycling facilities would be constructed on the southern side. On the northern side, a similar treatment is proposed although this would be redundant as the future widening would be carried out on the north side.

The existing bridge would remain, although new bridges would be required on either side of the bridge to improve access for pedestrians and cyclist. It is assumed that a 3m wide bridge would be provided over a 40m length on each side.

As this is an interim measure, there has been no allowance for upgrading intersections, and it is assumed that they would remain as priority-controlled intersections. It is expected that appropriate crossing treatments will be provided at the intersections.

The following cost allowances are included:

- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side (reference 6 in Table 5). This has been applied over a length of 520m to reflect an upgrade to both sides of the road.
- An allowance for 2 active mode bridges with an area of 120m² each.

Property Cost Allowance Assumptions:

To accommodate the new pedestrian/ cycle bridges, an area of approximately 100m² would be required on north side of Waihoehoe Road.

23b - Staged Upgrade to 4-lane corridor – Great South Road to Kath Henry Lane

This option would require a shift in the road to the north to accommodate high quality active mode facilities on both the north and south side of the road. It is assumed that the berm area on the southern side, including kerb and channel had already been constructed in its final form, so is not required for this final construction.

Full reconstruction of this western section would be required over a length of about 220m due to raised vertical profile. The active mode facilities on southern side can remain, along with kerb and channel, although the road carriageway will be reconstructed in its entirety so that crown can be repositioned for 4-lanes. Signalisation of Kath Henry Lane required, as well as reconstruction of the bridge over the NIMT rail line.

Most of the works completed during the interim stage would be redundant (e.g., the pedestrian bridges either side of the NIMT rail bridge), and it is only a small section of the southern berm area that would remain

Property Cost Allowance Assumptions:

The property cost allocated for this project is the full property cost identified in the Drury Arterial Network DBC for this section. As the interim option is constructed within the existing corridor, with minor impact on a property to the south, the final land acquisition to the north would be fully allocated to the final stage where the new bridge is constructed.

23c - Interim active modes upgrade – Kath Henry Lane to Fitzgerald Road

This project is based on upgrading active mode facilities along the existing corridor, which is approximately 20m wide. There has been no design carried out for provision of active modes in the existing environment. Therefore, linear rates are used to estimate the cost allowance for provision of active modes.

It is assumed that the existing road pavement would remain, and works would be limited to either side of the road. The active mode facilities would extend from the Fitzgerald Road intersection to Kath Henry Lane (approximately 370m). The existing berm is generally level and the width from the southern property boundary to the centre of the road is about 11m. Therefore, it is assumed that a new kerb and channel would be provided in the final position (6.8m from the southern property boundary) and the final walking and cycling facilities would be constructed on the southern side. On the northern side, a similar treatment is proposed although this would be redundant as the future widening would be carried out on the north side.

As this is an interim measure, there has been no allowance for upgrading intersections, and it is assumed that they would remain as priority-controlled intersections. It is expected that appropriate crossing treatments will be provided at the intersections.

The following cost allowances are included:

- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side (reference 6 in Table 5). This has been applied over a length of 740m to reflect an upgrade to both sides of the road.

Property Cost Allowance Assumptions:

It is assumed that all works can be accommodated within the existing road reserve.

23d - Staged Upgrade to 4-lane corridor – Kath Henry Lane to Fitzgerald Road

This option would require a shift in the road to the north to accommodate high quality active mode facilities on both the north and south side of the road. It is assumed that the berm area on the southern side, including kerb and channel had already been constructed in its final form, so is not required for this final construction.

The active mode facilities on southern side can remain, along with kerb and channel, although the road carriageway will be reconstructed in its entirety so that crown can be repositioned for 4-lanes.

As most of the works completed during the interim stage would be redundant, it is assumed that only a small section of the southern berm area would remain.

The following cost allowance is included:

- Linear rate for '4 Lane brownfields upgrade' (reference 6 in Table 5). This has been applied over a length of 240m.

Property Cost Allowance Assumptions:

The property cost allocated for this project is the full property cost identified in the Drury Arterial Network DBC. As the interim option is constructed within the existing corridor, with minor impact on a property to the south, the final land acquisition to the north would be fully allocated to the final stage.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
23a	Waihoehoe Rd West upgrades-between GSR & Kath Henry	Interim	0.2	0.1	0.4	0.3	4	5
23b	Waihoehoe Rd West upgrades-between GSR & Kath Henry Lane	Ultimate	6.6	0.5	2.1	1.4	23	34
23c	Waihoehoe Rd West upgrades-between Kath Henry Lane and Fitzgerald Rd	Interim	0.0	0.1	0.3	0.2	3	3
23d	Waihoehoe Rd West upgrades-between Kath Henry Lane and Fitzgerald Rd	Ultimate	3.5	0.1	0.7	0.4	7	12
23	Waihoehoe Rd West upgrades-between GSR & Fitzgerald Rd, including bridge replacement over the rail corridor	Ultimate	10.4	0.6	2.9	1.9	32	48

24 Waihoehoe Rd east Upgrade: Cossey Rd to Drury Hills Rd

This project extends from the end of the proposed development boundary, west of Cossey Road to the Drury Hills Road intersection (as shown in Figure 32). This covers a length of approximately 800m. The assumed development boundary is outlined in Section 2.1.1 and indicated in Figure 33) below.

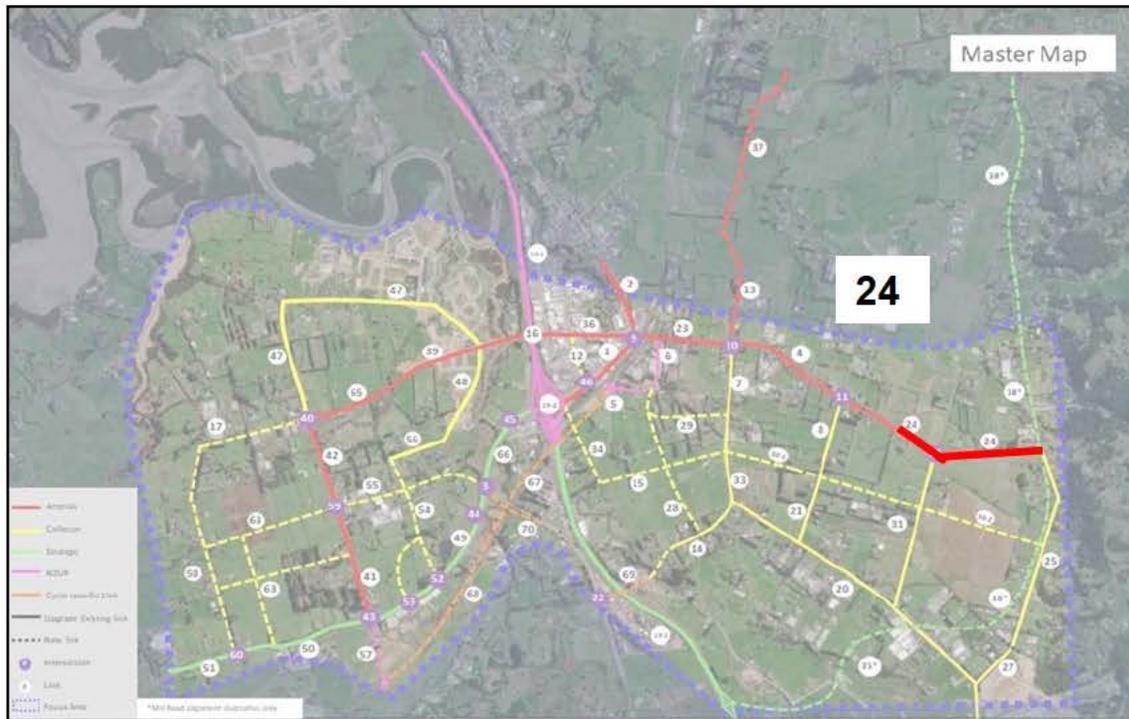


Figure 32: Drury Locality Map – Waihoehoe Rd Upgrade: Cossey Rd to Drury Hills Road



Figure 33: Extent of Development Boundary on Waihoehoe Road

The existing transport corridor is 20m wide. The Drury Arterials network includes a future upgrade of the corridor to a 24m corridor with 2 lanes and a high-quality active mode connection. The extent of the Waihoehoe Road East upgrade included in the Drury Arterials DBC is from a point approximately 150m east of the Fitzgerald Road intersection to Drury Hills Road in the east, being a total length of approximately 800m (Figure 34).

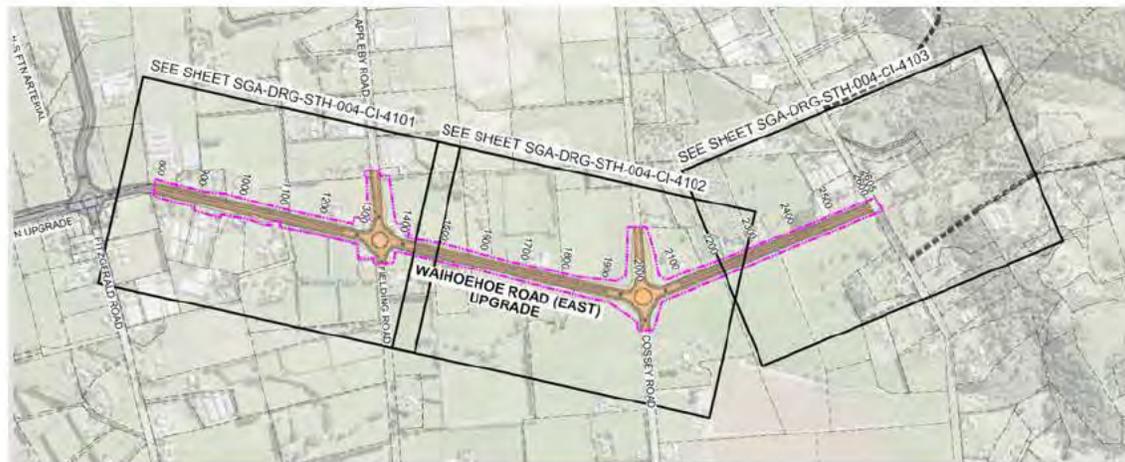


Figure 34: Extent of Waihoehoe Road East Upgrade included in the Drury Arterial Network DBC

The section of Waihoehoe Road that would be upgraded in line with development. This represents 40% of the total length of the corridor included in the Drury Arterial Network Business Case, and a proportional cost estimate would therefore equate to 40% of the DBC cost. However, the scope of the recommended option in the business case included a major upgrade of the Appleby intersection to accommodate a roundabout. This adds significant cost to this section upgrade, and therefore it is considered that an allowance of 50% would better reflect the scope of the western section (refer to option 4 earlier in this section for the converse discussion on the adjacent section). In addition, it is likely that there will be additional costs associated with a staged approach, and therefore a 10% uplift has been applied to this project, resulting in a total proportion of 55% of the DBC cost estimate (

The section of Waihoehoe Road that would be upgraded in line with development extends for a length of 900m. This represents 50% of the total length included in the Drury Arterial Network Business Case, and a proportional cost estimate would equate to 50% of the DBC cost. However, the scope of the recommended option in the business case included a major upgrade of the Appleby intersection to accommodate a roundabout which is included within this section (compared to option 4 earlier in this section). This adds significant cost, and therefore it is considered that an allowance of 55% would better reflect the scope of the eastern section.

Property Cost Allowance Assumptions:

The cost estimate prepared for the detailed business case reviewed the specific impacts on land, including temporary use and permanent acquisition. This has been included in the cost allowance.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
24	Upgrades on Waihoehoe Rd east from project 4 to Drury Hills + Drury Hills Intersection	Ultimate	2.2	0.6	2.8	1.8	31	38

25 Drury Hills Rd Upgrade: From Waihoehoe Rd to Macwhinney Dr

This project includes an upgrade of the existing Drury Hills Road corridor to a 2-lane urban environment with walking and cycling facilities on both sides of the road. The extent of the project is from Waihoehoe Road in the north to Macwhinney Road in the south. This covers a length of approximate 950m.

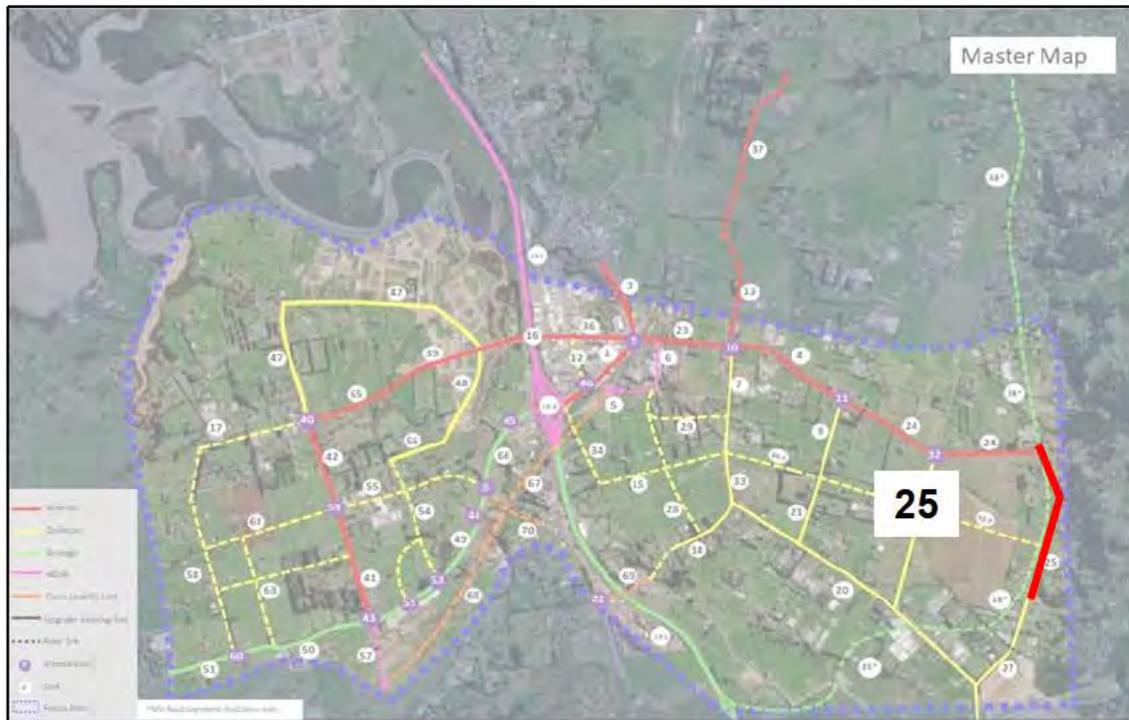


Figure 35: Drury Locality Map – Drury Hills Road Upgrade – South of Waihoehoe Road

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade in level topography has been allowed for along both sides of the road. (reference 6 in Table 5 above).

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
25	Upgrades on Drury Hills from Waihoehoe Rd to Macwhinney Dr	Ultimate	0.0	0.2	0.7	0.5	8	9

27 Active mode facilities from Drury Hills Rd and Fitzgerald Rd to Quarry Rd (2 links and intersections)

This project includes an upgrade of the southern section of Drury Hills Road corridor from Macwhinney Road to Fitzgerald Road (approx. 600m), and an upgrade of the Fitzgerald Road corridor from Drury Hills Road to Quarry Road (a distance of approximately 250m). The scope includes a 2-lane urban environment with walking and cycling facilities on both sides of the road.



Figure 36: Drury Locality Map – Drury Hills Road/ Fitzgerald Road Upgrade – southern section

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade in level topography has been allowed for along both sides of the road for most of the length (reference 6 in Table 5 above), although approximately 250m of the corridor is assumed to require significant retaining structures due to the steep topography (reference 8 in Table 5 above)

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
27a	Active mode facilities from Drury hills and Fitzgerald to Quarry Rd (2 links and intersections)	Interim	0.0	0.2	0.7	0.5	8	9

28 New Collector west of Fitzgerald Rd

This project provides a new 2-lane urban connection extending in a north-south direction to the west of Fitzgerald Road. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.



Figure 37: Drury Locality Map – New Collector Road west of Fitzgerald Rd

The scope includes construction of a new 2-lane road over a length of 1km. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above). A 2-lane roundabout is also required for the collector road to tie in with the station access road.

There is also a stream crossing to the south of the Proposed Station at Drury Central. This may be a culvert or bridge crossing. For the purpose of this cost estimate, a 10m long bridge has been assumed (16m wide) for in the costing.

Property Cost Allowance Assumptions:

It is assumed that land is required for road corridor only and built-in conjunction with the developer, so no temporary acquisition required. The area of land to be acquired is for a 1km length with a 20m cross section.

Assumptions:

- The total road length excluding the bridge is 90m (Ref 1 in Table 5)
- A 2-lane roundabout is provided at the intersection with the Drury Station access Road
- A new bridge is allowed for across the stream 10m long x 16m wide)
- Widen the new section east of Norrie road to 4 lanes over a length of 180m (Ref 3 in Table 5)
- Corridor upgrade from 2 lanes to 4-lanes over a length of 280m (Ref 4 in Table 5)

Property Cost Allowance Assumptions:

It is assumed that the land at the northern tie-in has already been purchased for the construction of the Drury Central Station Access Road. However, the alignment will extend outside this designation before heading south across the stream. Therefore, a property cost allowance has been allocated for a 100m section of the road over a width of 20m from the western edge of the adjoining property. (i.e. 2000m²)

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
28a	Northern Section of new collector in N-S direction parallel to Fitzgerald Rd	Ultimate	0.9	0.1	0.7	0.4	7	10

29 New Collector between Flanagan & Fitzgerald Rd

This project provides a new 2-lane urban connection extending between Flanagan Road and Fitzgerald Road. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.



Figure 39: Drury Locality Map – New Collector Road between Flanagan Rd and Fitzgerald Rd

The scope includes construction of a new 2-lane road over a length of 850m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above).

Property Cost Allowance Assumptions:

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for a 1km length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
29	New collector in E-W direction between Flanagan & Fitzgerald Rd (collector 2)	Ultimate	4.8	0.3	1.4	0.9	16	23

30 New collector between Fitzgerald Rd & Drury Hills Rd

This project provides a new 2-lane urban connection extending between Fitzgerald Road and Drury Hills Road. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.

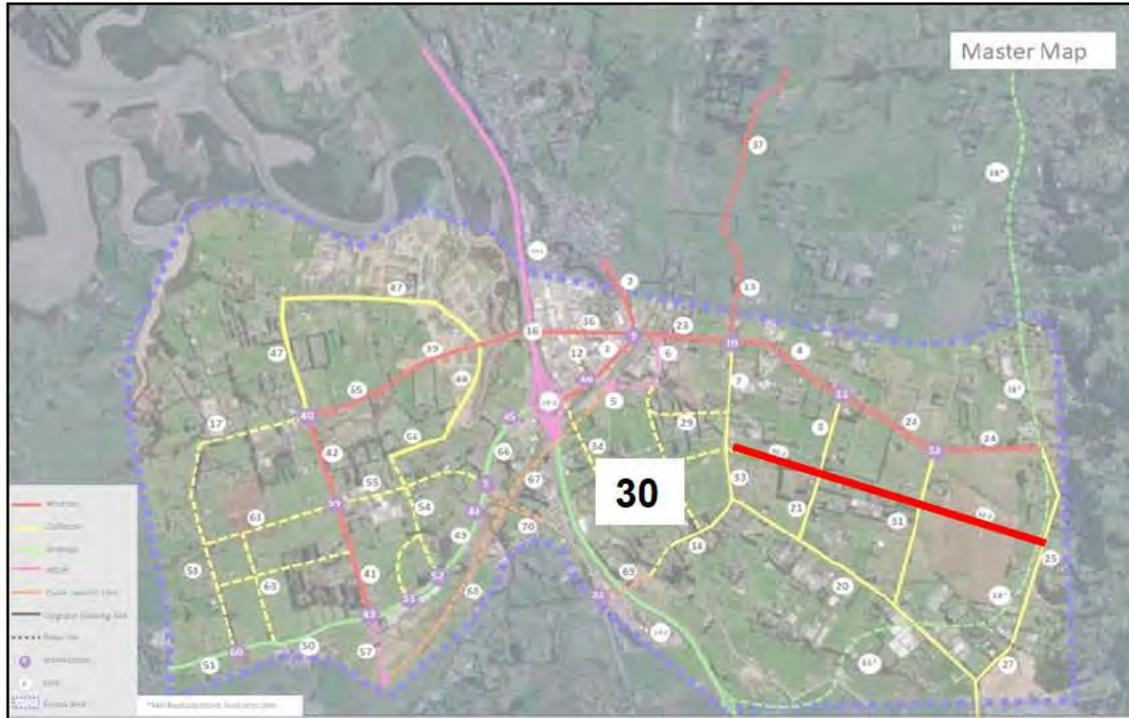


Figure 40: Drury Locality Map – New Collector Road between Fitzgerald Rd and Drury Hills Road

The scope includes construction of a new 2-lane road over a total length of 2km. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above).

This section has also been considered in the context of 2 shorter lengths as below. These costs have been proportioned based on their relevant length

- 30-1 From Fitzgerald Road to Fielding Road (650m)
- 30-2 From Fielding Ave to Drury Hills Road (1,350m)

Property Cost Allowance Assumptions:

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for the full length of each segment with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
30	2-lane internal collector between Fitzgerald & Drury Hills E-W direction	Ultimate	11.1	0.7	3.3	2.2	37	54
30-1	2-lane internal collector between Fitzgerald & Fielding Road E-W direction	Ultimate	3.7	0.2	1.1	0.7	12	18
30-2	2-lane internal collector between Fielding Road & Drury Hills E-W direction	Ultimate	7.5	0.5	2.2	1.5	25	37

31 Upgrades on Cossey Rd between Fitzgerald & Waihoehoe Rd

This project includes an upgrade of the southern section of the Cossey Road corridor from Waihoehoe Road to Fitzgerald Road (approx. 930m). The scope includes a 2-lane urban environment with walking and cycling facilities on both sides of the road.

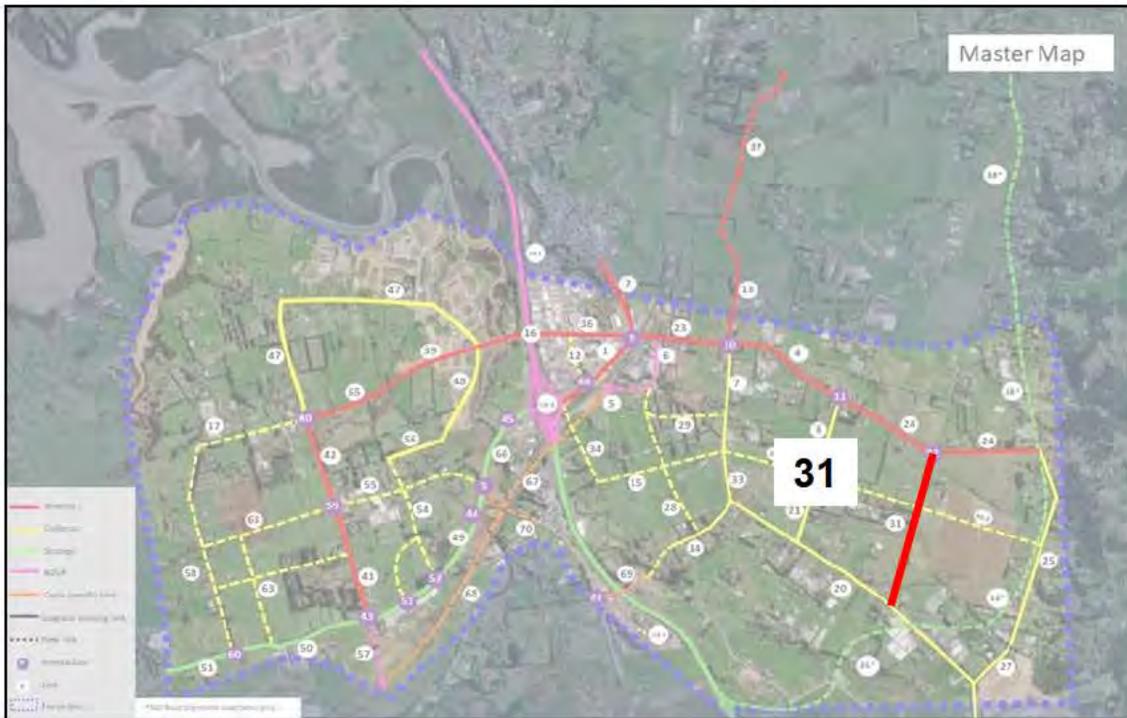


Figure 41: Drury Locality Map – Cossey Road Upgrade

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade in level topography has been allowed for along both sides of the road for most of the length (reference 6 in Table 5 above)

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Property Cost Allowance Assumptions:

The impacts on the adjacent property associated with the roundabout has been assessed based on the Drury Arterial Network DBC. This identified that 18,000m² of land would be required to accommodate the roundabout and the approaches

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
32	New Intersection on Cossey Rd/Waihoehoe Rd	Ultimate	4.3	0.1	0.4	0.3	5	10

33 Upgrade Fitzgerald Rd: north of Brookfield Rd

This project includes an upgrade of the existing Fitzgerald Road corridor to a 2-lane urban environment with walking and cycling facilities on both sides of the road. The extent of the project is from the northern end of the development boundary to Brookfield Road (as shown in Figure 14) This covers a length of approximately 380m. The assumed development boundary is outlined in Section 2.1.1 and indicated in Figure 12 below.

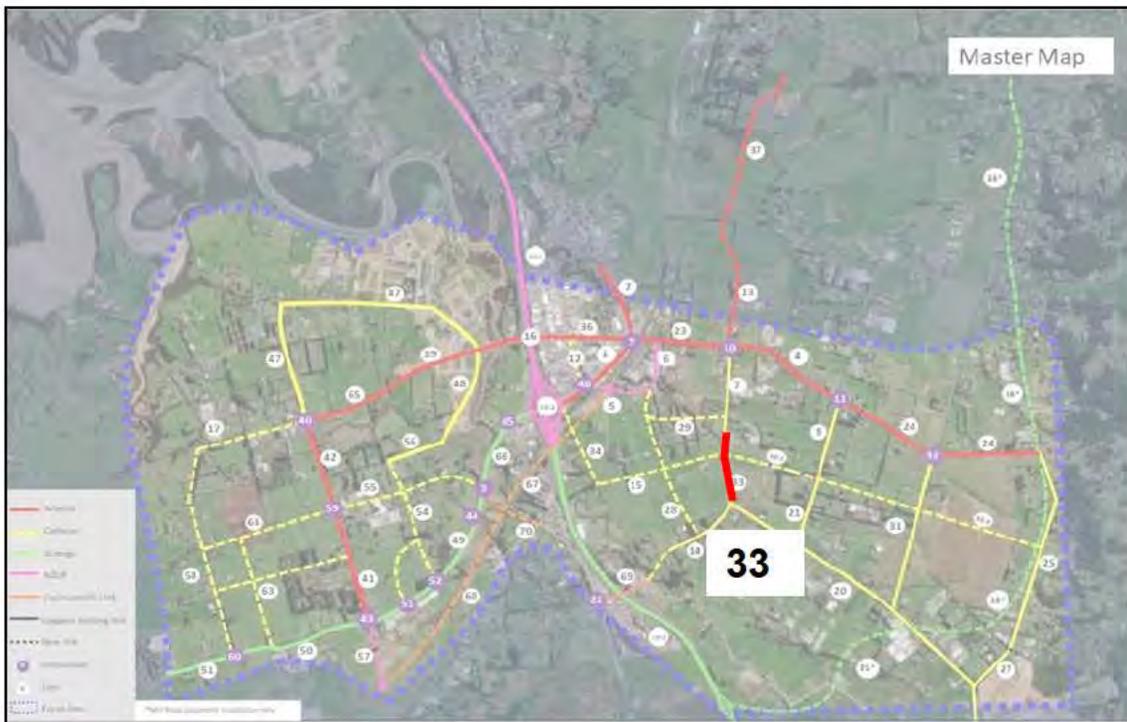


Figure 43: Drury Locality Map – Fitzgerald Road Upgrade – north of Brookfield Rd



Figure 44: Extent of Development Boundary on Fitzgerald Road

The cost includes an allowance for provision of an active mode corridor on both sides of the road. It is assumed that the existing pavement can be retained, and a new kerb and channel will be provided to form the road edge. The berm area will be upgraded to provide separated walking and cycling facilities. The elemental cost for a basic berm upgrade has been allowed for (reference 6 in Table 5 above).

Property Cost Allowance Assumptions:

The existing road reserve is approximately 20m wide in this location, and it is assumed that the active mode upgrade can occur within the existing road corridor. Therefore, there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
33	Upgrade Fitzgerald Rd from project 7 to Brookefield Rd	Ultimate	0.0	0.1	0.3	0.2	3	4

western end that would have been completed. Assumptions have been made around the scope of work required following completion of the NZUP project and these assumptions are documented below for each scenario.

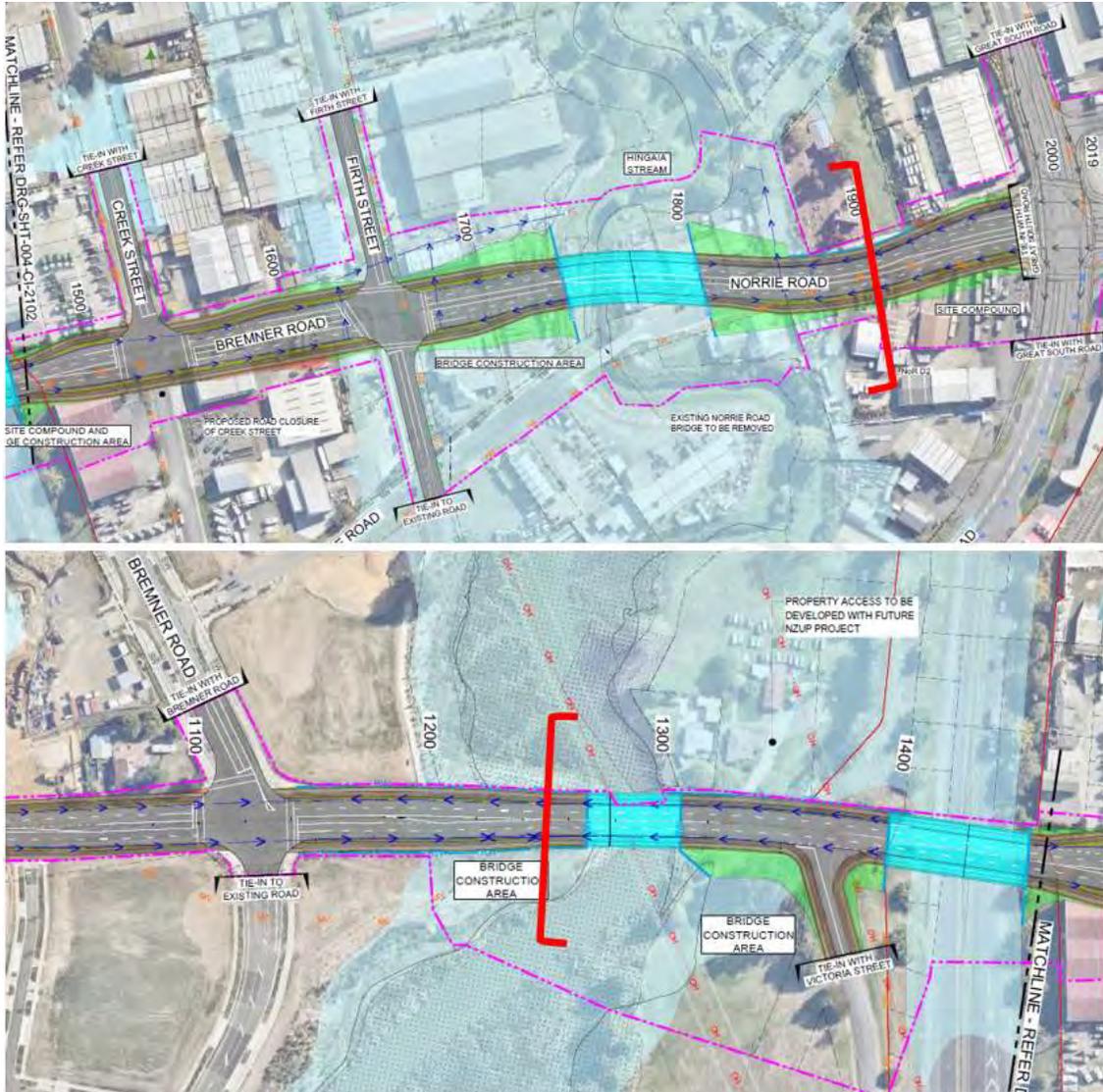


Figure 46: Extent of Waihoehoe Road Upgrade between GSR and Fitzgerald Road

36 - Final Layout: Full final 4 lane corridor with active modes

Scope Definition:

Construction of the full 4-lane corridor as set out in the Drury Arterial Network DBC (and indicated in Figure 46 above) from the current works being carried out will involve a significant upgrade to this corridor. The cost estimate prepared for the Drury Arterial Network DBC (SGA Cost Estimate for Section 8 in Appendix 1) was prepared prior to this work being funded, and was therefore based on the current road layout, and assumed full reconstruction of the bridges and arterial roads west of Creek Street.

As a result, the DBC cost to construct the final 4-lane road layout has been adjusted to reflect the work that will be completed through the NZUP. The assumptions for this future project are set out below.

Assumptions:

- A new bridge over the Ngākōroa Stream Bridge has been constructed and this will just require widening in future to accommodate the additional lane. It is assumed that the new bridge will need to be widened by 12m to accommodate 2 additional traffic lanes and a walking and cycling path on the southern side. (bridge widening of 50m length x 12m wide). Demolition of the old bridge is no longer required.
- A new bridge over the Southern Motorway has been constructed and this will just require widening in future to accommodate the additional It is assumed that the new bridge will need to be widened by 12m to accommodate 2 additional traffic lanes and a walking and cycling path on the southern side. (bridge widening of 60m length x 12m wide). Demolition of the old bridge is no longer required.
- Full construction of a new bridge and alignment over the Hingaia Stream would still be required (70m length x 23m width)
- Full corridor east of Creek Street would need to be upgraded as set out in the Drury Arterial Network DBC.

Due to these reduction in the scope, the allowance to complete the full upgrade following the completion of the NZUP project is assumed to be 80% of the full DBC cost estimate. This primarily reflects the reduced bridge construction that is required for the two bridges over the Ngākōroa Stream and the southern motorway.

Property:

The current works being carried out for the NZUP project are being contained within the existing road reserve. Therefore, it is assumed that the full property allowance included within the Drury Arterial Network DBC would still be required. The area of temporary and permanent acquisition was reviewed, and specific rates applied to each property as part of the DBC.

36a - Interim 2-lane corridor with active modes

This project cost is based on retrofitting active modes to the existing road corridor and providing a 2-lane connection from Bremner Road to the western end of Norrie Road along the alignment established in the Drury arterial Network DBC. It is assumed that the current NZUP project will upgrade the active mode facilities west of Creek Street. Therefore, the scope of this project is limited to the works required from Creek Street to the Norrie Road tie in (a length of approximately 380m).

The assumptions for this project are set out below.

Assumptions:

- New Road Connection extending from Bremner Road to tie in with the eastern end of Norrie Road (i.e., realignment) for a length of 130m
- New 2-lane bridge over Hingaia Stream constructed in the interim - 16m wide x 70m long
- Allow signalisation of GSR intersection and Bremner/ Firth St

The following cost allowances are included:

- New Bridge of 1120m² (Ref 10 in Table 5)
- Linear rate for 'Roadside Berm Construction' for the addition of separated footpath and cycleway on each side of the road between Creek Street and Firth Street (reference 6 in Table 5). This has been applied over a length of 200m to reflect an upgrade to both sides of the road.
- Linear rate for a new '2-lane Transport Corridor' for the new section of road between Firth street and Norrie Road tie-in, excluding the bridge (reference 1 in Table 5). This has been applied over a length of 210m

Property Cost Allowance Assumptions:

To accommodate the new 2-lane corridor between Firth Street and the Norrie Road tie-in, several commercial properties would be required. These have been measured and valued through the Drury Arterial Network DBC and these costs have been included directly.

36b and 36c - Staged Upgrade to 4-lane corridor

Following completion of the full 2-lane corridor, this project includes an upgrade to provide 4-traffic lanes with active modes on both sides (SGA design). The cost for the bridge structure has been separated out and included as project 36c.

Assumptions:

- The length of upgrade reflects the full length from the western end of the Ngākōroa Stream Bridge to the Norrie Road tie -in (i.e., 680m from ch1260 to ch1900 as indicated in Figure 46)
- The project includes widening to all three bridges. Is assumed that they would all need to be widening by 12m.

- The new section of road corridor west of Firth Street will be future proofed to allow for widening
- The existing section of Bremner Road will need a full reconstruction to provide 4-lanes as the interim option will only provide a retrofit.

Elemental Cost items:

- Widen the new section east of Norrie road to 4 lanes over a length of 180m (Ref 3 in Table 5)
- Corridor upgrade from 2 lanes to 4-lanes over a length of 280m (Ref 4 in Table 5)
- 12m of Bridge Widening for 3 bridges, total length of 180m (Ref 10 in Table 5)
- 2 sets of signal upgrade for Firth Street and Creek Street (Ref 13 in Table 5)

Property Cost Allowance Assumptions:

To accommodate the new 2-lane corridor between Firth Street and the Norrie Road tie-in, the remaining properties identified in the Drury Arterial Network DBC will need to be acquired. These have been measured and valued through the Drury Arterial Network DBC and these costs have been included directly.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
36	Complete Bremner-Norrie Road connection from SH1 upto GSR (overlap with project 12)	Ultimate	1.8	1.1	5.1	3.4	56	68
36a	Bremner-Norrie Road east of SH1 up to GSR (overlap with project 12)	Interim	9.4	0.4	1.7	1.1	19	32
36b	Complete Bremner-Norrie Road connection from SH1 up to GSR excluding Bridge (overlap with project 12)	Ultimate	1.8	0.4	1.7	1.1	18	23
36c	Complete Bremner-Norrie Road connection from SH1 up to GSR - Bridge structure (overlap with project 12)	Ultimate	0.0	0.4	1.7	1.2	19	23

37 N-S Ōpāheke Arterial from development to Ponga Rd

This project extends from Ponga Road in the north to the northern edge of the northern boundary of the development site (PC 50 (Private): Waihoehoe Precinct). This covers a length of approximate 1.25km.

There are two stages proposed for this corridor:

- 37a. Interim 2-lane urban corridor with active modes on both sides
- 37b. Final 4-lane urban FTN upgrade with active modes on both sides (SGA design)

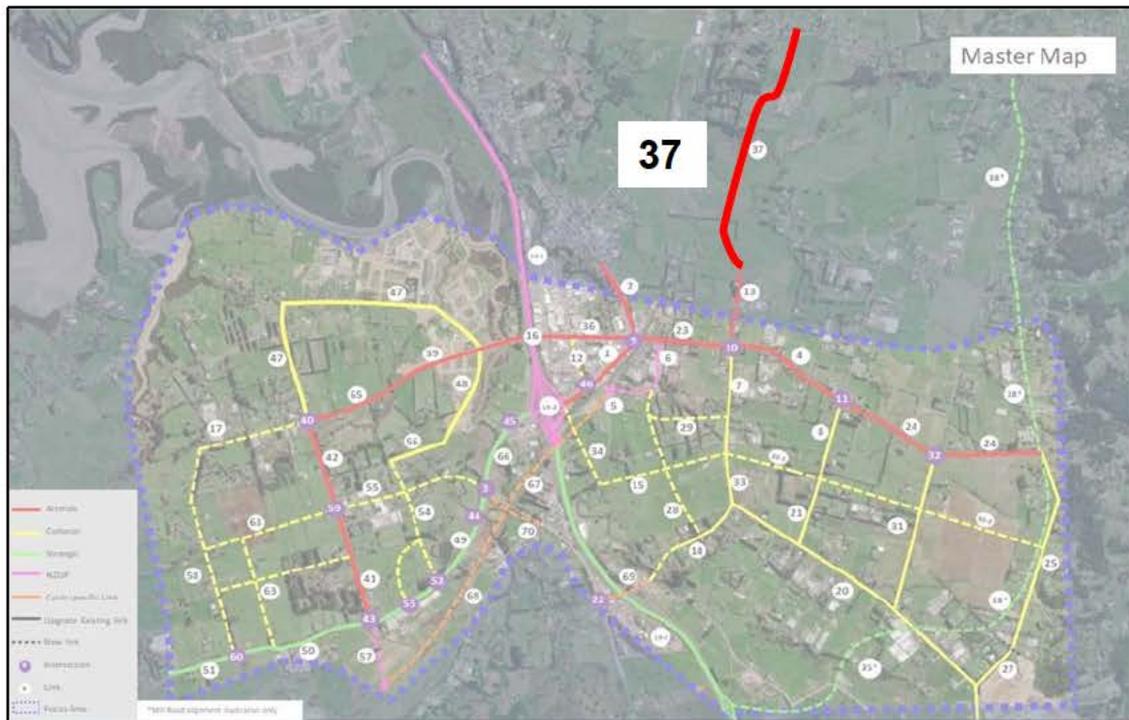


Figure 47: Drury Locality Map – Ōpāheke North-South Arterial

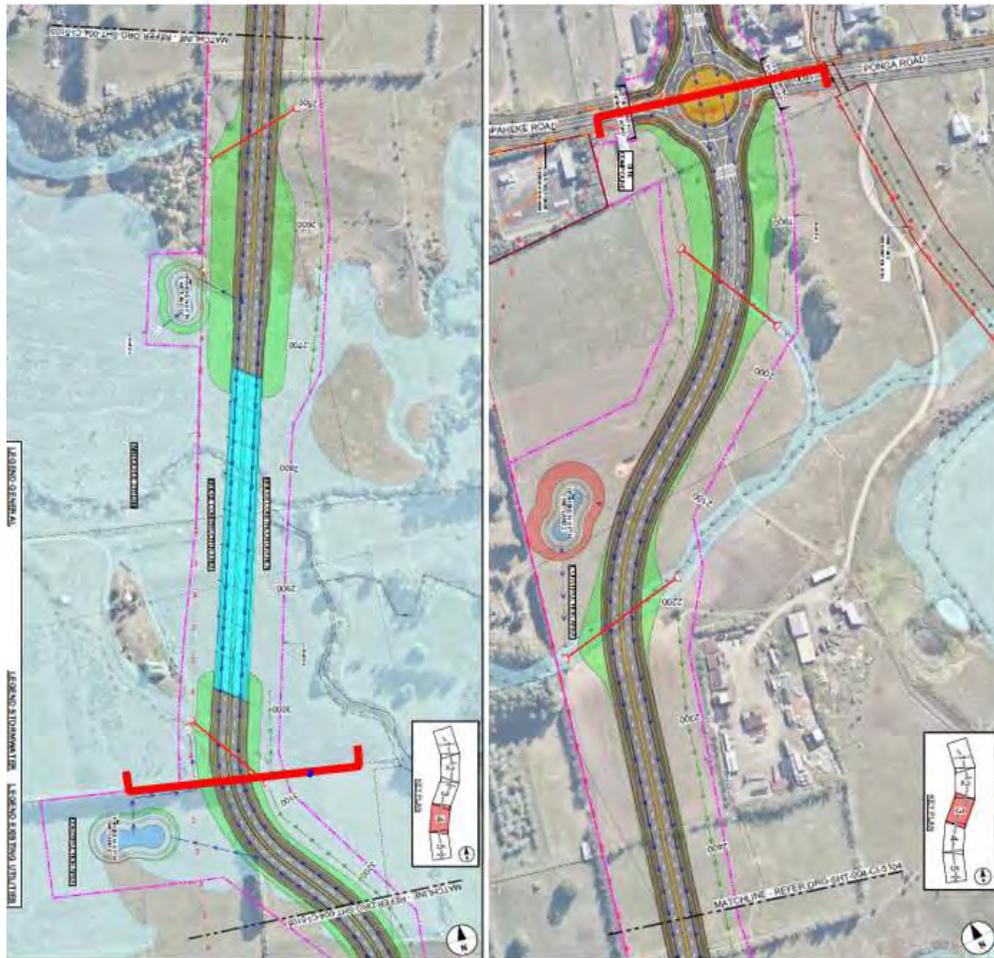


Figure 48: Extent of Ōpāheke North South Corridor

37a. Interim 2-lane urban corridor with active modes on both sides

This project involves construction of a new 2-lane urban road corridor through a greenfields area. There is a new bridge to be constructed over the floodplain with a length of 230m. For the interim 2-lane option, it is assumed that the width would be about 16m with flexibility to widen the structure in future. A new roundabout would be required at the Ponga Road intersection.

A cost estimate has been prepared for the Ōpāheke North South Project as part of the Drury Arterial Network DBC. This covered a length of 1.67km and allowed for the full upgrade, including construction of new bridge. Therefore, the cost of the interim 2-lane works has been determined through a proportional reduction in the cost to reflect the shorter length of 1.25km and the reduced width from 4-lanes to 2-lanes. The cost of the interim 2 lane option over this reduced length has been calculated to be about 58%.

Property Cost Allowance Assumptions:

As this is a new greenfields arterial, it is assumed that the full property acquisition would be made at the outset, and all property costs have been allocated to this interim option. The property costs have been measured and valued for each impacted property through the Drury Arterial Network DBC and these costs have been included directly.

37b. Final 4-lane urban FTN upgrade with active modes on both sides (SGA design)

This option would upgrade the interim 2-lane urban corridor to a 4-lane FTN arterial road corridor. The scope of works would involve widening the existing road and reconstruction of active modes along the edges. Kerb and channel would be provided along the route, and the interim Bridge would need to be widened. It is assumed an additional 12m would be added to the bridge to accommodate the 2 lanes and the final berm width.

Elemental Cost items:

- Corridor upgrade from 2 lanes to 4-lanes over a length of 1.02km (Ref 3 in Table 5)
- 12m of Bridge Widening for a length of 230m (Ref 10 in Table 5)
- Upgrade of the Ponga Road Intersection

Property Cost Allowance Assumptions:

As stated above, it is assumed that all property would be acquired through the interim project, and therefore there are no property costs allocated to this phase.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
37a(i)	N-S Opaheke Arterial from development to Ponga Rd	Interim	78.4	0.7	3.0	2.0	34	118
37a(ii)	N-S Opaheke Arterial from development to Ponga Rd	Interim	0.0	0.7	3.3	2.2	37	43
37b(i)	N-S Opaheke Arterial from development to Ponga Rd	Ultimate	0.0	0.3	1.6	1.0	17	20
37b(ii)	N-S Opaheke Arterial from development to Ponga Rd	Ultimate	0.0	0.4	2.0	1.3	22	26

39 Upgrade Auranga Drive from State Highway 1 to the Auranga Development

This project extends from the Victoria St intersection in the east to the end of Auranga Drive. This covers a total length of approximately 660m.

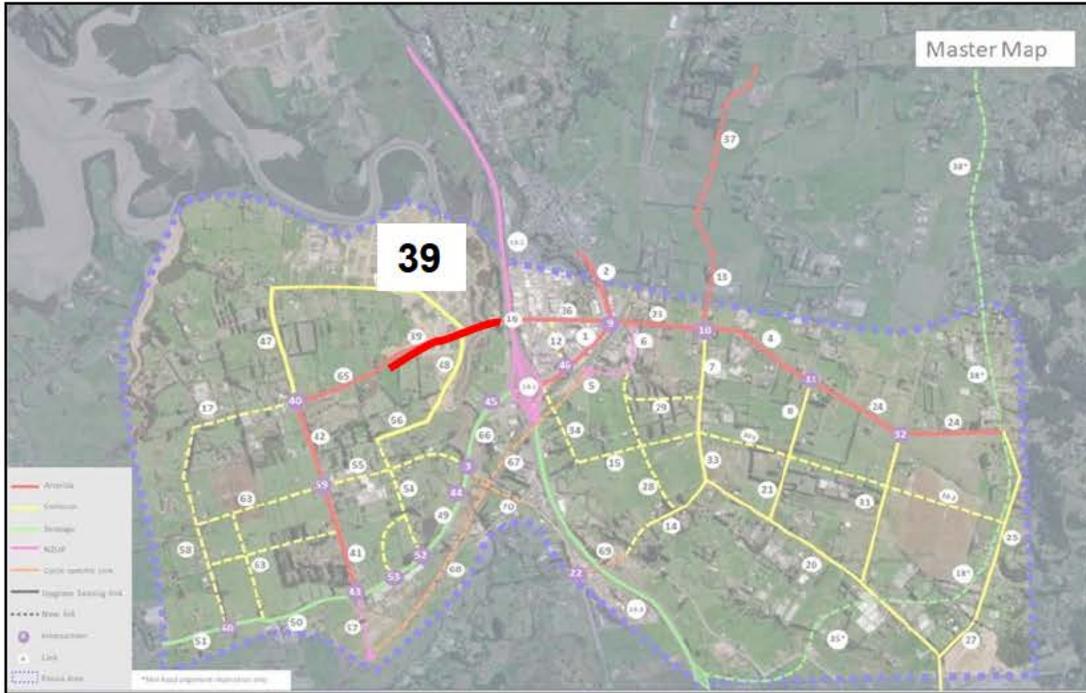


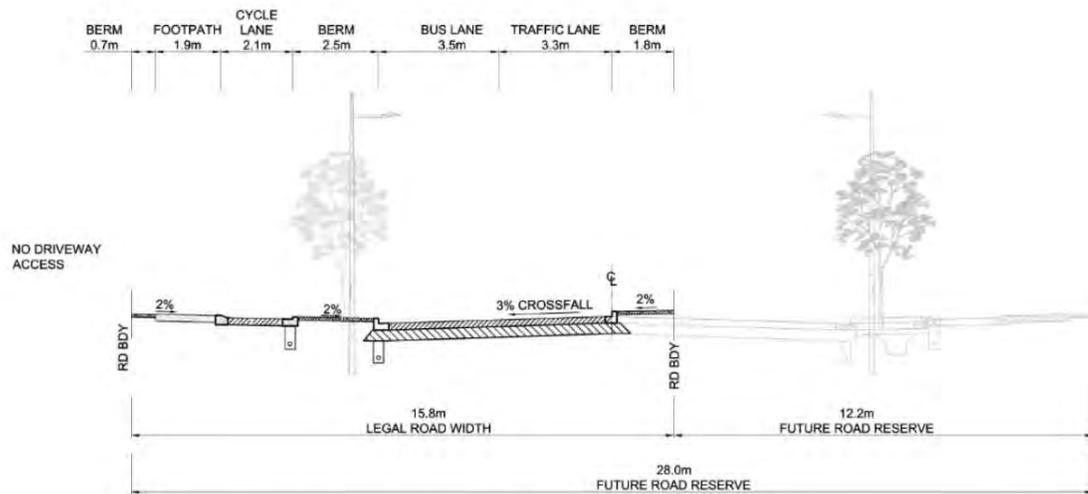
Figure 49: Drury Locality Map – New Arterial from SH1 to Auranga



Figure 50: Auranga Drive Upgrade – Project Extent⁴

⁴ Imagery supplied by NearMap

Auranga Drive has recently been constructed as part of the Auranga Development. As part of this Development (Auranga B1 Drury West - Plan Change 6), a 2-lane road has been formed extending from the Bremner Road intersection. This has been developed to accommodate future 4-laning as indicated in Figure 51 below. One side of the final arterial road corridor has been constructed, with a berm area provided for the future westbound carriageway. Therefore, the scope of this project is to provide the additional westbound carriageway formation.



Road I Future Collector Road (New) – Interim Local Road formation

Figure 51: Auranga Drive Upgrade – Interim Construction by Developer (Plan Change 6)

In addition, the section west of the Bremner Road intersection to Victoria Street will also need to be upgraded. This includes widening the bridge over the Ngākōroa Stream, which is currently proposed for reconstruction as part of the Waka Kotahi upgrade of the southern motorway from Papakura to Drury.

Elemental Cost items:

- Corridor upgrade from 2 lanes to 4-lanes over a length of 620m (Ref 3 in Table 5)
- 12m of Bridge Widening for a length of 40m (Ref 10 in Table 5)
- Upgrade of the Bremner Road intersection

Property Cost Allowance Assumptions:

No property required as all property has already been vested in Council as part of the Auranga Development.

There are two stages proposed for this corridor:

- 40a. Interim intersection to connect a 2-lane east west arterial
- 40b. Upgrade of the intersection to accommodate the future 4-lane FTN

The cost allowance has been developed using the generic unit rates set out in Table 5 above. For the interim intersection, an allowance for a complex intersection (reference 14 in Table 5) due to the need to tie in with the adjacent roads, and it is likely that an upgrade of Jesmond Road will be required over a length on the approaches to the intersection. In order to upgrade the intersection to its final 4-lane form to accommodate the FTN, a simple upgrade to the intersection is allowed for (reference 13 in Table 5)

Property Cost Allowance Assumptions:

For property acquisition, it is assumed that all property required for the final 4-lane intersection will be required to construct the interim signalised layout and the approaches. There will also be additional land required for the approaches to the intersection.

For this cost allowance, the property cost identified in the Detailed Business Case has been allocated to the intersection upgrade. As set out in the cost estimate summary for Segment 6 included in the Drury Arterial Network cost report Appendix 1, the property cost allowance has been determined to be \$10M.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
40a	New intersection on Jesmond/Bremner Rd	Interim	9.7	0.2	0.7	0.5	8	19
40b	Upgrade intersection on Jesmond/Bremner Rd	Ultimate	0.0	0.1	0.4	0.2	4	5

41 Jesmond Road Upgrade – southern section

This project extends along Jesmond Road from the intersection with State Highway 22 in the south to the southern boundary of the Waipupuke Development (Plan Change 61). This covers a total length of approximately 520m.

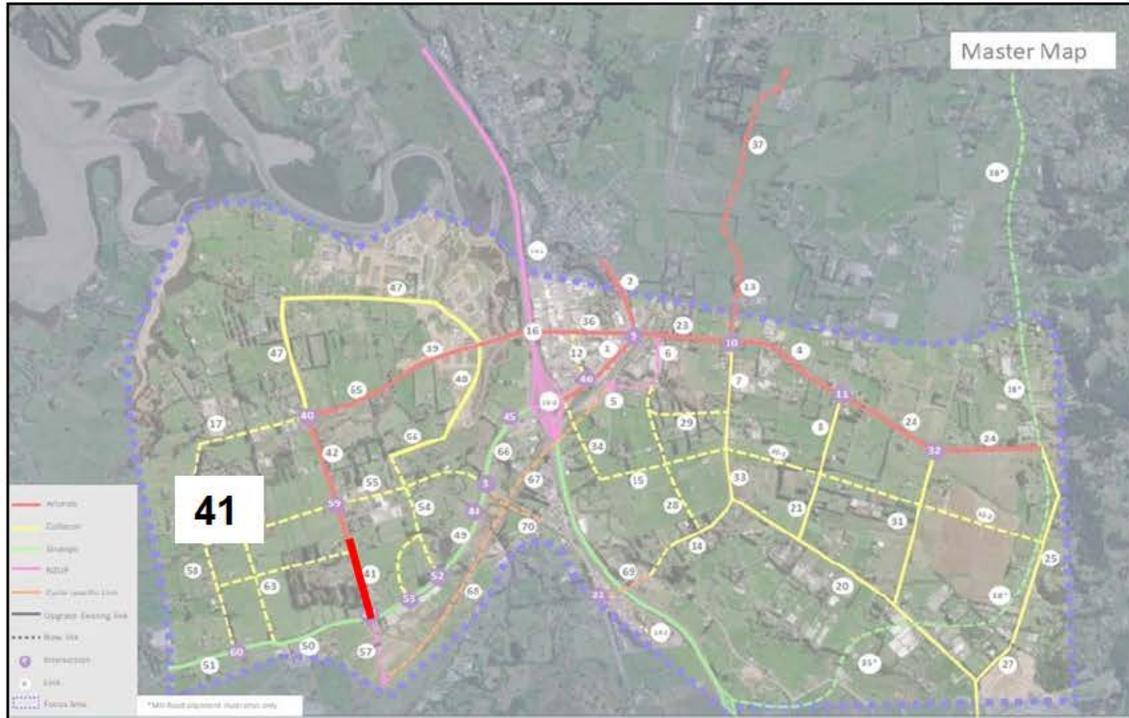


Figure 53: Drury Locality Map – Upgrade of Jesmond Road (southern extent)



Figure 54: Waipupuke Proposed Development (Plan Change 61)⁵

There are two stages proposed for this corridor:

- 41a. Interim 2-lane upgrade with active modes
- 41b. 4-lane upgrade to accommodate the future 4-lane FTN

41a. Interim 2-lane upgrade with active modes

The cost allowance has been developed using the generic unit rates set out in Table 5 above over the length of 520m. For the interim 2-lane upgrade, it is assumed that a full reconstruction of the existing road will be required (reference 1 in Table 5), including provision of the final berm area on the eastern side of the road. It is assumed that the interim works will be accommodated within the existing road reserve, and an interim active mode facility may be constructed on the western side of the road.

As the interim option will be accommodated within the existing road corridor, there is no allowance for property acquisition.

⁵ Image sourced from documents lodged with Council for Plan Change 61

41b. 4-lane upgrade to accommodate the future 4-lane FTN

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC as indicated in Figure 55 below.

To accommodate the 4-lane arrangement, property acquisition will be required. At the northern end near the Waipupuke development, the Jesmond Road widening is accommodated on the western side of Jesmond Road. As the alignment approaches State Highway 22, the widening moves to the eastern side of the road. Therefore, much of the interim upgrade within the existing road corridor would be redundant.

Therefore, a cost allowance for a full reconstruction of the corridor (reference 5 in Table 5) over a length of 300m has been allowed for. It is assumed that upgrade works for the remaining 220m length can be accommodated on the western side, and the unit rate for upgrading an existing 2-lane corridor has been applied for (reference 3 in Table 5).

The property cost allowance for the final 4-lane upgrade is based on the Drury Arterial Network DBC. It is assumed that property has already been acquired for the State Highway 22 intersection, and the property acquisition would be limited to that indicated by the cost estimate summary for Segment 5 in the DBC (refer Appendix 1).



Figure 55: Jesmond Road Upgrade (Drury Arterial Network DBC)

This allows for property cost for the full upgrade of Jesmond Road, extending over a length of 950m, although the section of Jesmond Road included in this upgrade is 320m (assuming the southern 200m section is acquired for construction of the SH22/Jesmond Road intersection). Therefore, a proportional cost of 34% of the DBC property cost has been allocated to this project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
41a	Jesmond Rd upgrades from SH22 to Waipupuke development boundary	Interim	0.0	0.2	1.0	0.6	11	12
41b	Jesmond Rd from SH22 to Waipupuke development boundary	Ultimate	5.5	0.2	1.0	0.7	11	19

42 Jesmond Road Upgrade – northern section

This project extends north along Jesmond Road from the southern boundary of the Waipupuke Development (Plan Change 61 as indicated in Figure 54 above) to the proposed intersection with a new east-west arterial connecting with Jesmond Road. This covers a total length of approximately 780m.

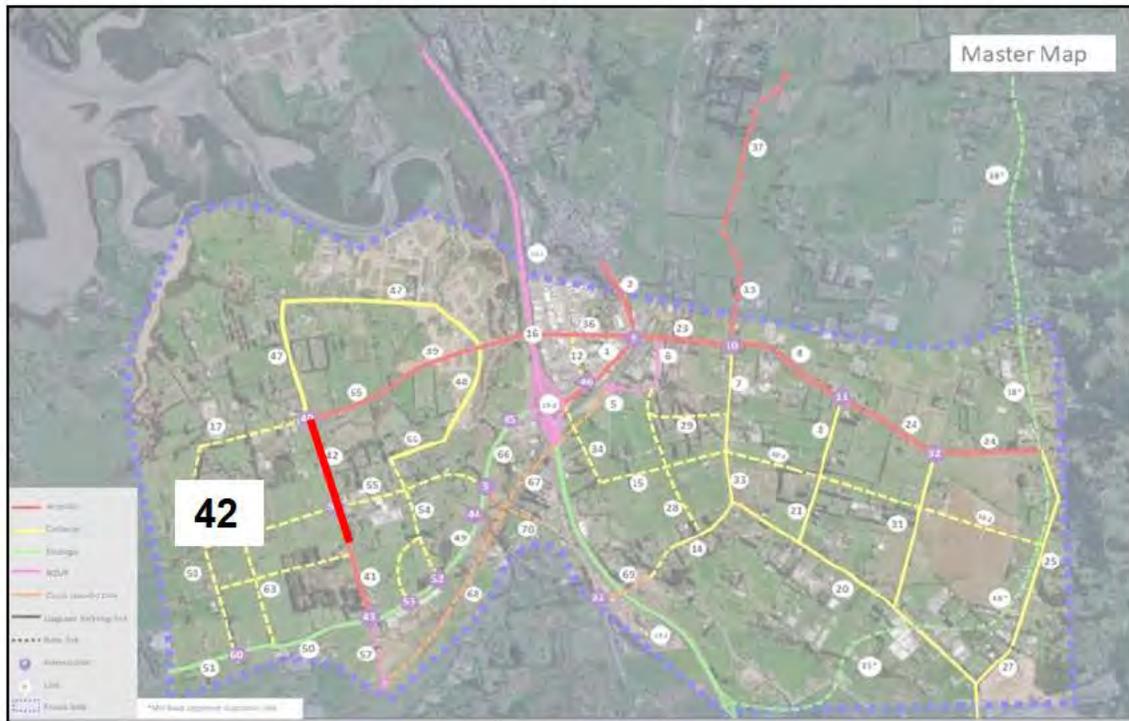


Figure 56: Drury Locality Map – Upgrade of Jesmond Road (northern extent)

There are three stages proposed for this corridor:

- 42a. Provision of Active Mode facilities only
- 42b. Interim 2-lane upgrade with active modes
- 42c. 4-lane upgrade to accommodate the future 4-lane FTN

42a. Provision of Active Mode Facilities

The cost allowance has been developed using the generic unit rates set out in Table 5 over the length of 780m. It is assumed that an active mode facility would be provided on the eastern side of the road. This would involve provision of a new kerb and channel and formed separated walking and cycling facilities (reference 6 in Table 5 for level terrain). The berm formation can be accommodated within the existing road corridor and could be retained for the final 4-lane upgrade. As this active mode option will be accommodated within the existing road corridor, there is no allowance for property acquisition.

42b. Interim 2-lane upgrade with active modes

The cost allowance has been developed using the generic unit rates set out in Table 5 above over the length of 780m. For the interim 2-lane upgrade, it is assumed that a full reconstruction of the existing road will be required (reference 1 in Table 5), including renewal of the final berm area on the eastern side of the road. It is assumed that the interim 2-lane works will be accommodated within the existing road reserve, and an interim active mode facility may be constructed on the western side of the road.

As the interim option will be accommodated within the existing road corridor, there is no allowance for property acquisition.

42c. 4-lane upgrade to accommodate the future 4-lane FTN

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC, and property acquisition will be required on the western side of Jesmond Road.

It is assumed that the interim 2-lane alignment has been developed in the final position for the southbound traffic lanes, and that all works will be limited to construction of the northbound lanes on the western side of the road. Therefore, a cost allowance for additional widening of the corridor (reference 3 in Table 5) over a length of 780m has been allowed for.

The property cost allowance for the final 4-lane upgrade is based on the Drury Arterial Network DBC. It is assumed that property has already been acquired for the State Highway 22 intersection and for the new east west arterial intersection at the northern end of the site (as set out in Section 40b above). Therefore, the property acquisition would be limited to that remaining for the Jesmond Road corridor. The property cost for the full upgrade of Jesmond Road, extending over a length of 950m, is indicated by the cost estimate summary for Segment 5 in the DBC (refer Appendix 1). With 34% of this cost allocated to the southern upgrade of Jesmond Road (Section 41b above), the remaining 66% is allocated to this length.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
42a	Jesmond Rd upgrades from project 41 to New Bremner Rd	Interim	0.0	0.1	0.3	0.2	3	4
42b	Jesmond Rd upgrades from project 41 to New Bremner Rd	Ultimate	0.0	0.3	1.4	1.0	16	19
42c	Jesmond Rd upgrades from project 41 to New Bremner Rd	Ultimate	10.1	0.2	0.7	0.5	8	19

43 State Highway 22/ Jesmond Road Upgrade

This project includes the upgrade of the existing priority-controlled intersection to a signalised intersection.



Figure 57: Drury Locality Map – New intersection at SH22/ Jesmond Road

There are two stages proposed for this corridor:

- 43a. Interim intersection to connect with the existing 2-lane SH22 corridor
- 43b. Upgrade of the intersection to accommodate the future 4-lane FTN on Jesmond Road and the 4-laning on SH22.

The cost allowance has been developed using the generic unit rates set out in Table 5 above. For the interim intersection, an allowance for a complex intersection (reference 14 in Table 5) has been adopted due to the need to reconstruct a large portion of State highway 22 to correct the shape of the road and provide additional lanes and traffic signal hardware the adjacent roads. It is likely that an upgrade of State Highway 22 and Jesmond Road will be required over a length on the approaches to the intersection. In order to upgrade the intersection to its final 4-lane form to accommodate four laning of SH22 and the FTN, a simple upgrade to the intersection is allowed for (reference 13 in Table 5).

Property Cost Allowance Assumptions:

For property acquisition, it is assumed that the interim signalisation can be accommodated within the existing road reserve. Therefore, the full allowance for property has been included in the future upgrade cost.

For this cost allowance, the property cost identified in the Detailed Business Case has been allocated to the intersection upgrade. As set out in the cost estimate summary for Segment 5 included in the Drury Arterial Network cost report (Appendix 1), the property cost allowance has been determined to be \$700k.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
43a	Intersection upgrade on Jesmond Rd/SH22 Rd	Interim	0.0	0.2	0.8	0.5	9	10
43b	Intersection upgrade on Jesmond Rd/SH22 Rd	Ultimate	0.6	0.1	0.4	0.2	4	5

44 State Highway 22/ Burberry Road Intersection Upgrade

This project includes the upgrade of the existing priority-controlled intersection to a signalised intersection.



Figure 58: Drury Locality Map – New intersection at SH22/ Burberry Road

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that the physical works to install traffic signals are limited to the installation of traffic signal hardware and some localised widening to provide approach lanes. Therefore, an allowance has been provided for a simple upgrade to the intersection (reference 13 in Table 5).

Property Cost Allowance Assumptions:

It is assumed that the interim signalisation can be accommodated within the existing road reserve. Therefore, there is no allowance for property acquisition for this project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
44	Intersection at SH22/Burberry Rd (likely to close entirely)	Ultimate	0.0	0.1	0.4	0.2	4	5

45 State Highway 22/ Victoria St Intersection Upgrade

This project includes the upgrade of the existing priority-controlled intersection to a signalised intersection.

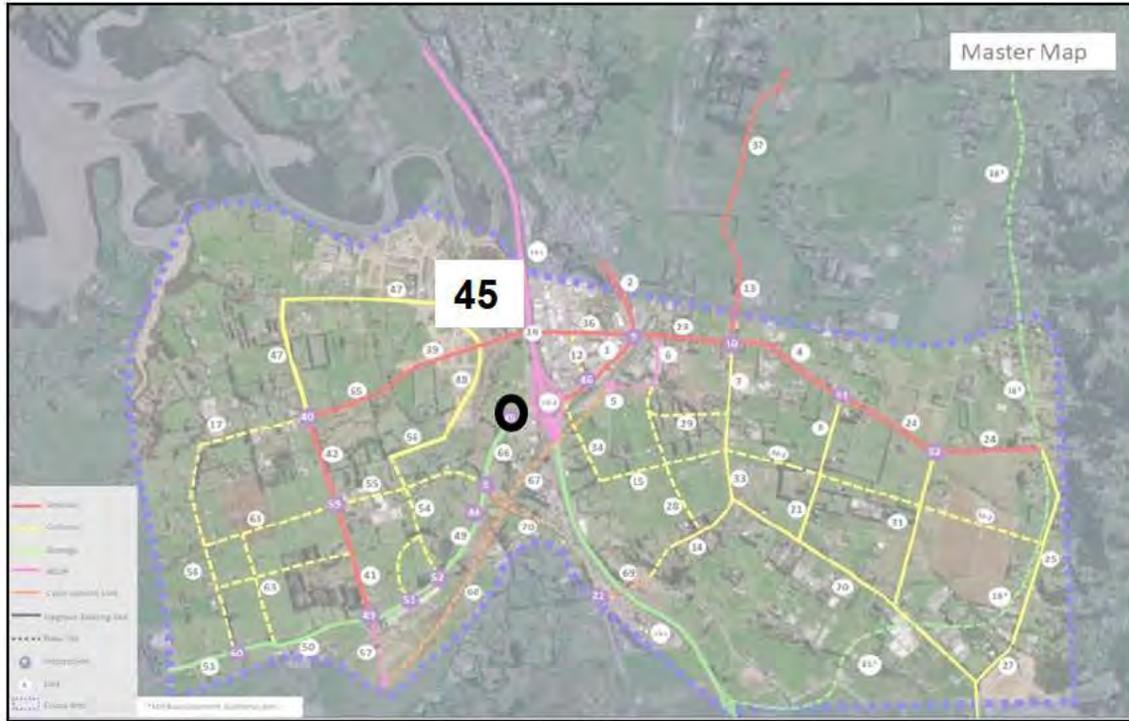


Figure 59: Drury Locality Map – New intersection at SH22/ Victoria St

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that the physical works to install traffic signals are limited to the installation of traffic signal hardware and some localised widening to provide approach lanes. Therefore, an allowance has been provided for a simple upgrade to the intersection (reference 13 in Table 5).

Property Cost Allowance Assumptions:

It is assumed that the interim signalisation can be accommodated within the existing road reserve. Therefore, there is no allowance for property acquisition for this project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
45	Upgrade intersection at SH22/Victoria Rd	Interim	0.0	0.1	0.4	0.2	4	5

49 SH22 improvements from GSR Intersection to Jesmond Rd

This project extends along State Highway 22 from the Great South Road intersection to the Jesmond Road intersection. This covers a total length of approximately 780m.



Figure 61: Drury Locality Map – SH22 Upgrade: Great South Road to Jesmond Road

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC. The assumptions for the Business Case are that the full corridor will need to be reconstructed to form the 4-lane urban arterial. This is due to the change in the horizontal alignment and the need to accommodate an appropriate profile for the road cross section.

The base cost for the physical works included in the Drury Arterials DBC was \$43M (as set out in the cost summary in Appendix 1 – Segment 4). This included the full length from the Ngākōroa Stream Bridge through to a point east of the Jesmond Road intersection, a length of 1.25km. Of this total, approximately \$10M is associated with the Ngākōroa Stream bridge. Therefore, the cost allowance for the section from Great South Road to Jesmond Road has been developed based on a proportional approach for the 780m length (i.e., 30% of the cost) with the cost of the Ngākōroa Stream bridge also allocated to this section. This results in a total Base cost of

The property cost allowance for the final 4-lane upgrade is also based on the Drury Arterial Network DBC, adopting a similar proportional approach.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
49	SH22 improvements from GSR Intersection to Jesmond Rd	Ultimate	16	0.6	2.6	1.7	29	50

50 SH22 improvements from Jesmond Road to Oira Road

This project extends along State Highway 22 from the Jesmond Road intersection to the Oira Road intersection. This covers a total length of approximately 900m.

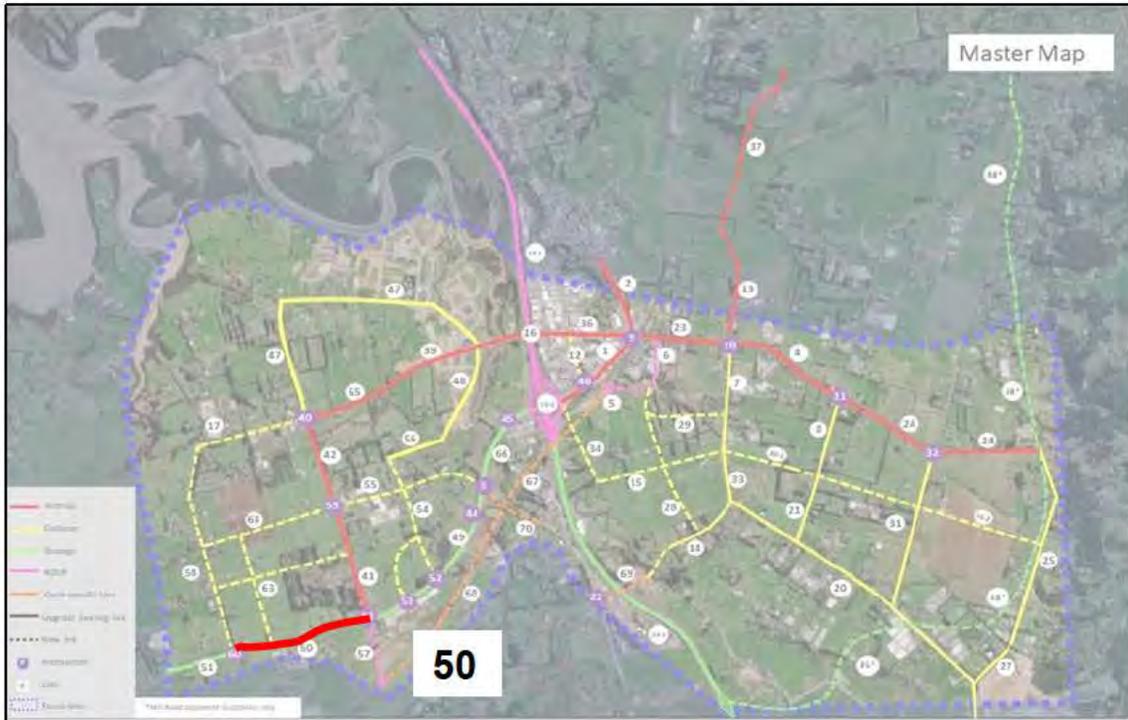


Figure 62: Drury Locality Map – SH22 Upgrade: Jesmond Road to Oira Road

There are two stages proposed for this corridor:

- 50a. Interim active mode upgrades on the northern side of the road
- 50b. Upgrade of the SH22 corridor to an urban 4-lane arterial

For the interim provision of an active mode facility, it is assumed that the existing SH22 road corridor would remain as it is. The active modes would consist of a new footpath and cycle path on the north side of the road and therefore, an allowance has been provided for a simple footpath over the project length of 900m (reference 9 in Table 5). All works can be accommodated within the road reserve so there is no property allowance.

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC. The assumption for the Business Case is that the full corridor will need to be reconstructed to form the 4-lane urban arterial. This is due to the change in the horizontal alignment and the need to accommodate an appropriate profile for the road cross section.

The base cost for the physical works included in the Drury Arterials DBC was \$15M (as set out in the cost summary in Appendix 1 – Segment 2). This includes the full length between the 2 intersections (not including the intersections themselves), being a total length of 750m. It is assumed the additional costs for the approaches to the intersections are included within the intersection costs themselves.

The property cost allowance for the final 4-lane upgrade is also based on the Drury Arterial Network DBC.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
50a	SH22 improvements from Jesmond Rd to Oira Rd- active mode upgrades on the northern section	Interim	0.0	0.0	0.2	0.1	2	2
50b	SH22 improvements from Jesmond Rd to Oira Rd	Ultimate	5	0.4	1.9	1.3	21	29

51 SH22 improvements from Oira Rd to Oira Creek

This project extends along State Highway 22 from the Oira Road intersection to the western extent of the Future Urban Zone near Oira Creek. This covers a total length of approximately 700m and includes provision of a roundabout at the Oira Road intersection.



Figure 63: Drury Locality Map – SH22 Upgrade: Oira Road to Oira Creek

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC. The assumption for the Business Case is that the full corridor will need to be reconstructed to form the 4-lane urban arterial. This is due to the change in the horizontal alignment and the need to accommodate an appropriate profile for the road cross section.

The base cost for the physical works included in the Drury Arterials DBC was \$12M (as set out in the cost summary in Appendix 1 – Segment 1). This includes the full length from east of the Oira Road roundabout (including the roundabout itself) to the transition with the existing rural state highway alignment at Oira Creek (FUZ boundary). The property cost allowance for the final 4-lane upgrade is also based on the Drury Arterial Network DBC.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
51	SH22 Improvements from Oira Rd to Oira Creek - subject to design, could be incorporated with project 60	Interim	11	0.3	1.5	1.0	17	31

52 State Highway 22/ Macpherson Road Intersection Upgrade

This project includes the upgrade of the existing priority-controlled intersection to a signalised intersection.

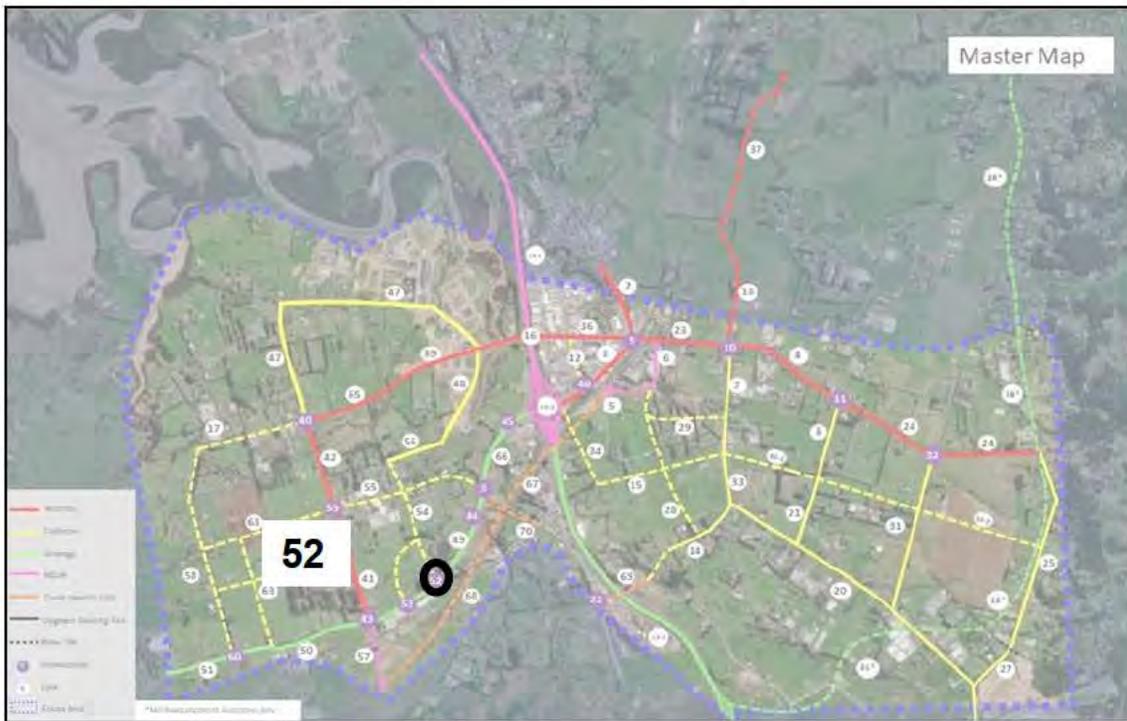


Figure 64: Drury Locality Map – New intersection at SH22/ McPherson Road

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that the physical works to install traffic signals are limited to the installation of traffic signal hardware and some localised widening to provide approach lanes. Therefore, an allowance has been provided for a simple upgrade to the intersection (reference 13 in Table 5).

Property Cost Allowance Assumptions:

It is assumed that the interim signalisation can be accommodated within the existing road reserve. Therefore, there is no allowance for property acquisition for this project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
52	Intersection upgrade- on SH22/ McPherson Rd/Karaka Rd (Auranga B1)	Ultimate	0.0	0.1	0.4	0.2	4	5

53 New Intersection on State Highway 22 to serve the Auranga Development

This project includes the construction of a new intersection between Jesmond Road and McPherson Road to serve the new development to the north.



Figure 65: Drury Locality Map – New intersection on SH22 east of Jesmond Road

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that the physical works to install traffic signals are limited to the installation of traffic signal hardware and some localised widening to provide approach lanes. Therefore, an allowance has been provided for a simple upgrade to the intersection (reference 13 in Table 5).

Property Cost Allowance Assumptions:

It is assumed that the interim signalisation can be accommodated within the existing road reserve. Therefore, there is no allowance for property acquisition for his project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
53	New Intersection east of Jesmond Rd (Auranga B1 main street)	Ultimate	0.0	0.1	0.3	0.2	4	4

54 New North-South Collector Roads within Auranga B1 Development

This project provides two new 2-lane urban connections through the proposed Auranga Development. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.



Figure 66: Drury Locality Map – New North-South Collector Roads within the Auranga Development

The scope includes construction of 2 new links connecting to State Highway 22, as well as a minor intersection joining the two roads. The total length of Collector road is assumed to be 1.2km. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above). It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for a 1.2km length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
54	New N-S collectors internal to Auranga B1 (2 links)+ Intersections	Ultimate	7	0.5	2.4	1.6	26	38

55 New East-West Collector Road within Auranga B1 Development

This project provides a new 2-lane urban connection through the proposed Auranga Development. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.

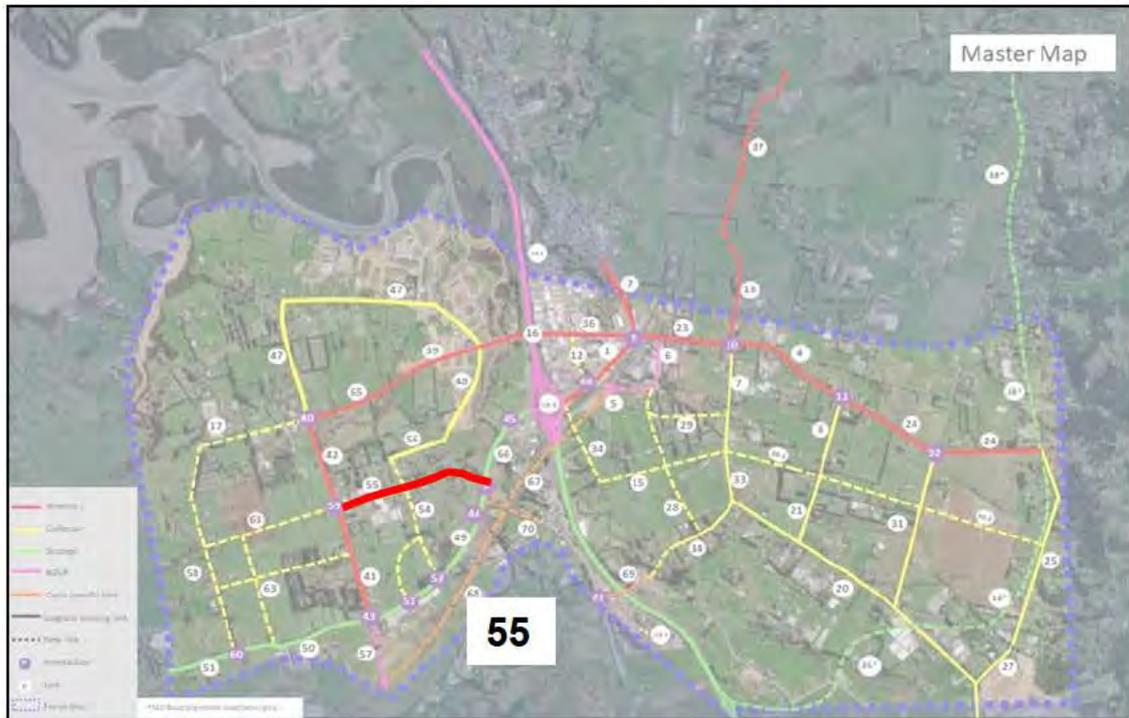


Figure 67: Drury Locality Map – New East-West Collector Roads within the Auranga Development

The scope includes construction of a new east-west collector road connecting State Highway 22 with Jesmond Road, as well as a minor intersection where the road connects with a new North-South Collector Road. The total length of Collector road is assumed to be 870m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above). While, there is a stream crossing, it is assumed that a culvert will be provided and the cost for this is included within the linear rate allowance for a 2-lane road corridor.

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for an 870m length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
55	New E-W collector Jesmond Rd to SH22	Ultimate	5	0.4	1.8	1.2	20	29

55a - East -West Extension from Jesmond Rd to Burberry Road

This project provides a new 2-lane urban connection through the proposed Auranga Development. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.



Figure 68: Drury Locality Map – New East-West Collector Roads within the Auranga Development

The scope includes construction of a new east-west collector road connecting Burberry Road with Jesmond Road, as well as a minor intersection where the road connects with a new North-South Collector Road. An allowance (50%) has also been included as a contribution to the new intersection on Jesmond Road.

The total length of Collector road is assumed to be 550m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above). While, there is a stream crossing, it is assumed that a culvert will be provided and the cost for this is included within the linear rate allowance for a 2-lane road corridor.

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for an 550m length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
55a	New E-W collector Jesmond Rd to Burberry Rd	Ultimate	3.7	0.3	1.5	1.0	17	23

56 Burberry Rd north connection to Auranga Precinct

This project provides a new 2-lane urban connection through the proposed Auranga Development to connect Burberry Road with Tributary Parade. The works involve formation of a new collector road in greenfields environment, with active modes on both sides.



Figure 69: Drury Locality Map – New East-West Collector Roads within the Auranga Development

The scope includes construction of a new collector road connecting the northern end of Burberry Road with the newly constructed Tributary Paraded Road, as well as a minor intersection where the road connects with a new North-South Collector Road. The total length of Collector road is assumed to be 500m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above).

It is assumed that land is required for road corridor only and built-in conjunction with developer, so no temporary acquisition required. The area of land to be acquired is for a 500m length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
56	Burberry Rd north connection to Auranga Precinct	Ultimate	2	0.3	1.2	0.8	14	18

58 Oira Road Upgrade

This project provides an upgrade of Oira Road from the intersection with State Highway 22 to a new Collector Road running in an east-west direction. The works involve a full reconstruction of the existing rural road, with active modes provided on both sides.



Figure 70: Drury Locality Map – Oira Road Upgrade

The scope includes the reconstruction of Oira Road from the State Highway 22 intersection for a length of 1,300m. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above). Provision for two simple roundabouts has also been included.

It is assumed that the works can be accommodated within the existing road corridor, and therefore there is no allowance for property acquisition included.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
58	Oira Rd upgrades from SH22 to proposed east-west collector	Ultimate	0.0	0.7	3.3	2.2	36	43

59 New Intersection on Jesmond Rd

This project includes the provision of a new intersection on Jesmond Road to accommodate two new collector roads running in an East West direction.

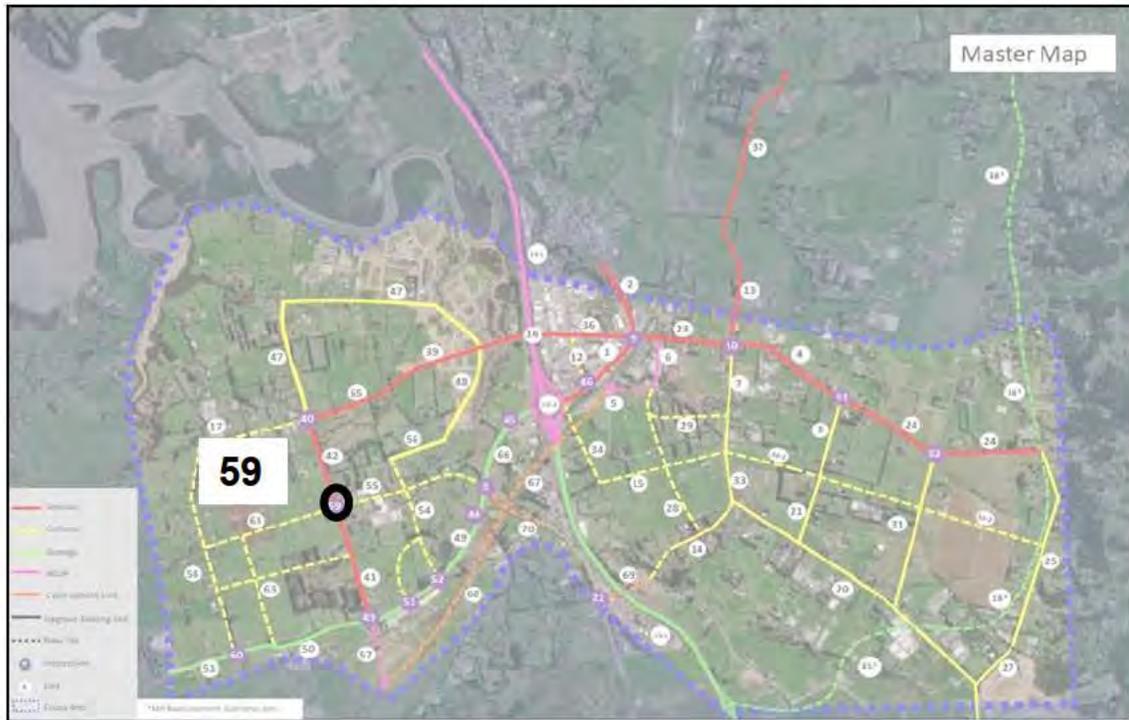


Figure 71: Drury Locality Map – New intersection on Jesmond Road

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that a simple 2-lane roundabout would be provided at the intersection. Therefore, an allowance has been provided for a simple upgrade to the intersection (reference 11 in Table 5).

It is assumed that the roundabout can be accommodated within the road reserve. Therefore, there is no allowance for property acquisition for his project.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
59	New Intersection on Jesmond Rd/collector (PC61)	Ultimate	0.0	0.1	0.4	0.3	5	6

60 New Intersection on State Highway 22 at Oira Road

This project includes the provision of a new roundabout on State Highway 22 at the Oira Road intersection. There are two stages proposed for this corridor:

- 60a. initially a single circulating lane roundabout will be constructed to serve the existing 3-leg intersection
- 60b. Future upgrade to a dual circulating lane, with a 4th leg added to the south.

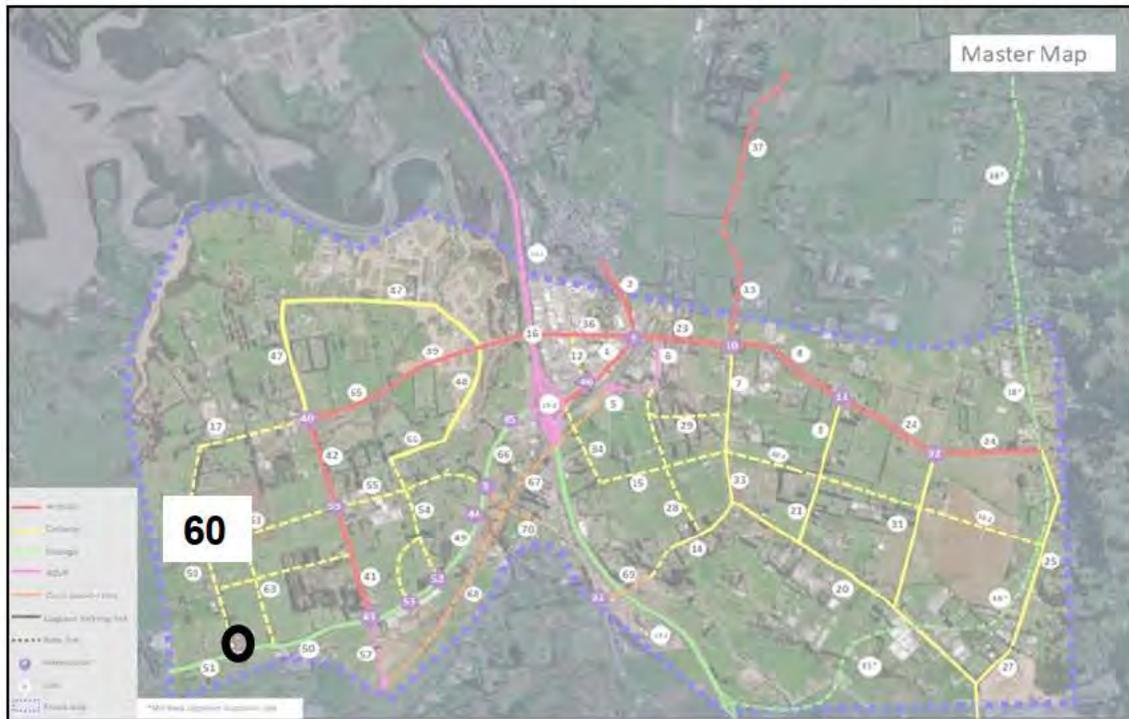


Figure 72: Drury Locality Map – New intersection on SH22 at Oira Road

The cost allowance has been developed using the generic unit rates set out in Table 5 above. It is assumed that a simple single lane roundabout would be provided at the intersection initially. Therefore, an allowance has been provided for a simple upgrade to the current priority-controlled intersection (reference 11 in Table 5). As this is a rural high-speed roundabout, it is assumed that the final land will be acquired for the initial construction of the 3-leg roundabout.

It is assumed that the interim 3-leg roundabout would be constructed to minimise redundancy, and the central island will be consistent with the final form. This would mean that the pavement for the single lane roundabout would remain, and an additional lane added to the outside to form a dual lane roundabout. Therefore, an additional allowance of half a simple single lane roundabout has been provided for the future upgrade.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
60a	SH22 Intersection upgrade - Oira Rd (3 leg)	Interim	4.0	0.1	0.4	0.3	5	10
60b	SH22 Intersection upgrade - Oira Rd (4 leg)	Ultimate	0.0	0.0	0.2	0.1	2	3

63 New collectors internal to Waipupuke Development (PC61)

This project provides three new 2-lane urban connections through the proposed Waipupuke Development as set out in Plan Change 61. The works involve formation new collector roads in greenfields environment, with active modes on both sides.

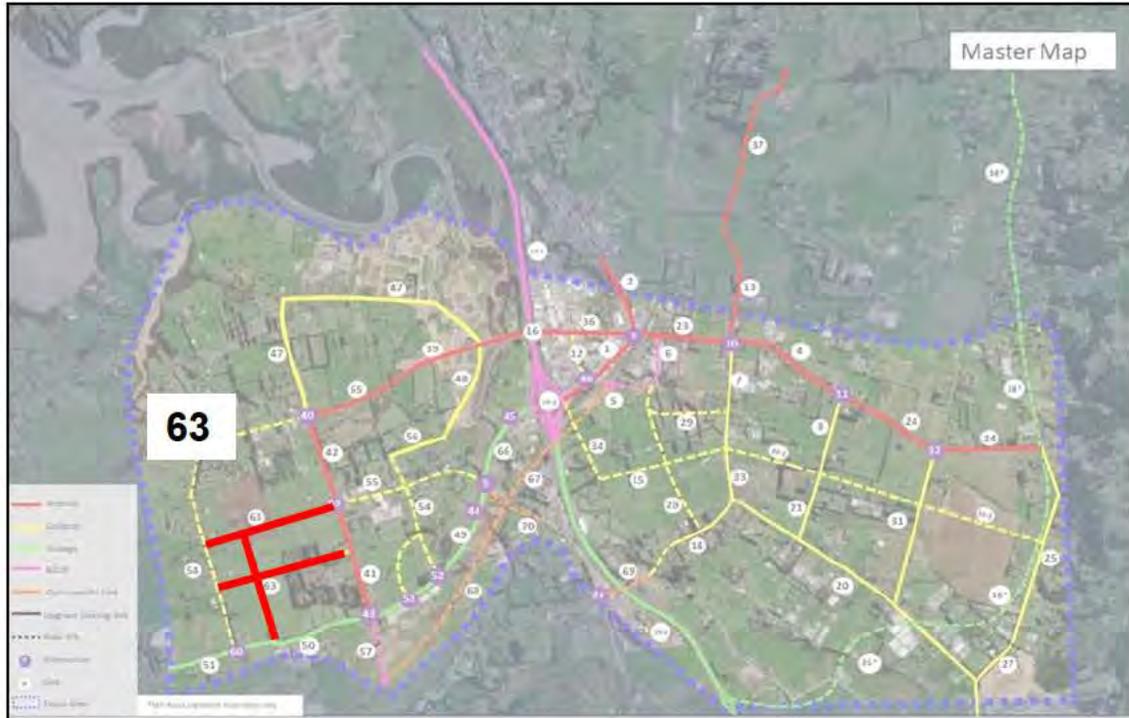


Figure 73: Drury Locality Map – New Collector Roads within the Waipupuke Development

The scope includes construction of 3 new links connecting to Jesmond Road, Oira Road and State Highway 22, as well as two new minor intersections joining the three roads. The total length of Collector road is assumed to be 1.8km. The cost allowance has been developed using a 2-lane rate (reference 1 in Table 5 above).

It is assumed that land is required for road corridor only and built-in conjunction with the development, so no temporary acquisition required. The area of land to be acquired is for a 1.8km length with a 20m cross section.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
63	New collectors internal to Waipupuke PC61 (3 links)+ Intersections	Ultimate	9	0.8	3.8	2.5	42	58

65 Auranga Drive Extension

This project extends from the end of the recently constructed Auranga Drive in the east to Jesmond Road in the west. This covers a total length of approximately 660m. There are two stages proposed for this corridor:

- 65a. 2-lane urban- new road layout with active modes on both sides
- 65b. Future upgrade to a 4-lane urban FTN arterial with active modes on both sides.

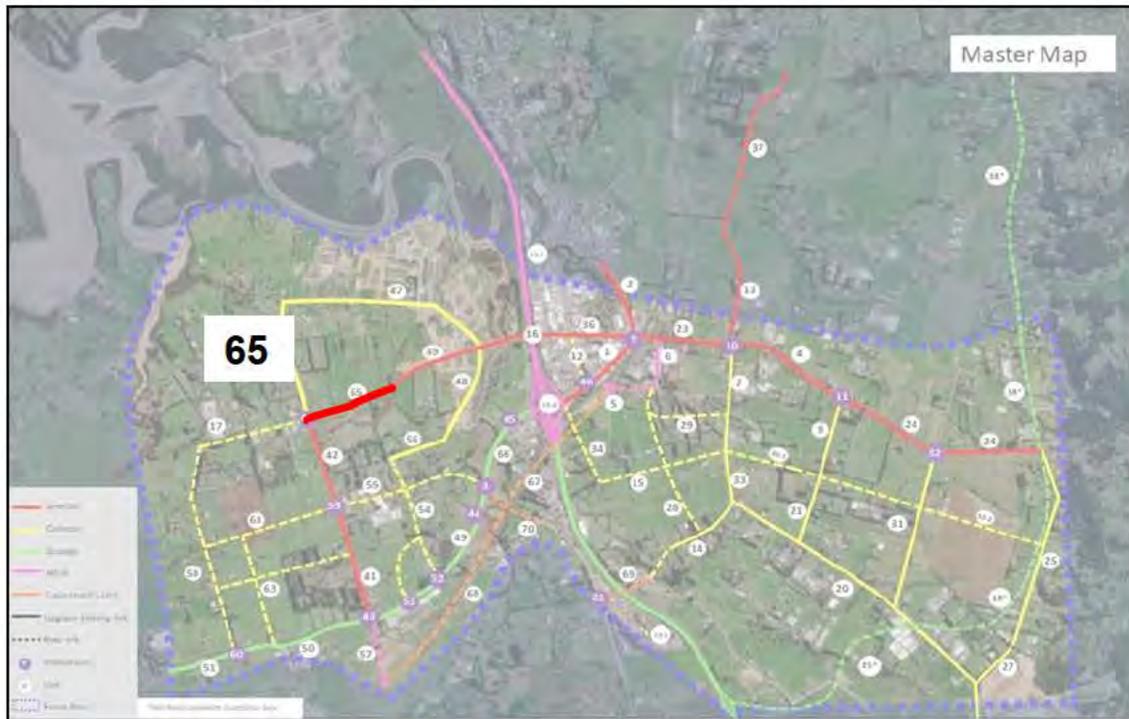


Figure 74: Drury Locality Map – New Arterial from Auranga Drive to Jesmond Road

The scope of work involves the initial construction of a 2-lane urban corridor. It is assumed that the initial construction would involve the earthworks and formation for the final 4-lane corridor consistent with the approach taken for the recent Auranga Drive construction (as identified in Figure 51 above). The total length of the road is assumed to be 680m. The cost allowance has been developed using a 2-lane rate (reference 2 in Table 5 above). Within this length is the construction of a new bridge to cross the stream at the western end of Auranga Drive (as indicated in the image in Figure 75 below). This bridge is assumed to be a single span of 30m length. For the interim option, it is assumed that a 2-lane bridge would be constructed with a width of 18m to accommodate active modes on both sides of the bridge.

For the upgrade to the future 4-lane FTN arterial, the works would be limited to formation of the westbound carriageway (2-lanes) with new kerb and channel and a newly constructed berm area. As majority of the construction work would have been carried out in the interim phase, an allowance for the additional work to form 4 lanes is provided (reference 3 in Table 5 above). It is also assumed that the bridge would need to be widened to 24m, so an additional bridge construction cost for 180m² of bridge construction is also included.

To construct the interim 2-lane option within the 4-lane footprint and complete the final earthworks, all the property would need to be acquired for the interim 2-lane option. The property cost has been extracted from those affected properties identified in the Drury Arterial Network DBC and reflects approximately 42,000m² of both permanent acquisition and temporary lease during construction.



Figure 75: Future 4-lane FTN extension of Auranga Drive

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
65a(i)	New Bremner Rd arterial from Auranga development to Jesmond Rd (excl)	Interim	10.0	0.3	1.3	0.9	15	27
65a(ii)	New Bremner Rd arterial from Auranga development to Jesmond Rd (bridge)	Interim	0.0	0.1	0.4	0.3	4	5
65b(i)	New Bremner Rd arterial from Auranga development to Jesmond Rd (excl bridge)	Ultimate	0.0	0.1	0.6	0.4	6	8
65b(ii)	New Bremner Rd arterial from Auranga development to Jesmond Rd (bridge widening)	Ultimate	0.0	0.0	0.1	0.1	2	2

66 SH22 Upgrade - Karaka Road to Drury Interchange

This project extends along State Highway 22 from the Great South Road intersection to the Victoria Ave intersection. This covers a total length of approximately 430m.



Figure 76: Drury Locality Map – SH22 Upgrade: Great South Road to Victoria Ave

The Drury Interchange is currently being upgraded through the NZ Upgrade Programme. The tie in for these works is the western side of the Ngākōroa Stream bridge. The future upgrade will involve the reconstruction of a new bridge over the Ngākōroa Stream, and it is assumed that this section of SH22 will require a full reconstruction to accommodate the future 4-lane corridor. This will be required to convert the existing rural road profile to a lower urbanised speed environment, and also to accommodate the amended horizontal and vertical geometry identified in the Drury Arterial Network DBC (image provided in Figure 77 below).

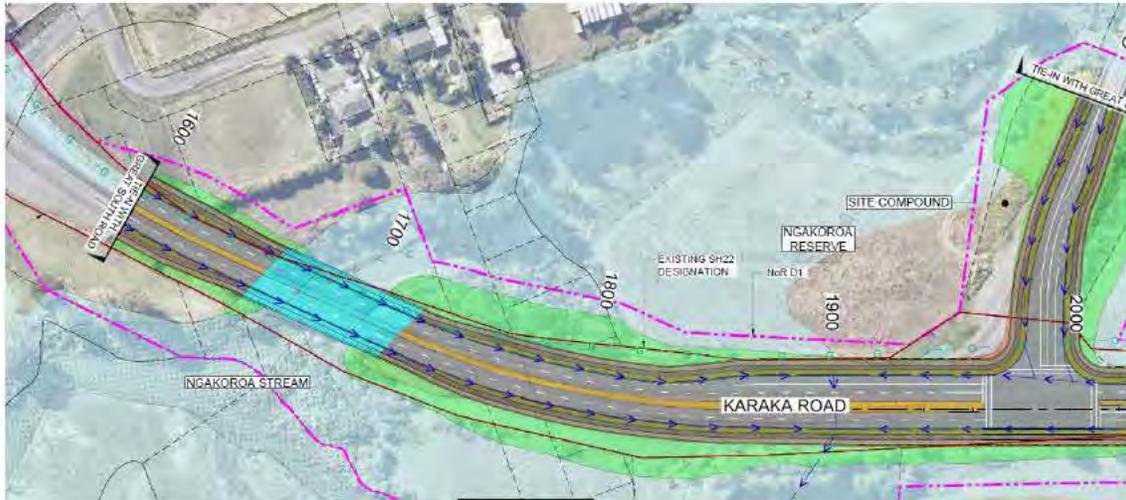


Figure 77: SH22 Upgrade: Great South Road to Victoria Ave as set out in the Drury Arterial Network DBC

The extent of the project is from Great South Road to the tie in with Victoria Ave, reflecting an assumed length of 430m. This includes a 60m length of new bridge across the Ngākōroa Stream.

The final 4-lane layout is assumed to be as presented in the Drury Arterial Network DBC. The assumption for the Business Case is that the full corridor will need to be reconstructed to form the 4-lane urban arterial. This is due to the change in the horizontal alignment and the need to accommodate an appropriate profile for the road cross section.

The base cost for the physical works included in the Drury Arterials DBC was \$43M (as set out in the cost summary in Appendix 1 – Segment 4). This included the full length from the Ngākōroa Stream Bridge through to a point east of the Jesmond Road intersection, a length of 1.25km. Of this total, approximately \$10M is associated with the Ngākōroa Stream bridge. Therefore, the cost allowance for the section from Great South Road to Victoria Ave has been developed based on a proportional approach for the 370m length (i.e., 30% of the cost) with the cost of the Ngākōroa Stream bridge also allocated to this section.

The property cost has been extracted from those affected properties identified in the Drury Arterial Network DBC and reflects approximately 30,000m² of both permanent acquisition and temporary lease during construction.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
66	SH22 Improvements - west of SH1 interchange to GSR	Ultimate	11	0.5	2.5	1.6	27	43

67 Active Mode Corridor: Drury Central to Great South Road

This project provides a walking and cycling connection from the proposed Drury Central Station, beneath the SH1 Southern Motorway, through to Great South Road. This covers a total length of approximately 1.6km.



Figure 78: Drury Locality Map – Drury Central to Great South Road Active Mode Corridor

An indicative alignment for the active mode corridor from Pukekohe to Drury was prepared as part of the Rail Package DBC. The scope includes provision of an active mode facility around the outside of the proposed Drury Central Station to connect with Flannagan Road on the western side of the station. There is a new bridge crossing of the stream on the eastern side of the Drury Interchange, and the active mode corridor would be accommodated between the bridge piers to be constructed for the upgrade of the Drury Interchange. The alignment then extends on an earthworks embankment through to Great South Road.

The cost estimate for this section of the Strategic Active Mode corridor (Section E - ch600 to 2200) has been extracted from the cost estimate prepared for Rail Package DBC. The base cost for the physical works for Section E was \$22M. This included the full length from the Drury Central Station through to Burt Road, a length of 2.2km. Therefore, the cost allowance for the section from Drury Central Station to Great South Road has been developed based on a proportional approach for the 1.6km length (i.e., 73% of the cost).

The property cost has been extracted from those affected properties identified in the Rail Package DBC and reflects approximately 20,000m² of both permanent acquisition and temporary lease during construction.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
67	Active Mode Corridor Drury Central to GSR	Ultimate	7.0	0.5	2.0	1.4	23	33

68 Active Mode Corridor: Great South Road to Drury West Station

This project provides a walking and cycling connection from the Great South Road to the proposed Drury Central Station. This covers a total length of approximately 1.3km.

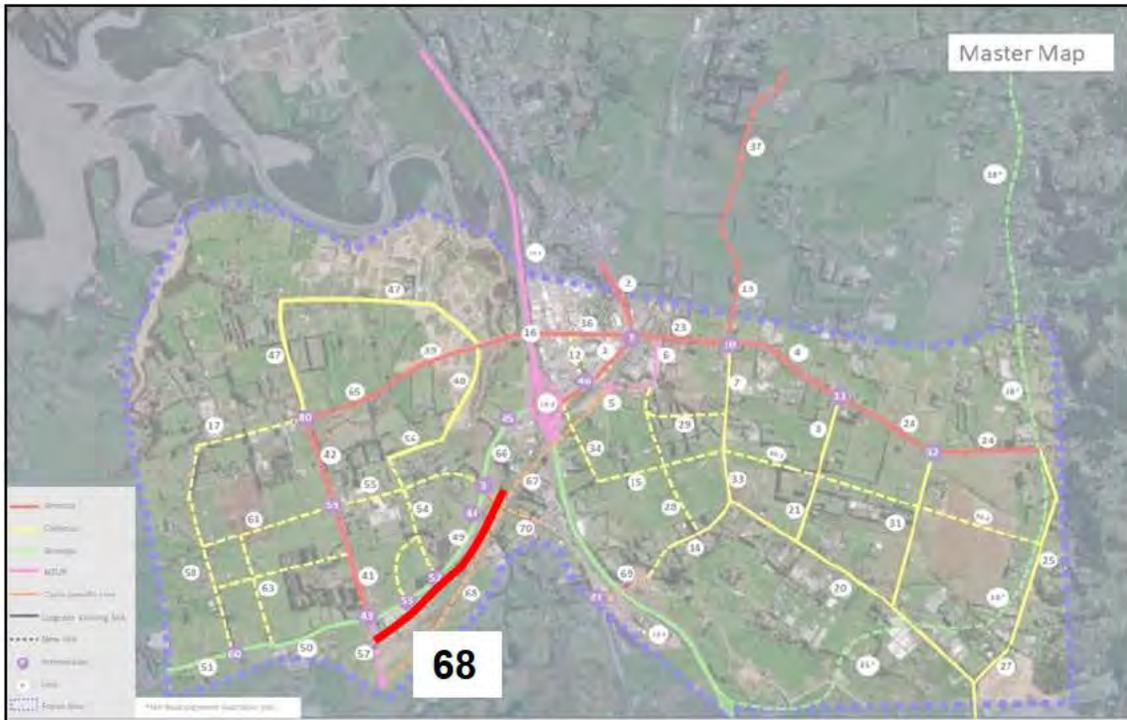


Figure 79: Drury Locality Map – Great South Road to Drury West Station Active Mode Corridor

An indicative alignment for the active mode corridor from Pukekohe to Drury was prepared as part of the Rail Package DBC. The scope includes provision of an active mode facility along the south side of the rail line and is on sections of both cut and embankment.

The cost estimate for this section of the Strategic Active Mode corridor (Section D from ch2100 to 2800 and Section E from ch0 to 600) has been extracted from the cost estimate prepared for Rail Package DBC. The base cost for the physical works for Section D and Section E was \$16M and \$22M respectively, which covered a total corridor length of approximately 5km. Therefore, the cost allowance for the section from Great South Road to Drury West Station has been developed based on a proportional approach for the 1.3km length (calculated separately for both Sections D and E being 24% and 27% respectively).

The property cost has been extracted from those affected properties identified in the Rail Package DBC and reflects approximately 73,000m² of both permanent acquisition and temporary lease during construction.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
68	Active Mode Corridor GSR to Drury West	Ultimate	23.2	0.3	1.3	0.8	14	40

69 Active Mode Corridor: Quarry Road Bridge

This project involves provision of an upgraded walking and cycling connection over the SH1 Southern Motorway at Quarry Road overbridge.

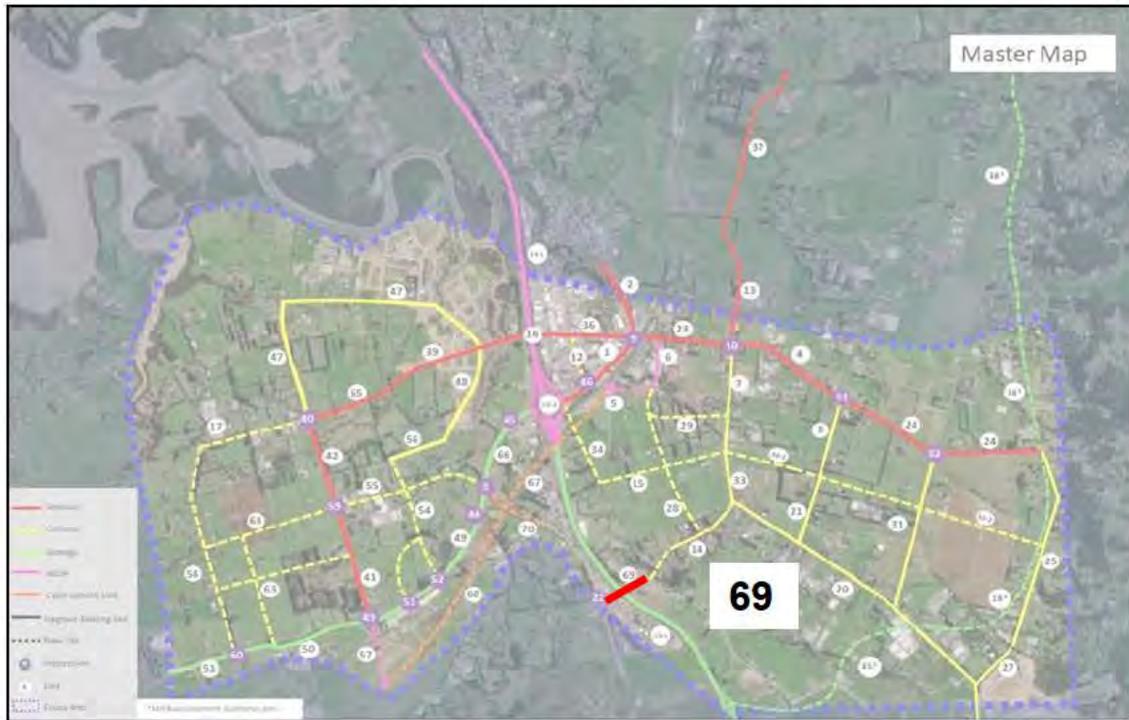


Figure 80: Drury Locality Map – Quarry Road Active Mode Facility

The existing bridge over the motorway does not have any facilities for pedestrians. Therefore, the scope of this project is to provide a new pedestrian/cycle bridge to the north of the existing bridge. This is assumed to be 90m long to match the existing road bridge and will have an assumed width of 5m to allow clear width for pedestrians and cyclists as well as accommodate appropriate bridge barrier and structural elements. There will also need to be new facilities provided on the approach to the bridge on both sides. For the approaches, an allowance has been provided for a simple footpath (reference 9 in Table 5) over a total combined length of 200m.

It is assumed that the works can be carried out fully within the existing road reserve, and therefore there is no allowance for property acquisition.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
69	walk/cycle bridges on Quarry Road bridge (over SH1)	Ultimate	0.0	0.1	0.4	0.3	5	5

70 Active Mode Corridor: Great South Road Rail overbridge

This project involves provision of an upgraded walking and cycling connection over the North Island Main Trunk rail line at Great South Road.



Figure 81: Drury Locality Map – Great South Road NIMT rail line crossing Active Mode Facility

The existing bridge over the NIMT rail line does not have any facilities for pedestrians. Therefore, the scope of this project is to provide a new pedestrian/cycle bridge to the east of the existing bridge. This is assumed to be 80m long to match the existing road bridge and will have an assumed width of 5m to allow clear width for pedestrians and cyclists as well as accommodate appropriate bridge barrier and structural elements. There will also need to be new facilities provided on the approach to the bridge on both sides. For the approaches, an allowance has been provided for a simple footpath (reference 9 in Table 5) over a total combined length of 270m.

It is assumed that the works can generally be carried within the existing road reserve, although a small area of land is likely to be required on the northern side of the bridge. An allowance for this has been included in the cost allowance.

Cost Allowance Summary:

No	Project Schedule	Project Stage	Property (\$M)	Project Development (2%)	Pre-Implementation (9%)	Implementation (6%)	Physical Works (\$M)	Indicative Cost (\$M)
70	walk/cycle bridges on GSR Road bridge over the rail corridor	Ultimate	0.2	0.1	0.3	0.2	4	4

Appendix 1 - Drury Arterial Network DBC Cost Estimate Report

Appendix 1.1 - Drury Arterial Network Detailed Business Case Cost Estimate Report

“Supporting Growth Detailed Business Case – Drury”, Appendix C - Drury Cost Estimate Report, Version 1.1, 2nd November 2020, Prepared by Te Tupu Ngātahi Supporting Growth

Supporting Growth

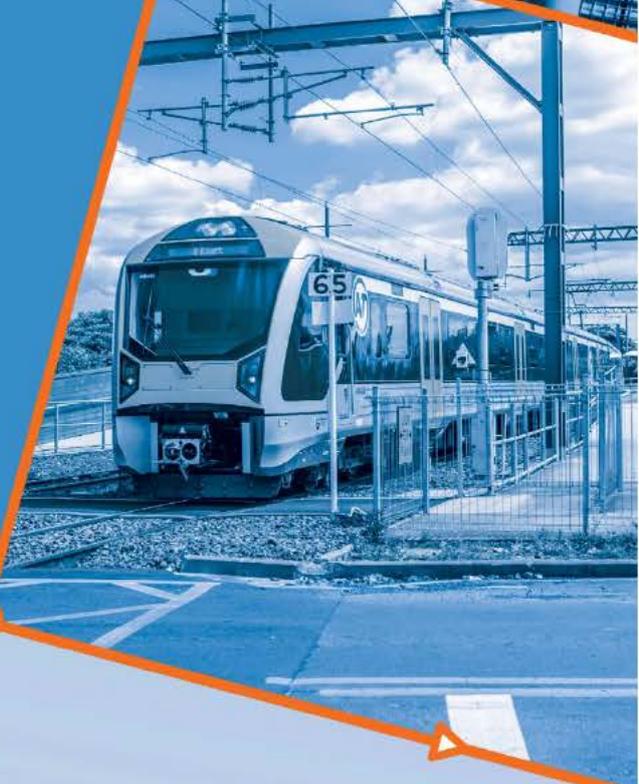
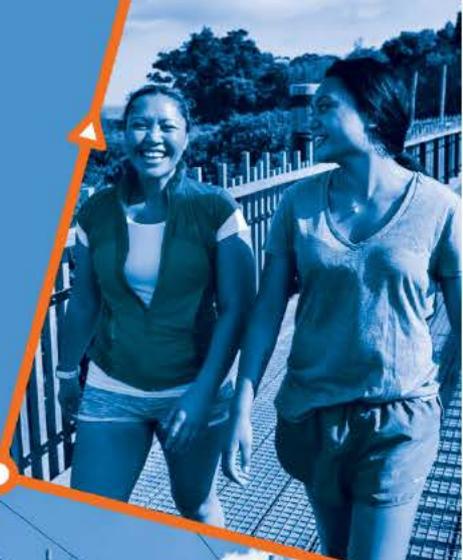
Detailed Business Case - Drury

Appendix C

Drury Cost Estimate Report

Version 1.1

2 November 2020



Document Status

Responsibility	Name
Author	Alex Revell
Reviewer	Nick Guo
Approver	Rob Mason

Revision Status

Version	Date	Reason for Issue
1.0	28 th August 2020	Business Case Issue
1.1	2 nd November 2020	Final

Disclaimer

This is a draft document for review by specified persons at Auckland Transport and the New Zealand Transport Agency. This draft will subsequently be updated following consideration of the comments from the persons at Auckland Transport and the New Zealand Transport Agency. This document is therefore still in a draft form and is subject to change. The document should not be disclosed in response to requests under the Official Information Act 1982 or Local Government Official Information and Meetings Act 1987 without seeking legal advice.

Cost Estimate Summary Table

Table 1: Elemental Cost Summary (\$M)

Project	Property	Dev	Pre-Imp	Construt	Base	P50	P95
SH22/OIRA RD ROUNDABOUT	\$8.3	\$0.2	\$1.1	\$12.8	\$22	\$27	\$32
SH22 MID-BLOCK	\$3.7	\$0.3	\$1.3	\$15.8	\$21	\$26	\$31
SH22/JESMOND RD INTERSECTION	\$0.5	\$0.4	\$1.8	\$21.7	\$24	\$30	\$37
SH22 MID-BLOCK	\$19.2	\$0.9	\$3.9	\$45.4	\$69	\$84	\$101
JESMOND RD MID-BLOCK	\$12.6	\$0.4	\$1.9	\$22.0	\$37	\$44	\$53
JESMOND RD/BREMNER INTERSECTION	\$7.5	\$0.3	\$1.5	\$18.0	\$27	\$33	\$40
JESMOND TO BREMNER LINK MID-BLOCK	\$24.0	\$0.5	\$2.4	\$28.6	\$56	\$67	\$80
BREMNER RD - GSR MID-BLOCK	\$21.2	\$1.0	\$4.5	\$52.4	\$79	\$97	\$116
WAIHOEHOE RD WEST - OPAHEKE N-S MID-BLOCK	\$14.6	\$0.5	\$2.1	\$24.3	\$41	\$50	\$60
WAIHOEHOE RD EAST MID-BLOCK	\$18.6	\$0.8	\$3.6	\$42.3	\$65	\$79	\$95
OPAHEKE N-S/WAIHOEHOE RD INTERSECTION	\$3.2	\$0.2	\$1.0	\$11.4	\$16	\$20	\$23
OPAHEKE N-S MID-BLOCK	\$60.7	\$1.7	\$7.4	\$87.5	\$157	\$190	\$228
OPAHEKE N-S/PONGA INTERSECTION	\$6.5	\$0.3	\$1.5	\$17.0	\$25	\$31	\$37
OPAHEKE N-S MID-BLOCK (NORTH OF PONGA)	\$27.8	\$1.2	\$5.3	\$61.7	\$96	\$117	\$141
PONGA RD	\$7.3	\$0.3	\$1.4	\$16.2	\$25	\$31	\$37
OPAHEKE RD UPGRADE	\$20.1	\$1.0	\$4.6	\$54.4	\$80	\$98	\$118
GREAT SOUTH ROAD INTERSECTION	\$5.4	\$0.1	\$0.6	\$6.7	\$13	\$15	\$18
Totals:	\$261	\$10	\$46	\$538	\$855	\$1,039	\$1,247

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- Appendix 1: Cost Estimate Summary Forms (DBE)**
- Appendix 2: Physical Works Assumption Schedules**
- Appendix 3: Property Cost Estimate Memorandums**
- Appendix 4: Project Costing Segments**

Glossary of Terms

Acronym/Term	Description
AADT	Annual Average Daily Traffic
AC	Auckland Council
AEE	Assessment of Effects on the Environment
AEP	Annual Exceedance Probability
AGR D	Austroroads Guide to Road Design
ARI	Annual Recurrence Interval
ASD	Approach Sight Distance
AT	Auckland Transport
ATCOP	Auckland Transport Code of Practice
AUP	Auckland Unitary Plan
CH	Chainage
DBC	Detailed Business Case
DJV	Design Joint Venture
DPS	Design Philosophy Statement
FTN	Future Transport Network
GIR	Geotechnical Interpretive Report
HAIL	Hazardous Activities and Industries List
HV	High Voltage
IBC	Indicative Business Case
ITS	Intelligent Transport System
FoS	Factor of Safety
LIDAR	Light Detection and Ranging
LV	Low Voltage
MOTSAM	Manual of Traffic Signs and Markings
MSE	Mechanically stabilised earth
NIMT	Northern Island Main Trunk (Rail)
NoR	Notice of Requirement
NZGD	New Zealand Geotechnical Database
NZTA	Waka Kotahi New Zealand Transport Agency
NZTM	New Zealand Transverse Mercator 2000
PWV	Permanent Water Volume
RAMM	Road Asset and Maintenance Management
RCRRJ	Reinforced concrete rubber ring jointed (pipes)

RMA	Resource Management Act
RSA	Road Safety Audit
RT	Reaction Time
SAT	Safety Audit Team
SAVF	South Auckland Volcanic Field
SCATS	Sydney Coordinated Adaptive Traffic System
SGA	Supporting Growth Alliance
SH1	State Highway 1
SH22	State Highway 22
SMAF	Stormwater Management Area Flow
SSD	Stopping Sight Distance
TDM	Transport Design Manual
TP10	Auckland Council Technical Publication #10 – Stormwater Management Devices Design Guideline Manual
UDA	Urban Design Assessment
WQ	Water Quality

1. Introduction

The Supporting Growth Alliance (SGA) (Te Tupu Ngātahi) has been established to identify the transport requirements to support the predicted level of growth forecast to occur in Auckland beyond a 30-year time frame. As such, the Detailed Business Case has been developed for route protection only, and these projects are not expected to be constructed for a number of years. Therefore, the cost estimate will need to be revised and reconfirmed at that time in order to reflect any changes in standards, planning conditions, network demands, and/or any other construction related matters.

Figure 1Error! Reference source not found. shows the recommended network for the Drury area. The estimates have been prepared to reflect the following projects:

- State Highway 22 Upgrade;
- Jesmond Road FTN Upgrade
- Bremner Road FTN Upgrade
- Waihoehoe Road West FTN Upgrade
- Waihoehoe Road East Upgrade
- Ōpāheke North-South FTN Arterial
- Ponga Road Upgrade
- Ōpāheke Road Rural Upgrade
- Ōpāheke Road Urban Upgrade.

This document should be read in conjunction with the Drury design report and appended drawings.

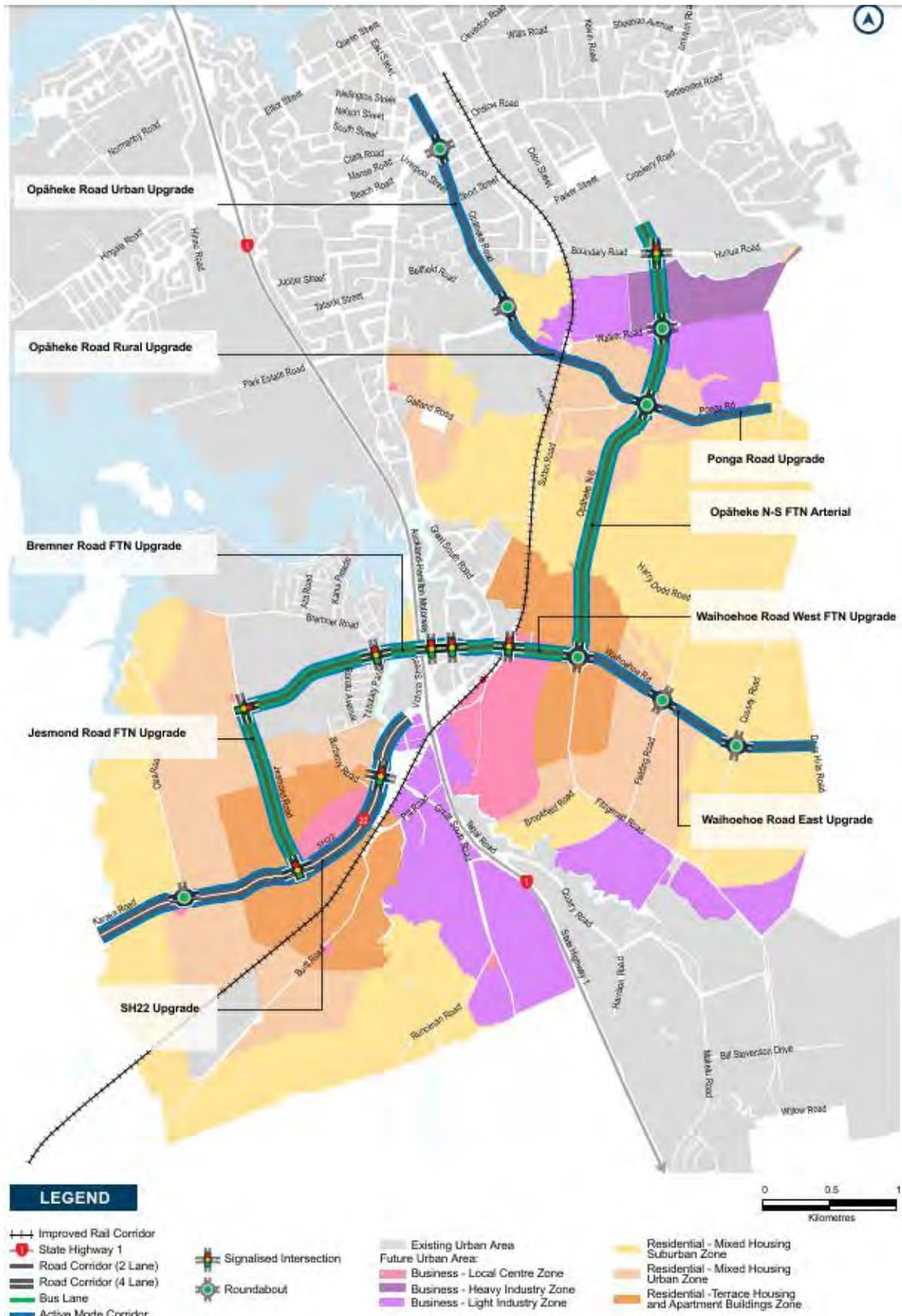


Figure 1: Drury Arterial Transport Network

2. Approach to Cost Estimation

This estimate has been prepared to provide an indication of costs for future budget forecasting and for inclusion in the economic analysis.

The costing of the works has been based primarily on the revision A set of the design drawings, alongside the generic assumptions outlined in Appendix 2. Significant changes to the design since Revision A have been captured in the costs also.

2.1. Property

The cost of land forms a significant part of the estimate. Property cost estimates have been undertaken by the Auckland Transport property team on behalf of SGA. These cost estimates have been prepared based on the land requirement (both temporary and permanent) represented by the proposed Designation boundary in the drawing set issued "For Approval". The assumptions associated with the Property cost estimates are attached in Appendix 3.

Where it was found that a property requirement was on the boundary between two costing segments (refer to Appendix 4), an assessment has been made as to which segment this cost should best be attributed to. It is for partly this reason that the property cost estimates per "project corridor" in the Property cost memorandums supplied do not necessarily align with those in Table 4.

The nett project property cost includes costs pertaining to both the temporary and permanent land requirement. The memorandums of Appendix 3 include the temporary occupation cost portion calculated on the basis of a one year occupation duration. These temporary occupation costs have since been adjusted to reflect the assumed construction duration set out in the Construction Method Statement for each project as detailed in Table 2 below, with a 15% contingency then applied to the associated cost for the P50 estimate.

Table 2: Assumed temporary occupation by project corridor

Project Corridor	Expected Construction Duration (years)	Assumed Duration for Temporary Occupation (years)
Bremner Rd FTN Upgrade	3-3.5	3
Jesmond Rd FTN Upgrade	1-1.5	1
Opaheke N-S FTN Arterial	3.5-4	3.5
Opaheke Road Upgrade	2-2.5	2
Ponga Road Upgrade	1-1.5	1
SH22 Upgrade	2-2.5	2
Waihoehoe Rd East Upgrade	2-2.5	2
Waihoehoe Rd West FTN Upgrade	2-2.5	2

2.2. Integration with Development

Where land development is currently progressing, and the transport network will need to be constructed in conjunction with the development works, there is likely to be a negotiation with the Developer to agree the extent of Developer contribution. While this is likely to be different in each case, the process of agreeing what the Developer is required to construct will be important in determining the scope and cost of the AT/ Waka Kotahi works.

An example is where a Developer will be required to construct a Collector Road, although there is a future requirement of an increased level of service (e.g. Arterial). In this case, the cost of construction over and above the Collector Road will need to be determined.

The costs prepared for the DBC have not considered these opportunities and have been based on full project construction costs. The opportunities to leverage off developments has been addressed in the Financial Case.

2.3. Verification

A Business Case of this scale would normally involve preparation of a parallel estimate by an independent estimator. However, as this Business Case is primarily focussed on route protection and a subsequent stage will be undertaken to seek funding for implementation, the level of cost estimation accuracy is considered to be less than a typical DBC. Therefore, it has been agreed with the IQA team from both Auckland Transport and Waka Kotahi that the costs will be peer reviewed through 'cross verification' by a separate team within SGA who were independent of the initial estimate preparation. To provide a level of independence, the peer review was undertaken by a different home organisation (i.e. Beca or Aecom).

With the focus of this Business Case being on route protection, there comes a financial risk associated with Property. Therefore, a greater focus will be put on review of the Property Cost estimates. This will involve the following:

- Undertake a review of the methodology used for pricing
- Undertake a review of the rates used for different property types
- Internal review with AT and Waka Kotahi on property estimates

2.4. Cost Summary Tables

Table 3: Cost Summary by Project Costing Segment

Cost Segment	Description	Nett Project			Physical Works &			Base Estimate	P50	P95
		CH START	CH END	Property Cost*	Project Development	Pre-Implementation	Implementation Fees			
1	SH22/OIRA RD ROUNDABOUT	4576	3800	\$ 8,263,000	\$ 241,000	\$ 1,083,000	\$ 12,752,000	\$ 22,340,000	\$ 27,030,000	\$ 32,440,000
2	SH22 MID-BLOCK	3800	3050	\$ 3,707,000	\$ 299,000	\$ 1,342,000	\$ 15,805,000	\$ 21,150,000	\$ 26,060,000	\$ 31,270,000
3	SH22/JESMOND RD INTERSECTION	3050	2850	\$ 461,000	\$ 409,000	\$ 1,839,000	\$ 21,656,000	\$ 24,370,000	\$ 30,420,000	\$ 36,500,000
4	SH22 MID-BLOCK	2850	1600	\$ 19,227,000	\$ 858,000	\$ 3,859,000	\$ 45,443,000	\$ 69,380,000	\$ 84,440,000	\$ 101,330,000
5	JESMOND RD MID-BLOCK	2200	3150	\$ 12,587,000	\$ 415,000	\$ 1,868,000	\$ 21,995,000	\$ 36,870,000	\$ 44,450,000	\$ 53,340,000
6	JESMOND RD/BREMNER INTERSECTION	3150	3480	\$ 7,463,000	\$ 340,000	\$ 1,529,000	\$ 17,999,000	\$ 27,330,000	\$ 33,250,000	\$ 39,900,000
7	JESMOND TO BREMNER LINK MID-BLOCK	280	1260	\$ 24,005,000	\$ 541,000	\$ 2,431,000	\$ 28,631,000	\$ 55,610,000	\$ 66,520,000	\$ 79,830,000
8	BREMNER RD - GSR MID-BLOCK	1260	1900	\$ 21,192,000	\$ 990,000	\$ 4,452,000	\$ 52,428,000	\$ 79,060,000	\$ 96,510,000	\$ 115,810,000
9	WAIHOEHOE RD WEST - OPAHEKE N-S MID-BLOCK	50	500	\$ 14,576,000	\$ 460,000	\$ 2,070,000	\$ 24,320,000	\$ 41,400,000	\$ 50,100,000	\$ 60,200,000
10	WAIHOEHOE RD EAST MID-BLOCK	800	2580	\$ 18,593,000	\$ 800,000	\$ 3,590,000	\$ 42,260,000	\$ 65,200,000	\$ 79,300,000	\$ 95,200,000
11	OPAHEKE N-S/WAIHOEHOE RD INTERSECTION	500	800	\$ 3,242,000	\$ 220,000	\$ 970,000	\$ 11,390,000	\$ 15,800,000	\$ 19,500,000	\$ 23,400,000
12	OPAHEKE N-S MID-BLOCK	3630	1960	\$ 60,726,000	\$ 1,660,000	\$ 7,440,000	\$ 87,540,000	\$ 157,400,000	\$ 189,700,000	\$ 227,600,000
13	OPAHEKE N-S/PONGA INTERSECTION	1960	1700	\$ 6,454,000	\$ 330,000	\$ 1,450,000	\$ 17,000,000	\$ 25,200,000	\$ 30,800,000	\$ 37,000,000
14	OPAHEKE N-S MID-BLOCK (NORTH OF PONGA)	1700	400	\$ 27,816,000	\$ 1,170,000	\$ 5,250,000	\$ 61,730,000	\$ 96,000,000	\$ 117,100,000	\$ 140,500,000
15	PONGA RD	1150	2020	\$ 7,340,000	\$ 310,000	\$ 1,380,000	\$ 16,170,000	\$ 25,200,000	\$ 30,700,000	\$ 36,900,000
16	OPAHEKE RD UPGRADE	0	2820	\$ 20,136,000	\$ 1,030,000	\$ 4,630,000	\$ 54,430,000	\$ 80,200,000	\$ 98,000,000	\$ 117,600,000
18	GREAT SOUTH ROAD INTERSECTION	-	-	\$ 5,415,000	\$ 126,000	\$ 566,000	\$ 6,657,000	\$ 12,760,000	\$ 15,340,000	\$ 18,410,000
Totals				\$ 261,203,000	\$ 10,199,000	\$ 45,749,000	\$ 538,206,000	\$ 855,270,000	\$1,039,220,000	\$1,247,230,000

Table 4: Cost Summary by Project Corridor

Cost Segment	DBC Project	Nett Project			Physical Works &			Base Estimate	P50	P95
		CH START	CH END	Property Cost*	Project Development	Pre-Implementation	Implementation Fees			
1	SH22	4576	3800	\$ 31,658,000.00	\$ 1,807,000.00	\$ 8,123,000.00	\$ 95,656,000.00	\$ 137,240,000.00	\$ 167,950,000.00	\$ 201,540,000.00
2		3800	3050							
3		3050	2850							
4		2850	1600							
5	Jesmond Road	2200	3150	\$ 20,050,000.00	\$ 755,000.00	\$ 3,397,000.00	\$ 39,994,000.00	\$ 64,200,000.00	\$ 77,700,000.00	\$ 93,240,000.00
6		3150	3480							
7	Bremner Road	280	1260	\$ 50,612,000.00	\$ 1,657,000.00	\$ 7,449,000.00	\$ 87,716,000.00	\$ 147,430,000.00	\$ 178,370,000.00	\$ 214,050,000.00
8		1260	1900							
18		-	-							
9	Waihoehoe Road	50	500	\$ 33,169,000.00	\$ 1,260,000.00	\$ 5,660,000.00	\$ 66,580,000.00	\$ 106,600,000.00	\$ 129,400,000.00	\$ 155,400,000.00
10		800	2580							
11	Opakehe N-S	500	800	\$ 98,238,000.00	\$ 3,380,000.00	\$ 15,110,000.00	\$ 177,660,000.00	\$ 294,400,000.00	\$ 357,100,000.00	\$ 428,500,000.00
12		3630	1960							
13		1960	1700							
14		1700	400							
15	Ponga Road	1150	2020	\$ 7,340,000.00	\$ 310,000.00	\$ 1,380,000.00	\$ 16,170,000.00	\$ 25,200,000.00	\$ 30,700,000.00	\$ 36,900,000.00
16	Opakehe Road	0	2820	\$ 20,136,000.00	\$ 1,030,000.00	\$ 4,630,000.00	\$ 54,430,000.00	\$ 80,200,000.00	\$ 98,000,000.00	\$ 117,600,000.00
Totals				\$ 261,203,000	\$ 10,199,000	\$ 45,749,000	\$ 538,206,000	\$ 855,270,000	\$ 1,039,220,000	\$ 1,247,230,000

Appendix 1: Cost Estimate Summary Forms (DBE)

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 1: SH22/Oira Rd Roundabout

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	8,263,000	1,170,000	\$1,887,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	241,000	\$61,000.00	\$61,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	1,083,000	\$271,000.00	\$271,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	722,000	\$181,000.00	\$181,000.00
	Physical Works			
1	Environmental Compliance	240,458		
2	Earthworks	1,178,545		
3	Ground Improvements	110,500		
4	Drainage	1,196,752		
5	Pavement and Surfacing	1,518,850		
6	Bridges	-		
7	Retaining Walls	136,000		
8	Traffic Services	350,265		
9	Service Relocations	1,572,258		
10	Landscaping	673,214		
11	Western extent of the Corridor	958,270		
12	Traffic Management and Temporary Works	1,923,664		
13	Preliminary and General	2,168,931		
14	Extraordinary Construction Costs			
	Sub Total Base Physical works	12,030,000	\$3,008,000.00	\$3,008,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	22,340,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$4,690,000.00	
G	Project Expected Estimate (E+F)		\$27,030,000.00	
	Nett Project Property Cost Expected Estimate		\$9,433,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$1,400,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$5,410,000.00
I	95th percentile Project Estimate (G+H)			\$32,440,000.00
	Nett Project Property Cost 95th percentile Estimate			\$11,300,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$1,600,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
	Date of Estimate July 2020	Cost Index (Qtr/Year) 1/2020		
	Estimate prepared by S Zhang	Signed 		
	Estimate internal peer review by J Luo	Signed 		
	Estimate external peer review by	Signed		
	Estimate accepted by NZTA	Signed		
Note:	(1) These estimates are exclusive of escalation and GST.			
	(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.			

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 2: SH22 Mid-Block

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	3,707,000	545,000	\$851,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	299,000	\$75,000.00	\$75,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	1,342,000	\$336,000.00	\$336,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	895,000	\$224,000.00	\$224,000.00
	Physical Works			
1	Environmental Compliance	298,031		
2	Earthworks	2,073,267		
3	Ground Improvements	150,750		
4	Drainage	1,185,900		
5	Pavement and Surfacing	2,092,550		
6	Bridges	-		
7	Retaining Walls	140,000		
8	Traffic Services	658,500		
9	Service Relocations	2,744,875		
10	Landscaping	1,502,614		
11	Western extent of the Corridor	-		
12	Traffic Management and Temporary Works	1,372,800		
13	Preliminary and General	2,688,244		
14	Extraordinary Construction Costs			
	Sub Total Base Physical works	14,910,000	\$3,728,000.00	\$3,728,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	21,150,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$4,910,000.00	
G	Project Expected Estimate (E+F)		\$26,060,000.00	
	Nett Project Property Cost Expected Estimate		\$4,252,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$1,700,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$5,210,000.00
I	95th percentile Project Estimate (G+H)			\$31,270,000.00
	Nett Project Property Cost 95th percentile Estimate			\$5,100,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$2,000,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Zhang		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 3: SH22/Jesmond Rd Intersection

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	461,000	69,000	\$106,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	409,000	\$103,000.00	\$103,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	1,839,000	\$460,000.00	\$460,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,226,000	\$307,000.00	\$307,000.00
	Physical Works			
	1 Environmental Compliance	408,370		
	2 Earthworks	5,404,599		
	3 Ground Improvements	127,800		
	4 Drainage	1,063,250		
	5 Pavement and Surfacing	2,494,045		
	6 Bridges	-		
	7 Retaining Walls	110,000		
8 Traffic Services	842,560			
9 Service Relocations	3,098,008			
10 Landscaping	961,995			
11 Traffic Management and Temporary Works	2,232,540			
12 Preliminary and General	3,683,497			
13 Extraordinary Construction Costs				
Sub Total Base Physical works	20,430,000	\$5,108,000.00	\$5,108,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	24,370,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$6,050,000.00	
G	Project Expected Estimate (E+F)		\$30,420,000.00	
	Nett Project Property Cost Expected Estimate		\$530,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$2,300,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$6,080,000.00
I	95th percentile Project Estimate (G+H)			\$36,500,000.00
	Nett Project Property Cost 95th percentile Estimate			\$600,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$2,800,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Zhang		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 4: SH22 Mid-Block

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	19,227,000	2,515,000	\$4,349,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	858,000	\$215,000.00	\$215,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	3,859,000	\$965,000.00	\$965,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	2,573,000	\$644,000.00	\$644,000.00
	Physical Works			
	1 Environmental Compliance	857,119		
	2 Earthworks	3,040,298		
	3 Ground Improvements	205,050		
	4 Drainage	2,229,951		
	5 Pavement and Surfacing	2,650,275		
	6 Bridges	6,912,000		
	7 Retaining Walls	300,000		
8 Traffic Services	9,261,507			
9 Service Relocations	3,266,240			
10 Landscaping	1,970,584			
11 Traffic Management and Temporary Works	4,448,836			
12 Preliminary and General	7,731,209			
13 Extraordinary Construction Costs				
Sub Total Base Physical works	42,870,000	\$10,718,000.00	\$10,718,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	69,380,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$15,060,000.00	
G	Project Expected Estimate (E+F)		\$84,440,000.00	
	Nett Project Property Cost Expected Estimate		\$21,742,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$4,800,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$16,890,000.00
I	95th percentile Project Estimate (G+H)			\$101,330,000.00
	Nett Project Property Cost 95th percentile Estimate			\$26,100,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$5,800,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Zhang		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed _____		
Estimate accepted by NZTA		Signed _____		
Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 5: Jesmond Rd Mid-Block

Detailed Business Case Estimate

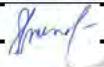
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	12,587,000	1,508,000	\$2,819,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	415,000	\$104,000.00	\$104,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	1,868,000	\$467,000.00	\$467,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,245,000	\$312,000.00	\$312,000.00
	Physical Works			
	1 Environmental Compliance	414,841		
	2 Earthworks	2,442,585		
	3 Ground Improvements	190,950		
	4 Drainage	1,892,000		
	5 Pavement and Surfacing	2,751,050		
	6 Bridges	-		
	7 Retaining Walls	400,000		
8 Traffic Services	781,780			
9 Service Relocations	4,450,400			
10 Landscaping	1,775,872			
11 Traffic Management and Temporary Works	1,909,003			
12 Preliminary and General	3,741,866			
13 Extraordinary Construction Costs	-			
Sub Total Base Physical works	20,750,000	\$5,188,000.00	\$5,188,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	36,870,000		
F	Contingency (Assessed/Analysed)	(A+C+D)	\$7,580,000.00	
G	Project Expected Estimate (E+F)		\$44,450,000.00	
	Nett Project Property Cost Expected Estimate		\$14,095,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$2,300,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed)	(A+C+D)		\$8,890,000.00
I	95th percentile Project Estimate (G+H)			\$53,340,000.00
	Nett Project Property Cost 95th percentile Estimate			\$16,900,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$2,800,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by P Tavener		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 6: Jesmond Rd/Bremner Intersection

Detailed Business Case Estimate

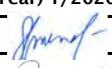
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	7,463,000	951,000	\$1,683,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	340,000	\$85,000.00	\$85,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	1,529,000	\$383,000.00	\$383,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,019,000	\$255,000.00	\$255,000.00
	Physical Works			
1	Environmental Compliance	339,440		
2	Earthworks	3,954,086		
3	Ground Improvements	164,050		
4	Drainage	1,415,440		
5	Pavement and Surfacing	2,177,125		
6	Bridges	-		
7	Retaining Walls	300,000		
8	Traffic Services	799,340		
9	Service Relocations	2,148,520		
10	Landscaping	1,418,669		
11	Traffic Management and Temporary Works	1,200,380		
12	Preliminary and General	3,061,751		
13	Extraordinary Construction Costs	-		
	Sub Total Base Physical works	16,980,000	\$4,245,000.00	\$4,245,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	27,330,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$5,920,000.00	
G	Project Expected Estimate (E+F)		\$33,250,000.00	
	Nett Project Property Cost Expected Estimate		\$8,414,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$1,900,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$6,650,000.00
I	95th percentile Project Estimate (G+H)			\$39,900,000.00
	Nett Project Property Cost 95th percentile Estimate			\$10,100,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$2,300,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
	Date of Estimate July 2020	Cost Index (Qtr/Year) 1/2020		
	Estimate prepared by S Cruz	Signed 		
	Estimate internal peer review by J Luo	Signed 		
	Estimate external peer review by	Signed		
	Estimate accepted by NZTA	Signed		
Note:	(1) These estimates are exclusive of escalation and GST.			
	(2) Project Development Phase Estimates are set to Nil as these are now sunk costs.			

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 7: Jesmond to Bremner Link Mid-Block

Detailed Business Case Estimate

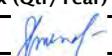
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	24,005,000	3,007,000	\$5,403,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	541,000	\$136,000.00	\$136,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	2,431,000	\$608,000.00	\$608,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,621,000	\$406,000.00	\$406,000.00
	Physical Works			
	1 Environmental Compliance	539,937		
	2 Earthworks	2,742,115		
	3 Ground Improvements	144,750		
	4 Drainage	4,963,584		
	5 Pavement and Surfacing	1,850,850		
	6 Bridges	-		
	7 Retaining Walls	24,880		
8 Traffic Services	7,296,570			
9 Service Relocations	2,113,840			
10 Landscaping	2,037,398			
11 Traffic Management and Temporary Works	423,480			
12 Preliminary and General	4,870,229			
13 Extraordinary Construction Costs	-			
Sub Total Base Physical works	27,010,000	\$6,753,000.00	\$6,753,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	55,610,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$10,910,000.00	
G	Project Expected Estimate (E+F)		\$66,520,000.00	
	Nett Project Property Cost Expected Estimate		\$27,012,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$3,000,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$13,310,000.00
I	95th percentile Project Estimate (G+H)			\$79,830,000.00
	Nett Project Property Cost 95th percentile Estimate			\$32,400,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$3,600,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Cruz		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 8: Bremner Rd - GSR Mid-Block

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	21,192,000	2,981,000	\$4,835,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	990,000	\$248,000.00	\$248,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	4,452,000	\$1,113,000.00	\$1,113,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	2,968,000	\$742,000.00	\$742,000.00
	Physical Works			
	1 Environmental Compliance	988,725		
	2 Earthworks	4,142,427		
	3 Ground Improvements	176,900		
	4 Drainage	1,341,982		
	5 Pavement and Surfacing	2,571,900		
	6 Bridges	19,387,500		
	7 Retaining Walls	50,000		
8 Traffic Services	1,550,833			
9 Service Relocations	2,999,820			
10 Landscaping	1,281,143			
11 Traffic Management and Temporary Works	6,046,500			
12 Preliminary and General	8,918,301			
13 Extraordinary Construction Costs	-			
Sub Total Base Physical works	49,460,000	\$12,365,000.00	\$12,365,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	79,060,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$17,450,000.00	
G	Project Expected Estimate (E+F)		\$96,510,000.00	
	Nett Project Property Cost Expected Estimate		\$24,173,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$5,600,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$19,300,000.00
I	95th percentile Project Estimate (G+H)			\$115,810,000.00
	Nett Project Property Cost 95th percentile Estimate			\$29,000,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$6,700,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Cruz		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 9: Waihoehoe Rd West - Opaheke N-S Mid-Block

Detailed Business Case Estimate

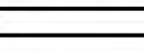
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	14,576,000	2,003,000	\$3,320,000
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	460,000	\$120,000.00	\$120,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	2,070,000	\$520,000.00	\$520,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	1,380,000	\$350,000.00	\$350,000.00
	Physical Works			
	1 Environmental Compliance	454,000		
	2 Earthworks	3,635,418		
	3 Ground Improvements	156,400		
	4 Drainage	952,950		
	5 Pavement and Surfacing	2,486,834		
	6 Bridges	3,780,000		
7 Retaining Walls	412,000			
8 Traffic Services	425,533			
9 Service Relocations	5,439,240			
10 Landscaping	839,906			
11 Traffic Management and Temporary Works	363,000			
12 Preliminary and General	3,989,000			
13 Extraordinary Construction Costs				
Sub Total Base Physical works	22,940,000	\$5,740,000.00	\$5,740,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	41,400,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$8,700,000.00	
G	Project Expected Estimate (E+F)		\$50,100,000.00	
	Nett Project Property Cost Expected Estimate		\$16,600,000.00	
	Project Development Phase Expected Estimate		\$600,000.00	
	Pre-implementation Phase Expected Estimate		\$2,600,000.00	
	Implementation Phase Expected Estimate		\$1,800,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$10,100,000.00
I	95th percentile Project Estimate (G+H)			\$60,200,000.00
	Nett Project Property Cost 95th percentile Estimate			\$19,900,000.00
	Project Development Phase 95th percentile Estimate			\$700,000.00
	Pre-implementation Phase 95th percentile Estimate			\$3,200,000.00
	Implementation Phase 95th percentile Estimate			\$2,100,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed		
Estimate internal peer review by J Luo and B Geyer		Signed		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

Drury Local Upgrade - Segment 10: Waihoehoe Rd East Mid-Block

DBE

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	18,593,000	2,392,000	\$4,200,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	800,000	\$200,000.00	\$200,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	3,590,000	\$900,000.00	\$900,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	2,400,000	\$600,000.00	\$600,000.00
	Physical Works			
1	Environmental Compliance	723,000		
2	Earthworks	6,541,331		
3	Ground Improvements	427,250		
4	Drainage	4,855,625		
5	Pavement and Surfacing	4,155,771		
6	Bridges	-		
7	Retaining Walls	739,000		
8	Traffic Services	1,750,049		
9	Service Relocations	6,385,900		
10	Landscaping	4,032,212		
11	Traffic Management and Temporary Works	3,892,000		
12	Preliminary and General	6,356,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	39,860,000	\$9,970,000.00	\$9,970,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	65,200,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$14,100,000.00	
G	Project Expected Estimate (E+F)		\$79,300,000.00	
	Nett Project Property Cost Expected Estimate		\$21,000,000.00	
	Project Development Phase Expected Estimate		\$1,000,000.00	
	Pre-implementation Phase Expected Estimate		\$4,500,000.00	
	Implementation Phase Expected Estimate		\$3,000,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$15,900,000.00
I	95th percentile Project Estimate (G+H)			\$95,200,000.00
	Nett Project Property Cost 95th percentile Estimate			\$25,200,000.00
	Project Development Phase 95th percentile Estimate			\$1,200,000.00
	Pre-implementation Phase 95th percentile Estimate			\$5,400,000.00
	Implementation Phase 95th percentile Estimate			\$3,600,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed   		
Estimate internal peer review by J Luo and B Geyer		Signed  		
Estimate external peer review by		Signed 		
Estimate accepted by NZTA		Signed 		
Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 11: Opaheke N-S/Waihoehoe Rd Intersection

Detailed Business Case Estimate

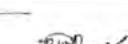
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	3,242,000	483,000	\$750,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	220,000	\$60,000.00	\$60,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	970,000	\$250,000.00	\$250,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	650,000	\$170,000.00	\$170,000.00
	Physical Works			
1	Environmental Compliance	192,000		
2	Earthworks	1,547,724		
3	Ground Improvements	144,050		
4	Drainage	589,377		
5	Pavement and Surfacing	1,924,527		
6	Bridges	-		
7	Retaining Walls	39,950		
8	Traffic Services	676,014		
9	Service Relocations	1,974,088		
10	Landscaping	754,459		
11	Traffic Management and Temporary Works	1,207,528		
12	Preliminary and General	1,684,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	10,740,000	\$2,690,000.00	\$2,690,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	15,800,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$3,700,000.00	
G	Project Expected Estimate (E+F)		\$19,500,000.00	
	Nett Project Property Cost Expected Estimate		\$3,800,000.00	
	Project Development Phase Expected Estimate		\$300,000.00	
	Pre-implementation Phase Expected Estimate		\$1,300,000.00	
	Implementation Phase Expected Estimate		\$900,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$3,900,000.00
I	95th percentile Project Estimate (G+H)			\$23,400,000.00
	Nett Project Property Cost 95th percentile Estimate			\$4,500,000.00
	Project Development Phase 95th percentile Estimate			\$400,000.00
	Pre-implementation Phase 95th percentile Estimate			\$1,500,000.00
	Implementation Phase 95th percentile Estimate			\$1,000,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed   		
Estimate internal peer review by J Luo and B Geyer		Signed 		
Estimate external peer review by		Signed _____		
Estimate accepted by NZTA		Signed _____		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 12: Opaheke N-S Mid-Block

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	60,726,000	8,114,000	\$13,770,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	1,660,000	\$420,000.00	\$420,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IW consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	7,440,000	\$1,860,000.00	\$1,860,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	4,960,000	\$1,240,000.00	\$1,240,000.00
	Physical Works			
1	Environmental Compliance	1,631,000		
2	Earthworks	17,089,322		
3	Ground Improvements	340,800		
4	Drainage	3,820,308		
5	Pavement and Surfacing	4,328,124		
6	Bridges	31,001,850		
7	Retaining Walls	15,000		
8	Traffic Services	1,240,481		
9	Service Relocations	4,865,240		
10	Landscaping	2,527,048		
11	Traffic Management and Temporary Works	1,364,563		
12	Preliminary and General	14,351,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	82,580,000	\$20,650,000.00	\$20,650,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	157,400,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$32,300,000.00	
G	Project Expected Estimate (E+F)		\$189,700,000.00	
	Nett Project Property Cost Expected Estimate		\$68,900,000.00	
	Project Development Phase Expected Estimate		\$2,100,000.00	
	Pre-implementation Phase Expected Estimate		\$9,300,000.00	
	Implementation Phase Expected Estimate		\$6,200,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$37,900,000.00
I	95th percentile Project Estimate (G+H)			\$227,600,000.00
	Nett Project Property Cost 95th percentile Estimate			\$82,700,000.00
	Project Development Phase 95th percentile Estimate			\$2,500,000.00
	Pre-implementation Phase 95th percentile Estimate			\$11,200,000.00
	Implementation Phase 95th percentile Estimate			\$7,500,000.00
	Date of Estimate July 2020	Cost Index (Qtr/Year) 1/2020		
	Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando	Signed     		
	Estimate internal peer review by J Luo and B Geyer	Signed  		
	Estimate external peer review by	Signed _____		
	Estimate accepted by NZTA	Signed _____		
Note:	(1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.			

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 13: Opaheke N-S/Ponga Intersection

Detailed Business Case Estimate

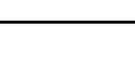
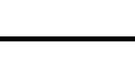
Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	6,454,000	897,000	\$1,480,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	330,000	\$90,000.00	\$90,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	1,450,000	\$370,000.00	\$370,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	970,000	\$250,000.00	\$250,000.00
	Physical Works			
1	Environmental Compliance	287,000		
2	Earthworks	5,423,665		
3	Ground Improvements	137,300		
4	Drainage	937,520		
5	Pavement and Surfacing	1,876,821		
6	Bridges	-		
7	Retaining Walls	94,000		
8	Traffic Services	789,272		
9	Service Relocations	1,586,990		
10	Landscaping	596,062		
11	Traffic Management and Temporary Works	1,776,244		
12	Preliminary and General	2,518,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	16,030,000	\$4,010,000.00	\$4,010,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	25,200,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$5,600,000.00	
G	Project Expected Estimate (E+F)		\$30,800,000.00	
	Nett Project Property Cost Expected Estimate		\$7,400,000.00	
	Project Development Phase Expected Estimate		\$500,000.00	
	Pre-implementation Phase Expected Estimate		\$1,900,000.00	
	Implementation Phase Expected Estimate		\$1,300,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$6,200,000.00
I	95th percentile Project Estimate (G+H)			\$37,000,000.00
	Nett Project Property Cost 95th percentile Estimate			\$8,900,000.00
	Project Development Phase 95th percentile Estimate			\$600,000.00
	Pre-implementation Phase 95th percentile Estimate			\$2,200,000.00
	Implementation Phase 95th percentile Estimate			\$1,500,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed		
Estimate internal peer review by J Luo and B Geyer		Signed		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 14: Opaheke N-S Mid-Block (North of Ponga)

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	27,816,000	4,010,000	\$6,370,000.00
B	Project Development Phase - Consultancy Fees - NZTA Managed Costs			
	Total Project Development	1,170,000	\$300,000.00	\$300,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution - Stream Mitigation Costs			
Total Pre-implementation		5,250,000	\$1,320,000.00	\$1,320,000.00
D	Implementation Phase Implementation Fees MSQA 4% and Client Managed Costs 1% - NZTA Managed Costs see above - Construction Monitoring Fees			
	Sub Total Base Implementation Fees	3,500,000	\$880,000.00	\$880,000.00
	Physical Works			
	1 Environmental Compliance	1,059,000		
	2 Earthworks	6,012,855		
	3 Ground Improvements	325,900		
	4 Drainage	3,365,530		
	5 Pavement and Surfacing	4,778,786		
	6 Bridges	16,200,000		
	7 Retaining Walls	91,000		
	8 Traffic Services	1,965,765		
	9 Service Relocations	7,214,436		
	10 Landscaping	2,385,357		
	11 Traffic Management and Temporary Works	5,510,000		
12 Preliminary and General	9,315,000			
13 Extraordinary Construction Costs				
Sub Total Base Physical works	58,230,000	\$14,560,000.00	\$14,560,000.00	
Total for Implementation Phase				
E	Project Base Estimate (A+C+D)	96,000,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$21,100,000.00	
G	Project Expected Estimate (E+F)		\$117,100,000.00	
	Nett Project Property Cost Expected Estimate		\$31,900,000.00	
	Project Development Phase Expected Estimate		\$1,500,000.00	
	Pre-implementation Phase Expected Estimate		\$6,600,000.00	
	Implementation Phase Expected Estimate		\$4,400,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$23,400,000.00
I	95th percentile Project Estimate (G+H)			\$140,500,000.00
	Nett Project Property Cost 95th percentile Estimate			\$38,200,000.00
	Project Development Phase 95th percentile Estimate			\$1,800,000.00
	Pre-implementation Phase 95th percentile Estimate			\$7,900,000.00
	Implementation Phase 95th percentile Estimate			\$5,300,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed		
Estimate internal peer review by J Luo and B Geyer		Signed		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 15: Ponga Rd

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	7,340,000	1,034,000	\$1,680,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	310,000	\$80,000.00	\$80,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	1,380,000	\$350,000.00	\$350,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	920,000	\$230,000.00	\$230,000.00
	Physical Works			
1	Environmental Compliance	278,000		
2	Earthworks	950,976		
3	Ground Improvements	88,250		
4	Drainage	1,504,903		
5	Pavement and Surfacing	1,267,223		
6	Bridges	3,420,145		
7	Retaining Walls	160,700		
8	Traffic Services	490,264		
9	Service Relocations	2,074,826		
10	Landscaping	1,127,520		
11	Traffic Management and Temporary Works	1,441,025		
12	Preliminary and General	2,439,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	15,250,000	\$3,820,000.00	\$3,820,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	25,200,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$5,500,000.00	
G	Project Expected Estimate (E+F)		\$30,700,000.00	
	Nett Project Property Cost Expected Estimate		\$8,400,000.00	
	Project Development Phase Expected Estimate		\$400,000.00	
	Pre-implementation Phase Expected Estimate		\$1,800,000.00	
	Implementation Phase Expected Estimate		\$1,200,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$6,200,000.00
I	95th percentile Project Estimate (G+H)			\$36,900,000.00
	Nett Project Property Cost 95th percentile Estimate			\$10,100,000.00
	Project Development Phase 95th percentile Estimate			\$500,000.00
	Pre-implementation Phase 95th percentile Estimate			\$2,100,000.00
	Implementation Phase 95th percentile Estimate			\$1,400,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed   		
Estimate internal peer review by J Luo and B Geyer		Signed _____		
Estimate external peer review by _____		Signed  _____		
Estimate accepted by NZTA		Signed _____		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 16: Opaheke Rd Upgrade

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	20,136,000	2,781,000	\$4,590,000.00
	Project Development Phase			
	- Consultancy Fees			
	- NZTA Managed Costs			
B	Total Project Development	1,030,000	\$260,000.00	\$260,000.00
	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWJ consultation			
	Development Contribution			
	- Stream Mitigation Costs			
C	Total Pre-implementation	4,630,000	\$1,160,000.00	\$1,160,000.00
	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	3,090,000	\$780,000.00	\$780,000.00
	Physical Works			
1	Environmental Compliance	931,000		
2	Earthworks	4,619,857		
3	Ground Improvements	137,550		
4	Drainage	3,823,158		
5	Pavement and Surfacing	8,279,570		
6	Bridges	9,150,759		
7	Retaining Walls	1,020,772		
8	Traffic Services	1,193,245		
9	Service Relocations	6,276,900		
10	Landscaping	2,698,927		
11	Traffic Management and Temporary Works	5,016,096		
12	Preliminary and General	8,185,000		
13	Extraordinary Construction Costs			
	Sub Total Base Physical works	51,340,000	\$12,840,000.00	\$12,840,000.00
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	80,200,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$17,800,000.00	
G	Project Expected Estimate (E+F)		\$98,000,000.00	
	Nett Project Property Cost Expected Estimate		\$23,000,000.00	
	Project Development Phase Expected Estimate		\$1,300,000.00	
	Pre-implementation Phase Expected Estimate		\$5,800,000.00	
	Implementation Phase Expected Estimate		\$3,900,000.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$19,600,000.00
I	95th percentile Project Estimate (G+H)			\$117,600,000.00
	Nett Project Property Cost 95th percentile Estimate			\$27,600,000.00
	Project Development Phase 95th percentile Estimate			\$1,600,000.00
	Pre-implementation Phase 95th percentile Estimate			\$7,000,000.00
	Implementation Phase 95th percentile Estimate			\$4,700,000.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by M Dimba, J Dufour, B Roach, E Ipapo, S Fernando		Signed		
Estimate internal peer review by J Luo and B Geyer		Signed		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Project Estimate - Form C

DBE

Drury Local Upgrade - Segment 18: Great South Road Intersection

Detailed Business Case Estimate

Item	Description	Base Estimate	Contingency	Funding Risk Contingency
A	Nett Project Property Cost	5,415,000	732,000	\$1,230,000.00
B	Project Development Phase			
	- Consultancy Fees - NZTA Managed Costs			
B	Total Project Development	126,000	\$32,000.00	\$32,000.00
C	Pre-implementation Phase 9%			
	Above allowances: Consenting 1% incl Env Court risk, Design Fees 7% Incl geo tech investigation, client managed costs 1% incl IWI consultation			
	Development Contribution - Stream Mitigation Costs			
C	Total Pre-implementation	566,000	\$142,000.00	\$142,000.00
D	Implementation Phase			
	Implementation Fees			
	MSQA 4% and Client Managed Costs 1%			
	- NZTA Managed Costs see above			
	- Construction Monitoring Fees			
	Sub Total Base Implementation Fees	377,000	\$95,000.00	\$95,000.00
	Physical Works			
	1 Environmental Compliance	125,526		
	2 Earthworks	456,170		
	3 Ground Improvements	98,150		
	4 Drainage	515,169		
	5 Pavement and Surfacing	1,347,225		
	6 Bridges	-		
	7 Retaining Walls	-		
8 Traffic Services	510,819			
9 Service Relocations	937,401			
10 Landscaping	319,261			
11 Traffic Management and Temporary Works	836,839			
12 Preliminary and General	1,133,440			
13 Extraordinary Construction Costs	-			
Sub Total Base Physical works	6,280,000	\$1,570,000.00	\$1,570,000.00	
D	Total for Implementation Phase			
E	Project Base Estimate (A+C+D)	12,760,000		
F	Contingency (Assessed/Analysed) (A+C+D)		\$2,580,000.00	
G	Project Expected Estimate (E+F)		\$15,340,000.00	
	Nett Project Property Cost Expected Estimate		\$6,147,000.00	
	Project Development Phase Expected Estimate		Nil	
	Pre-implementation Phase Expected Estimate		\$700,000.00	
	Implementation Phase Expected Estimate		\$0.00	
H	Funding Risk Contingency (Assessed/Analysed) (A+C+D)			\$3,070,000.00
I	95th percentile Project Estimate (G+H)			\$18,410,000.00
	Nett Project Property Cost 95th percentile Estimate			\$7,400,000.00
	Project Development Phase 95th percentile Estimate			Nil
	Pre-implementation Phase 95th percentile Estimate			\$900,000.00
	Implementation Phase 95th percentile Estimate			\$0.00
Date of Estimate July 2020		Cost Index (Qtr/Year) 1/2020		
Estimate prepared by S Cruz		Signed 		
Estimate internal peer review by J Luo		Signed 		
Estimate external peer review by		Signed		
Estimate accepted by NZTA		Signed		
<p>Note: (1) These estimates are exclusive of escalation and GST. (2) Project Development Phase Estimates are set to Nil as these are now sunk costs.</p>				

Appendix 2: Physical Works Assumption Schedules

Project: SGA Cost Estimates - Option Assessment		DBE Stage Estimates February 2020.
Drury Local		
Item No.	Description	Assumptions
	*Median (3.00m wide)	Planted
	*Traffic Lane (3.5m wide) - One each side	Asphalt
	*Berm (2.3m wide) - One each side	Grass (tree planted at 50m centres)
	*Cycleway (2.0m wide) - One each side	100mm Asphalt, 150mm subbase
	*Berm (0.4m wide) - One each side	Grass
	*Concrete footpath (1.80m wide) - One each side	100mm Concrete, 150mm subbase
	*Berm (0.3m wide) - One each side	Grass
	Scope:	New Roads constructed as per below specification. Existing roads completely replaced as plans provided
2.1 Environmental Compliance		
2.1.1	Silt fence	Environmental Compliance allowed at 2.5% of physical works cost as on previous SGA areas
2.1.2	Temporary ponds	Environmental Compliance allowed at 2.5% of physical works cost as on previous SGA areas
2.1.3	Bund	Environmental Compliance allowed at 2.5% of physical works cost as on previous SGA areas
2.1.4	Maintenance of environmental temporary ponds	Environmental Compliance allowed at 2.5% of physical works cost as on previous SGA areas
2.1.5	Environmental Compliance Plan	Environmental Compliance allowed at 2.5% of physical works cost as on previous SGA areas
2.2 Earthworks		
2.2.1	Site clearance	Greenfield such as small trees, shrubs, hedging, etc. Existing kerbs, islands, signage, street furniture, asphalt all measured separately
2.2.2	Remove existing trees	Sum allowed based on \$35/m ² for trees where assumed (per m x 1.8m wide strip)
2.2.3	Topsoil stripping	To be measured off plan by estimator. Approx 200mm of topsoil existing on site. Assume this is reusable and will be carted to stockpiled in temporary site laydown areas at 500m intervals where possible
2.2.4	Cut and Fill Quantities	Assume 30% able to be used directly (ie: cut to fill), 25% suitable for use after treatment (ie: to stockpile and then from stockpile to fill location), 45% to waste off site. Volumes to be supplied by Rosemary
2.2.5	Undercut to waste, import with GAP65	Complete cross section width allow 500mm to 10% of the area. Culverts to permanent ponds assume 30% of length 1m wide x 500mm deep. Embankment foundations (10% of the toe of the slope lengths)
2.3 Ground Improvements		
2.3.1	Site decontamination (removal of contaminated materials)	Included in bulk earthworks cost section, 5% of cut volume
2.3.2	Ground stabilisation	To road pavement only (excludes central median), allow 300mm depth (3% lime)
2.3.3	Preload/Settlement and dewatering	To be advised. Previous allowance of \$600/m to new roads only
2.3.4	Geotechnical monitoring	Excluded
2.4 Drainage		
2.4.1	Culverts including headwalls, chambers, temporary stream diversions	As detailed from Stormwater engineer
2.4.2	Subsoil and pavement drains	Side of road, both sides (left & right) ie: under new kerb
2.4.3	Subsoil drains to embankments	Please advise if required. Previously allowed at m ² rate
2.4.4	Kerb and channel	Side of road, both sides (left & right) Median kerb incl in traffic island cost
2.4.5	Catchpit lead (Bike Lane)	Not required (all surface water flows into berm)
2.4.6	Catchpit lead (Main Line)	300mm diameter 0-1.5m deep at 60m centres to one side of each carriageway
2.4.7	Main line	Dependant on the project pipes are either one side or both sides of the road. Sizes differ between 300 - 375 mm dia. within the berm and inlet/outlet pipes for wetlands range between 375 to 750 mm dia Allow as detailed on plans.
2.4.8	Manholes	1050mm diameter 1.51-3.00m deep to invert level at 90m centres to where drainage pipes indicated for drainage diameters 375mm or less. Larger diameter pipes assume 1500mm diameter manholes same depth
2.4.9	Connection of main line to existing manhole	Allowed connections to existing manholes or assumed pipe runs
2.4.10	Manhole stormfilter	Only allowed where noted. Assume if permanent pond allowed then no Stormfilter required.
2.4.11	Catchpits/sumps (Bike Lane)	Not required (all surface water flows into berm)
2.4.12	Catchpits/sumps (Main Line)	Standard catchpits allowed 800mm x 500mm with 1200mm lintel at 60m centres to one side of each carriageway
2.4.13	E.O for double catchpit (standard)	Allowance made
2.4.14	Permanent ponds	Based on SW design details provided.
2.4.15	Permanent ponds, outfall	Provided by Stormwater Engineer
2.5 Pavement and Surfacing		
2.5.1	Sub grade preparation and testing	To road pavement only. Brownfield and Greenfield rates used where applicable.

2.5.2	380mm thick ATCOP AP65	To road pavement only. Brownfield and Greenfield rates used where applicable.
2.5.3	Grade 4 chipseal membrane	To road pavement only. Brownfield and Greenfield rates used where applicable.
2.5.4	50mm AC14HF layer	To road pavement only. Brownfield and Greenfield rates used where applicable.
2.5.5	120mm AC20 in two layers	To road pavement only. Brownfield and Greenfield rates used where applicable.
2.5.6	50mm 4% SBS PMB AC14	To road pavement only. Brownfield and Greenfield rates used where applicable.
2.6 Bridges		
2.6.1	Substructure, superstructure, temporary works, etc.	Bridges allowed at m2 rate where detailed. All existing bridges demolished.
2.7 Retaining Walls		
2.7.1	Walling	Design team to advise locations, lengths, heights and types of walls
2.8 Traffic Services		
2.8.1	Barrier (wire/concrete, median barrier/verge barrier)	Include bridge barriers and barriers on top of retaining walls only. None elsewhere unless detailed.
2.8.2	<u>Pavement marking, pavement markers</u>	
2.8.2.1	Type C3, centreline	Allow where centreline occurs on cross sections
2.8.2.2	Type E, continuity lane line: 100mm wide reflectorised white long life marking, 1m stripe, 3m gap	To edges of carriageway both sides (left & right), 100mm wide reflectorised white long life marking, 1m stripe, 3m gap including second coat
2.8.2.3	Bus lane/Cycle Lane greening: bus lane greening to be AS2700 S1996 colour G13 emerald	All routes with 30m cross-sections. 10m long x 3.5m wide at 60m intervals
2.8.2.4	Cycle lane symbol (every 300m)	Measured where indicated on plan
2.8.2.5	Pedestrian way symbol (every 100m)	All routes with 30m cross-sections.
2.8.2.6	Pedestrian crossings (no traffic lights)	none identified yet on drawing - assume none
2.8.2.7	Bus stops	allow for bus stops every 400m for FTN routes (30m cross-sections). Allow for standard ATCOP bus stop infrastructure (Passenger information display, PID, shelters for all stops, signs, power, etc)
2.8.2.8	BUS ONLY text (every 500m)	To 30m cross sections
2.8.2.9	BUS STOP text (every 400m)	To 30m cross sections
2.8.2.10	GIVE WAY triangle	For all side roads (other than marked as signals).
2.8.2.11	Urban size single reflectorised white arrow	Measured where indicated on plan
2.8.2.12	Urban size double reflectorised white arrow	Measured where indicated on plan
2.8.2.13	Advance warning diamond symbol: 100mm wide 0.6m x 0.4m (Refer MOTSAM Part 2 Section 4 Fig.4.4, 4.5)	Assume none
2.8.3	<u>Road signs, gantries</u>	
2.8.3.1	Small signs	1 per 100m along each carriageway
2.8.3.2	Medium signs	1 per 500m along each carriageway
2.8.3.3	VMS Signage	Allow \$120,000 per bridge location
2.8.4	<u>Traffic signals</u>	
2.8.4.1	Traffic signals	Allowed Provisional Sum within each intersection cost
2.8.5	<u>Lighting</u>	
2.8.5.1	Techlight AEC ITALO 2 STA 4 5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2 x 2m curved outreach and luminaire (Type S1)	Lighting assumed single pole at 35m centres located in 0.5m wide berm to each side of cross section (ie: 2 poles every 35m of road section)
2.9 Service Relocations/Services		
2.9.1	NZTA cost of all local authority and utility companies (after cost share) and contractors on costs	Excluded
2.9.2	<u>Civil works associated with utility services such as trenching.</u>	
2.9.2.1	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.2	50mm diameter PE MP gas duct in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.3	5 no 100mm diameter ITS ducts with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.4	Power poles replaced by underground cables	Existing demolished and removed from site (costed in Demo section). Replaced by underground cables
2.9.2.5	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.6	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.7	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.8	150mm diameter Vodafone duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.9	Water	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections

2.9.2.10	100mm diameter Vector communications duct with draw wire and warning tape in berm	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.11	Wastewater drainage	Excluded, Watercare
2.9.2.12	Fire hydrants	Excluded, Watercare
2.9.2.13	Common trench	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.14	Common service pits	Outside of carriageway on both sides (total 2000m per km) to 30m cross section. One side only to less width cross sections and allowance for crossing carriageway at 300m sections
2.9.2.15	Service ducts under carriageway	Excluded on 30m cross sections (allowed ducts to both sides of carriageway). Allowed at 300m intervals on lesser width sections where services only run one side
2.10	Landscaping & Urban Design	
2.10.1	Exposed aggregate concrete footpath	1.8m wide (both sides ie: 2000m length per 1km section of carriageway)
2.10.2	Asphalt Cycle Path	2m wide (both sides ie: 2000m length per 1km section of carriageway)
2.10.3	Solid traffic islands (includes kerbs)	Median
2.10.4	Weed control to grass areas	All berms
2.10.5	Weed control to planting areas	No planting sections allowed unless specified (median assumed solid)
2.10.6	Fencing	Replace to boundaries similar to type removed
2.10.7	150mm thick topsoil for grass areas	Measured from plan
2.10.8	150mm thick topsoil for planting areas	No planting sections allowed unless specified (median assumed solid)
2.10.9	100mm thick organic mulch	No planting sections allowed unless specified (median assumed solid)
2.10.10	Grass seed	All berms
2.10.11	General Planting	No planting sections allowed unless specified (median assumed solid)
2.10.12	Trees	At 50m centres to 2.30m wide berm. Includes tree pit at tree locations
2.10.13	Maintenance of grass areas (24 months)	All berms
2.10.14	Maintenance of planting areas (24 months)	No planting sections allowed unless specified (median assumed solid)
2.10.15	Landscaping to embankment	Measured from plan
2.10.16	Street furniture (seat & bin)	Excluded
2.11	Accommodation Works	
2.11.1	To be advised by design engineer	
3.00	Exclusions	
3.01	Excavation in rock	
3.02	Ground water diversions	
3.03	Barriers (except on bridges and retaining walls)	
3.04	Electronic signage (Except VMS to bridges and PID on bus stops)	
3.05	Relocation of signs (all new allowed)	
3.06	Cabling to services (unless relocated or streetlights)	
3.07	No allowance to work under or relocate Transpower cables or towers	Unless advised
3.08	Street furniture	
3.09	Rain Gardens unless specified	
3.1	Property costs	Added to DBE cover page. Provided by property team
3.11	GST	
3.12	Escalation from February 2020	
3.13	Fees	Added to DBE cover page
3.14	Contingency	Added to DBE cover page
3.15	Funding Risk	Added to DBE cover page
3.16	Archaeological	Added to DBE cover page
3.17	IWI Consultation	Added to DBE cover page
3.18	Mitigation and Urban Design	Added to DBE cover page

Appendix 3: Property Cost Estimate Memorandums

Memorandum

To: Rob Mason, Project Lead – Drury
From: Sara Dunn, Team Leader Property Acquisition
Alex Saifiti, Property Advisor
Date: 20 July 2020
Subject: Property Cost Estimates for the Waihoehoe Road East, Opāheke North-South, Opāheke Road, Ponga Road Supporting Growth Alliance Projects

Summary

This memorandum provides property cost estimates, refer attached, to the Supporting Growth Alliance (SGA) for the:

- Waihoehoe Road East,
- Opāheke North-South,
- Opāheke Road, and
- Ponga Road projects.

The table below is a summary of the total property interests and property cost estimates.

Table 1:

	Waihoehoe Road East	Opāheke N-S	Opāheke Road	Ponga Road
Total Property Interest	■	■	■	■
Property Cost Estimates	\$14.5m	\$61.8m	\$22.1m	\$9.1m

Overview of Property Interests

To provide context to the property cost estimates, we have summarised the number of property interests to be acquired for each of the projects, see Table 2 below:

Table 2: Overview of property interests to be acquired

	Waihoehoe Road East	Opāheke N-S	Opāheke Road	Ponga Road	TOTAL
Full	■	■	■	■	■
Partial	■	■	■	■	■
Temporary Occupation (TO)	■	■	■	■	■
Partial & TO	■	■	■	■	■
Total	■	■	■	■	■

NB1: The summary excludes existing road interests included in the property schedules provided by SGA.

Memorandum

Overview of Property Cost Estimates

The property cost estimates are based on desktop indicative valuation advice completed by Roberts McKeown in December 2019.

To determine injurious affection or the loss of value, if any, to residue land for partial acquisitions caused by the proposed works, we have applied the following matrix to each property interest to be acquired, where applicable.

Table 3: Injurious Affection Matrix

Injurious Affection Matrix		
High	A	30%
Medium	B	20%
Low	C	10%

In terms of temporary occupation, we adopted a rate of \$100 per square metre on a per annum basis. For example, 250m² x \$100 = \$25,000 rental per annum.

Where applicable, QV Costbuilder rates have been adopted for properties that are to be demolished and rebuilt.

The property cost estimates include acquisition, temporary occupation and ancillary costs, see Table 4 below.

Table 4: Property Cost Estimates

SGA Projects	Waihoehoe Road East	Ōpaheke N-S	Opāheke Road	Ponga Road	Total
Property Cost Estimates	\$14.5m	\$61.8m	\$22.1m	\$9.1m	\$108m

NB: Public Works Act 1981 (PWA) costs under s66 and s72 plus AT's costs of acquisition up to issuing a s18 Notice of Desire have been included within the cost estimates.

General comments for discussion

- The project team will need to mitigate, where possible, the potential effects of road construction, noise, dust and privacy issues etc.
- Some properties have extreme access mitigation risk. Costs have not been included for this mitigation.
- Planning advice around the use of any severed land is recommended.
- In some cases, temporary occupation areas affect entire dwellings which will involve occupants being relocated during construction. This is considered a construction cost and has not been included in property cost estimates.
- Stormwater outfall easements (within temporary occupation areas) are not included in cost estimates.
- The property cost estimate includes the land requirement for culverts. Easements may be appropriate going forward at a cost to be determined.
- Some properties (Opāheke N-S) may benefit from betterment. Betterment has not been included in property cost estimates. The issue of betterment will be considered

Memorandum

at the time of formal acquisition of a property and when compensation under the PWA is considered.

- If the plans presented are suggesting a partial acquisition, but after consideration of the property impacts, it is recommended a full acquisition, then the land acquisition boundaries will need to be adjusted accordingly.

Memorandum

To: Rob Mason, Project Lead – Drury
From: Sara Dunn, Team Leader Property Acquisition
Alex Saifiti, Property Advisor
Date: 22 July 2020
Subject: Property Cost Estimates for the Jesmond Road, Bremner Road, Waihoehoe Road (West) Supporting Growth Alliance Projects

Summary

This memorandum provides property cost estimates, refer attached, to the Supporting Growth Alliance (SGA) for the:

- Jesmond Road,
- Bremner Road, and
- Waihoehoe Road (West) projects.

The table below is a summary of the total property interests and property cost estimates.

Table 1:

	Jesmond Road	Bremner Road	Waihoehoe Road (West) FTN	TOTAL
Total Property Interest	■	■	■	■
Property Cost Estimates	\$22.9m	\$60.8m	\$12.8m	\$96.5m

Overview of Property Interests

To provide context to the property cost estimates, we have summarised the number of property interests to be acquired for each of the projects, see Table 2 below:

Table 2: Overview of property interests to be acquired

	Jesmond Road	Bremner Road	Waihoehoe Road (West) FTN	TOTAL
Full	■	■	■	■
Partial	■	■	■	■
Temporary Occupation (TO)	■	■	■	■
Partial & TO	■	■	■	■
Total	■	■	■	■

NB1: The summary excludes existing road interests included in the property schedules provided by SGA.

Memorandum

Overview of Property Cost Estimates

The property cost estimates are based on desktop indicative valuation advice completed by Roberts McKeown in December 2019.

To determine injurious affection or the loss of value, if any, to residue land for partial acquisitions caused by the proposed works, we have applied the following matrix to each property interest to be acquired, where applicable.

Table 3: Injurious Affection Matrix

Injurious Affection Matrix		
High	A	30%
Medium	B	20%
Low	C	10%

In terms of temporary occupation, we adopted a rate of \$100 per square metre on a per annum basis. For example, 250m² x \$100 = \$25,000 rental per annum.

Where applicable, QV Costbuilder rates have been adopted for properties that are to be demolished and rebuilt.

The property cost estimates include acquisition, temporary occupation and ancillary costs, see Table 4 below.

Table 4: Property Cost Estimates

SGA Projects	Jesmond Road	Bremner Road	Waihoehoe Road	Total
Property Cost Estimates	\$22.9m	\$60.8m	\$12.8m	\$96.5m

NB: Public Works Act 1981 (PWA) costs under s66 and s72 plus AT's costs of acquisition up to issuing a s18 Notice of Desire have been included within the cost estimates.

General comments for discussion

- If the plans presented are suggesting a partial acquisition, but after consideration of the property impacts, it is recommended a full acquisition, then the land acquisition boundaries will need to be adjusted accordingly.
- The land acquisition requirements need to be clarified to confirm the developer will vest the local road corridor land at no cost, with AT acquiring the additional land to take this to an arterial road corridor width. If this assumption is correct, then the land areas provided need to be adjusted.
- In the case of two Bremner Road properties, AT has already acquired the extra arterial width and the intention is the developer will vest the local road width at no cost. If this assumption is correct, then the land areas provided need to be adjusted and property cost estimates updated accordingly.
- As AT has already acquired the extra arterial width from the Jesmond Road MoE site, this has been excluded from the property cost estimate.

Memorandum

- The project team will need to mitigate, where possible, the potential effects of road construction, noise, dust and privacy issues etc.
- Some properties have significant access mitigation risk. These costs have not been included for this mitigation.
- Some properties have significant business relocation and business loss risk. These costs have not been included for this mitigation.
- Where properties are leasehold and/or have multiple tenancies, the property cost estimates assume the freehold will be acquired early to mitigate business relocation costs and manage leases expiring.
- Planning advice around the use of any severed land is recommended.
- In some cases, temporary occupation areas affect entire dwellings which will involve occupants being relocated during construction. This is considered a construction cost and has not been included in property cost estimates.
- The property cost estimate includes the land requirement for culverts. Easements may be appropriate going forward at a cost to be determined.
- Stormwater outfall easements (within temporary occupation areas) are not included in cost estimates.
- Some properties may benefit from betterment. Betterment has not been included in property cost estimates. The issue of betterment will be considered at the time of formal acquisition of a property and when compensation under the PWA is considered.

Memorandum

To: Rob Mason, Project Lead – Drury
From: Sara Dunn, Team Leader Property Acquisition
Alex Saifiti, Property Advisor
Date: 28 August 2020
Subject: Property Cost Estimates for the SH22 Supporting Growth Alliance Project

Summary

This memorandum provides property cost estimates, refer attached, to the Supporting Growth Alliance (SGA) for the SH22 project.

The table below is a summary of the total property interests and property cost estimates.

Table 1:

	SH22
Total Property Interest	█
Property Cost Estimate	██████

*200 Karaka Road is excluded because it is already owned by NZTA.

Overview of Property Interests

To provide context to the property cost estimates, we have summarised the number of property interests to be acquired for the SH22 project, see Table 2 below:

Table 2: Overview of property interests to be acquired

	SH22
Full	█
Partial	█
Temporary Occupation (TO)	██
Partial & TO	██
Total	███

NB1: The summary excludes existing road interests included in the property schedules provided by SGA.

Overview of Property Cost Estimates

The property cost estimates are based on desktop indicative valuation advice completed by Roberts McKeown in December 2019.

To determine injurious affection or the loss of value, if any, to residue land for partial acquisitions caused by the proposed works, we have applied the following matrix to each property interest to be acquired, where applicable.

Table 3: Injurious Affection Matrix

Injurious Affection Matrix		
High	A	30%
Medium	B	20%
Low	C	10%

In terms of temporary occupation, we adopted a rate of \$100 per square metre on a per annum basis. For example, 250m² x \$100 = \$25,000 rental per annum.

Where applicable, QV Costbuilder rates have been adopted for properties that are to be demolished and rebuilt.

The property cost estimates include acquisition, temporary occupation and ancillary costs, see Table 4 below.

Table 4: Property Cost Estimates

SGA Projects	SH22
Property Cost Estimates	\$28.1m

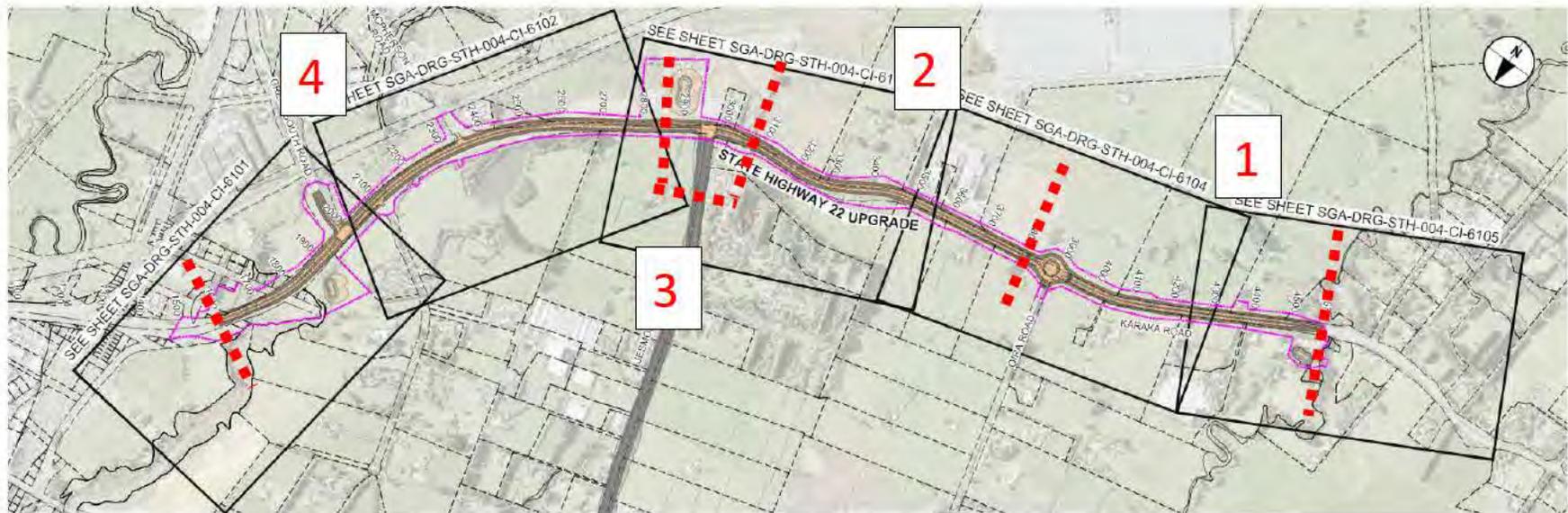
NB: Public Works Act 1981 (PWA) costs under s66 and s72 plus AT's costs of acquisition up to issuing a s18 Notice of Desire have been included within the cost estimates.

General comments for discussion

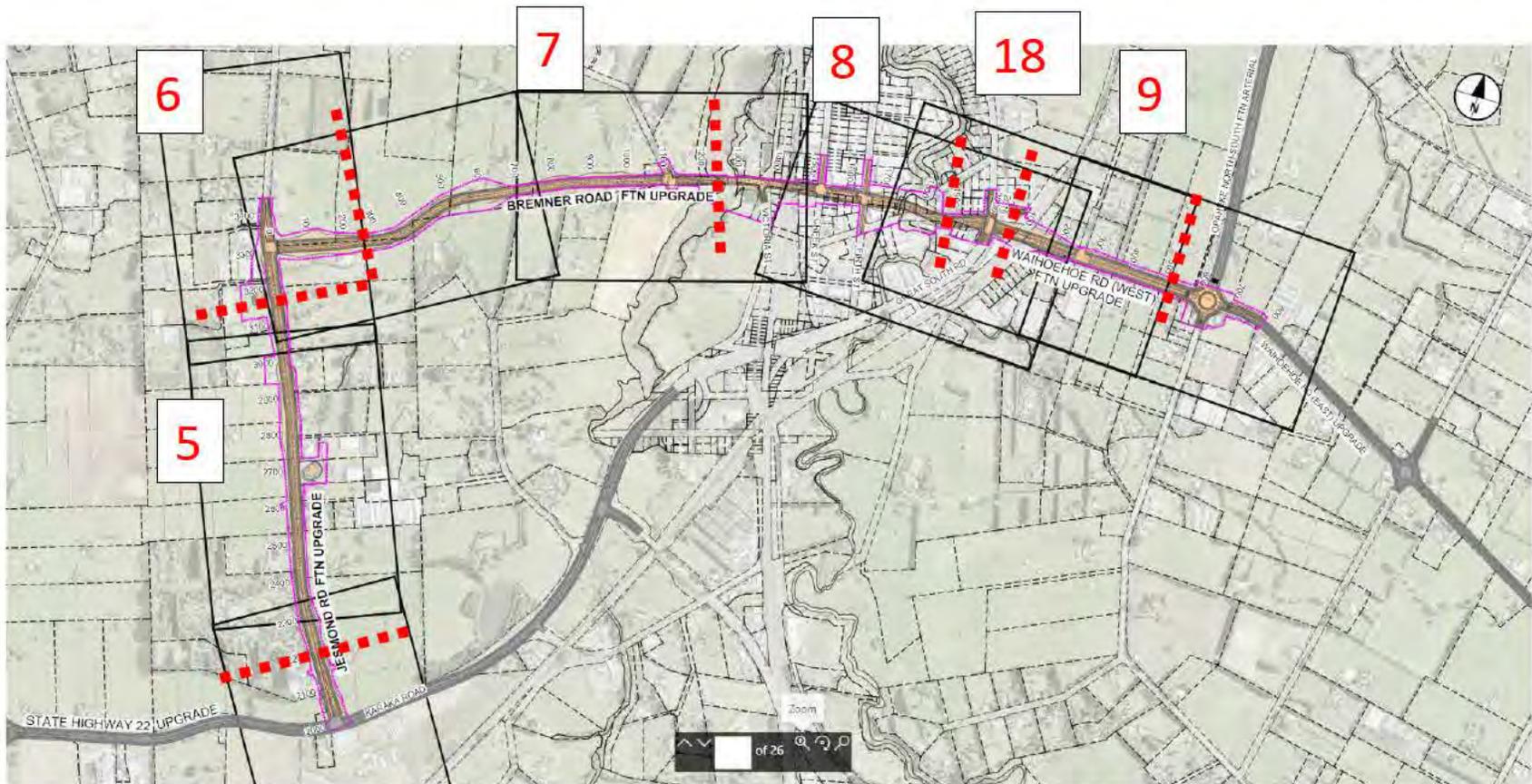
- If the plans presented are suggesting a partial acquisition, but after consideration of the property impacts, it is recommended a full acquisition, then the land acquisition boundaries will need to be adjusted accordingly.
- Some properties have significant business relocation and business loss risk. These costs have not been included for this mitigation.
- The project team will need to mitigate, where possible, the potential effects of road construction, noise, dust and privacy issues etc.
- The property cost estimate includes the land requirement for culverts. Easements may be appropriate going forward at a cost to be determined.
- Stormwater outfall easements (within temporary occupation areas) are not included in cost estimates.

Appendix 4: Project Costing Segments

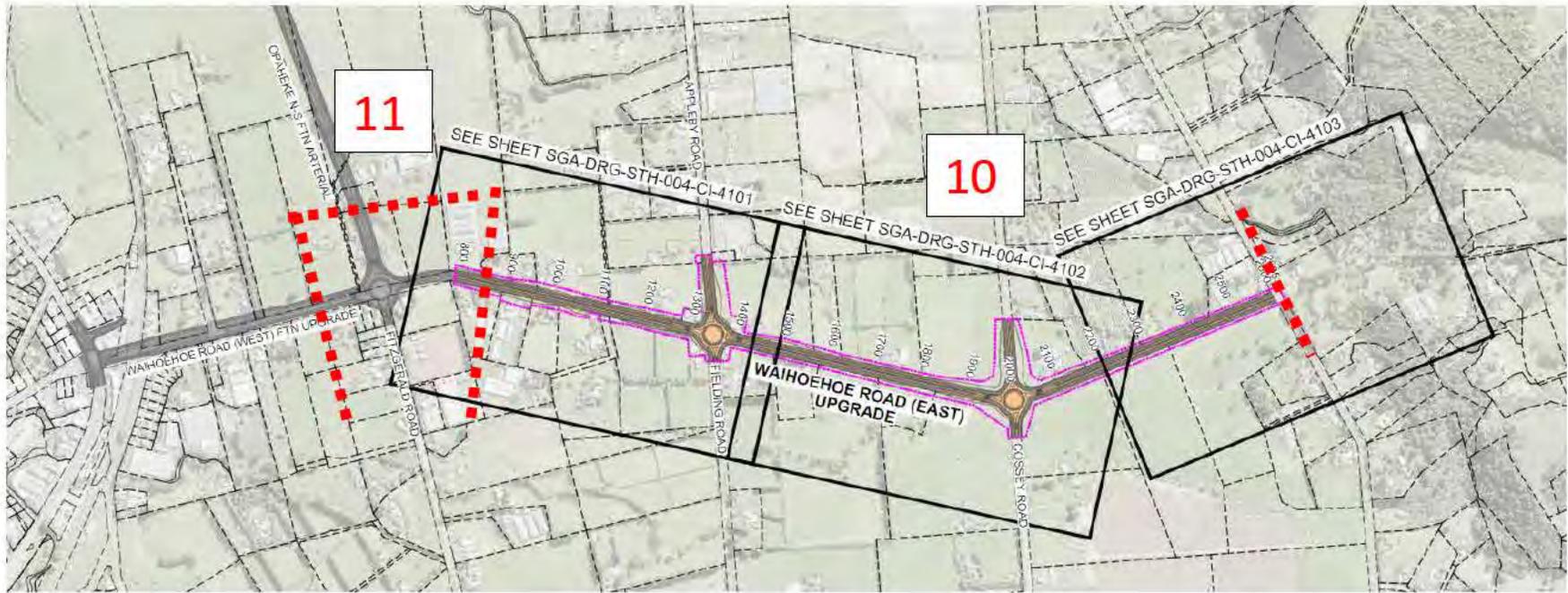
Extent of Scope for Cost Estimation:



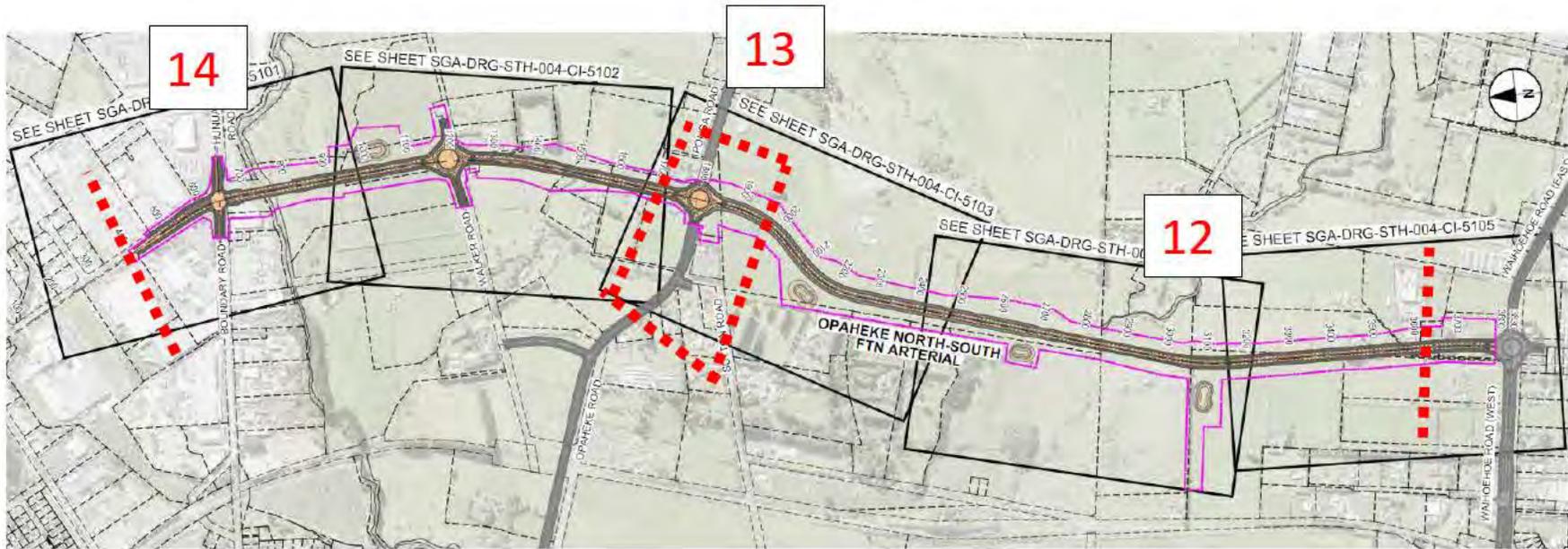
1	SH22/OIRA RD ROUNDABOUT	4576	3800
2	SH22 MID-BLOCK	3800	3050
3	SH22/JESMOND RD INTERSECTION	3050	2850
4	SH22 MID-BLOCK	2850	1600



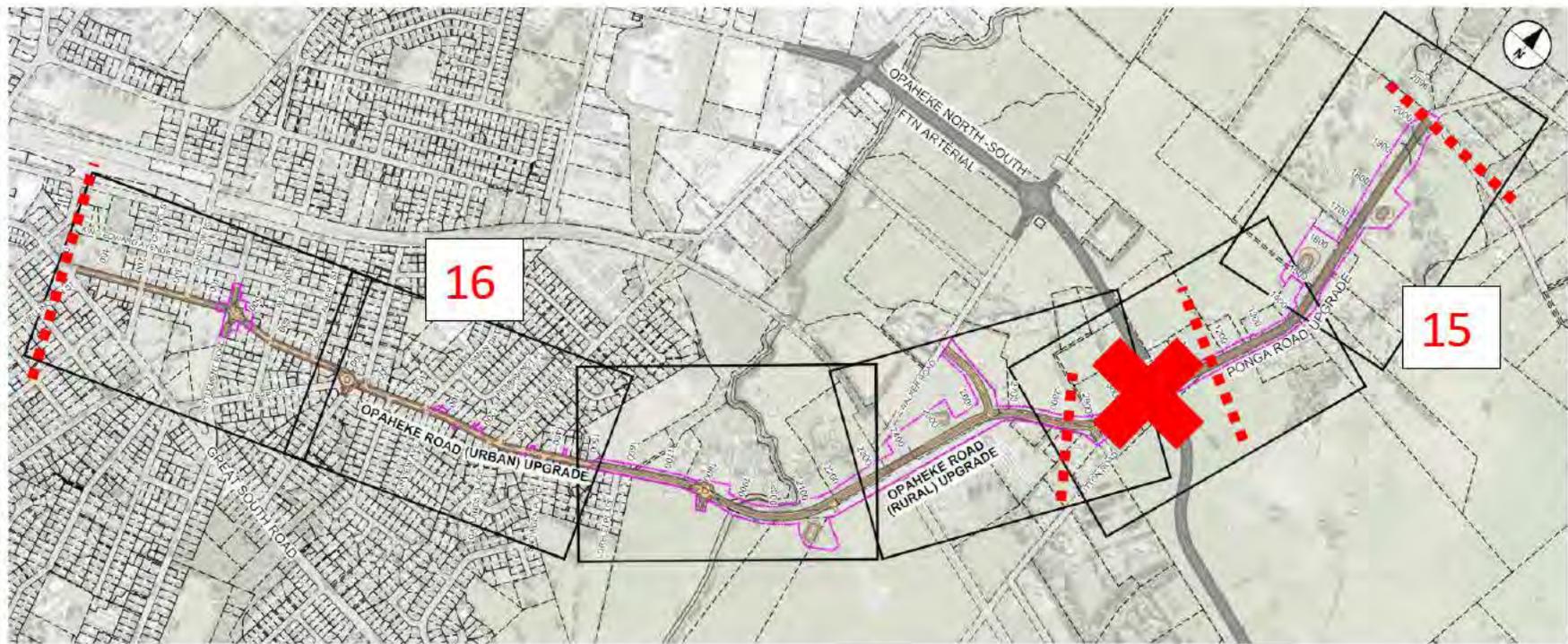
5	JESMOND RD MID-BLOCK	2200	3150
6	JESMOND RD/BRENNER INTERSECTION	3150	3480
7	JESMOND TO BRENNER LINK MID-BLOCK	280	1260
8	BRENNER RD - GSR MID-BLOCK	1260	1900
9	WAIHOEHOE RD WEST - OPAHEKE N-S MID-BLOCK	50	500
18	GREAT SOUTH ROAD INTERSECTION	-	-



10	WAIHOEHOE RD EAST MID-BLOCK	800	2580
11	OPAHEKE N-S/WAIHOEHOE RD INTERSECTION	500	800



12	OPAHEKE N-S MID-BLOCK	3630	1960
13	OPAHEKE N-S/PONGA INTERSECTION	1960	1700
14	OPAHEKE N-S MID-BLOCK (NORTH OF PONGA)	1700	400



15	PONGA RD	1150	2020
16	OPAHEKE RD UPGRADE	0	2820

Appendix 2 - Drury Arterial DBC - Cost Estimate Detail

Estimate Summary - Drury Local

Code	Description	Quantity	Unit	Rate	Total
	Drury Local Upgrade Summary March 2020				
1	Segment 1 SH22/ Oira Rd Roundabout				21,120,000
2	Segment 2 SH22 Mid Block				26,160,000
3	Segment 3 Jesmond Rd Intersection				35,860,000
4	Segment 4 SH22 Mid Block				75,240,000
5	Segment 5 Jesmond Rd Mid Block				36,420,000
6	Segment 6 Jesmond / Bremner FTN Intersection				29,810,000
7	Segment 7 Jesmond to Bremner Link mid-block				47,400,000
8	Segment 8 Bremner Rd FTN - GSR Mid-block				86,810,000
9	Segment 18 Great South Rd - Intersection				11,030,000
10	Segment 18 Great South Rd - Remaining Great South Road				20,150,000
	Estimate prepared by: Sarah Zhang and Shirley Cruz				
	Estimate reviewed by: Phil Tavener				
	Estimate verified by: Jason Luo				
	Date of Estimate: March 2020				
	Job No: 3810934				
	Inputs				
	SGA Design drawings				
	Scope of Work				
	Segments 1-8 and 18 as per drawings provided February 2020				
	Assumptions				
	An assumptions list is attached with this estimate				
	Assume 30% able to be used directly (ie: cut to fill), 25% suitable for use after treatment (ie: to stockpile and then from stockpile to fill location), 45% to waste off site.				
	Volumes to be supplied by Rosemary Beltran				
	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep)				
	Topsoil - 200mm thick strip and cart to stockpile on site and re-used. Excess soil dispose off site				
	Cut off drains to top and bottom of all embankment drains				
	Contaminated materials - 5% of earthworks				
	Retaining walls allowed 1m high to 50% of cut batter length				
	No allowance for excavation in rock				

Estimate Summary - Drury Local



Code	Description	Quantity	Unit	Rate	Total
	<p>Preliminary and General - 22%</p> <p>Exclusions</p> <p>Property costs</p> <p>GST</p> <p>Escalation from June 2020</p>				

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				
	Segment 1: SH22/ Oira Rd Roundabout				
1.1	CH start 4100m CH end 3800m Length = 300m				
	EARTHWORK				
	Demolition and Site clearance				
1.2	Remove existing grass and dispose debris off site	13,164	m2	2.00	26,328
1.3	Saw cut existing average 50mm thick Asphalt	23	m	8.00	184
1.4	Remove existing concrete driveway and dispose debris off site	70	m2	20.00	1,400
1.5	Remove existing fences and dispose debris off site	715	m	15.00	10,725
1.6	Remove existing gates	2	No	200.00	400
1.7	Remove existing trees	1	PS	18,000.00	18,000
1.8	Remove existing traffic signs and dispose debris off site	5	No	100.00	500
1.9	Remove existing street lighting poles and dispose debris off site	9	No	1,500.00	13,500
1.10	Remove existing power pole and dispose debris off site	9	No	2,500	22,500
1.11	Remove Existing Road Surfacing	3,166	m2	10.00	31,660
1.12	Strip topsoil and dispose off site (Brownfield Site)	1,896	m3	90.00	170,640
1.13	Strip topsoil and cart to stockpile	741	m3	15.00	11,115
1.14	Cut to fill (total fill required is less than 30% of cut material)	1,573	m3	12.00	18,876
1.15	Cut to stockpile (25% of cut material plus excess material not required for fill or cart to waste)	1,311	m3	12.00	15,732
1.16	Excavate from stockpile and cart and place as fill	1,311	m3	20.00	26,220

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.17	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	2,360	m3	90.00	212,400
1.18	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	4,165	m3	63.00	262,400
1.19	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	262	m3	110.00	28,837
1.20	Undercut to embankment areas (10% of area at 500mm depth)	116	m3	191.00	22,156
1.21	Undercut to waste and backfill with imported GAP65 fill (assume 20% of total construction areas x 0.5m deep) (Brownfield Areas).	1,492	m3	191.00	284,972
	Sub Total for Earthworks				1,178,545
	Ground Improvements				
1.22	Ground stabilisation 300mm deep (3% lime)	2,210	m3	50.00	110,500
	Sub Total for Ground Improvements				110,500
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
1.23	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	845	m	60.00	50,700
1.24	Subsoil drain	845	m	50.00	42,250
1.25	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep, 1:3 slopes)	1,690	m	50.00	84,500
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
1.26	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	71	m	300.00	21,300
1.27	300mm dia. pipe, 1.51 - 3.0m deep to invert level	606	m	420.00	254,520
1.28	450mm dia. pipe, 1.51 - 3.0m deep to invert level	353	m	530.00	187,090

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.29	Divert and reconstruct existing overland flow path	115	m	20.00	2,292
	Manholes				
1.30	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	8	No	7,500.00	60,000
1.31	1500mm dia. manhole, 1.51 - 3.0m deep to invert level	4	No	9,300.00	37,200
1.32	Allow to connect new stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
1.33	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	15	No	4,300.00	64,500
1.34	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
1.35	Culverts (new culvert 1 x 450mm dia)	1	LS	40,000.00	40,000
	Stormwater Ponds				
1.36	Wingwall outfall, rip rap for ponds	1	no	5,000.00	5,000
1.37	Sediment pond (2000m ² x 2.1m deep)	1	PS	315,000.00	315,000
	Subtotal for Stormwater Drainage				1,196,752
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
1.38	Sub grade preparation and testing	7,364	m ²	3.00	22,092
1.39	380mm thick ATCOP AP65	2,799	m ³	115.00	321,879
1.40	Grade 4 chipseal membrane	7,364	m ²	6.00	44,184
1.41	50mm AC14HF layer	7,364	m ²	38.00	279,832
1.42	120mm AC20 in two layers	7,364	m ²	84.00	618,576
1.43	50mm 4% SBS PMB AC14	7,364	m ²	30.00	220,920
1.44	Round	1	LS	517.00	517

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
	Sub Total				1,508,000
	Concrete Road Crossovers/Driveways				
1.45	Sub grade preparation and testing	70	m2	3.00	210
1.46	250 Micron Polyethylene sheet	70	m2	12.00	840
1.47	665 mesh	70	m2	15.00	1,050
1.48	125mm 10MPa lean mix concrete	70	m2	38.00	2,660
1.49	180mm thick 40MPa concrete	70	m2	72.00	5,040
1.50	U5 broom finish	70	m2	15.00	1,050
	Sub Total				10,850
	Sub Total for Pavement and Surfacing				1,518,850
	Bridges				
	Sub Total for Bridges	Nil			0
	RETAINING WALLS				
1.51	Timber Pole Retaining Walls 1m high	136	m	1,000.00	136,000
	Sub Total for Retaining Walls				136,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
1.52	Small Signs (1 per 100m each side)	9	No	500.00	4,500
1.53	Medium Signs (1 per 500m each side) Plus 1 for side Rd	3	No	2,000.00	6,000
	Sub Total				10,500

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
	Line Marking				
1.54	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	600	m	7.00	4,200
1.55	Single lines	2,533	m	5.00	12,665
1.56	Type N, holding line: 300mm wide continuous reflectorised white long life marking	19	m	15.00	285
1.57	White bi-directional RRPM's	85	No	10.00	850
1.58	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	350	m2	65.00	22,750
1.59	Cycle lane and pedestrian symbol	17	No	60.00	1,020
1.60	"Bus Lane" text	10	No	600.00	6,000
1.61	"BUS ONLY" text	2	No	600.00	1,200
1.62	"Bus Stop" text	2	No	600.00	1,200
1.63	"GIVE WAY" triangle	3	No	100.00	300
1.64	Urban size single reflectorised white arrow	10	No	150.00	1,500
	Subtotal for lane marking				51,970
	Lighting				
1.65	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	3,000.00	3,000
1.66	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	25	No	6,500.00	162,500
1.67	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	121	m	70.00	8,470

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.68	Ducting (incl new main duct in common trench)	965	m	15.00	14,475
1.69	AT Costs				
1.70	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	965	m	90.00	86,850
1.71	Allow for connection	25	No	500.00	12,500
	Subtotal for Lighting				287,795
	Sub Total for Traffic Services				350,265
	SERVICES RELOCATIONS				
1.72	Allow to pilot trench all existing utilities and confirm locations	1	LS	10,000.00	10,000
1.73	Allow to protect existing services	1	PS	80,000.00	80,000
	Vector - Fibre Optic				
1.74	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	723	m	24.00	17,352
	Sub Total				17,352
	Vector PE MP GAS				
1.75	50mm diameter PE MP gas duct in berm	723	m	160.00	115,680
1.76	Gas Connection	1	LS	100,000.00	100,000
	Sub Total				215,680
	ITS				
1.77	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	723	m	125.00	90,375
	Sub Total				90,375
	New Cables Replacing Overhead Cables				
	Ducting allowed below				

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.78	Allow for 3 cables (\$220/m per cable)	323	m	660.00	213,180
1.79	Allow for 4 cables (\$220/m per cable)	100	m	880.00	88,000
1.80	Cable jointing	1	LS	20,000.00	20,000
1.81	Testing	1	LS	20,000.00	20,000
	Sub Total				341,180
	Vector Power (LV)				
1.82	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	723	m	24.00	17,352
	Sub Total				17,352
	Vector Power (MV)				
1.83	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	723	m	24.00	17,352
	Sub Total				17,352
	Chorus				
1.84	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	723	m	120.00	86,760
	Sub Total				86,760
	Vodafone				
1.85	150mm diameter Vodafone duct with draw wire and warning tape in berm	723	m	24.00	17,352
	Sub Total				17,352
	Water				
1.86	Watermain	723	m	660.00	477,180
1.87	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				482,180

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
	Vector Communications				
1.88	100mm diameter Vector communications duct with draw wire and warning tape in berm	723	m	15.00	10,845
	Sub Total				10,845
	Wastewater Drainage				
1.89	150mm dia PVC pipe, 3.01 - 4.5m deep to invert level	Excluded	m	475.00	0
	Sub Total				0
	Commissioning and Testing				
1.90	Allowance for commissioning and testing	1	LS	10,000.00	10,000
1.91	Sub Total				
	Common Trench				
1.92	1500mm wide x 1200mm deep common trench	723	m	210.00	151,830
1.93	Common services pits	3	No	8,000.00	24,000
	Sub Total				175,830
	Sub Total for Services Relocations				1,572,258
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
1.94	Exposed aggregate concrete footpath	1,944	m2	90.00	174,960
1.95	Kerb to Footpath	972	m	60.00	58,320
1.96	Asphalt Cyclepath	1,944	m2	90.00	174,960
	Sub Total				408,240
	Traffic Islands				
1.97	Planted roundabout	819	m2	90.00	73,710

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.98	Traffic islands (including kerbs)	154	m2	110.00	16,940
	Sub Total				90,650
	Pram Crossing				
1.99	Pram crossing / Cycle Ramp	12	m2	100.00	1,200
1.100	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	3	m2	350.00	1,050
	Sub Total				2,250
	New Fencing				
1.101	New Fencing to boundaries where existing removed to 50% of boundaries	423	m	200.00	84,600
1.102	New Farm Fencing to 50% of boundaries	423	m	30.00	12,690
	Sub Total				97,290
	Planting & Grassing				
1.103	Weed control to grass areas	3,639	m2	0.30	1,092
1.104	Weed control to planting areas	1,275	m2	0.30	383
1.105	150mm thick topsoil uplifted from stockpile for grass and embankment areas.	4,913	m2	2.00	9,826
1.106	Grass	3,639	m2	1.00	3,639
1.107	Landscaping to 50% of embankment areas	1,275	m2	20.00	25,500
1.108	New Trees in 2.3m berms (at 50m centres)	17	no	350.00	5,950
1.109	Maintenance of grass areas (24 months)	3,639	m2	5.00	18,195
1.110	Maintenance of planting areas (24 months)	1,275	m2	8.00	10,200

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
	Sub Total				74,784
	Sub Total for Landscaping				673,214
	Western Extent of the Corridor (CH4100 - CH4576)				
1.111	Allowance for extension	476	m	1,830.40	871,270
1.112	Wetland 3 (430m2 x 2.1m deep)	1	PS	87,000.00	87,000
	Subtotal				958,270
	TRAFFIC MANAGEMENT				
1.113	Traffic Management Roundabouts and Intersections	7,694,654		0.20	1,538,931
1.114	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	7,694,654		0.05	384,733
	Sub Total for Traffic Management				1,923,664
	ENVIRONMENTAL COMPLIANCE				
1.115	Allowance for environmental compliance	9,618,318	%	0.03	240,458
	Sub Total for Environmental Compliance				240,458
	PRELIMINARY AND GENERAL				
1.116	Allow for preliminary and general (22%)	9,858,776	%	0.22	2,168,931
1.117	Rounding	1	LS	2,293.57	2,294
	Sub Total for Preliminary & General				2,168,931
	TOTAL FOR PHYSICAL WORKS				12,030,000
	FEES				
1.118	Allowance for Project Development Phase costs (2%)	12,030,000	%	0.02	240,600

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
1.119	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	12,030,000	%	0.09	1,082,700
1.120	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	12,030,000	%	0.06	721,800
1.121	Rounding	1	LS	4,900.00	4,900
	Subtotal for Fees				2,050,000
	CONTINGENCY				
1.122	Allowance for construction (25%)	12,030,000	%	0.25	3,007,500
1.123	Allowance for Project Development Phase costs (25%)	240,600	%	0.25	60,150
1.124	Allowance for Pre-Implementation phase costs (25%)	1,082,700	%	0.25	270,675
1.125	Allowance for Implementation phase fees (25%)	721,800	%	0.25	180,450
1.126	Rounding	1	LS	1,225.00	1,225
	Subtotal for Contingency				3,520,000
	TOTAL EXPECTED ESTIMATE (P50)				17,600,000
	FUNDING RISK				
1.127	Allowance for construction (20%)	15,037,500	%	0.20	3,007,500
1.128	Allowance for Project Development Phase costs (20%)	300,750	%	0.20	60,150
1.129	Allowance for Pre-Implementation phase costs (20%)	1,353,375	%	0.20	270,675
1.130	Allowance for Implementation phase fees (20%)	902,250	%	0.20	180,450
1.131	Rounding	1	LS	1,225.00	1,225

Code	Description	Quantity	Unit	Rate	Total
1	Segment 1 SH22/ Oira Rd Roundabout				<i>(Continued)</i>
	Subtotal for Funding Risk				3,520,000
	95TH PERCENTILE COST ESTIMATE				21,120,000

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				
	Segment 2 SH22 Mid Block				
2.1	CH start 3800m CH end 3050m Length = 750m				
	EARTHWORK				
	Demolition and Site clearance				
2.2	Remove existing grass and dispose debris off site	24,285	m2	2.00	48,570
2.3	Saw cut existing average 50mm thick Asphalt	15	m	8.00	120
2.4	Remove existing concrete driveway and dispose debris off site	210	m2	20.00	4,200
2.5	Remove existing fences and dispose debris off site	1,500	m	15.00	22,500
2.6	Remove existing road barrier and dispose debris off site	300	m	15.00	4,500
2.7	Remove existing gates	6	No	200.00	1,200
2.8	Remove existing trees	1	PS	44,000.00	44,000
2.9	Remove existing traffic signs and dispose debris off site	8	No	100.00	800
2.10	Remove existing street lighting poles and dispose debris off site	15	No	1,500.00	22,500
2.11	Remove existing power pole and dispose debris off site	15	No	2,500	37,500
2.12	Remove Existing Road Surfacing	5,625	m2	10.00	56,250
2.13	Strip topsoil and dispose off site (Greenfield Site)	n/a	m3	90.00	0
2.14	Strip topsoil and dispose off site (Brownfield Site)	3,009	m3	90.00	270,810
2.15	Strip topsoil and cart to stockpile	1,856	m3	15.00	27,840
2.16	Cut to fill (total fill required is less than 30% of cut material)	1,290	m3	12.00	15,480
2.17	Cut to stockpile (25% of cut material plus excess material not required for fill or cart to waste)	1,075	m3	12.00	12,900

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.18	Excavate from stockpile and cart and place as fill	1,075	m3	20.00	21,500
2.19	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	1,935	m3	90.00	174,150
2.20	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	15,859	m3	63.00	999,061
2.21	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	215	m3	110.00	23,650
2.22	Undercut to embankment areas (10% of area at 500mm depth)	371	m3	191.00	70,861
2.23	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	1,125	m3	191.00	214,875
	Sub Total for Earthworks				2,073,267
	Ground Improvements				
2.24	Ground stabilisation 300mm deep (3% lime)	3,015	m3	50.00	150,750
	Sub Total for Ground Improvements				150,750
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
2.25	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,500	m	60.00	90,000
2.26	Subsoil drain	1,500	m	50.00	75,000
2.27	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep, 1:3 slopes)	3,000	m	20.00	60,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
2.28	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	125	m	300.00	37,500

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.29	300mm dia. pipe, 1.51 - 3.0m deep to invert level	1,500	m	420.00	630,000
	Manholes				
2.30	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	17	No	7,500.00	127,500
2.31	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
2.32	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	25	No	4,300.00	107,500
2.33	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
2.34	Culverts (renew existing culverts , assumed 450mm dia pipe)	1	LS	26,000.00	26,000
	Subtotal for Stormwater Drainage				1,185,900
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
2.35	Sub grade preparation and testing	10,050	m2	3.00	30,150
2.36	380mm thick ATCOP AP65	3,819	m3	115.00	439,177
2.37	Grade 4 chipseal membrane	10,050	m2	6.00	60,300
2.38	50mm AC14HF layer	10,050	m2	38.00	381,900
2.39	120mm AC20 in two layers	10,050	m2	84.00	844,200
2.40	50mm 4% SBS PMB AC14	10,050	m2	30.00	301,500
2.41	Round	1	LS	2,773.00	2,773
	Sub Total				2,060,000
	Concrete Road Crossovers/Driveways				
2.42	Sub grade preparation and testing	210	m2	3.00	630
2.43	250 Micron Polyethylene sheet	210	m2	12.00	2,520
2.44	665 mesh	210	m2	15.00	3,150

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.45	125mm 10MPa lean mix concrete	210	m2	38.00	7,980
2.46	180mm thick 40MPa concrete	210	m2	72.00	15,120
2.47	U5 broom finish	210	m2	15.00	3,150
	Sub Total				32,550
	Sub Total for Pavement and Surfacing				2,092,550
	RETAINING WALLS				
2.48	Assumed 1m high along 50% of cut batter				
2.49	Timber Pole Retaining Walls 1m high	140	m	1,000.00	140,000
	Sub Total for Retaining Walls				140,000
	TRAFFIC SERVICES				
	Barriers				
2.50	W-section barriers	300	m	100.00	30,000
	Sub Total				30,000
	Signage				
	Ground Mounted Single Post Signage				
2.51	Small Signs (1 per 100m each side)	15	No	500.00	7,500
2.52	Medium Signs (1 per 500m each side)	3	No	2,000.00	6,000
	Sub Total				13,500
	Line Marking				
2.53	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	1,500	m	7.00	10,500
2.54	Single lines	4,500	m	5.00	22,500

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.55	White bi-directional RRPM's	150	No	10.00	1,500
2.56	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	875	m2	65.00	56,875
2.57	Cycle lane and pedestrian symbol	30	No	60.00	1,800
2.58	"Bus Lane" text	25	No	600.00	15,000
2.59	"BUS ONLY" text	3	No	600.00	1,800
2.60	"Bus stop" text	5	No	600.00	3,000
2.61	"GIVE WAY" triangle	1	No	100.00	100
2.62	Urban size single reflectorised white arrow	4	No	150.00	600
	Subtotal for lane marking				113,675
	Lighting				
2.63	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	5,200.00	5,200
2.64	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	43	No	6,500.00	279,500
2.65	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	215	m	70.00	15,050
2.66	Ducting (incl new main duct in common trench)	1,715	m	15.00	25,725
2.67	AT Costs				
2.68	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	1,715	m	90.00	154,350
2.69	Allow for connection	43	No	500.00	21,500
	Subtotal for Lighting				501,325

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
	Sub Total for Traffic Services				658,500
	SERVICES RELOCATIONS				
2.70	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
2.71	Allow to protect existing services	1	PS	150,000.00	150,000
	Vector - Fibre Optic				
2.72	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,500	m	24.00	36,000
	Sub Total				36,000
	Vector PE MP GAS (connection allowed in segment 1)				
2.73	50mm diameter PE MP gas duct in berm	1,500	m	160.00	240,000
	Sub Total				240,000
	ITS				
2.74	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	723	m	125.00	90,375
	Sub Total				90,375
	New Cables Replacing Overhead Cables				
	Ducting allowed below				
2.75	Allow for 3 cables (\$220/m per cable)	750	m	660.00	495,000
2.76	Testing	1	LS	20,000.00	20,000
2.77	Jointing	1	LS	20,000.00	20,000
	Sub Total				535,000
	Vector Power (LV)				
2.78	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,500	m	24.00	36,000

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
	Sub Total				36,000
	Vector Power (MV)				
2.79	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,500	m	24.00	36,000
	Sub Total				36,000
	Chorus				
2.80	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,500	m	120.00	180,000
	Sub Total				180,000
	Vodafone				
2.81	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,500	m	24.00	36,000
	Sub Total				36,000
	Water				
2.82	Watermain	1,500	m	660.00	990,000
2.83	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				995,000
	Vector Communications				
2.84	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,500	m	15.00	22,500
	Sub Total				22,500
	Common Trench				
2.85	1500mm wide x 1200mm deep common trench	1,500	m	210.00	315,000
2.86	Common services pits	6	No	8,000.00	48,000

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
	Sub Total				363,000
	Commissioning and Testing				
2.87	Allowance for commissioning and testing	1	LS	10,000.00	10,000
	Sub Total				10,000
	Sub Total for Services Relocations				2,744,875
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
2.88	Exposed aggregate concrete footpath	3,000	m2	90.00	270,000
2.89	Kerb to Footpath	1,500	m	60.00	90,000
2.90	Asphalt Cyclepath	3,000	m2	90.00	270,000
	Sub Total				630,000
	Traffic Islands				
2.91	Traffic islands (including kerbs)	2,250	m2	110.00	247,500
	Sub Total				247,500
	Pram Crossing				
2.92	Pram crossing / Cycle Ramp	n/a	m2	100.00	0
2.93	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	n/a	m2	350.00	0
	Sub Total				0
	New Fencing				
2.94	New Fencing to boundaries where existing removed to 50% of boundaries	750	m	200.00	150,000
2.95	New Farm Fencing to 50% of boundaries	750	m	30.00	22,500

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
	Sub Total				172,500
	Planting & Grassing				
2.96	Weed control to grass areas	8,274	m2	0.30	2,482
2.97	Weed control to planting areas	4,074	m2	0.30	1,222
2.98	150mm thick topsoil uplifted from stockpile for grass and embankment areas.	12,347	m2	2.00	24,694
2.99	Grass	8,274	m2	1.00	8,274
2.100	Landscaping to 50% of embankment areas	4,074	m2	20.00	81,480
2.101	New Trees in 2.3m berms (at 50m centres)	30	no	350.00	10,500
2.102	Maintenance of grass areas (24 months)	8,274	m2	5.00	41,370
2.103	Maintenance of planting areas (24 months)	4,074	m2	8.00	32,592
	Sub Total				202,614
	Bus Stops				
2.104	New Bus Stop	5	no	45,000.00	225,000
	Sub Total				225,000
	Street Furniture				
2.105	Street furniture to bus stop locations	5	no	5,000.00	25,000
	Sub Total				25,000
	Sub Total for Landscaping				1,502,614
	TRAFFIC MANAGEMENT				

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.106	Traffic Management Brownfield Sites (all costs excl Intersections)	10,560,000		0.08	844,800
2.107	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	10,560,000		0.05	528,000
	Sub Total for Traffic Management				1,372,800
	ENVIRONMENTAL COMPLIANCE				
2.108	Allowance for environmental compliance	11,921,257	%	0.03	298,031
	Sub Total for Environmental Compliance				298,031
	PRELIMINARY AND GENERAL				
2.109	Allow for preliminary and general (22%)	12,219,289	%	0.22	2,688,244
2.110	Rounding	1	LS	2,467.73	2,468
	Sub Total for Preliminary & General				2,690,711
	TOTAL FOR PHYSICAL WORKS				14,910,000
	FEES				
2.111	Allowance for Project Development Phase costs (2%)	14,910,000	%	0.02	298,200
2.112	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	14,910,000	%	0.09	1,341,900
2.113	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	14,910,000	%	0.06	894,600
2.114	Rounding	1	LS	-4,700.00	-4,700
	Subtotal for Fees				2,530,000
	CONTINGENCY				
2.115	Allowance for construction (25%)	14,910,000	%	0.25	3,727,500

Code	Description	Quantity	Unit	Rate	Total
2	Segment 2 SH22 Mid Block				<i>(Continued)</i>
2.116	Allowance for Project Development Phase costs (25%)	298,200	%	0.25	74,550
2.117	Allowance for Pre-Implementation phase costs (25%)	1,341,900	%	0.25	335,475
2.118	Allowance for Implementation phase fees (25%)	894,600	%	0.25	223,650
2.119	Rounding	1	LS	-1,175.00	-1,175
	Subtotal for Contingency				4,360,000
	TOTAL EXPECTED ESTIMATE (P50)				21,800,000
	FUNDING RISK				
2.120	Allowance for construction (20%)	18,637,500	%	0.20	3,727,500
2.121	Allowance for Project Development Phase costs (20%)	372,750	%	0.20	74,550
2.122	Allowance for Pre-Implementation phase costs (20%)	1,677,375	%	0.20	335,475
2.123	Allowance for Implementation phase fees (20%)	1,118,250	%	0.20	223,650
2.124	Rounding	1	LS	-1,175.00	-1,175
	Subtotal for Funding Risk				4,360,000
	95TH PERCENTILE COST ESTIMATE				26,160,000

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				
3.1	Segment 3 Jesmond Rd Intersection CH start 3050m CH end 2850m Length = 200m (Karaka Rd) 400m (Jesmond Rd) 50m (Unnamed Rd)				
	EARTHWORK				
	Demolition and Site clearance				
3.2	Remove existing grass and dispose debris off site	20,105	m2	2.00	40,210
3.3	Allow to demolish and remove existing structures	7,298	m2	150.00	1,094,651
3.4	Saw cut existing average 50mm thick Asphalt	23	m	8.00	184
3.5	Remove existing carpark	716	m2	20.00	14,328
3.6	Remove existing fences and dispose debris off site	956	m	15.00	14,340
3.7	Remove existing trees	1	PS	3,000.00	3,000
3.8	Remove existing traffic signs and dispose debris off site	4	No	100.00	400
3.9	Remove existing street lighting poles and dispose debris off site	8	No	1,500.00	12,000
3.10	Remove existing power pole and dispose debris off site	8	No	2,500	20,000
3.11	Remove Existing Road Surfacing	2,909	m2	10.00	29,090
3.12	Strip topsoil and dispose off site (Greenfield Site)	n/a	m3	90.00	0
3.13	Strip topsoil and dispose off site (Brownfield Site)	2,812	m3	90.00	253,080
3.14	Strip topsoil and cart to stockpile	1,209	m3	15.00	18,135
3.15	Cut to fill (total fill required is less than 30% of cut material)	1,016	m3	12.00	12,192
3.16	Cut to stockpile (25% of cut material plus excess material not required for fill or cart to waste)	847	m3	12.00	10,164

Code	Description	Quantity	Unit	Rate	Total
3 Segment 3 Jesmond Rd Intersection					<i>(Continued)</i>
3.17	Excavate from stockpile and cart and place as fill in segment	847	m3	20.00	16,940
3.18	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	1,524	m3	90.00	137,160
3.19	Preload to embankments 1m depth (new roads and fill areas to embankments on new roads only)	6,000	m3	63.00	377,989
3.20	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	31,739	m3	63.00	1,999,500
3.21	Extra value over cut to waste for cutting in medium rock (assume 20% of total cut)	Excluded	m3	30.00	0
3.22	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	169	m3	110.00	18,629
3.23	Undercut to embankment areas (10% of area at 500mm depth)	204	m3	191.00	38,964
3.24	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	6,773	m3	191.00	1,293,643
	Sub Total for Earthworks				5,404,599
	Ground Improvements				
3.25	Ground stabilisation 300mm deep (3% lime)	2,556	m3	50.00	127,800
	Sub Total for Ground Improvements				127,800
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
3.26	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,281	m	60.00	76,860
3.27	Subsoil drain	1,281	m	50.00	64,050
3.28	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep, 1:3 slopes)	2,561	m	20.00	51,220

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
3.29	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	102	m	300.00	30,600
3.30	300mm dia. pipe, 1.51 - 3.0m deep to invert level	1,221	m	420.00	512,820
	Manholes				
3.31	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	14	No	7,500.00	105,000
3.32	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
3.33	Standard 'street catchpit' 800mm x 500mm with 1200 long precast intel as per AT COP RD038	21	No	4,300.00	90,300
3.34	Standard double catchpit with 2400 long precast intel	4	No	7,600.00	30,400
	Culverts				
3.35	Culverts (extend existing culverts 1 x 225mm dia, 1 x 900mm dia and 1 x new assumed 450mm)	1	LS	100,000.00	100,000
	Subtotal for Stormwater Drainage				1,063,250
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
3.36	Sub grade preparation and testing	4,724	m2	3.00	14,172
3.37	380mm thick ATCOP AP65	1,795	m3	104.00	186,685
3.38	Grade 4 chipseal membrane	4,724	m2	5.00	23,620
3.39	50mm AC14HF layer	4,724	m2	35.00	165,340
3.40	120mm AC20 in two layers	4,724	m2	78.00	368,472
3.41	50mm 4% SBS PMB AC14	4,724	m2	30.00	141,720
	Type A (Brownfield)				
3.42	Sub grade preparation and testing	7,796	m2	3.00	23,388
3.43	380mm thick ATCOP AP65	1,975	m3	115.00	227,121
3.44	Grade 4 chipseal membrane	7,796	m2	6.00	46,776

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.45	50mm AC14HF layer	7,796	m2	38.00	296,248
3.46	120mm AC20 in two layers	7,796	m2	84.00	654,864
3.47	50mm 4% SBS PMB AC14	7,796	m2	30.00	233,880
3.48	Round	1	LS	714.00	714
	Sub Total				2,383,000
	Concrete Road Crossovers/Driveways				
3.49	Sub grade preparation and testing	716	m2	3.00	2,149
3.50	250 Micron Polyethylene sheet	716	m2	12.00	8,597
3.51	665 mesh	716	m2	15.00	10,746
3.52	125mm 10MPa lean mix concrete	716	m2	38.00	27,224
3.53	180mm thick 40MPa concrete	716	m2	72.00	51,582
3.54	U5 broom finish	716	m2	15.00	10,746
	Sub Total				111,045
	Sub Total for Pavement and Surfacing				2,494,045
	RETAINING WALLS				
3.55	Assumed 1m high to 50% of cut batter length				
3.56	Timber Pole Retaining Walls 1m high	110	m	1,000.00	110,000
	Sub Total for Retaining Walls				110,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
3.57	Small Signs (1 per 100m each side)	13	No	500.00	6,500
3.58	Medium Signs (1 per 500m each side)	4	No	2,000.00	8,000

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
	Sub Total				14,500
	Traffic Signals				
3.59	Allowance for new traffic signals	1	PS	300,000.00	300,000
	Sub Total				300,000
	Line Marking				
3.60	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	1,195	m	7.00	8,365
3.61	Single lines	3,841	m	5.00	19,205
3.62	Type N, holding line: 300mm wide continuous reflectorised white long life marking	21	m	15.00	315
3.63	White bi-directional RRPM's	129	No	10.00	1,290
3.64	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	700	m2	65.00	45,500
3.65	Cycle lane and pedestrian symbol	26	No	60.00	1,560
3.66	"Bus Lane" text	20	No	600.00	12,000
3.67	"BUS ONLY" text	4	No	600.00	2,400
3.68	"Bus stop" text	2	No	600.00	1,200
3.69	"GIVE WAY" triangle	4	No	100.00	400
3.70	Urban size single reflectorised white arrow	16	No	150.00	2,400
	Subtotal for lane marking				94,635
	Lighting				

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.71	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	8,000.00	8,000
3.72	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	37	No	6,500.00	240,500
3.73	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	183	m	70.00	12,810
3.74	Ducting (incl new main duct in common trench)	1,463	m	15.00	21,945
3.75	AT Costs				
3.76	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	1,463	m	90.00	131,670
3.77	Allow for connection	37	No	500.00	18,500
	Subtotal for Lighting				433,425
	Sub Total for Traffic Services				842,560
	SERVICES RELOCATIONS				
3.78	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
3.79	Allow to protect existing services	1	PS	130,000.00	130,000
	Vector - Fibre Optic				
3.80	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,238	m	24.00	29,712
	Sub Total				29,712
	Vector PE MP GAS (connection to existing allowed in segment 1)				
3.81	50mm diameter PE MP gas duct in berm	1,238	m	160.00	198,080
3.82	Allow for First Gas crossing and protection at Jesmond Road	250	m	500.00	125,000
	Sub Total				323,080

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
	ITS				
3.83	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	1,238	m	125.00	154,750
	Sub Total				154,750
	New Cables Replacing Overhead Cables				
	Ducting allowed below				
3.84	Allow for 7 cables (\$220/m per cable)	641	m	1,540.00	987,140
3.85	Jointing	1	LS	20,000.00	20,000
3.86	Testing	1	LS	50,000.00	50,000
	Sub Total				1,057,140
	Vector Power (LV)				
3.87	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,238	m	24.00	29,712
	Sub Total				29,712
	Vector Power (MV)				
3.88	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,238	m	24.00	29,712
	Sub Total				29,712
	Chorus				
3.89	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,238	m	120.00	148,560
	Sub Total				148,560
	Vodafone				
3.90	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,238	m	24.00	29,712
	Sub Total				29,712
	Water				

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.91	Watermain	1,238	m	660.00	817,080
3.92	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				822,080
	Vector Communications				
3.93	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,238	m	15.00	18,570
	Sub Total				18,570
	Wastewater Drainage				
3.94	150mm dia PVC pipe, 3.01 - 4.5m deep to invert level	Excluded	m	475.00	0
	Sub Total				0
	Common Trench				
3.95	1500mm wide x 1200mm deep common trench	1,238	m	210.00	259,980
3.96	Common services pits	5	No	8,000.00	40,000
	Commissioning and Testing				
3.97	Allowance for commissioning and testing	1	LS	10,000.00	10,000
	Sub Total				10,000
	Sub Total				309,980
	Sub Total for Services Relocations				3,098,008
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
3.98	Exposed aggregate concrete footpath	2,081	m2	90.00	187,290

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.99	Kerb to Footpath	1,041	m	60.00	62,460
3.100	Asphalt Cyclepath	2,081	m2	90.00	187,290
	Sub Total				437,040
	Traffic Islands				
3.101	Planted traffic islands	n/a	m2	90.00	0
3.102	Traffic islands (including kerbs)	1,612	m2	110.00	177,320
	Sub Total				177,320
	Pram Crossing				
3.103	Pram crossing / Cycle Ramp	16	m2	100.00	1,600
3.104	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	8	m2	350.00	2,800
	Sub Total				4,400
	New Fencing				
3.105	New Fencing to boundaries where existing removed to 50% of boundaries	521	m	200.00	104,200
3.106	New Farm Fencing to 50% of boundaries	521	m	30.00	15,630
	Sub Total				119,830
	Planting & Grassing				
3.107	Weed control to grass areas	5,820	m2	0.30	1,746
3.108	Weed control to planting areas	2,236	m2	0.30	671
3.109	150mm thick topsoil uplifted from stockpile for grass and embankment areas	8,055	m2	2.00	16,110
3.110	Grass	5,820	m2	1.00	5,820

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.111	Landscaping to 50% of embankment areas	2,236	m2	20.00	44,720
3.112	New Trees in 2.3m berms (at 50m centres)	21	no	350.00	7,350
3.113	Maintenance of grass areas (24 months)	5,820	m2	5.00	29,100
3.114	Maintenance of planting areas (24 months)	2,236	m2	8.00	17,888
	Bus Stops				
3.115	New Bus Stop	2	no	45,000.00	90,000
	Sub Total				90,000
	Sub Total				213,405
3.116					0
	Street Furniture				
3.117	Street furniture adjacent to bus stop	2	no	5,000.00	10,000
	Sub Total				10,000
	Sub Total for Landscaping				961,995
	TRAFFIC MANAGEMENT				
3.118	Traffic Management Brownfield Sites (all costs excl Intersections)	14,130,000		0.08	0
3.119	Traffic Management Green Field Site	14,130,000		0.02	113,040
3.120	Traffic Management Roundabouts and Intersections	14,130,000		0.20	1,695,600
3.121	Traffic Management Brownfield Sites : Motorways	0		0.15	0
3.122	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	14,130,000		0.05	423,900
	Sub Total for Traffic Management				2,232,540

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
	ENVIRONMENTAL COMPLIANCE				
3.123	Allowance for environmental compliance	16,334,797	%	0.03	408,370
	Sub Total for Environmental Compliance				408,370
	PRELIMINARY AND GENERAL				
3.124	Allow for preliminary and general (22%)	16,743,167	%	0.22	3,683,497
3.125	Rounding	1	LS	3,336.29	3,336
	Sub Total for Preliminary & General				3,686,833
	TOTAL FOR PHYSICAL WORKS				20,430,000
	FEES				
3.126	Allowance for Project Development Phase costs (2%)	20,430,000	%	0.02	408,600
3.127	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	20,430,000	%	0.09	1,838,700
3.128	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	20,430,000	%	0.06	1,225,800
3.129	Rounding	1	LS	-3,100.00	-3,100
	Subtotal for Fees				3,470,000
	CONTINGENCY				
3.130	Allowance for construction (25%)	20,430,000	%	0.25	5,107,500
3.131	Allowance for Project Development Phase costs (25%)	408,600	%	0.25	102,150
3.132	Allowance for Pre-Implementation phase costs (25%)	1,838,700	%	0.25	459,675
3.133	Allowance for Implementation phase fees (25%)	1,225,800	%	0.25	306,450

Code	Description	Quantity	Unit	Rate	Total
3	Segment 3 Jesmond Rd Intersection				<i>(Continued)</i>
3.134	Rounding	1	LS	4,225.00	4,225
	Subtotal for Contingency				5,980,000
	TOTAL EXPECTED ESTIMATE (P50)				29,880,000
	FUNDING RISK				
3.135	Allowance for construction (20%)	25,537,500	%	0.20	5,107,500
3.136	Allowance for Project Development Phase costs (20%)	510,750	%	0.20	102,150
3.137	Allowance for Pre-Implementation phase costs (20%)	2,298,375	%	0.20	459,675
3.138	Allowance for Implementation phase fees (20%)	1,532,250	%	0.20	306,450
3.139	Rounding	1	LS	4,225.00	4,225
	Subtotal for Funding Risk				5,980,000
	95TH PERCENTILE COST ESTIMATE				35,860,000

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				
	Segment 4 SH22 Mid Block				
4.1	CH start 2850m CH end 1600m Length = 1250m				
	EARTHWORK				
	Demolition and Site clearance				
4.2	Remove existing grass and dispose debris off site	32,930	m2	2.00	65,860
4.3	Allow to demolish and remove existing buildings	463	m2	150.00	69,497
4.4	Demolish existing bridge structure	450	m2	750.00	337,500
4.5	Saw cut existing average 50mm thick Asphalt	60	m	8.00	480
4.6	Remove existing concrete driveway and dispose debris off site	105	m2	20.00	2,100
4.7	To saw cut /break out existing traffic islands and make good	150	m2	20.00	3,000
4.8	Remove traffic barriers	1,340	m	30.00	40,200
4.9	Remove existing fences and dispose debris off site	1,905	m	15.00	28,575
4.10	Remove existing gates	3	No	200.00	600
4.11	Remove existing trees	1	PS	20,600.00	20,600
4.12	Remove existing traffic signs and dispose debris off site	11	No	100.00	
4.13	Remove existing street lighting poles and dispose debris off site	30	No	1,500.00	45,000
4.14	Remove Existing Road Surfacing	7,819	m2	10.00	78,190
4.15	Strip topsoil and dispose off site (Brownfield Site)	4,087	m3	90.00	367,830
4.16	Strip topsoil and cart to stockpile	2,507	m3	15.00	37,605
4.17	Cut to fill (total fill required is less than 30% of cut material)	3,057	m3	12.00	36,684

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.18	Cut to stockpile (25% of cut material plus excess material not required for fill or cart to waste)	2,547	m3	12.00	30,564
4.19	Excavate from stockpile and cart and place as fill	2,547	m3	20.00	50,940
4.20	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	4,585	m3	90.00	412,650
4.21	Fill with imported Engineered fill (Greenfield Areas)	n/a	m3	63.00	0
4.22	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	16,129	m3	63.00	1,016,098
4.23	Undercut to embankment areas (10% of area at 500mm depth)	500	m3	191.00	95,500
4.24	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	1,575	m3	191.00	300,825
	Sub Total for Earthworks				3,040,298
	Ground Improvements				
4.25	Ground stabilisation 300mm deep (3% lime)	4,101	m3	50.00	205,050
	Sub Total for Ground Improvements				205,050
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
4.26	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	2,025	m	60.00	121,500
4.27	Subsoil drain	2,025	m	50.00	101,250
4.28	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep, 1:3 slopes)	4,050	m	20.00	81,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
4.29	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	170	m	300.00	51,001

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.30	300mm dia. pipe, 1.51 - 3.0m deep to invert level	1,000	m	420.00	420,000
4.31	375mm dia. pipe, 1.51 - 3.0m deep to invert level	1,040	m	450.00	468,000
	Manholes				
4.32	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	12	No	7,500.00	90,000
4.33	1500mm dia. manhole, 1.51 - 3.0m deep to invert level	12	No	9,300.00	111,600
4.34	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
4.35	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	34	No	4,300.00	146,200
4.36	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
4.37	Culverts (renew existing culverts 1 x 450mm dia assumed)	1	LS	29,000.00	29,000
	Stormwater Ponds				
4.38	Wingwall outfall, rip rap for ponds	1	no	5,000.00	5,000
4.39	Sediment pond (4300m2 x 2.1m deep, 1/3 of the size)	1	PS	243,000.00	243,000
4.40	Sediment pond (1330m2 x 2.1m deep) Jesmond Wetland Pond 1	1	PS	330,000.00	330,000
	Subtotal for Stormwater Drainage				2,229,951
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
4.41	Sub grade preparation and testing	12,864	m2	3.00	38,592
4.42	380mm thick ATCOP AP65	4,889	m3	115.00	562,225

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.43	Grade 4 chipseal membrane	12,864	m2	6.00	77,184
4.44	50mm AC14HF layer	12,864	m2	38.00	488,832
4.45	120mm AC20 in two layers	12,864	m2	84.00	1,080,576
4.46	50mm 4% SBS PMB AC14	12,864	m2	30.00	385,920
4.47	Round	1	LS	671.00	671
	Sub Total				2,634,000
	Concrete Road Crossovers/Driveways				
4.48	Sub grade preparation and testing	105	m2	3.00	315
4.49	250 Micron Polyethylene sheet	105	m2	12.00	1,260
4.50	665 mesh	105	m2	15.00	1,575
4.51	125mm 10MPa lean mix concrete	105	m2	38.00	3,990
4.52	180mm thick 40MPa concrete	105	m2	72.00	7,560
4.53	U5 broom finish	105	m2	15.00	1,575
	Sub Total				16,275
	Sub Total for Pavement and Surfacing				2,650,275
	Bridges				
4.54	60m long 25.6m wide bridge with 1225 deep super tee girders and spill-through abutments refer drawings 004-ST-6701 and 004-ST-6720, (12 no. 1225mm super T girder and 200mm thick concrete deck)	1,536	m2	4,500.00	6,912,000
	Sub Total for Bridges				6,912,000
	RETAINING WALLS				
4.55	Assumed 50% of cut batter length 1m high				
4.56	Timber Pole Retaining Walls 1m high	300	m	1,000.00	300,000
	Sub Total for Retaining Walls				300,000

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
	TRAFFIC SERVICES				
	Barriers				
4.57	W-section barriers	1,340	m	100.00	134,000
	Sub Total				134,000
	Signage				
	Ground Mounted Single Post Signage				
4.58	Small Signs (1 per 100m each side)	21	No	500.00	10,500
4.59	Medium Signs (1 per 500m each side)	5	No	2,000.00	10,000
4.60	VMS signage at bridge location	1	LS	120,000.00	120,000
	Sub Total				140,500
	Intersection Costs				
4.61	Great South Rd Intersection	1	LS	8,145,266.96	8,145,267
	Sub Total				8,145,267
	Line Marking				
4.62	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	2,040	m	7.00	14,280
4.63	Single lines	6,120	m	5.00	30,600
4.64	Type N, holding line: 300mm wide continuous reflectorised white long life marking	14	m	15.00	210
4.65	White bi-directional RRPM's	204	No	10.00	2,040
4.66	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	1,190	m2	65.00	77,350
4.67	Cycle lane and pedestrian symbol	41	No	60.00	2,460

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.68	"Bus Lane" text	34	No	600.00	20,400
4.69	"BUS ONLY" text	5	No	600.00	3,000
4.70	"Bus Stop" text	6	No	600.00	3,600
4.71	"GIVE WAY" triangle	2	No	100.00	200
4.72	Urban size single reflectorised white arrow	12	No	150.00	1,800
	Subtotal for lane marking				155,940
	Lighting				
4.73	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	7,500.00	7,500
4.74	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	59	No	6,500.00	383,500
4.75	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	292	m	70.00	20,440
4.76	Ducting (incl new main duct in common trench)	2,332	m	15.00	34,980
4.77	AT Costs				
4.78	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	2,332	m	90.00	209,880
4.79	Allow for connection	59	No	500.00	29,500
	Subtotal for Lighting				685,800
	Sub Total for Traffic Services				9,261,507
	SERVICES RELOCATIONS				
4.80	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.81	Allow to protect existing services	1	PS	200,000.00	200,000
	Vector - Fibre Optic				
4.82	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	2,040	m	24.00	48,960
	Sub Total				48,960
	Vector PE MP GAS				
4.83	50mm diameter PE MP gas duct in berm	2,040	m	160.00	326,400
4.84	Allow for Gas connection to existing	1	LS	100,000.00	100,000
4.85	Allow for First Gas crossing and protection at CH2800	140	m	500.00	70,000
	Sub Total				496,400
	ITS				
4.86	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	2,040	m	125.00	255,000
	Sub Total				255,000
	Vector Power (LV)				
4.87	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	2,040	m	24.00	48,960
	Sub Total				48,960
	Vector Power (MV)				
4.88	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	2,040	m	24.00	48,960
	Sub Total				48,960
	Chorus				
4.89	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	2,040	m	120.00	244,800
	Sub Total				244,800
	Vodafone				

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.90	150mm diameter Vodafone duct with draw wire and warning tape in berm	2,040	m	24.00	48,960
	Sub Total				48,960
	Water				
4.91	Watermain	2,040	m	660.00	1,346,400
4.92	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				1,351,400
	Vector Communications				
4.93	100mm diameter Vector communications duct with draw wire and warning tape in berm	2,040	m	15.00	30,600
	Sub Total				30,600
	Common Trench				
4.94	1500mm wide x 1200mm deep common trench	1,920	m	210.00	403,200
4.95	Common services pits	8	No	8,000.00	64,000
	Sub Total				467,200
	Testing and Commissioning				
4.96	Testing and Commissioning	1	LS	10,000.00	10,000
	Sub Total				10,000
	Sub Total for Services Relocations				3,266,240
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
4.97	Exposed aggregate concrete footpath	4,050	m2	90.00	364,500

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.98	Kerb to Footpath	2,025	m	60.00	121,500
4.99	Asphalt Cyclepath	3,930	m2	90.00	353,700
	Sub Total				839,700
	Traffic Islands				
4.100	Traffic islands (including kerbs)	3,060	m2	110.00	336,600
	Sub Total				336,600
	Pram Crossing				
4.101	Pram crossing / Cycle Ramp	8	m2	100.00	800
4.102	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	2	m2	350.00	700
	Sub Total				1,500
	New Fencing				
4.103	New Fencing to boundaries where existing removed to 50% of boundaries	953	m	200.00	190,600
4.104	New Farm Fencing to 50% of boundaries	953	m	30.00	28,590
	Sub Total				219,190
	Planting & Grassing				
4.105	Weed control to grass areas	11,200	m2	0.30	3,360
4.106	Weed control to planting areas	5,488	m2	0.30	1,646
4.107	150mm thick topsoil uplifted from stockpile for grass and embankment areas	16,687	m2	2.00	33,374
4.108	Grass	11,200	m2	1.00	11,200
4.109	Landscaping to 50% of embankment areas	5,488	m2	20.00	109,760

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
4.110	New Trees in 2.3m berms (at 50m centres)	41	no	350.00	14,350
4.111	Maintenance of grass areas (24 months)	11,200	m2	5.00	56,000
4.112	Maintenance of planting areas (24 months)	5,488	m2	8.00	43,904
	Sub Total				273,594
	Bus Stops				
4.113	New Bus Stop	6	no	45,000.00	270,000
	Sub Total				270,000
	Street Furniture				
4.114	Street Furniture adjacent to bus stops	6	no	5,000.00	30,000
	Sub Total				30,000
	Sub Total for Landscaping				1,970,584
	TRAFFIC MANAGEMENT				
4.115	Traffic Management Brownfield Sites (all costs excl Intersections)	21,690,637		0.08	1,735,251
4.116	Traffic Management Roundabouts and Intersections	8,145,267		0.20	1,629,053
4.117	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	21,690,637		0.05	1,084,532
	Sub Total for Traffic Management				4,448,836
	ENVIRONMENTAL COMPLIANCE				
4.118	Allowance for environmental compliance	34,284,741	%	0.03	857,119
	Sub Total for Environmental Compliance				857,119

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
	PRELIMINARY AND GENERAL				
4.119	Allow for preliminary and general (22%)	35,141,859	%	0.22	7,731,209
4.120	Rounding	1	LS	-3,068.15	-3,068
	Sub Total for Preliminary & General				7,728,141
	TOTAL FOR PHYSICAL WORKS				42,870,000
	FEES				
4.121	Allowance for Project Development Phase costs (2%)	42,870,000	%	0.02	857,400
4.122	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	42,870,000	%	0.09	3,858,300
4.123	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	42,870,000	%	0.06	2,572,200
4.124	Rounding	1	LS	2,100.00	2,100
	Subtotal for Fees				7,290,000
	CONTINGENCY				
4.125	Allowance for construction (25%)	42,870,000	%	0.25	10,717,500
4.126	Allowance for Project Development Phase costs (25%)	857,400	%	0.25	214,350
4.127	Allowance for Pre-Implementation phase costs (25%)	3,858,300	%	0.25	964,575
4.128	Allowance for Implementation phase fees (25%)	2,572,200	%	0.25	643,050
4.129	Rounding	1	LS	525.00	525
	Subtotal for Contingency				12,540,000
	TOTAL EXPECTED ESTIMATE (P50)				62,700,000

Code	Description	Quantity	Unit	Rate	Total
4	Segment 4 SH22 Mid Block				<i>(Continued)</i>
	FUNDING RISK				
4.130	Allowance for construction (20%)	53,587,500	%	0.20	10,717,500
4.131	Allowance for Project Development Phase costs (20%)	1,071,750	%	0.20	214,350
4.132	Allowance for Pre-Implementation phase costs (20%)	4,822,875	%	0.20	964,575
4.133	Allowance for Implementation phase fees (20%)	3,215,250	%	0.20	643,050
4.134	Rounding	1	LS	525.00	525
	Subtotal for Funding Risk				12,540,000
	95TH PERCENTILE COST ESTIMATE				75,240,000

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				
5.1	Segment 5 Jesmond Rd Mid Block Ch start 2200m ch end 3150m Length = 950m EARTHWORK Demolition and Site clearance				
5.2	Remove existing grass and dispose debris off site	27,950	m2	2.00	55,900
5.3	Allow to demolish and remove existing buildings	600	m2	150.00	90,000
5.4	Saw cut existing average 50mm thick Asphalt	15	m	8.00	120
5.5	Remove existing concrete driveway and dispose debris off site	910	m2	20.00	18,200
5.6	Remove existing fences and dispose debris off site	1,900	m	15.00	28,500
5.7	Remove existing gates	26	No	200.00	5,200
5.8	Remove existing trees	1	PS	45,000.00	45,000
5.9	Remove existing traffic signs and dispose debris off site	10	No	100.00	1,000
5.10	Remove existing power pole and dispose debris off site	19	No	2,500	47,500
5.11	Remove Existing Road Surfacing	7,125	m2	10.00	71,250
5.12	Strip topsoil and dispose off site (Greenfield Site)	n/a	m3	90.00	0
5.13	Strip topsoil and dispose off site (Brownfield Site)	3,711	m3	90.00	333,990
5.14	Strip topsoil and cart to stockpile	1,887	m3	15.00	28,305
5.15	Cut to fill (total fill required is less than 30% of cut material)	4,029	m3	12.00	48,348
5.16	Cut to stockpile (25% of cut material plus excess material not required for fill or cart to waste)	8,624	m3	12.00	103,488
5.17	Excavate from stockpile and cart and place as fill in segment 7 (Jesmond to Bremner Link mid-block as material not required in Segment 5)	8,624	m3	20.00	172,480

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.18	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	10,352	m3	90.00	931,680
5.19	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	1,151	m3	110.00	126,610
5.20	Undercut to embankment areas (10% of area at 500mm depth)	329	m3	191.00	62,839
5.21	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	1,425	m3	191.00	272,175
	Sub Total for Earthworks				2,442,585
	Ground Improvements				
5.22	Ground stabilisation 300mm deep (3% lime)	3,819	m3	50.00	190,950
	Sub Total for Ground Improvements				190,950
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
5.23	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,900	m	60.00	114,000
5.24	Subsoil drain	1,900	m	50.00	95,000
5.25	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep, 1:3 slopes)	3,800	m	20.00	76,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
5.26	300mm pipe, 0-1.5m deep to invert level (Catchpit leads at 60m centres)	160	m	300.00	48,001
5.27	300mm dia. pipe, 1.51 - 3.0m deep to invert level	1,700	m	420.00	714,000
5.28	375mm dia. pipe, 1.51 - 3.0m deep to invert level	200	m	450.00	90,000

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
	Manholes				
5.29	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	26	No	7,500.00	195,000
5.30	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
5.31	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038. 60m centres	32	No	4,300.00	137,600
5.32	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
5.33	Culverts (extend existing culverts 1 x 300mm dia, 1 x 450mm dia)	1	LS	35,000.00	35,000
	Stormwater Ponds				
5.34	Wingwall outfall, rip rap for ponds	1	no	5,000.00	5,000
5.35	Sediment pond (2300m2 x 2.1m deep) Jesmond Wetland Pond 2	1	PS	350,000.00	350,000
	Subtotal for Stormwater Drainage				1,892,000
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
5.36	Sub grade preparation and testing	12,730	m2	3.00	38,190
5.37	380mm thick ATCOP AP65	4,838	m3	115.00	556,360
5.38	Grade 4 chipseal membrane	12,730	m2	6.00	76,380
5.39	50mm AC14HF layer	12,730	m2	38.00	483,740
5.40	120mm AC20 in two layers	12,730	m2	84.00	1,069,320
5.41	50mm 4% SBS PMB AC14	12,730	m2	30.00	381,900
5.42	Round	1	LS	4,110.00	4,110
	Sub Total				2,610,000
	Concrete Road Crossovers/Driveways				
5.43	Sub grade preparation and testing	910	m2	3.00	2,730

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.44	250 Micron Polyethylene sheet	910	m2	12.00	10,920
5.45	665 mesh	910	m2	15.00	13,650
5.46	125mm 10MPa lean mix concrete	910	m2	38.00	34,580
5.47	180mm thick 40MPa concrete	910	m2	72.00	65,520
5.48	U5 broom finish	910	m2	15.00	13,650
	Sub Total				141,050
	Sub Total for Pavement and Surfacing				2,751,050
	RETAINING WALLS				
5.49	Assumed 50% of cut batter length 1m high				
5.50	Timber Pole Retaining Walls 1m high	400	m	1,000.00	400,000
	Sub Total for Retaining Walls				400,000
	Signage				
	Ground Mounted Single Post Signage				
5.51	Small Signs (1 per 100m each side)	19	No	500.00	9,500
5.52	Medium Signs (1 per 500m each side)	4	No	2,000.00	8,000
	Sub Total				17,500
	Line Marking				
5.53	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	1,900	m	7.00	13,300
5.54	Single lines	5,700	m	5.00	28,500
5.55	White bi-directional RRPM's	190	No	10.00	1,900

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.56	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald (10m long x 3.5m wide at 60m intervals)	1,120	m2	65.00	72,800
5.57	Cycle lane and pedestrian symbol	38	No	60.00	2,280
5.58	"BUS ONLY" text	4	No	600.00	2,400
5.59	BUS STOP text	5	No	600.00	3,000
	Subtotal for lane marking				124,180
	Lighting				
5.60	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	8,000.00	8,000
5.61	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	55	No	6,500.00	357,500
5.62	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	272	m	70.00	19,040
5.63	Ducting (incl new main duct in common trench)	2,172	m	15.00	32,580
5.64	AT Costs				
5.65	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	2,172	m	90.00	195,480
5.66	Allow for connection	55	No	500.00	27,500
	Subtotal for Lighting				640,100
	Sub Total for Traffic Services				781,780
	SERVICES RELOCATIONS				
5.67	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
5.68	Allow to protect existing services	1	PS	190,000.00	190,000

Code	Description	Quantity	Unit	Rate	Total
5 Segment 5 Jesmond Rd Mid Block					<i>(Continued)</i>
Vector - Fibre Optic					
5.69	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,900	m	24.00	45,600
	Sub Total				45,600
Vector PE MP GAS (connection to main allowed in SH22 segments 1-4)					
5.70	50mm diameter PE MP gas duct in berm	1,900	m	160.00	304,000
	Sub Total				304,000
ITS					
5.71	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	1,900	m	125.00	237,500
	Sub Total				237,500
New Cables Replacing Overhead Cables					
Ducting allowed below					
5.72	Allow for 7 cables (\$220/m per cable)	950	m	1,540.00	1,463,000
5.73	Jointing	1	LS	20,000.00	20,000
5.74	Testing	1	LS	50,000.00	50,000
	Sub Total				1,533,000
Vector Power (LV)					
5.75	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,900	m	24.00	45,600
	Sub Total				45,600
Vector Power (MV)					
5.76	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,900	m	24.00	45,600
	Sub Total				45,600
Chorus					
5.77	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,900	m	120.00	228,000

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
	Sub Total				228,000
	Vodafone				
5.78	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,900	m	24.00	45,600
	Sub Total				45,600
	Water				
5.79	Watermain	1,900	m	660.00	1,254,000
	Sub Total				1,254,000
5.80	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				1,259,000
	Vector Communications				
5.81	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,900	m	15.00	28,500
	Sub Total				28,500
	Common Trench				
5.82	1500mm wide x 1200mm deep common trench	1,900	m	210.00	399,000
5.83	Common services pits	8	No	8,000.00	64,000
	Sub Total				463,000
	Testing and Commissioning				
5.84	Testing and Commissioning	1	LS	10,000.00	10,000
	Sub Total				10,000

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
	Sub Total for Services Relocations				4,450,400
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
5.85	Exposed aggregate concrete footpath	3,800	m2	90.00	342,000
5.86	Kerb to Footpath	1,900	m	60.00	114,000
5.87	Asphalt Cyclepath	3,800	m2	90.00	342,000
	Sub Total				798,000
	Traffic Islands				
5.88	Traffic islands (including kerbs)	2,850	m2	110.00	313,500
	Sub Total				313,500
	New Fencing				
5.89	New Fencing to boundaries where existing removed to 50% of boundaries	950	m	200.00	190,000
5.90	New Farm Fencing to 50% of boundaries	950	m	30.00	28,500
	Sub Total				218,500
	Planting & Grassing				
5.91	Weed control to grass areas	8,934	m2	0.30	2,680
5.92	150mm thick topsoil uplifted from stockpile for grass and embankment areas.	12,548	m2	2.00	25,096
5.93	Grass	8,934	m2	1.00	8,934
5.94	Landscaping to 50% of embankment areas	3,614	m2	20.00	72,280
5.95	New Trees in 2.3m berms (at 50m centres)	38	no	350.00	13,300

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.96	Maintenance of grass areas (24 months)	8,934	m2	5.00	44,670
5.97	Maintenance of planting areas (24 months)	3,614	m2	8.00	28,912
	Sub Total				195,872
	Bus Stops				
5.98	New Bus Stop (400m centres either side)	5	no	45,000.00	225,000
	Sub Total				225,000
	Street Furniture				
5.99	Street furniture adjacent to bus stops	5	no	5,000.00	25,000
	Sub Total				25,000
	Sub Total for Landscaping				1,775,872
	TRAFFIC MANAGEMENT				
5.100	Traffic Management Brownfield Sites (all costs excl Intersections)	14,684,638		0.08	1,174,771
5.101	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	14,684,638		0.05	734,232
	Sub Total for Traffic Management				1,909,003
	ENVIRONMENTAL COMPLIANCE				
5.102	Allowance for environmental compliance	16,593,641	%	0.03	414,841
	Sub Total for Environmental Compliance				414,841
	PRELIMINARY AND GENERAL				
5.103	Allow for preliminary and general (22%)	17,008,482	%	0.22	3,741,866

Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.104	Rounding	1	LS	-347.45	-347
	Sub Total for Preliminary & General				3,741,518
	TOTAL FOR PHYSICAL WORKS				20,750,000
	FEES				
5.105	Allowance for Project Development Phase costs (2%)	20,750,000	%	0.02	415,000
5.106	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	20,750,000	%	0.09	1,867,500
5.107	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	20,750,000	%	0.06	1,245,000
5.108	Rounding	1	LS	2,500.00	2,500
	Subtotal for Fees				3,530,000
	CONTINGENCY				
5.109	Allowance for construction (25%)	20,750,000	%	0.25	5,187,500
5.110	Allowance for Project Development Phase costs (25%)	415,000	%	0.25	103,750
5.111	Allowance for Pre-Implementation phase costs (25%)	1,867,500	%	0.25	466,875
5.112	Allowance for Implementation phase fees (25%)	1,245,000	%	0.25	311,250
5.113	Rounding	1	LS	625.00	625
	Subtotal for Contingency				6,070,000
	TOTAL EXPECTED ESTIMATE (P50)				30,350,000
	FUNDING RISK				
5.114	Allowance for construction (20%)	25,937,500	%	0.20	5,187,500

Estimate Details - Drury Local



Code	Description	Quantity	Unit	Rate	Total
5	Segment 5 Jesmond Rd Mid Block				<i>(Continued)</i>
5.115	Allowance for Project Development Phase costs (20%)	518,750	%	0.20	103,750
5.116	Allowance for Pre-Implementation phase costs (20%)	2,334,375	%	0.20	466,875
5.117	Allowance for Implementation phase fees (20%)	1,556,250	%	0.20	311,250
5.118	Rounding	1	LS	625.00	625
	Subtotal for Funding Risk				6,070,000
	95TH PERCENTILE COST ESTIMATE				36,420,000

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				
6.1	Segment 6 Jesmond / Bremner FTN Intersection Ch start 3150m ch end 3480m Length = 330m EARTHWORK Demolition and Site clearance				
6.2	Remove existing grass and dispose debris off site	26,960	m2	2.00	53,920
6.3	Allow to demolish and remove existing buildings	2,670	m2	150.00	400,500
6.4	Saw cut existing average 50mm thick Asphalt	15	m	8.00	120
6.5	Remove existing concrete driveway and dispose debris off site	175	m2	20.00	3,500
6.6	Remove existing fences and dispose debris off site	660	m	15.00	9,900
6.7	Remove existing gates	5	No	200.00	1,000
6.8	Remove existing trees	1	PS	24,000.00	24,000
6.9	Remove existing traffic signs and dispose debris off site	2	No	100.00	200
6.10	Remove existing power pole and dispose debris off site	8	No	2,500	20,000
6.11	Remove Existing Road Surfacing	2,475	m2	10.00	24,750
6.12	Strip topsoil and dispose off site (Greenfield Site)	n/a	m3	90.00	0
6.13	Strip topsoil and dispose off site (Brownfield Site)	3,678	m3	90.00	331,020
6.14	Strip topsoil and cart to stockpile	1,714	m3	15.00	25,710
6.15	Cut to fill	3,357	m3	12.00	40,284
6.16	Cut to stockpile (25% of cut material)	21,344	m3	12.00	256,128
6.17	Excavate from stockpile and cart and place as fill in segment 7 (Jesmond to Bremner Link mid-block as material not required in Segment 6)	21,344	m3	20.00	426,880

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.18	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	20,210	m3	90.00	1,818,900
6.19	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	2,246	m3	110.00	247,060
6.20	Undercut to waste and backfill with imported Brown Rock fill (assume 10% of total construction areas x 0.5m deep) (Greenfield Areas). Assumed 50% of area Greenfield / 50% Brownfield)	566	m3	171.00	96,786
6.21	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas). Assumed 50% of area Greenfield / 50% Brownfield)	566	m3	191.00	108,106
6.22	Undercut to embankment areas (10% of area at 500mm depth)	342	m3	191.00	65,322
	Sub Total for Earthworks				3,954,086
	Ground Improvements				
6.23	Ground stabilisation 300mm deep to road pavement area only (3% lime)	3,281	m3	50.00	164,050
	Sub Total for Ground Improvements				164,050
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
6.24	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,400	m	60.00	84,000
6.25	Subsoil drain	1,400	m	50.00	70,000
6.26	Cut-off drain to embankment	2,800	m	50.00	140,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
6.27	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	94	m	300.00	28,200
6.28	300mm dia. pipe, 1.51 - 3.0m deep to invert level	1,120	m	420.00	470,400

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
	Manholes				
6.29	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	17	No	7,500.00	127,500
6.30	Allow to connect new 300mm dia. stormwater pipe to existing manhole	2	No	500.00	1,000
	Catchpits				
6.31	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	38	No	4,300.00	163,400
6.32	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
6.33	Culverts (Extend existing culvert 1 x 300mm dia, Add new culvert 1 x 450mm dia)	1	LS	50,000.00	50,000
	Swales				
6.34	Construct Swales	570	m	20.00	11,400
	Cut Off Berms				
6.35	Construct 300mm wide by 300mm deep cut off berms/channels lined with grass (assumes soil cut to waste 100%) Greenfield as shown on drawing	46	m3	90.00	4,140
	Stormwater Ponds				
6.36	Wingwall outfall, rip rap for ponds	1	no	5,000.00	5,000
6.37	Sediment pond (1260m2 x 2.1m deep)	1	PS	230,000.00	230,000
	Subtotal for Stormwater Drainage				1,415,440
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
6.38	Sub grade preparation and testing	6,488	m2	3.00	19,464
6.39	380mm thick ATCOP AP65	2,465	m3	104.00	256,413
6.40	Grade 4 chipseal membrane	6,488	m2	5.00	32,440

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.41	50mm AC14HF layer	6,488	m2	35.00	227,080
6.42	120mm AC20 in two layers	6,488	m2	78.00	506,064
6.43	50mm 4% SBS PMB AC14	6,488	m2	30.00	194,640
	Type A (Brownfield)				
6.44	Sub grade preparation and testing	4,447	m2	3.00	13,341
6.45	380mm thick ATCOP AP65	1,690	m3	115.00	194,330
6.46	Grade 4 chipseal membrane	4,447	m2	6.00	26,682
6.47	50mm AC14HF layer	4,447	m2	38.00	168,986
6.48	120mm AC20 in two layers	4,447	m2	84.00	373,548
6.49	50mm 4% SBS PMB AC14	4,447	m2	30.00	133,410
6.50	Round	1	LS	3,601.71	3,602
	Sub Total				2,150,000
	Concrete Road Crossovers/Driveways				
6.51	Sub grade preparation and testing	175	m2	3.00	525
6.52	250 Micron Polyethylene sheet	175	m2	12.00	2,100
6.53	665 mesh	175	m2	15.00	2,625
6.54	125mm 10MPa lean mix concrete	175	m2	38.00	6,650
6.55	180mm thick 40MPa concrete	175	m2	72.00	12,600
6.56	U5 broom finish	175	m2	15.00	2,625
	Sub Total				27,125
	Sub Total for Pavement and Surfacing				2,177,125
	RETAINING WALLS				
6.57	Assumed 50% of cut batter 1m high				
6.58	Timber Pole Retaining Walls 1m high	300	m	1,000.00	300,000
	Sub Total for Retaining Walls				300,000

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
	Signage				
	Ground Mounted Single Post Signage				
6.59	Small Signs (1 per 100m each side)	14	No	500.00	7,000
6.60	Medium Signs (1 per 500m each side)	4	No	2,000.00	8,000
	Sub Total				15,000
	Traffic Signals				
	Jesmond Road / Bremner Rd				
6.61	Allowance for new traffic signals	1	PS	250,000.00	250,000
	Sub Total				250,000
	Line Marking				
6.62	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	805	m	7.00	5,635
6.63	Single lines	4,560	m	5.00	22,800
6.64	Type N, holding line: 300mm wide continuous reflectorised white long life marking	51	m	15.00	765
6.65	White bi-directional RRPM's	152	No	10.00	1,520
6.66	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	470	m2	65.00	30,550
6.67	Cycle lane and pedestrian symbol	28	No	60.00	1,680
6.68	"BUS ONLY" text	4	No	600.00	2,400
6.69	"GIVE WAY" triangle	4	No	100.00	400
6.70	Urban size single reflectorised white arrow	12	No	150.00	1,800

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
	Subtotal for lane marking				67,550
	Lighting				
6.71	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	5,000.00	5,000
6.72	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	40	No	6,500.00	260,000
6.73	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	200	m	70.00	14,000
6.74	Ducting (incl new main duct in common trench)	1,598	m	15.00	23,970
6.75	AT Costs				
6.76	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	1,598	m	90.00	143,820
6.77	Allow for connection	40	No	500.00	20,000
	Subtotal for Lighting				466,790
	Sub Total for Traffic Services				799,340
	SERVICES RELOCATIONS				
6.78	Allow to pilot trench all existing utilities and confirm locations	1	LS	10,000.00	10,000
6.79	Allow to protect existing services	1	PS	40,000.00	40,000
	Vector - Fibre Optic				
6.80	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,110	m	24.00	26,640
	Sub Total				26,640
	Vector PE MP GAS				
6.81	50mm diameter PE MP gas duct in berm (both sides 30m cross section, 1 side only to other sections)	1,110	m	160.00	177,600

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.82	Connection to existing gas main	1	LS	100,000.00	100,000
	Sub Total				277,600
	ITS				
6.83	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	1,110	m	125.00	138,750
	Sub Total				138,750
	New Cables Replacing Overhead Cables				
	Ducting allowed below				
6.84	Allow for 7 cables (\$220/m per cable)	152	m	1,540.00	234,080
6.85	Allow for 3 cables (\$220/m per cable)	153	m	660.00	100,980
6.86	Allow for jointing	1	LS	20,000.00	20,000
6.87	Allow for testing	1	LS	50,000.00	50,000
	Sub Total				405,060
	Vector Power (LV)				
6.88	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,110	m	24.00	26,640
	Sub Total				26,640
	Vector Power (MV)				
6.89	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,110	m	24.00	26,640
	Sub Total				26,640
	Chorus				
6.90	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,110	m	120.00	133,200
	Sub Total				133,200
	Vodafone				
6.91	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,110	m	24.00	26,640

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
	Sub Total				26,640
	Water				
6.92	Water Service	1,110	m	660.00	732,600
	Sub Total				732,600
6.93	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				737,600
	Vector Communications				
6.94	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,110	m	15.00	16,650
	Sub Total				16,650
	Common Trench				
6.95	1500mm wide x 1200mm deep common trench	1,110	m	210.00	233,100
6.96	Common services pits	5	No	8,000.00	40,000
	Sub Total				273,100
	Testing and Commissioning				
6.97	Testing and Commissioning	1	LS	10,000.00	10,000
	Sub Total				10,000
	Sub Total for Services Relocations				2,148,520
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
6.98	Exposed aggregate concrete footpath	2,796	m2	90.00	251,640

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.99	Kerb to Footpath	1,400	m	60.00	84,000
6.100	Asphalt Cyclepath	2,796	m2	90.00	251,640
	Sub Total				587,280
	Traffic Islands				
6.101	Traffic islands (including kerbs)	2,162	m2	110.00	237,863
	Sub Total				237,863
	Pram Crossing				
6.102	Pram crossing / Cycle Ramp	28	m2	100.00	2,800
6.103	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	7	m2	350.00	2,450
	Sub Total				5,250
	New Fencing				
6.104	New Fencing to boundaries where existing removed to 50% of boundaries	700	m	200.00	140,000
6.105	New Farm Fencing to 50% of boundaries	700	m	30.00	21,000
	Sub Total				161,000
	Planting & Grassing				
6.106	Weed control to grass areas	7,671	m2	0.30	2,301
6.107	Weed control to planting areas	3,756	m2	0.30	1,127
6.108	150mm thick topsoil uplifted from stockpile for grass and embankment areas	11,427	m2	2.00	22,854
6.109	Grass	7,671	m2	1.00	7,671

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.110	Landscaping to 50% of embankment areas	3,756	m2	20.00	75,120
6.111	New Trees in 2.3m berms (at 50m centres)	28	no	350.00	9,800
6.112	Maintenance of grass areas (24 months)	7,671	m2	5.00	38,355
6.113	Maintenance of planting areas (24 months)	3,756	m2	8.00	30,048
	Sub Total				187,276
6.114	Street Furniture				
6.115	Rain garden	400	m2	600.00	240,000
	Sub Total				240,000
	Sub Total for Landscaping				1,418,669
	TRAFFIC MANAGEMENT				
6.116	Traffic Management Brownfield Sites (all costs excl Intersections)	12,770,000		0.08	408,640
6.117	Traffic Management Green Field Site	12,770,000		0.02	153,240
6.118	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	12,770,000		0.05	638,500
	Sub Total for Traffic Management				1,200,380
	ENVIRONMENTAL COMPLIANCE				
6.119	Allowance for environmental compliance	13,577,610	%	0.03	339,440
	Sub Total for Environmental Compliance				339,440
	PRELIMINARY AND GENERAL				
6.120	Allow for preliminary and general (22%)	13,917,050	%	0.22	3,061,751

Code	Description	Quantity	Unit	Rate	Total
6	Segment 6 Jesmond / Bremner FTN Intersection				<i>(Continued)</i>
6.121	Rounding	1	LS	1,198.59	1,199
	Sub Total for Preliminary & General				3,062,950
	TOTAL FOR PHYSICAL WORKS				16,980,000
	FEES				
6.122	Allowance for Project Development Phase costs (2%)	16,980,000	%	0.02	339,600
6.123	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	16,980,000	%	0.09	1,528,200
6.124	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	16,980,000	%	0.06	1,018,800
6.125	Rounding	1	LS	3,400.00	3,400
	Subtotal for Fees				2,890,000
	CONTINGENCY				
6.126	Allowance for construction (25%)	16,980,000	%	0.25	4,245,000
6.127	Allowance for Project Development Phase costs (25%)	339,600	%	0.25	84,900
6.128	Allowance for Pre-Implementation phase costs (25%)	1,528,200	%	0.25	382,050
6.129	Allowance for Implementation phase fees (25%)	1,018,800	%	0.25	254,700
6.130	Rounding	1	LS	3,349.73	3,350
	Subtotal for Contingency				4,970,000
	TOTAL EXPECTED ESTIMATE (P50)				24,840,000
	FUNDING RISK				
6.131	Allowance for construction (20%)	21,225,000	%	0.20	4,245,000

Code	Description	Quantity	Unit	Rate	Total
6 Segment 6 Jesmond / Bremner FTN Intersection					<i>(Continued)</i>
6.132	Allowance for Project Development Phase costs (20%)	424,500	%	0.20	84,900
6.133	Allowance for Pre-Implementation phase costs (20%)	1,910,250	%	0.20	382,050
6.134	Allowance for Implementation phase fees (20%)	1,273,500	%	0.20	254,700
6.135	Rounding	1	LS	3,349.94	3,350
	Subtotal for Funding Risk				4,970,000
	95TH PERCENTILE COST ESTIMATE				29,810,000

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				
	Segment 7 Jesmond to Bremner Link Mid-block				
7.1	Ch start 280m ch end 1260m Length = 980m				
7.2	Ch start 280m ch end 1000m Length = 720m				
7.3	Ch start 1000m ch end 1260m Length = 260m (Intersection - Segment 7a)				
	EARTHWORK				
	Demolition and Site clearance				
7.4	Remove existing grass and dispose debris off site	29,680	m2	2.00	59,360
7.5	Remove existing concrete driveway and dispose debris off site	70	m2	20.00	1,400
7.6	Remove existing fences and dispose debris off site	373	m	15.00	5,595
7.7	Remove existing gates	2	No	200.00	400
7.8	Remove existing trees	1	PS	19,000.00	19,000
7.9	Strip topsoil and dispose off site (Greenfield Site)	3,998	m3	90.00	359,820
7.10	Strip topsoil and cart to stockpile	1,937	m3	15.00	29,055
7.11	Cut to fill (30% of cut material)	1,537	m3	12.00	18,444
7.12	Cut to stockpile (25% of cut material)	1,281	m3	12.00	15,372
7.13	Excavate from stockpile and cart and place as fill	1,281	m3	12.00	15,372
7.14	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	2,305	m3	90.00	207,450
7.15	Preload to embankments 1m depth (new roads and fill areas to embankments on new roads only)	24,659	m3	63.00	1,553,473
7.16	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	2,655	m3	63.00	167,260
7.17	Fill from cut on segments 5 and 6	29,968	m3	see other segments for cost	0

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.18	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	257	m3	110.00	28,270
7.19	Undercut to waste and backfill with imported Brown Rock fill (assume 10% of total construction areas x 0.5m deep) (Greenfield Areas).	1,080	m3	171.00	184,680
7.20	Undercut to embankment areas (10% of area at 500mm depth)	404	m3	191.00	77,164
	Sub Total for Earthworks				2,742,115
	Ground Improvements				
7.21	Ground stabilisation 300mm deep (3% lime)	2,895	m3	50.00	144,750
	Sub Total for Ground Improvements				144,750
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
7.22	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,440	m	60.00	86,400
7.23	Subsoil drain	1,440	m	50.00	72,000
7.24	Cut-off drain to embankment	2,880	m	50.00	144,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
7.25	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	180	m	300.00	54,001
7.26	300mm dia. pipe, 1.51 - 3.0m deep to invert level	956	m	420.00	401,520
7.27	375mm dia. pipe, 1.51 - 3.0m deep to invert level	489	m	450.00	220,050
7.28	600mm dia. pipe, 1.51 - 3.0m deep to invert level	65	m	850.00	55,514
	Manholes				

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.29	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	16	No	7,500.00	120,000
7.30	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Outlet Structure				
7.31	Outlet structure for the 600mm pipe	1	no	3,500.00	3,500
	Catchpits				
7.32	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	24	No	4,300.00	103,200
7.33	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Culverts				
	Deduction of the culvert and inlet/outlet structures				
7.34	Culverts	1	LS	80,000.00	80,000
	Replacement of the culvert with the bridge				
7.35	35m long x 22.8m wide 1525 deep Super T bridge with MSE wall abutments	798	m2	4,500.00	3,591,000
	Subtotal for Stormwater Drainage				4,963,584
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
7.36	Sub grade preparation and testing	9,648	m2	3.00	28,944
7.37	380mm thick ATCOP AP65	3,666	m3	104.00	381,300
7.38	Grade 4 chipseal membrane	9,648	m2	5.00	48,240
7.39	50mm AC14HF layer	9,648	m2	35.00	337,680
7.40	120mm AC20 in two layers	9,648	m2	78.00	752,544
7.41	50mm 4% SBS PMB AC14	9,648	m2	30.00	289,440
7.42	Round	1	LS	1,852.46	1,852
	Sub Total				1,840,000
	Concrete Road Crossovers/Driveways				
7.43	Sub grade preparation and testing	70	m2	3.00	210
7.44	250 Micron Polyethylene sheet	70	m2	12.00	840

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.45	665 mesh	70	m2	15.00	1,050
7.46	125mm 10MPa lean mix concrete	70	m2	38.00	2,660
7.47	180mm thick 40MPa concrete	70	m2	72.00	5,040
7.48	U5 broom finish	70	m2	15.00	1,050
	Sub Total				10,850
	Sub Total for Pavement and Surfacing				1,850,850
	RETAINING WALLS				
7.49	Assumed 50% of cut batter length 1m high				
7.50	Timber Pole Retaining Walls 1m high	25	m	1,000.00	24,880
	Sub Total for Retaining Walls				24,880
	Signage				
	Ground Mounted Single Post Signage				
7.51	Small Signs (1 per 100m each side)	16	No	500.00	8,000
7.52	Medium Signs (1 per 500m each side)	4	No	2,000.00	8,000
	Sub Total				16,000
	Intersection Costs				
7.53	Bremner Link to Bremner Road Intersection				
7.54	Refer section 7a for detailed costs	1	LS	6,700,000.00	6,700,000
	Sub Total				6,700,000
	Line Marking				
7.55	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	1,440	m	7.00	10,080

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.56	Single lines	4,320	m	5.00	21,600
7.57	White bi-directional RRPM's	144	No	10.00	1,440
7.58	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	840	m2	65.00	54,600
7.59	Cycle lane and pedestrian symbol	30	No	60.00	1,800
7.60	"BUS ONLY" text	4	No	600.00	2,400
7.61	BUS STOP text	4	No	600.00	2,400
	Subtotal for lane marking				94,320
	Lighting				
7.62	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	5,000.00	5,000
7.63	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	42	No	6,500.00	273,000
7.64	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	206	m	70.00	14,420
7.65	Ducting (incl new main duct in common trench)	1,646	m	15.00	24,690
7.66	AT Costs				
7.67	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	1,646	m	90.00	148,140
7.68	Allow for connection	42	No	500.00	21,000
	Subtotal for Lighting				486,250
	Sub Total for Traffic Services				7,296,570
	SERVICES RELOCATIONS				

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.69	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
7.70	Allow to protect existing services	1	PS	10,000.00	10,000
7.71	Allow for crossing of proposed First Gas line	70	m	500.00	35,000
	Vector - Fibre Optic				
7.72	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,440	m	24.00	34,560
	Sub Total				34,560
	Vector PE MP GAS				
7.73	50mm diameter PE MP gas duct in berm	1,440	m	160.00	230,400
	Sub Total				230,400
	ITS				
7.74	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	1,440	m	125.00	180,000
	Sub Total				180,000
	Vector Power (LV)				
7.75	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,440	m	24.00	34,560
	Sub Total				34,560
	Vector Power (MV)				
7.76	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,440	m	24.00	34,560
	Sub Total				34,560
	Chorus				
7.77	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,440	m	120.00	172,800
	Sub Total				172,800

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
	Vodafone				
7.78	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,440	m	24.00	34,560
	Sub Total				34,560
	Water				
7.79	Water Service	1,440	m	660.00	950,400
	Sub Total				950,400
7.80	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	n/a	LS	5,000.00	0
	Sub Total				950,400
	Vector Communications				
7.81	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,440	m	15.00	21,600
	Sub Total				21,600
	Common Trench				
7.82	1500mm wide x 1200mm deep common trench	1,440	m	210.00	302,400
7.83	Common services pits	6	No	8,000.00	48,000
	Testing and Commissioning				
7.84	Testing and Commissioning	1	LS	10,000.00	10,000
	Sub Total				360,400
	Sub Total for Services Relocations				2,113,840
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.85	Exposed aggregate concrete footpath	2,880	m2	90.00	259,200
7.86	Kerb to Footpath	1,440	m	60.00	86,400
7.87	Asphalt Cyclepath	2,880	m2	90.00	259,200
	Sub Total				604,800
	Traffic Islands				
7.88	Traffic islands (including kerbs)	2,160	m2	110.00	237,600
	Sub Total				237,600
	New Fencing				
7.89	New Fencing to boundaries where existing removed to 50% of boundaries	720	m	200.00	144,000
7.90	New Farm Fencing to 50% of boundaries	720	m	30.00	21,600
	Sub Total				165,600
	Planting & Grassing				
7.91	Weed control to grass areas	8,472	m2	0.30	2,542
7.92	Weed control to planting areas	4,440	m2	0.30	1,332
7.93	150mm thick topsoil uplifted from stockpile for grass and embankment areas	12,911	m2	2.00	25,822
7.94	Grass	8,472	m2	1.00	8,472
7.95	Landscaping to 50% of embankment areas	4,440	m2	20.00	88,800
7.96	New Trees in 2.3m berms (at 50m centres)	29	no	350.00	10,150
7.97	Maintenance of grass areas (24 months)	8,472	m2	5.00	42,360

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
7.98	Maintenance of planting areas (24 months)	4,440	m2	8.00	35,520
	Sub Total				214,998
	Bus Stops				
7.99	New Bus Stop (400m centres either side)	4	no	45,000.00	180,000
	Sub Total				180,000
7.100	Street Furniture				
7.101	Rain garden	1,024	m2	600.00	614,400
7.102	Street furniture adjacent to bus stops	4	no	5,000.00	20,000
	Sub Total				634,400
	Sub Total for Landscaping				2,037,398
	TRAFFIC MANAGEMENT				
7.103	Traffic Management Brownfield Sites (all costs excl Intersections)			0.08	0
7.104	Traffic Management Green Field Site	21,173,987		0.02	423,480
7.105	Traffic Management Roundabouts and Intersections			0.20	0
7.106	Traffic Management Brownfield Sites : Motorways			0.15	0
7.107	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)			0.05	0
	Sub Total for Traffic Management				423,480
	ENVIRONMENTAL COMPLIANCE				
7.108	Allowance for environmental compliance	21,597,466	%	0.03	539,937

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
	Sub Total for Environmental Compliance				539,937
	PRELIMINARY AND GENERAL				
7.109	Allow for preliminary and general (22%)	22,137,403	%	0.22	4,870,229
7.110	Rounding	1	LS	2,368.68	2,369
	Sub Total for Preliminary & General				4,872,597
	TOTAL FOR PHYSICAL WORKS				27,010,000
	FEES				
7.111	Allowance for Project Development Phase costs (2%)	27,010,000	%	0.02	540,200
7.112	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	27,010,000	%	0.09	2,430,900
7.113	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	27,010,000	%	0.06	1,620,600
7.114	Rounding	1	LS	-1,700.00	-1,700
	Subtotal for Fees				4,590,000
	CONTINGENCY				
7.115	Allowance for construction (25%)	27,010,000	%	0.25	6,752,500
7.116	Allowance for Project Development Phase costs (25%)	540,200	%	0.25	135,050
7.117	Allowance for Pre-Implementation phase costs (25%)	2,430,900	%	0.25	607,725
7.118	Allowance for Implementation phase fees (25%)	1,620,600	%	0.25	405,150
7.119	Rounding	1	LS	-425.54	-426
	Subtotal for Contingency				7,900,000

Code	Description	Quantity	Unit	Rate	Total
7	Segment 7 Jesmond to Bremner Link mid-block				<i>(Continued)</i>
	TOTAL EXPECTED ESTIMATE (P50)				39,500,000
	FUNDING RISK				
7.120	Allowance for construction (20%)	33,762,500	%	0.20	6,752,500
7.121	Allowance for Project Development Phase costs (20%)	675,250	%	0.20	135,050
7.122	Allowance for Pre-Implementation phase costs (20%)	3,038,625	%	0.20	607,725
7.123	Allowance for Implementation phase fees (20%)	2,025,750	%	0.20	405,150
7.124	Rounding	1	LS	-425.54	-426
	Subtotal for Funding Risk				7,900,000
	95TH PERCENTILE COST ESTIMATE				47,400,000

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				
	Segment 8 Bremner Rd FTN - GSR Mid-block				
8.1	Ch start 1260m ch end 1900m Length = 640m	640			
8.2	Ch start 1461m ch end 1593m Length = 132m T-junction (Segment 8a)				
8.3	Ch start 1593m ch end 1750m Length = 157m T-junction (Segment 8b)				
	EARTHWORK				
	Demolition and Site clearance				
8.4	Remove existing grass and dispose debris off site	2,025	m2	2.00	4,050
8.5	Allow to demolish and remove existing buildings	2,004	m2	150.00	300,600
8.6	Saw cut existing average 50mm thick Asphalt	15	m	8.00	120
8.7	Remove existing concrete driveway and dispose debris off site	70	m2	20.00	1,400
8.8	Remove existing trees	1	PS	4,000.00	4,000
8.9	Remove existing power pole and dispose debris off site	3	No	2,500	7,500
8.10	Remove Existing Road Surfacing	675	m2	10.00	6,750
8.11	Strip topsoil and dispose off site (Brownfield Site)	313	m3	90.00	28,170
8.12	Strip topsoil and cart to stockpile	381	m3	15.00	5,715
8.13	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Greenfield Areas)	See Intersections	m3	90.00	0
8.14	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	14,624	m3	63.00	921,286
8.15	Undercut to embankment areas (10% of area at 500mm depth)	72	m3	191.00	13,752
8.16	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	255	m3	191.00	48,705
	Sub Total for Earthworks				1,342,048
	Ground Improvements				

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
8.17	Ground stabilisation 300mm deep (3% lime)	684	m3	50.00	34,200
	Sub Total for Ground Improvements				34,200
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
8.18	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	340	m	60.00	20,400
8.19	Subsoil drain	340	m	50.00	17,000
8.20	Cut-off drain to embankment	680	m	50.00	34,000
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
8.21	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	43	m	300.00	12,900
8.22	300mm dia. pipe, 1.51 - 3.0m deep to invert level	710	m	420.00	298,200
8.23	375mm dia. pipe, 1.51 - 3.0m deep to invert level	53	m	450.00	23,702
	Manholes				
8.24	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	5	No	7,500.00	37,500
8.25	Allow to connect new 300mm dia. stormwater pipe to existing manhole	4	No	500.00	2,000
	Catchpits				
8.26	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	12	No	4,300.00	51,600
8.27	Standard double catchpit with 2400 long precast lintel	2	No	7,600.00	15,200
	Subtotal for Stormwater Drainage				512,502
	PAVEMENT AND SURFACING				

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
	Type A (Brownfield)				
8.28	Sub grade preparation and testing	2,278	m2	3.00	6,834
8.29	380mm thick ATCOP AP65	866	m3	115.00	99,588
8.30	Grade 4 chipseal membrane	2,278	m2	6.00	13,668
8.31	50mm AC14HF layer	2,278	m2	38.00	86,564
8.32	120mm AC20 in two layers	2,278	m2	84.00	191,352
8.33	50mm 4% SBS PMB AC14	2,278	m2	30.00	68,340
8.34	Round	1	LS	3,654.00	3,654
	Sub Total				470,000
	Concrete Road Crossovers/Driveways				
8.35	Sub grade preparation and testing	70	m2	3.00	210
8.36	250 Micron Polyethylene sheet	70	m2	12.00	840
8.37	665 mesh	70	m2	15.00	1,050
8.38	125mm 10MPa lean mix concrete	70	m2	38.00	2,660
8.39	180mm thick 40MPa concrete	70	m2	72.00	5,040
8.40	U5 broom finish	70	m2	15.00	1,050
	Sub Total				10,850
	Sub Total for Pavement and Surfacing				480,850
	Bridges				
	<u>Bridge 1 - 50m (Ch start 1260 ch end 1310) over a river</u>				
8.41	Demolition of existing bridge 50m long x 8m wide	400	m2	750.00	300,000
8.42	Allow for construction of a new bridge 1225 Super T	1,140	m2	4,500.00	5,130,000
	<u>Bridge 2 - 61m (Ch start 1400 ch end 1461) over an expressway</u>				
8.43	Allow for demolition of existing bridge 61m long x 10m wide	610	m2	750.00	457,500
8.44	Allow for construction of a new bridge 1525 Super T	1,400	m2	4,500.00	6,300,000

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
	<u>Bridge 3 - 70m (Ch start 1750 ch end 1820) over a river</u>				
8.45	Allow for construction of a new bridge 1525 Super T	1,600	m2	4,500.00	7,200,000
	Sub Total for Bridges				19,387,500
	RETAINING WALLS				
8.46	Assumed 50m length for minimal cutr areas				
8.47	Timber Pole Retaining Walls 1m high	50	m	1,000.00	50,000
	Sub Total for Retaining Walls				50,000
	Signage				
	Ground Mounted Single Post Signage				
8.48	Small Signs (1 per 100m each side)	4	No	500.00	2,000
8.49	Medium Signs (1 per 500m each side)	2	No	2,000.00	4,000
8.50	VMS Signage at each bridge location	3	no	150,000.00	450,000
	Sub Total				456,000
	Intersection Costs				
8.51	T-junction Bremner Rd / Creek St (Ch start 1461 ch end 1593) [see Segment 8a for estimate breakdown]	1	sum	3,850,000.00	3,850,000
8.52	Intersection (Ch start 1593 ch end 1750) [see Segment 8b for estimate breakdown]	1	sum	5,750,000.00	5,750,000
	Line Marking				
8.53	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	340	m	7.00	2,380
8.54	Single lines	1,020	m	5.00	5,100
8.55	White bi-directional RRPM's	34	No	10.00	340

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
8.56	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	280	m2	65.00	18,200
8.57	Cycle lane and pedestrian symbol	8	No	60.00	480
8.58	"BUS ONLY" text	4	No	600.00	2,400
	Subtotal for lane marking				28,900
	Lighting				
8.59	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	2,000.00	2,000
8.60	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	22	No	6,500.00	143,000
8.61	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	60	m	70.00	4,200
8.62	Ducting (incl new main duct in common trench)	399	m	15.00	5,985
8.63	AT Costs				
8.64	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	399	m	90.00	35,910
8.65	Allow for connection	22	No	500.00	11,000
	Subtotal for Lighting				202,095
	Sub Total for Traffic Services				10,286,995
	SERVICES RELOCATIONS				
8.66	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
8.67	Allow to protect existing services	1	PS	90,000.00	90,000
8.68	Allowance to work around and fix the HV line sag onto the proposed new bridge between two nearby transpower towers	1	PS	150,000.00	150,000

Code	Description	Quantity	Unit	Rate	Total
8 Segment 8 Bremner Rd FTN - GSR Mid-block					<i>(Continued)</i>
Vector - Fibre Optic					
8.69	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	340	m	24.00	8,160
	Sub Total				8,160
Vector PE MP GAS					
8.70	50mm diameter PE MP gas duct in berm	340	m	160.00	54,400
8.71	Gas connection at Chainage 1300m	1	LS	100,000.00	100,000
	Sub Total				154,400
ITS					
8.72	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	340	m	125.00	42,500
	Sub Total				42,500
8.73	New Cables Replacing Overhead Cables				
8.74	Ducting allowed below				
8.75	Allow for 7 cables (\$220/m per cable)	n/a	m	1,540.00	0
	Sub Total				0
Vector Power (LV)					
8.76	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	340	m	24.00	8,160
	Sub Total				8,160
Vector Power (MV)					
8.77	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	340	m	24.00	8,160
	Sub Total				8,160
Chorus					
8.78	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	340	m	120.00	40,800

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
	Sub Total				40,800
	Vodafone				
8.79	150mm diameter Vodafone duct with draw wire and warning tape in berm	340	m	24.00	8,160
	Sub Total				8,160
	Water				
8.80	Water Service	340	m	660.00	224,400
	Sub Total				224,400
8.81	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				229,400
	Vector Communications				
8.82	100mm diameter Vector communications duct with draw wire and warning tape in berm	340	m	15.00	5,100
	Sub Total				5,100
	Common Trench				
8.83	1500mm wide x 1200mm deep common trench	340	m	210.00	71,400
8.84	Common services pits	4	No	8,000.00	32,000
	Sub Total				103,400
	Testing and Commissioning				
8.85	Testing and Commissioning	1	LS	10,000.00	10,000
	Sub Total				10,000

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
	Sub Total for Services Relocations				873,240
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
8.86	Exposed aggregate concrete footpath	680	m2	90.00	61,200
8.87	Kerb to Footpath	340	m	60.00	20,400
8.88	Asphalt Cyclepath	680	m2	90.00	61,200
	Sub Total				142,800
	Traffic Islands				
8.89	Traffic islands (including kerbs)	510	m2	110.00	56,100
	Sub Total				56,100
	New Fencing				
8.90	New Fencing to boundaries where existing removed to 50% of boundaries	90	m	200.00	18,000
8.91	New Farm Fencing to 50% of boundaries		m	30.00	0
	Sub Total				18,000
	Planting & Grassing				
8.92	Weed control to grass areas	1,744	m2	0.30	523
8.93	Weed control to planting areas	792	m2	0.30	238
8.94	150mm thick topsoil uplifted from stockpile for grass and embankment areas	2,535	m2	2.00	5,070
8.95	Grass	1,744	m2	1.00	1,744
8.96	Landscaping to 50% of embankment areas	792	m2	20.00	15,840

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
8.97	New Trees in 2.3m berms (at 50m centres)	8	no	350.00	2,800
8.98	Maintenance of grass areas (24 months)	1,744	m2	5.00	8,720
8.99	Maintenance of planting areas (24 months)	792	m2	8.00	6,336
	Sub Total				41,271
	Bus Stops				
8.100	New Bus Stop (400m centres either side)	2	no	45,000.00	90,000
	Sub Total				90,000
8.101	Street Furniture				
8.102	Rain garden	295	m2	600.00	177,000
8.103	Street Furniture adjacent to bus stops	2	no	5,000.00	10,000
	Sub Total				187,000
	Sub Total for Landscaping				535,171
	TRAFFIC MANAGEMENT				
8.104	Traffic Management Brownfield Sites (all costs excl Intersections)	24,050,000		0.08	1,924,000
8.105	Traffic Management Green Field Site			0.02	0
8.106	Traffic Management Roundabouts and Intersections	9,600,000		0.20	1,920,000
8.107	Traffic Management Brownfield Sites : Motorways			0.15	0
8.108	Allowance for New Bridge over Motorway	1	LS	1,000,000.00	1,000,000
8.109	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	24,050,000		0.05	1,202,500

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
	Sub Total for Traffic Management				6,046,500
	ENVIRONMENTAL COMPLIANCE				
8.110	Allowance for environmental compliance	39,549,005	%	0.03	988,725
	Sub Total for Environmental Compliance				988,725
	PRELIMINARY AND GENERAL				
8.111	Allow for preliminary and general (22%)	40,537,731	%	0.22	8,918,301
8.112	Rounding	1	LS	3,968.75	3,969
	Sub Total for Preliminary & General				8,922,269
	TOTAL FOR PHYSICAL WORKS				49,460,000
	FEES				
8.113	Allowance for Project Development Phase costs (2%)	49,460,000	%	0.02	989,200
8.114	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	49,460,000	%	0.09	4,451,400
8.115	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	49,460,000	%	0.06	2,967,600
8.116	Rounding	1	LS	1,800.00	1,800
	Subtotal for Fees				8,410,000
	CONTINGENCY				
8.117	Allowance for construction (25%)	49,460,000	%	0.25	12,365,000
8.118	Allowance for Project Development Phase costs (25%)	989,200	%	0.25	247,300
8.119	Allowance for Pre-Implementation phase costs (25%)	4,451,400	%	0.25	1,112,850
8.120	Allowance for Implementation phase fees (25%)	2,967,600	%	0.25	741,900

Code	Description	Quantity	Unit	Rate	Total
8	Segment 8 Bremner Rd FTN - GSR Mid-block				<i>(Continued)</i>
8.121	Rounding	1	LS	2,950.00	2,950
	Subtotal for Contingency				14,470,000
	TOTAL EXPECTED ESTIMATE (P50)				72,340,000
	FUNDING RISK				
8.122	Allowance for construction (20%)	61,825,000	%	0.20	12,365,000
8.123	Allowance for Project Development Phase costs (20%)	1,236,500	%	0.20	247,300
8.124	Allowance for Pre-Implementation phase costs (20%)	5,564,250	%	0.20	1,112,850
8.125	Allowance for Implementation phase fees (20%)	3,709,500	%	0.20	741,900
8.126	Rounding	1	LS	2,950.00	2,950
	Subtotal for Funding Risk				14,470,000
	95TH PERCENTILE COST ESTIMATE				86,810,000

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				
	Segment 18 Great South Rd				
9.1	Length = 665m Drawing Ref. CI-3101 and 3104				
	EARTHWORK				
	Demolition and Site clearance				
9.2	Remove existing grass and dispose debris off site	0	m2	2.00	0
9.3	Saw cut existing average 50mm thick Asphalt	0	m	8.00	0
9.4	Remove existing concrete driveway and dispose debris off site	0	m2	20.00	0
9.5	Remove existing footpath and dispose debris off site	745	m2	20.00	14,900
9.6	Remove existing traffic islands	180	m2	20.00	3,600
9.7	Remove existing fences and dispose debris off site	149	m	15.00	2,235
9.8	Remove existing gates	2	No	200.00	400
9.9	Remove existing trees	1	PS	2,000.00	2,000
9.10	Remove existing kerb & channel	479	m	20.00	9,580
9.11	Remove existing catchpit to waste	12	No	300.00	3,600
9.12	Remove existing traffic signs and dispose debris off site	10	No	100.00	1,000
9.13	Remove existing street lighting poles and dispose debris off site	5	No	1,500.00	7,500
9.14	Remove existing power pole and dispose debris off site	2	No	2,500	5,000
9.15	Remove existing bus stop shelter and concrete pad to waste	0	no	2,000.00	0
9.16	Remove Existing Road Surfacing	5,928	m2	10.00	59,280
9.17	Strip topsoil and cart to stockpile	260	m3	15.00	3,900

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.18	Import topsoil	4	m3	63.00	252
9.19	Cut to fill (30% of cut material)	382	m3	12.00	4,584
9.20	Cut to stockpile (25% of cut material)	319	m3	12.00	3,828
9.21	Excavate from stockpile and cart and place as fill	319	m3	12.00	3,828
9.22	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	573	m3	90.00	51,570
9.23	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	2,915	m3	63.00	183,640
9.24	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	64	m3	110.00	7,040
9.25	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas). Assumed 50% of area Greenfield / 50% Brownfield)	463	m3	191.00	88,433
	Sub Total for Earthworks				456,170
	Ground Improvements				
9.26	Ground stabilisation 300mm deep (3% lime)	1,963	m3	50.00	98,150
	Sub Total for Ground Improvements				98,150
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
9.27	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	481	m	60.00	28,860
9.28	Subsoil drain	481	m	50.00	24,050
9.29	Cut-off drain to embankment	962	m	50.00	48,100
	Pipework				

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
9.30	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	41	m	300.00	12,300
9.31	525mm dia. pipe, 1.51 - 3.0m deep to invert level	481	m	625.00	300,625
	Manholes				
9.32	1500mm dia. manhole, 1.51 - 3.0m deep to invert level	6	No	9,300.00	55,800
9.33	Allow to connect new 525mm dia. stormwater pipe to existing manhole	1	No	750.00	1,110
	Catchpits				
9.34	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	9	No	4,300.00	38,700
9.35	Standard double catchpit with 2400 long precast lintel	1	No	7,600.00	5,624
	Subtotal for Stormwater Drainage				515,169
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
9.36	Sub grade preparation and testing	6,541	m2	3.00	19,623
9.37	380mm thick ATCOP AP65	2,486	m3	115.00	285,837
9.38	Grade 4 chipseal membrane	6,541	m2	6.00	39,246
9.39	50mm AC14HF layer	6,541	m2	38.00	248,558
9.40	120mm AC20 in two layers	6,541	m2	84.00	549,444
9.41	50mm 4% SBS PMB AC14	6,541	m2	30.00	196,230
9.42	Round	1	LS	8,287.00	8,287
	Sub Total				1,347,225
	Concrete Road Crossovers/Driveways				
9.43	Sub grade preparation and testing	0	m2	3.00	0
9.44	250 Micron Polyethylene sheet	0	m2	12.00	0
9.45	665 mesh	0	m2	15.00	0

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.46	125mm 10MPa lean mix concrete	0	m2	38.00	0
9.47	180mm thick 40MPa concrete	0	m2	72.00	0
9.48	U5 broom finish	0	m2	15.00	0
	Sub Total				0
	Sub Total for Pavement and Surfacing				1,347,225
	Bridges				
	<u>Bridge at the south tie-in of GSR Rd - Assume 20m over a river</u>				
9.49	Demolition of existing bridge 20m long x 8m wide	0	m2	750.00	0
9.50	Allow for construction of a new bridge (20m long x 25.4m wide)	0	m2	4,500.00	0
	Sub Total for Bridges				0
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
9.51	Small Signs (1 per 100m each side)	5	No	500.00	2,500
9.52	Medium Signs (1 per 500m each side)	2	No	2,000.00	4,000
9.53	No VMS sign alloed for small bridge				
	Sub Total				6,500
	Traffic Signals				
	Great South Rd/Norrie Rd				
9.54	Allowance for new traffic signals	1	PS	300,000.00	300,000
	Sub Total				300,000

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
	Line Marking				
9.55	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	481	m	7.00	3,367
9.56	Single lines	2,087	m	5.00	10,435
9.57	Type N, holding line: 300mm wide continuous reflectorised white long life marking	59	m	15.00	885
9.58	White bi-directional RRPM's	70	No	10.00	700
9.59	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	281	m2	65.00	18,265
9.60	Cycle lane and pedestrian symbol	10	No	60.00	600
9.61	"BUS ONLY" text	1	No	600.00	600
9.62	BUS STOP text	1	No	600.00	444
9.63	"GIVE WAY" triangle	1	No	100.00	148
9.64	Urban size single reflectorised white arrow	16	No	150.00	2,400
	Subtotal for lane marking				37,844
	Lighting				
9.65	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	6,000.00	6,000
9.66	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	14	No	6,500.00	91,000
9.67	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	69	m	70.00	4,830
9.68	Ducting (incl new main duct in common trench)	549	m	15.00	8,235

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.69	AT Costs				
9.70	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	549	m	90.00	49,410
9.71	Allow for connection	14	No	500.00	7,000
	Subtotal for Lighting				166,475
	Sub Total for Traffic Services				510,819
	SERVICES RELOCATIONS				
9.72	Allow to pilot trench all existing utilities and confirm locations	1	LS	10,000.00	10,000
9.73	Allow to protect existing services	1	PS	96,054.96	96,055
	Vector - Fibre Optic				
9.74	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	481	m	24.00	11,544
	Sub Total				11,544
	Vector PE MP GAS				
9.75	50mm diameter PE MP gas duct in berm	481	m	160.00	76,960
	Sub Total				76,960
	ITS				
9.76	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	481	m	125.00	60,125
	Sub Total				60,125
	New Cables Replacing Overhead Cables				
	Ducting allowed below				
9.77	Allow for 7 cables (\$220/m per cable)	0	m	1,540.00	0
9.78	Allow for 3 cables (\$220/m per cable)	153	m	660.00	100,980
9.79	Allow for jointing	1	LS	20,000.00	10,000
9.80	Allow for testing	1	LS	50,000.00	25,000

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
	Sub Total				135,980
	Vector Power (LV)				
9.81	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	481	m	24.00	11,544
	Sub Total				11,544
	Vector Power (MV)				
9.82	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	481	m	24.00	11,544
	Sub Total				11,544
	Chorus				
9.83	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	481	m	120.00	57,720
	Sub Total				57,720
	Vodafone				
9.84	150mm diameter Vodafone duct with draw wire and warning tape in berm	481	m	24.00	11,544
	Sub Total				11,544
	Water				
9.85	Water Service	481	m	660.00	317,460
	Sub Total				317,460
9.86	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	n/a	LS	5,000.00	0
	Sub Total				317,460
	Vector Communications				

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.87	100mm diameter Vector communications duct with draw wire and warning tape in berm	481	m	15.00	7,215
	Sub Total				7,215
	Fire Hydrants				
9.88	Fire hydrants	3	No	3,000.00	9,000
	Sub Total				9,000
	Common Trench				
9.89	1500mm wide x 1200mm deep common trench	481	m	210.00	101,010
9.90	Common services pits	2	No	8,000.00	16,000
	Sub Total				117,010
	Testing and Commissioning				
9.91	Testing and Commissioning	0	LS	10,000.00	3,700
	Sub Total				3,700
	Sub Total for Services Relocations				937,401
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
9.92	Exposed aggregate concrete footpath	961	m2	90.00	86,490
9.93	Kerb to Footpath	481	m	60.00	28,860
9.94	Asphalt Cyclepath	961	m2	90.00	86,490
	Sub Total				201,840
	Traffic Islands				
9.95	Traffic islands (including kerbs)	47	m2	110.00	5,170

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
	Sub Total				5,170
	Pram Crossing				
9.96	Pram crossing / Cycle Ramp	16	m2	100.00	1,600
9.97	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	4	m2	350.00	1,400
	Sub Total				3,000
	New Fencing				
9.98	New Fencing to boundaries where existing removed to 50% of boundaries	241	m	200.00	48,200
	Sub Total				48,200
	Planting & Grassing				
9.99	Weed control to grass areas	1,055	m2	0.30	317
9.100	Weed control to planting areas	447	m2	0.30	134
9.101	150mm thick topsoil uplifted from stockpile for grass and embankment areas	1,502	m2	2.00	3,004
9.102	Grass	1,055	m2	1.00	1,055
9.103	Landscaping to 50% of embankment areas	447	m2	20.00	8,940
9.104	New Trees in 2.3m berms (at 50m centres)	5	no	350.00	1,750
9.105	Maintenance of grass areas (24 months)	1,055	m2	5.00	5,275
9.106	Maintenance of planting areas (24 months)	447	m2	8.00	3,576
	Sub Total				24,051
	Bus Stops				

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.107	New Bus Stop (assume in sections adjacent to this section)	1	no	45,000.00	33,300
	Sub Total				33,300
	Street Furniture				
9.108	Street Furniture adjacent to bus stop	1	no	5,000.00	3,700
	Sub Total				3,700
	Sub Total for Landscaping				319,261
	TRAFFIC MANAGEMENT				
9.109	Traffic Management Brownfield Sites (all costs excl Intersections)			0.08	0
9.110	Traffic Management Green Field Site			0.02	0
9.111	Traffic Management Roundabouts and Intersections	4,184,194		0.20	836,839
9.112	Traffic Management Brownfield Sites : Motorways			0.15	0
9.113	Allowance for New Bridge over Motorway	0	LS	1,000,000.00	0
9.114	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)			0.05	0
	Sub Total for Traffic Management				836,839
	ENVIRONMENTAL COMPLIANCE				
9.115	Allowance for environmental compliance	5,021,033	%	0.03	125,526
	Sub Total for Environmental Compliance				125,526
	PRELIMINARY AND GENERAL				
9.116	Allow for preliminary and general (22%)	5,146,559	%	0.22	1,132,243

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.117	Rounding	1	LS	1,198.42	1,198
	Sub Total for Preliminary & General				1,133,441
	TOTAL FOR PHYSICAL WORKS				6,280,000
	FEES				
9.118	Allowance for Project Development Phase costs (2%)	6,280,000	%	0.02	125,600
9.119	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	6,280,000	%	0.09	565,200
9.120	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	6,280,000	%	0.06	376,800
9.121	Rounding	1	LS	2,400.00	2,400
	Subtotal for Fees				1,070,000
	CONTINGENCY				
9.122	Allowance for construction (25%)	6,280,000	%	0.25	1,570,000
9.123	Allowance for Project Development Phase costs (25%)	125,600	%	0.25	31,400
9.124	Allowance for Pre-Implementation phase costs (25%)	565,200	%	0.25	141,300
9.125	Allowance for Implementation phase fees (25%)	376,800	%	0.25	94,200
9.126	Rounding	1	LS	3,100.00	3,100
	Subtotal for Contingency				1,840,000
	TOTAL EXPECTED ESTIMATE (P50)				9,190,000
	FUNDING RISK				
9.127	Allowance for construction (20%)	7,850,000	%	0.20	1,570,000

Code	Description	Quantity	Unit	Rate	Total
9	Segment 18 Great South Rd - Intersection				<i>(Continued)</i>
9.128	Allowance for Project Development Phase costs (20%)	157,000	%	0.20	31,400
9.129	Allowance for Pre-Implementation phase costs (20%)	706,500	%	0.20	141,300
9.130	Allowance for Implementation phase fees (20%)	471,000	%	0.20	94,200
9.131	Rounding	1	LS	3,100.00	3,100
	Subtotal for Funding Risk				1,840,000
	95TH PERCENTILE COST ESTIMATE				11,030,000

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				
	Segment 18 Remaining Great South Rd				
10.1	Length = 665m Drawing Ref. CI-3101 and 3104				
	EARTHWORK				
	Demolition and Site clearance				
10.2	Remove existing grass and dispose debris off site	1,740	m2	2.00	3,480
10.3	Saw cut existing average 50mm thick Asphalt	38	m	8.00	304
10.4	Remove existing concrete driveway and dispose debris off site	875	m2	20.00	17,500
10.5	Remove existing footpath and dispose debris off site	371	m2	20.00	7,420
10.6	Remove existing traffic islands	0	m2	20.00	0
10.7	Remove existing fences and dispose debris off site	182	m	15.00	2,730
10.8	Remove existing gates	3	No	200.00	600
10.9	Remove existing trees	1	PS	6,000.00	6,000
10.10	Remove existing kerb & channel	821	m	20.00	16,420
10.11	Remove existing catchpit to waste	21	No	300.00	6,300
10.12	Remove existing traffic signs and dispose debris off site	0	No	100.00	0
10.13	Remove existing street lighting poles and dispose debris off site	8	No	1,500.00	12,000
10.14	Remove existing power pole and dispose debris off site	4	No	2,500	10,000
10.15	Remove existing bus stop shelter and concrete pad to waste	1	no	2,000.00	2,000
10.16	Remove Existing Road Surfacing	4,623	m2	10.00	46,230
10.17	Strip topsoil and cart to stockpile	449	m3	15.00	6,735

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.18	Import topsoil	358	m3	63.00	22,553
10.19	Cut to fill (30% of cut material)	573	m3	12.00	6,876
10.20	Cut to stockpile (25% of cut material)	478	m3	12.00	5,736
10.21	Excavate from stockpile and cart and place as fill	478	m3	12.00	5,736
10.22	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut) (Brownfield Areas) 45% of cut quantity	859	m3	90.00	77,310
10.23	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	4,373	m3	63.00	275,491
10.24	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	96	m3	110.00	10,560
10.25	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas). Assumed 50% of area Greenfield / 50% Brownfield)	566	m3	191.00	108,106
	Sub Total for Earthworks				650,088
	Ground Improvements				
10.26	Ground stabilisation 300mm deep (3% lime)	1,798	m3	50.00	89,900
	Sub Total for Ground Improvements				89,900
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
10.27	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	819	m	60.00	49,140
10.28	Subsoil drain	819	m	50.00	40,950
10.29	Cut-off drain to embankment	1,638	m	50.00	81,900
	Pipework				

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
10.30	300mm pipe, 0-1.5m deep to invert level (Catchpit leads)	70	m	300.00	21,000
10.31	525mm dia. pipe, 1.51 - 3.0m deep to invert level	819	m	625.00	511,875
	Manholes				
10.32	1500mm dia. manhole, 1.51 - 3.0m deep to invert level	12	No	9,300.00	111,600
10.33	Allow to connect new 525mm dia. stormwater pipe to existing manhole	3	No	750.00	1,890
	Catchpits				
10.34	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	14	No	4,300.00	60,200
10.35	Standard double catchpit with 2400 long precast lintel	1	No	7,600.00	9,576
	Subtotal for Stormwater Drainage				888,131
	PAVEMENT AND SURFACING				
	Type A (Brownfield)				
10.36	Sub grade preparation and testing	5,485	m2	3.00	16,455
10.37	380mm thick ATCOP AP65	2,084	m3	115.00	239,690
10.38	Grade 4 chipseal membrane	5,485	m2	6.00	32,910
10.39	50mm AC14HF layer	5,485	m2	38.00	208,430
10.40	120mm AC20 in two layers	5,485	m2	84.00	460,740
10.41	50mm 4% SBS PMB AC14	5,485	m2	30.00	164,550
10.42	Round	1	LS	8,287.00	8,287
	Sub Total				1,131,062
	Concrete Road Crossovers/Driveways				
10.43	Sub grade preparation and testing	875	m2	3.00	2,625
10.44	250 Micron Polyethylene sheet	875	m2	12.00	10,500
10.45	665 mesh	875	m2	15.00	13,125

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.46	125mm 10MPa lean mix concrete	875	m2	38.00	33,250
10.47	180mm thick 40MPa concrete	875	m2	72.00	63,000
10.48	U5 broom finish	875	m2	15.00	13,125
	Sub Total				135,625
	Sub Total for Pavement and Surfacing				1,266,687
	Bridges				
	<u>Bridge at the south tie-in of GSR Rd - Assume 20m over a river</u>				
10.49	Demolition of existing bridge 20m long x 8m wide	160	m2	750.00	120,000
10.50	Allow for construction of a new bridge (20m long x 25.4m wide)	456	m2	4,500.00	2,052,000
	Sub Total for Bridges				2,172,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
10.51	Small Signs (1 per 100m each side)	9	No	500.00	4,500
10.52	Medium Signs (1 per 500m each side)	4	No	2,000.00	8,000
10.53	No VMS sign alloed for small bridge				
	Sub Total				12,500
	Traffic Signals				
	Great South Rd/Norrie Rd				
10.54	Allowance for new traffic signals	0	PS	300,000.00	0
	Sub Total				0

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
	Line Marking				
10.55	Type B, bus lane marking: 150mm wide continuous reflectorised white long life marking	819	m	7.00	5,733
10.56	Single lines	2,087	m	5.00	10,435
10.57	Type N, holding line: 300mm wide continuous reflectorised white long life marking	0	m	15.00	0
10.58	White bi-directional RRPM's	70	No	10.00	700
10.59	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	770	m2	65.00	50,050
10.60	Cycle lane and pedestrian symbol	17	No	60.00	1,020
10.61	"BUS ONLY" text	3	No	600.00	1,800
10.62	BUS STOP text	1	No	600.00	756
10.63	"GIVE WAY" triangle	3	No	100.00	252
10.64	Urban size single reflectorised white arrow	0	No	150.00	0
	Subtotal for lane marking				70,746
	Lighting				
10.65	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	6,000.00	6,000
10.66	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	24	No	6,500.00	156,000
10.67	Allow to connect to street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	117	m	70.00	8,190
10.68	Ducting (incl new main duct in common trench)	935	m	15.00	14,025

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.69	AT Costs				
10.70	Allow for cable as required to connect to street lighting network by Vector incl main road length x 2	935	m	90.00	84,150
10.71	Allow for connection	24	No	500.00	12,000
	Subtotal for Lighting				280,365
	Sub Total for Traffic Services				363,611
	SERVICES RELOCATIONS				
10.72	Allow to pilot trench all existing utilities and confirm locations	1	LS	6,300.00	6,300
10.73	Allow to protect existing services	1	PS	163,945.04	163,945
	Vector - Fibre Optic				
10.74	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	819	m	24.00	19,656
	Sub Total				19,656
	Vector PE MP GAS				
10.75	50mm diameter PE MP gas duct in berm	819	m	160.00	131,040
	Sub Total				131,040
	ITS				
10.76	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	819	m	125.00	102,375
	Sub Total				102,375
	New Cables Replacing Overhead Cables				
	Ducting allowed below				
10.77	Allow for 7 cables (\$220/m per cable)	152	m	1,540.00	234,080
10.78	Allow for 3 cables (\$220/m per cable)	0	m	660.00	0
10.79	Allow for jointing	1	LS	20,000.00	10,000
10.80	Allow for testing	1	LS	50,000.00	25,000

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
	Sub Total				269,080
	Vector Power (LV)				
10.81	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	819	m	24.00	19,656
	Sub Total				19,656
	Vector Power (MV)				
10.82	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	819	m	24.00	19,656
	Sub Total				19,656
	Chorus				
10.83	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	819	m	120.00	98,280
	Sub Total				98,280
	Vodafone				
10.84	150mm diameter Vodafone duct with draw wire and warning tape in berm	871	m	24.00	20,904
	Sub Total				20,904
	Water				
10.85	Water Service	871	m	660.00	574,860
	Sub Total				574,860
10.86	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	n/a	LS	5,000.00	0
	Sub Total				574,860
	Vector Communications				

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.87	100mm diameter Vector communications duct with draw wire and warning tape in berm	819	m	15.00	12,285
	Sub Total				12,285
	Fire Hydrants				
10.88	Fire hydrants	6	No	3,000.00	18,000
	Sub Total				18,000
	Common Trench				
10.89	1500mm wide x 1200mm deep common trench	819	m	210.00	171,990
10.90	Common services pits	4	No	8,000.00	32,000
	Sub Total				203,990
	Testing and Commissioning				
10.91	Testing and Commissioning	1	LS	10,000.00	6,300
	Sub Total				6,300
	Sub Total for Services Relocations				1,666,327
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
10.92	Exposed aggregate concrete footpath	1,636	m2	90.00	147,240
10.93	Kerb to Footpath	819	m	60.00	49,140
10.94	Asphalt Cyclepath	1,636	m2	90.00	147,240
	Sub Total				343,620
	Traffic Islands				
10.95	Traffic islands (including kerbs)	134	m2	110.00	14,740

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
	Sub Total				14,740
	Pram Crossing				
10.96	Pram crossing / Cycle Ramp	0	m2	100.00	0
10.97	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	0	m2	350.00	0
	Sub Total				0
	New Fencing				
10.98	New Fencing to boundaries where existing removed to 50% of boundaries	409	m	200.00	81,800
	Sub Total				81,800
	Planting & Grassing				
10.99	Weed control to grass areas	2,523	m2	0.30	757
10.100	Weed control to planting areas	700	m2	0.30	210
10.101	150mm thick topsoil uplifted from stockpile for grass and embankment areas	3,222	m2	2.00	6,444
10.102	Grass	2,523	m2	1.00	2,523
10.103	Landscaping to 50% of embankment areas	700	m2	20.00	14,000
10.104	New Trees in 2.3m berms (at 50m centres)	14	no	350.00	4,900
10.105	Maintenance of grass areas (24 months)	2,523	m2	5.00	12,615
10.106	Maintenance of planting areas (24 months)	700	m2	8.00	5,600
	Sub Total				47,049
	Bus Stops				

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.107	New Bus Stop (assume in sections adjacent to this section)	1	no	45,000.00	56,700
	Sub Total				56,700
	Street Furniture				
10.108	Street Furniture adjacent to bus stop	1	no	5,000.00	6,300
	Sub Total				6,300
	Sub Total for Landscaping				550,209
	TRAFFIC MANAGEMENT				
10.109	Traffic Management Brownfield Sites (all costs excl Intersections)			0.08	0
10.110	Traffic Management Green Field Site			0.02	0
10.111	Traffic Management Roundabouts and Intersections	7,646,953		0.20	1,529,391
10.112	Traffic Management Brownfield Sites : Motorways			0.15	0
10.113	Allowance for New Bridge over Motorway	1	LS	1,000,000.00	0
10.114	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)			0.05	0
	Sub Total for Traffic Management				1,529,391
	ENVIRONMENTAL COMPLIANCE				
10.115	Allowance for environmental compliance	9,176,343	%	0.03	229,409
	Sub Total for Environmental Compliance				229,409
	PRELIMINARY AND GENERAL				
10.116	Allow for preliminary and general (22%)	9,405,752	%	0.22	2,069,265

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.117	Rounding	1	LS	4,982.46	4,982
	Sub Total for Preliminary & General				2,074,248
	TOTAL FOR PHYSICAL WORKS				11,480,000
	FEES				
10.118	Allowance for Project Development Phase costs (2%)	11,480,000	%	0.02	229,600
10.119	Allowance for Pre-Implementation phase costs (9%) (Consenting 1% incl Env Court risk, Design Fees 7% incl geo tech investigation, Client managed costs 1% incl IWI consultation)	11,480,000	%	0.09	1,033,200
10.120	Allowance for Implementation phase fees (6%) (MSQA 4% and Client Managed Costs 1%, Construction monitoring fees 1%)	11,480,000	%	0.06	688,800
10.121	Rounding	1	LS	-1,600.00	-1,600
	Subtotal for Fees				1,950,000
	CONTINGENCY				
10.122	Allowance for construction (25%)	11,480,000	%	0.25	2,870,000
10.123	Allowance for Project Development Phase costs (25%)	229,600	%	0.25	57,400
10.124	Allowance for Pre-Implementation phase costs (25%)	1,033,200	%	0.25	258,300
10.125	Allowance for Implementation phase fees (25%)	688,800	%	0.25	172,200
10.126	Rounding	1	LS	2,100.00	2,100
	Subtotal for Contingency				3,360,000
	TOTAL EXPECTED ESTIMATE (P50)				16,790,000
	FUNDING RISK				
10.127	Allowance for construction (20%)	14,350,000	%	0.20	2,870,000

Code	Description	Quantity	Unit	Rate	Total
10	Segment 18 Great South Rd - Remaining Great South Road				<i>(Continued)</i>
10.128	Allowance for Project Development Phase costs (20%)	287,000	%	0.20	57,400
10.129	Allowance for Pre-Implementation phase costs (20%)	1,291,500	%	0.20	258,300
10.130	Allowance for Implementation phase fees (20%)	861,000	%	0.20	172,200
10.131	Rounding	1	LS	2,100.00	2,100
	Subtotal for Funding Risk				3,360,000
	95TH PERCENTILE COST ESTIMATE				20,150,000

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Segment 9 - Waihoehoe Road FTN - Opaheke N-S
 mid block

No.	Description	Quantity	Unit	Rate	Amount
	Segment 9 - Waihoehoe Road FTN - Opaheke N-S mid-block				22,934,281
	Total				\$22,934,281

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Segment 9 - Waihoehoe Road FTN - Opaheke N-S
 mid-block

No.	Description	Quantity	Unit	Rate	Total
	Segment 9 - Waihoehoe Road FTN - Opaheke N-S				
	Segment No 9 Waihoehoe Road FTN - Opaheke N-S mid-block (Chainage 50 to 500)				
	EARTHWORK				
	Demolition				
	Remove existing grass and dispose debris off site	26,941	m2	2.00	53,882
	Allow to demolish and remove existing buildings	1,042	m2	150.00	156,300
	Saw cut existing average 50mm thick Asphalt	101	m	8.00	808.00
	Remove existing concrete driveway and dispose debris off site	1,300	m2	20.00	26,000
	Remove existing footpath and dispose debris off site	114	m2	20.00	2,280
	Remove existing gates	8	No	200.00	1,600
	Remove existing trees	1	PS	50,000.00	50,000
	Remove existing kerb & channel	705	m	20.00	14,100
	Remove existing traffic signs and dispose debris off site	3	No	100.00	300.00
	Remove existing street lighting poles and dispose debris off site	11	No	1,500.00	16,500
	Remove existing power pole and dispose debris off site	8	No	2,500.00	20,000
	Demolish, remove and dispose off-site existing bridge 26 m long x 8m wide (Provisional Sum)	208	PS	750.00	156,000
	Remove existing retaining wall ave 5m high (Provisional Quantity)	32	m	450.00	14,400
	Remove existing road surfacing	1,761	m2	10.00	17,610
	Strip topsoil and dispose off site	3,845	m3	90.00	346,050
	Strip topsoil and cart to stockpile	2,307	m3	15.00	34,605
	Cut to fill	952	m3	12.00	11,424

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Segment 3 - Wainoerua Road F11N - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	Cut to stockpile	793	m3	12.00	9,516
	Cut from stockpile to fill	793	m3	20.00	15,867
	Cut to waste	1,428	m3	90.00	128,520
	Preload to embankments 1m depth	15,862	m3	63.00	999,306
	Fill with imported Engineered fill	21,620	m3	63.00	1,362,060
	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	865	m3	110.00	95,150
	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep)	540	m3	191.00	103,140
	Sub Total for Earthworks				3,635,418
	Ground Improvements				
	Ground stabilisation 300mm deep (3% lime)	3,128	m3	50.00	156,400
	Sub Total for Ground Improvements				156,400
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	2,940	m	60.00	176,400
	Subsoil drain	2,940	m	50.00	147,000
	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep. 1:3 slopes)	1,154	m	50.00	57,700
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
	300mm pipe, 0-1.5m deep to invert level	90	m	300.00	27,000

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Segment 9 - Wainoene Road F I N - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	375mm dia. pipe, 1.51 - 3.0m deep to invert level	495	m	450.00	222,750
	Manholes				
	1050m dia. manhole, 1.51 - 3.0m deep to invert level	26	No	7,500.00	195,000
	Allow to connect new 375mm dia. stormwater pipe to existing manhole	4	No	750.00	3,000
	Stormfilter				
	Allowance for Stormfilter - 9 Filters	1	No	55,000.00	55,000
	Catchpits				
	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	9	No	4,300.00	38,700
	Standard double catchpit with 2400 long precast lintel	4	No	7,600.00	30,400
	Subtotal for Stormwater Drainage				952,950
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
	Sub grade preparation and testing	16,990	m2	3.00	50,970
	380mm thick ATCOP AP65	3,962	m3	104.00	412,048
	Grade 4 chipseal membrane	10,425	m2	5.00	52,125
	50mm AC14HF layer	10,425	m2	35.00	364,875
	120mm AC20 in two layers	10,425	m2	78.00	813,150
	50mm 4% SBS PMB AC14	10,425	m2	30.00	312,750
	Re-alignment of Tui Road	1,050	m2	389.52	408,996
	Sub Total				2,414,914
	Concrete Road Crossovers/Driveways				
	Sub grade preparation and testing	464	m2	3.00	1,392
	250 Micron Polyethylene sheet	464	m2	12.00	5,568
	665 mesh	464	m2	15.00	6,960
	125mm 10MPa lean mix concrete	464	m2	38.00	17,632

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Segment 9 - Wainoene Road F11N - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	180mm thick 40MPa concrete	464	m2	72.00	33,408
	U5 broom finish	464	m2	15.00	6,960
	Sub Total				
	Sub Total for Pavement and Surfacing				2,486,834
	Bridges				
	28m long x 30m wide bridge including substructure, superstructure, temporary works, etc.	840	m2	4,500.00	3,780,000
	Sub Total for Bridges				3,780,000
	RETAINING WALLS				
	Retaining walls Timber Pole retaining walls 1m high	27	m	1,000.00	27,000
	MSE Retaining Wall 200mm thick precast concrete panel with urban design feature and anti-graffiti treatment	350	m2	1,100.00	385,000
	Sub Total for Retaining Walls				412,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
	Small Signs (1 per 100m each side)	5	No	500.00	2,500
	Medium Signs (1 per 500m each side)	1	No	2,000.00	2,000
	Sub Total				
	Line Marking				
	Type C3 Center line	1,009	m	7.00	7,063
	Type E, continuity lane line: 100mm wide reflectorised white long life marking, 1m stripe, 3m gap	961	m	5.00	4,805
	Type N, holding line: 300mm wide continuous reflectorised white long life marking	135	m	15.00	2,025
	White bi-directional RRPM's	51	No	10.00	510.00

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Segment 9 - Wainoene Road P11N - Opapeke N-S
 mid block

No.	Description	Quantity	Unit	Rate	Total
	Cycle lane and pedestrian symbol	8	No	60.00	480.00
	"GIVE WAY" triangle	3	No	100.00	300.00
	Subtotal for lane marking				
	Road Signs				
	Allowance for VMS Signage	1	PS	120,000.00	120,000
	Sub Total				
	Lighting				
	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	8,000.00	8,000
	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	26	No	6,500.00	169,000
	Allow to connect to existing street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	990	m	70.00	69,300
	Ducting	990	m	15.00	14,850
	AT Costs				
	Allow for cable as required to connect to existing street lighting network by Vector	130	m	90.00	11,700
	Allow for connection	26	No	500.00	13,000
	Subtotal for Lighting				
	Sub Total for Traffic Services				425,533
	SERVICES RELOCATIONS				
	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
	Allow to work around existing services	1	LS	10,000.00	10,000

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Segment 9 - Wainoene Road F I N - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	Vector - Fibre Optic				
	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	990	m	24.00	23,760
	Sub Total				
	Vector PE MP GAS				
	50mm diameter PE MP gas duct in berm	990	m	160.00	158,400
	Gas Connection	1	LS	100,000.00	100,000
	Sub Total				
	ITS				
	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	990	m	125.00	123,750
	Sub Total				
	New buried cables to replace overhead cables				
	Allow for 4 cables (\$220/m per cable)	990	m	880.00	871,200
	Cable Jointing	1	LS	20,000.00	20,000
	Testing	1	LS	20,000.00	20,000
	Sub Total				
	Vector Power (LV)				
	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	990	m	24.00	23,760
	Sub Total				
	Vector Power (MV)				
	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	990	m	24.00	23,760
	Sub Total				
	Chorus				
	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	990	m	120.00	118,800

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Segment 9 - Wainoene Road F I N - Ōpaneke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total				
	Vodafone				
	150mm diameter Vodafone duct with draw wire and warning tape in berm	990	m	24.00	23,760
	Sub Total				
	Water				
	Watermain	990	m	660.00	653,400
	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				
	Watercare main				
	Watercare watermain re-alignment	171	m	15,000.00	2,559,900
	Allowance for Watercare watermains tie-ins / connections	1	LS	300,000.00	300,000
	Allowance for Watercare internal liaison and management	1	LS	150,000.00	150,000
	Vector Communications				
	100mm diameter Vector communications duct with draw wire and warning tape in berm	990	m	15.00	14,850
	Sub Total				
	Common Trench				
	1500mm wide x 1200mm deep common trench	990	m	210.00	207,900
	Common services pits	2	No	8,000.00	16,000
	Sub Total				
	Sub Total for Services Relocations				5,439,240
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
	Exposed aggregate concrete footpath	1,782	m2	90.00	160,380

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Segment 9 - Wainoene Road F11N - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	Asphalt Cyclepath	1,980	m2	90.00	178,200
	Sub Total				
	Traffic Islands				
	Traffic islands	520	m2	110.00	57,200
	Sub Total				
	Pram Crossing				
	Pram crossing / Cycle Ramp	32	m2	100.00	3,200
	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	32	m2	350.00	11,200
	Sub Total				
	Planting & Grassing				
	Weed control to grass areas	2,797	m2	0.30	839.00
	Weed control to planting areas	11,535	m2	0.30	3,461
	100mm thick topsoil uplifted from stockpile for grass and embankment areas	14,332	m2	2.00	28,664
	Grass	2,797	m2	1.00	2,797
	Landscaping to 50% of embankment areas	11,535	m2	20.00	230,700
	New Trees in 2.3m berms (at 50m centres)	20	no	350.00	7,000
	Maintenance of grass areas (24 months)	2,797	m2	5.00	13,985
	Maintenance of planting areas (24 months)	11,535	m2	8.00	92,280
	Sub Total				
	Bus Stops				

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Segment 9 - Wainoene Road Fin - Opapeke N-3
 mid block

No.	Description	Quantity	Unit	Rate	Total
	New Bus Stop	1	no	45,000.00	45,000
	Sub Total				
	Street Furniture				
	Street furniture at bus top locations	1	no	5,000.00	5,000
	Sub Total				
	Sub Total for Landscaping				839,906
	TRAFFIC MANAGEMENT				
	Traffic Management Green Field Site	18,128,2		0.02	363,000
	Sub Total for Traffic Management				363,000
	ENVIRONMENTAL COMPLIANCE				
	Environmental Compliance	18,128,2		0.03	454,000
	Sub Total for Environmental Compliance				454,000
	PRELIMINARIES AND GENERAL				
	Preliminaries and General	18,128,2		0.22	3,989,000
	Sub Total for Preliminaries and General				3,989,000
	Sub-Total				22,934,281

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Amount
	Segment 10 Waihoehoe Road East mid-block				39,858,138
	Total				\$39,858,138

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Segment 10 Waihoehoe Road East mid-block				
	Segment No 10 Waihoehoe Road FTN - East mid-block (CH 800 to 2250)				
	EARTHWORK				
	Demolition				
	Remove existing grass and dispose debris off site	90,790	m2	2.00	181,580
	Allow to demolish and remove existing buildings	2,052	m2	150.00	307,800
	Saw cut existing average 50mm thick Asphalt	120	m	8.00	960.00
	Remove existing concrete driveway and dispose debris off site	1,827	m2	20.00	36,540
	Remove existing footpath and dispose debris off site	980	m2	20.00	19,600
	Remove existing traffic islands	8	m2	20.00	160.00
	Remove existing fences and dispose debris off site	2,413	m	15.00	36,195
	Remove existing gates	17	No	200.00	3,400
	Remove existing trees	1	PS	12,500.00	12,500
	Remove existing kerb & channel	2,264	m	20.00	45,280
	Remove existing traffic signs and dispose debris off site	8	No	100.00	800.00
	Remove existing street lighting poles and dispose debris off site	42	No	1,500.00	63,000
	Remove existing power pole and dispose debris off site	23	No	2,500.00	57,500
	Remove existing road surfacing	17,803	m2	10.00	178,030
	Strip topsoil and dispose off site	13,431	m3	90.00	1,208,790
	Strip topsoil and cart to stockpile	2,862	m3	15.00	42,930
	Cut to fill	10,869	m3	12.00	130,428

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Cut to stockpile	9,057	m3	12.00	108,684
	Cut from stockpile to fill	9,057	m3	20.00	181,148
	Cut to waste	16,303	m3	90.00	1,467,270
	Fill with imported Engineered fill	26,720	m3	63.00	1,683,360
	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	1,812	m3	110.00	199,320
	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep)	3,016	m3	191.00	576,056
	Sub Total for Earthworks				6,541,331
	Ground Improvements				
	Ground stabilisation 300mm deep (3% lime)	8,545	m3	50.00	427,250
	Sub Total for Ground Improvements				427,250
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	15,690	m	60.00	941,400
	Subsoil drain	15,690	m	50.00	784,500
	Cut off drains to top and bottom of embankments (0.3m wide x 0.3m deep. 1:3 slopes)	3,242	m2	50.00	162,100
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
	300mm pipe, 0-1.5m deep to invert level	438	m	300.00	131,400
	525mm dia. pipe, 1.51 - 3.0m deep to invert level	3,165	m	625.00	1,978,125
	Manholes				

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	1500mm dia. manhole, 1.51 - 3.0m deep to invert level	63	No	9,300.00	585,900
	Allow to connect new 525mm dia. stormwater pipe to existing manhole	4	No	750.00	3,000
	Wingwalls				
	Wingwalls outfall, riprap	1	No	5,000.00	5,000
	Catchpits				
	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	42	No	4,300.00	180,600
	Standard double catchpit with 2400 long precast lintel	11	No	7,600.00	83,600
	Subtotal for Stormwater Drainage				4,855,625
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
	Sub grade preparation and testing	21,357	m2	3.00	64,071
	380mm thick ATCOP AP65	8,116	m3	104.00	844,064
	Grade 4 chipseal membrane	21,357	m2	5.00	106,785
	50mm AC14HF layer	21,357	m2	35.00	747,495
	120mm AC20 in two layers	21,357	m2	78.00	1,665,846
	50mm 4% SBS PMB AC14	21,357	m2	30.00	640,710
	Concrete Road Crossovers/Driveways				
	Sub grade preparation and testing	560	m2	3.00	1,680
	250 Micron Polyethylene sheet	560	m2	12.00	6,720
	665 mesh	560	m2	15.00	8,400
	125mm 10MPa lean mix concrete	560	m2	38.00	21,280
	180mm thick 40MPa concrete	560	m2	72.00	40,320
	U5 broom finish	560	m2	15.00	8,400
	Sub Total				

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total for Pavement and Surfacing				4,155,771
	RETAINING WALLS				
	Retaining walls Timber Pole retaining walls 1m high	739	m	1,000.00	739,000
	Sub Total for Retaining Walls				739,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
	Small Signs (1 per 100m each side)	28	No	500.00	14,000
	Medium Signs (1 per 500m each side)	7	No	2,000.00	14,000
	Sub Total				
	Line Marking				
	Type C3, centreline	572	m	7.00	4,004
	Type E, continuity lane line: 100mm wide reflectorised white long life marking, 1m stripe, 3m gap	3,427	m	5.00	17,135
	Type N, holding line: 300mm wide continuous reflectorised white long life marking	612	m	15.00	9,180
	Cycle lane and pedestrian symbol	20	No	60.00	1,200
	"GIVE WAY" triangle	8	No	100.00	800.00
	White bi-directional RRPM's	458	No	10.00	4,580
	Cycle lane symbol (every 300m)	32	No	60.00	1,920
	Pedestrian symbol (every 100m)	48	No	60.00	2,880

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	"GIVE WAY" triangle	6	No	100.00	600.00
	Urban size single reflectorised white arrow	10	No	150.00	1,500
	Subtotal for lane marking				
	Lighting				
	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	10,000.00	10,000
	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	163	No	6,500.00	1,059,500
	Allow to connect to existing street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	5,340	m	70.00	373,800
	Ducting	5,340	m	15.00	80,100
	AT Costs				
	Allow for cable as required to connect to existing street lighting network by Vector	815	m	90.00	73,350
	Allow for connection	163	No	500.00	81,500
	Subtotal for Lighting				
	Sub Total for Traffic Services				1,750,049
	SERVICES RELOCATIONS				
	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
	Allow to work around existing services	1	LS	10,000.00	10,000
	Vector - Fibre Optic				
	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	3,560	m	24.00	85,440

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total				
	Vector PE MP GAS				
	50mm diameter PE MP gas duct in berm	3,560	m	160.00	569,600
	Gas Connection	1	LS	100,000.00	100,000
	Sub Total				
	ITS				
	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	3,560	m	125.00	445,000
	Sub Total				
	New buried cables to replace overhead cables				
	Allow for 3 cables (\$220/m per cable)	2,835	m	660.00	1,871,100
	Allow for 4 cables (\$220/m per cable)	1,253	m	880.00	1,102,640
	Cable Jointing	1	LS	20,000.00	20,000
	Testing	1	LS	20,000.00	20,000
	Sub Total				
	Vector Power (LV)				
	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	3,560	m	24.00	85,440
	Sub Total				
	Vector Power (MV)				
	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	3,560	m	24.00	85,440
	Sub Total				
	Chorus				
	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	3,560	m	120.00	427,200
	Sub Total				

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Vodafone				
	150mm diameter Vodafone duct with draw wire and warning tape in berm	3,560	m	24.00	85,440
	Sub Total				
	Water				
	150mm diameter PE water pipe in berm	3,560	m	160.00	569,600
	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				
	Vector Communications				
	100mm diameter Vector communications duct with draw wire and warning tape in berm	3,560	m	15.00	53,400
	Sub Total				
	Common Trench				
	1500mm wide x 1200mm deep common trench	3,560	m	210.00	747,600
	Common services pits	11	No	8,000.00	88,000
	Sub Total				
	Sub Total for Services Relocations				6,385,900
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
	Exposed aggregate concrete footpath	9,314	m2	90.00	838,260
	Asphalt Cyclepath	10,348	m2	90.00	931,320
	Sub Total				
	Traffic Islands				
	Traffic islands	13,667	m2	110.00	1,503,370

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Segment 10 Waihoehoe Road East mid-block

No.	Description	Quantity	Unit	Rate	Total
	Traffic islands - roundabouts	2,728	m2	110.00	300,080
	New Fencing				
	New fences	340	m	150.00	51,000
	New gates	16	No	2,000.00	32,000
	Sub Total				
	Pram Crossing				
	Pram crossing / Cycle Ramp	32	m2	100.00	3,200
	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	32	m2	350.00	11,200
	Sub Total				
	Planting & Grassing				
	Weed control to grass areas	14,591	m2	0.30	4,377
	Weed control to planting areas	7,954	m2	0.30	2,386
	100mm thick topsoil uplifted from stockpile for grass and embankment areas	2,255	m2	2.00	4,510
	Grass	14,591	m2	1.00	14,591
	Landscaping to 50% of embankment areas	7,954	m2	20.00	159,080
	New Trees in 2.3m berms (at 50m centres)	115	no	350.00	40,250
	Maintenance of grass areas (24 months)	14,591	m2	5.00	72,955
	Maintenance of planting areas (24 months)	7,954	m2	8.00	63,632
	Sub Total				
	Sub Total for Landscaping				4,032,212

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Amount
	Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection				10,733,716

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

Total

\$10,733,716

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection					
EARTHWORK					
Demolition and Site clearance					
	Remove existing grass and dispose debris off site	13,486	m2	2.00	26,972
	Allow to demolish and remove existing buildings	220	m2	150.00	33,000
	Remove existing concrete driveway and dispose debris off site	22	m2	20.00	440.00
	Remove existing fences and dispose debris off site	856	m	15.00	12,840
	Remove existing gates	12	No	200.00	2,400
	Remove existing trees	1	PS	26,000.00	26,000
	Remove existing traffic signs and dispose debris off site	6	No	100.00	600.00
	Remove existing street lighting poles and dispose debris off site	6	No	1,500.00	9,000
	Remove existing power pole and dispose debris off site	12	No	2,500.00	30,000
	Remove Existing Road Surfacing	8,337	m2	10.00	83,370
	Strip topsoil and dispose off site (Greenfield Site)	520	m3	90.00	46,800
	Strip topsoil and dispose off site (Brownfield Site)	471	m3	90.00	42,390
	Strip topsoil and cart to stockpile	520	m3	15.00	7,800
	Cut to fill (30% of cut materials)	881	m3	12.00	10,572
	Cut to stockpile (25% of cut material)	734	m3	12.00	8,808
	Excavate from stockpile and cart and place as fill	734	m3	20.00	14,680
	Preload to embankments 1m depth	3,545	m3	63.00	223,329

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	Fill with imported Engineered fill Brown Rock (Brownfield Areas)	11,924	m3	63.00	751,191
	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	147	m3	110.00	16,148
	Undercut to waste and backfill with imported Brown Rock fill (assume 10% of total construction areas x 0.5m deep) (Greenfield Areas).	770	m3	171.00	131,670
	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep) (Brownfield Areas).	365	m3	191.00	69,715
	Sub Total for Earthworks				1,547,724
	Ground Improvements				
	Ground stabilisation 300mm deep (3% lime)	2,881	m3	50.00	144,050
	Sub Total for Ground Improvements				144,050
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	1,253	m	60.00	75,180
	Subsoil drain	1,253	m	50.00	62,650
	Cut off drains to embankments	1,264	m	50.00	63,197
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
	300mm pipe, 0-1.5m deep to invert level	40	m	300.00	12,000
	300mm dia. pipe, 1.51 - 3.0m deep to invert level	776	m	300.00	232,800
	Manholes				
	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	10	No	7,300.00	73,000

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	Allow to connect new 300mm dia. stormwater pipe to existing manhole	5	No	750.00	3,750
	Catchpits				
	Standard 'street catchpit' 800mm x 500mm with 1200 long precast lintel as per AT COP RD038	12	No	4,300.00	51,600
	Standard double catchpit with 2400 long precast lintel	2	No	7,600.00	15,200
	Subtotal for Stormwater Drainage				589,377
	PAVEMENT AND SURFACING				
	Type A (Greenfield)				
	Sub grade preparation and testing	6,945	m2	3.00	20,835
	380mm thick ATCOP AP65	2,640	m3	104.00	274,568
	Grade 4 chipseal membrane	6,945	m2	5.00	34,725
	50mm AC14HF layer	6,945	m2	35.00	243,075
	120mm AC20 in two layers	6,945	m2	78.00	541,710
	50mm 4% SBS PMB AC14	6,945	m2	30.00	208,350
	Type A (Brownfield)				
	Sub grade preparation and testing	2,656	m2	3.00	7,968
	380mm thick ATCOP AP65	1,010	m3	115.00	116,148
	Grade 4 chipseal membrane	2,656	m2	6.00	15,936
	50mm AC14HF layer	2,656	m2	38.00	100,928
	120mm AC20 in two layers	2,656	m2	84.00	223,104
	50mm 4% SBS PMB AC14	2,656	m2	30.00	79,680
	Round	1	LS	3,250.00	3,250
	Sub Total				1,870,277
	Concrete Road Crossovers/Driveways				
	Sub grade preparation and testing	350	m2	3.00	1,050
	250 Micron Polyethylene sheet	350	m2	12.00	4,200
	665 mesh	350	m2	15.00	5,250
	125mm 10MPa lean mix concrete	350	m2	38.00	13,300

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	180mm thick 40MPa concrete	350	m2	72.00	25,200
	U5 broom finish	350	m2	15.00	5,250
	Sub Total				54,250
	Sub Total for Pavement and Surfacing				1,924,527
	RETAINING WALLS				
	Timber Pole Retaining Walls 1m high	40	m	1,000.00	39,950
	Sub Total for Retaining Walls				39,950
	TRAFFIC SERVICES				
	Barriers				
	Signage				
	Ground Mounted Single Post Signage				
	Small Signs (1 per 100m each side)	12	No	500.00	6,000
	Medium Signs (1 per 500m each side)	8	No	2,000.00	16,000
	Sub Total				22,000
	Intersection Costs				
	Traffic Signals				
	Allowance for new traffic signals	1	PS	300,000.00	300,000
	Sub Total				300,000
	Line Marking				
	Type C3 centerline	579	m	5.00	2,894
	Type E, continuity line	2,795	m	7.00	19,565

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	280	m2	65.00	18,200
	Cycle lane and pedestrian symbol	8	No	60.00	480.00
	"BUS ONLY" text	2	No	600.00	1,200
	"BUS STOP" text	2	No	600.00	1,200
	"GIVE WAY" triangle	6	No	100.00	600.00
	Urban size single reflectorised white arrow	20	No	150.00	3,000
	Subtotal for lane marking				47,139
	Lighting				
	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	2,000.00	2,000
	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	34	No	6,500.00	221,000
	Allow to connect to existing street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	575	m	70.00	40,250
	Ducting	575	m	15.00	8,625
	AT Costs				
	Allow for cable as required to connect to existing street lighting network by Vector	200	m	90.00	18,000
	Allow for connection	34	No	500.00	17,000
	Subtotal for Lighting				306,875

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	Sub Total for Traffic Services				676,014
	SERVICES RELOCATIONS				
	Allow to pilot trench all existing utilities and confirm locations	1	LS	10,000.00	10,000
	Allow to work around existing services	1	LS	5,000.00	5,000
	Vector - Fibre Optic				
	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	1,158	m	24.00	27,792
	Sub Total				27,792
	Vector PE MP GAS				
	50mm diameter PE MP gas duct in berm	1,158	m	160.00	185,280
	Gas Connection	1	LS	100,000.00	100,000
	Sub Total				285,280
	ITS				
	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	1,158	m	125.00	144,750
	Sub Total				144,750
	New Cables replacing Overhead				
	Allow for 3 cables (\$220/m/cable)	135	m	660.00	89,100
	Allow for 4 cables (\$220/m/cable)	100	m	880.00	88,000
	Cable Jointing	1	LS	20,000.00	20,000
	Testing	1	LS	20,000.00	20,000
	Sub Total				217,100
	Vector Power (LV)				
	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	1,158	m	24.00	27,792
	Sub Total				27,792
	Vector Power (MV)				

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	1,158	m	24.00	27,792
	Sub Total				27,792
	Chorus				
	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	1,158	m	120.00	138,960
	Sub Total				138,960
	Vodafone				
	150mm diameter Vodafone duct with draw wire and warning tape in berm	1,158	m	24.00	27,792
	Sub Total				27,792
	Water				
	Watermain	1,158	m	660.00	764,280
	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	5,000.00	5,000
	Sub Total				769,280
	Vector Communications				
	100mm diameter Vector communications duct with draw wire and warning tape in berm	1,158	m	15.00	17,370
	Sub Total				17,370
	Common Trench				
	1500mm wide x 1200mm deep common trench	1,158	m	210.00	243,180
	Common services pits	4	No	8,000.00	32,000
	Sub Total				275,180
	Sub Total for Services Relocations				1,974,088

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
	Exposed aggregate concrete footpath	2,316	m2	90.00	208,440
	Asphalt Cyclepath	2,316	m2	90.00	208,440
	Sub Total				416,880
	Traffic Islands				
	Traffic islands	1,671	m2	110.00	183,835
	Sub Total				183,835
	Pram Crossing				
	Pram crossing / Cycle Ramp	24	m2	100.00	2,400
	Tactile ground surface indicator in accordance with ATCOP Drawing FP009	24	m2	350.00	8,400
	Sub Total				10,800
	New Fencing				
	New Fencing to boundaries where existing removed	250	m	200.00	50,000
	New Farm Fencing to Greenfields Road	1,000	m	30.00	30,000
	Sub Total				80,000
	Planting & Grassing				
	Weed control to grass areas	2,316	m2	0.30	695.00
	Weed control to planting areas	1,235	m2	0.30	371.00
	100mm thick topsoil uplifted from stockpile for grass and embankment areas	3,551	m2	2.00	7,102
	Grass	2,316	m2	1.00	2,316

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Segment 11 - Opaheke N-S/ Waihoehoe Rd intersection

No.	Description	Quantity	Unit	Rate	Total
	Landscaping to 50% of embankment areas	1,235	m2	20.00	24,700
	New Trees in 2.3m berms (at 50m centres)	18	no	350.00	6,300
	Maintenance of grass areas (24 months)	2,316	m2	5.00	11,580
	Maintenance of planting areas (24 months)	1,235	m2	8.00	9,880
	Sub Total for Landscaping				754,459
	TRAFFIC MANAGEMENT				
	Traffic Management Brownfield Sites (all costs excl Intersections)	7,650,18		0.08	612,015
	Traffic Management Green Field Site	7,650,18		0.02	153,004
	Traffic Management Roundabouts and Intersections	300,000		0.20	60,000
	Brown field adjustment rate (enabling/accommodation) 5% on upgrade extg and new arterial costs.(to all costs)	7,650,18		0.05	382,509
	Sub Total for Traffic Management				1,207,528
	ENVIRONMENTAL COMPLIANCE				
	Environmental Compliance	7,650,18		0.03	192,000
	Sub Total for Environmental Compliance				192,000
	PRELIMINARIES AND GENERAL				
	Preliminaries and General	7,650,18		0.22	1,684,000
	Sub Total for Preliminaries and General				1,684,000
	Sub-Total				10,733,716

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Amount
	Segment 12 - Opaheke N-S mid-block				82,574,737
	Total				\$82,574,737

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Segment 12 - Opaheke N-S mid-block				
	EARTHWORK				
	Demolition and Site clearance				
	Remove existing grass and dispose debris off site	75,468	m2	2.00	150,936
	Allow to demolish and remove existing buildings	729	m2	150.00	109,398
	Remove existing fences and dispose debris off site	1,800	m	15.00	27,000
	Remove existing gates	3	No	200.00	600.00
	Remove existing trees	1	PS	50,000.00	50,000
	Remove Existing Road Surfacing	1,302	m2	10.00	13,020
	Strip topsoil and dispose off site (Greenfield Site)	13,239	m3	90.00	1,191,471
	Strip topsoil and cart to stockpile	1,855	m3	15.00	27,819
	Cut to fill	564	m3	12.00	6,768
	Stockpile cut materials - allowed for 25% of total cut material	470	m3	12.00	5,640
	Excavate from stockpile and cart and place as fill	470	m3	20.00	9,400
	Cut in all materials met and dispose excavated materials to landfill facility (measured in the cut)	846	m3	90.00	76,140
	Preload to embankments 1m depth	75,468	m3	63.00	4,754,340
	Fill with imported Engineered fill Brown Rock	161,560	m3	63.00	10,177,990
	Extra value over for cutting contaminated materials to waste (assume 5% of total cut)	94	m3	110.00	10,346
	Undercut to waste and backfill with imported GAP65 fill (assume 10% of total construction areas x 0.5m deep)	2,505	m3	191.00	478,455
	Sub Total for Earthworks				17,089,322

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Ground Improvements				
	Ground stabilisation 300mm deep (3% lime)	6,816	m3	50.00	340,800
	Sub Total for Ground Improvements				340,800
	DRAINAGE				
	Stormwater drainage				
	Kerb and channel				
	Extruded standard kerb and channel 'Type 3' as per ATCOP (DWG GD009)	3,394	m	60.00	203,662
	Subsoil drain	3,394	m	50.00	169,718
	Cut off drains to embankments	5,344	m2	50.00	267,203
	Pipework				
	<i>RCRRJ Class 4 pipes including but not limited to trench excavation, bedding, supply and lay of pipe, surround and backfill with hardfill</i>				
	300mm pipe, 0-1.5m deep to invert level	3,394	m	300.00	1,018,319
	Manholes				
	1050mm dia. manhole, 1.51 - 3.0m deep to invert level	19	No	7,300.00	138,700
	Allow to connect new 300mm dia. stormwater pipe to existing manhole	6	No	750.00	4,500
	Catchpits				
	Standard 'street catchpit' 300mm diameter with 1200 long precast intel as per AT COP RD038	29	No	4,300.00	124,700
	Standard double catchpit with 2400 long precast intel	8	No	7,600.00	60,800
	Culverts				
	Culverts (6 No Culverts)	1	LS	1,470,000.	1,470,000
	Stormwater Ponds				

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Wingwall outfall, rip rap for ponds	2	no	5,000.00	10,000
	Sediment pond	1	PS	352,705.99	352,706
	Subtotal for Stormwater Drainage				3,820,308
PAVEMENT AND SURFACING					
Type A (Greenfield)					
	Sub grade preparation and testing	22,717	m2	3.00	68,151
	380mm thick ATCOP AP65	8,633	m3	104.00	897,857
	Grade 4 chipseal membrane	22,717	m2	5.00	113,585
	50mm AC14HF layer	22,717	m2	35.00	795,095
	120mm AC20 in two layers	22,717	m2	78.00	1,771,926
	50mm 4% SBS PMB AC14	22,717	m2	30.00	681,510
Type A (Brownfield)					
	Sub grade preparation and testing		m2	3.00	0.00
	380mm thick ATCOP AP65		m3	115.00	0.00
	Grade 4 chipseal membrane		m2	6.00	0.00
	50mm AC14HF layer		m2	38.00	0.00
	120mm AC20 in two layers		m2	84.00	0.00
	50mm 4% SBS PMB AC14		m2	30.00	0.00
	Round		LS	3,250.00	0.00
	Sub Total				4,328,124
Concrete Road Crossovers/Driveways					
	Sub grade preparation and testing		m2	3.00	0.00
	250 Micron Polyethylene sheet		m2	12.00	0.00
	665 mesh		m2	15.00	0.00
	125mm 10MPa lean mix concrete		m2	38.00	0.00
	180mm thick 40MPa concrete		m2	72.00	0.00
	U5 broom finish		m2	15.00	0.00
	Sub Total				0.00

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total for Pavement and Surfacing				4,328,124
	Bridges				
	Allowance for Bridge	6,889	m2	4,500.00	31,001,850
	Sub Total for Bridges				31,001,850
	RETAINING WALLS				
	Timber Pole Retaining Walls 1m high	15	m	1,000.00	15,000
	Sub Total for Retaining Walls				15,000
	TRAFFIC SERVICES				
	Signage				
	Ground Mounted Single Post Signage				
	Small Signs (1 per 100m each side)	34	No	500.00	17,000
	Medium Signs (1 per 500m each side)	9	No	2,000.00	18,000
	VMS Signage	1	LS	120,000.00	120,000
	Sub Total				155,000
	Line Marking				
	Type C3 centerline	3,340	m	7.00	23,380
	Type E, continuity line	6,680	m	7.00	46,760
	Bus lane greening and cycleway greening: bus lane greening to be AS2700 S1996 colour G13 emerald	1,949	m2	65.00	126,685
	Cycle lane and pedestrian symbol	23	No	60.00	1,357
	"BUS ONLY" text	7	No	600.00	4,200
	"BUS STOP" text	9	No	600.00	5,400

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	"GIVE WAY" triangle	6	No	100.00	600.00
	Urban size single reflectorised white arrow	6	No	150.00	900.00
	Subtotal for lane marking				209,282
	Lighting				
	Allow to locate all existing utilities and excavate for pilot hole at each streetlight pole location to confirm constructability and foundation type	1	LS	2,000.00	2,000
	Techlight AEC ITALO 2 STA 4.5 6m, 10m high hot dip galvanised octagonal tapered ground plant column, 2m curved outreach and luminaire (Type S1)	98	No	6,500.00	637,000
	Allow to connect to existing street lighting network including but not be limited to excavation trench, backfilling and reinstatement of surface as required	1,695	m	70.00	118,670
	Ducting	1,695	m	15.00	25,429
	AT Costs				
	Allow for cable as required to connect to existing street lighting network by Vector	490	m	90.00	44,100
	Allow for connection	98	No	500.00	49,000
	Subtotal for Lighting				876,200
	Sub Total for Traffic Services				1,240,481
	SERVICES RELOCATIONS				
	Allow to pilot trench all existing utilities and confirm locations	1	LS	15,000.00	15,000
	Allow to work around existing services	1	LS	10,000.00	10,000
	Vector - Fibre Optic				
	150mm diameter Vector fibre optic duct with draw wire and warning tape in berm	3,340	m	24.00	80,160

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Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total				80,160
	Vector PE MP GAS				
	50mm diameter PE MP gas duct in berm	3,340	m	160.00	534,400
	Gas Connection	1	No	100,000.00	100,000
	Sub Total				634,400
	ITS				
	5 x 100mm diameter ITS ducts with draw wire and warning tape in berm	3,340	m	125.00	417,500
	Sub Total				417,500
	Vector Power (LV)				
	150mm diameter Vector power (LV) duct with draw wire and warning tape in berm	3,340	m	24.00	80,160
	Sub Total				80,160
	Vector Power (MV)				
	150mm diameter Vector power (MV) duct with draw wire and warning tape in berm	3,340	m	24.00	80,160
	Sub Total				80,160
	Chorus				
	8 x 100mm diameter Chorus duct with draw wire and warning tape in berm	3,340	m	120.00	400,800
	Sub Total				400,800
	Vodafone				
	150mm diameter Vodafone duct with draw wire and warning tape in berm	3,340	m	24.00	80,160
	Sub Total				80,160
	Water				
	Watermain	3,340	m	660.00	2,204,400

Project : **SGA**
Drury Local
 Cost Plan : **Drury Local Upgrade Segments**
 Revision : **Rev 10.07.2020**



Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Undertake testing, chlorination and commissioning of final watermain by Watercare approved sub-contractor engaged by Main Contractor	1	LS	15,000.00	15,000
	Sub Total				2,219,400
	Vector Communications				
	100mm diameter Vector communications duct with draw wire and warning tape in berm	3,340	m	15.00	50,100
	Sub Total				50,100
	Common Trench				
	1500mm wide x 1200mm deep common trench	3,340	m	210.00	701,400
	Common services pits	12	No	8,000.00	96,000
	Sub Total				797,400
	Sub Total for Services Relocations				4,865,240
	LANDSCAPING				
	Shared Path/Footpath/Cyclepath				
	Exposed aggregate concrete footpath	6,784	m2	90.00	610,560
	Asphalt Cyclepath	6,784	m2	90.00	610,560
	Sub Total				1,221,120
	Traffic Islands				
	Traffic islands	3,566	m2	110.00	392,260
	Sub Total				392,260
	New Fencing				
	New Farm Fencing to Greenfields Road	1,000	m	30.00	30,000
	Sub Total				30,000

Project : SGA
 Drury Local
 Cost Plan : Drury Local Upgrade Segments
 Revision : Rev 10.07.2020



Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
Planting & Grassing					
	Weed control to grass areas	6,822	m2	0.30	2,047
	Weed control to planting areas	11,778	m2	0.30	3,533
	100mm thick topsoil uplifted from stockpile for grass and embankment areas	18,600	m2	2.00	37,200
	Grass	6,822	m2	1.00	6,822
	Landscaping to 50% of embankment areas	11,778	m2	20.00	235,560
	New Trees in 2.3m berms (at 50m centres)	58	no	350.00	20,172
	Maintenance of grass areas (24 months)	6,822	m2	5.00	34,110
	Maintenance of planting areas (24 months)	11,778	m2	8.00	94,224
	Sub Total				433,668
Street Furniture					
	Street Furniture	9	No	5,000.00	45,000
	Sub Total				45,000
Bus Stops					
	Bus stops	9	No	45,000.00	405,000
	Sub Total for Landscaping				2,527,048
TRAFFIC MANAGEMENT					
	Traffic Management Green Field Site	65,228,1		0.02	1,304,563
	Traffic Management Roundabouts and Intersections	300,000		0.20	60,000

Project : SGA
 Drury Local
 Cost Plan : Drury Local Upgrade Segments
 Revision : Rev 10.07.2020



Segment 12 - Opaheke N-S mid-block

No.	Description	Quantity	Unit	Rate	Total
	Sub Total for Traffic Management				1,364,563
	ENVIRONMENTAL COMPLIANCE				
	Environmental Compliance	65,228,1		0.03	1,631,000
	Sub Total for Environmental Compliance				1,631,000
	PRELIMINARIES AND GENERAL				
	Preliminaries and General	65,228,1		0.22	14,351,000
	Sub Total for Preliminaries and General				14,351,000
					Sub-Total
					82,574,737

Appendix 3 - Estimates for Generic Cross Sections

Appendix 3a - 2-Lane Interim Transport Corridor (Ref 2)

**Appendix 3b - Roadside Berm Construction – level
topography (Ref 6)**

**Appendix 3c - Roadside Berm Construction - rolling
topography (Ref 7)**

**Appendix 3d - Roadside Berm Construction - Steep
Topography (Ref 8)**

DIF Cost Estimates

	Description	Unit	Quantity	Rate	Total
6.1	EARTHWORKS				
6.2	Site clearance	m2	24	3.00	72
6.3	Earthworks	m2	24	270.00	6,480
	Sub Total for Earthworks				6,552
6.5	DRAINAGE				
6.6	Swales	m	2	50.00	100
	Sub Total for Drainage				100
6.8	PAVEMENT AND SURFACING				
6.9	Pavement and surfacing	m2	10	205.00	2,050
	Sub Total for Pavement and Surfacing				2,050
6.11	TRAFFIC SERVICES				
6.12	Allowance for signs	m	1	9.00	9
6.13	Allowance for line markings	m	1	32.00	32
6.14	Allowance for lighting	m	1	630.00	630
6.15	Sub Total for Traffic Services				
6.16	SERVICES RELOCATIONS				
6.17	Utilities (one side only)	m	1	1,100.00	1,100
	Sub Total for Services Relocations				1,100
6.19	LANDSCAPING				
6.20	Kerb between cycleway and footpath	m	1	120.00	120
6.21	Footpath	m2	3.6	90.00	324
6.22	Cycle path	m2	4	90.00	360
6.23	2.3m wide berm	m2	4.6	16.50	76
6.24	Trees	No	0.2	350.00	70
6.25	New Fencing to boundaries where existing removed (Farm type, wire fencing)	m	2	30.00	60
	Sub Total for Landscaping				1,010
	Total for Linear Cost for Cross Section 1				11,483

DIF Cost Estimates

	Description	Unit	Quantity	Rate	Total
1.1	EARTHWORKS				
1.2	Site clearance	m2	7	3.00	21
1.3	Cut to waste	m3	3	90.00	270
	Sub Total for Earthworks				291
1.5	DRAINAGE				
1.6	Kerb & channel	m	1	60.00	60
1.7	Subsoil drain	m	1	50.00	50
	Sub Total for Drainage				110
1.9	TRAFFIC SERVICES				
1.10	Cycle lane symbol and pedestrian symbol	No	0.1	60.00	6
1.11	Sub Total for Traffic Services				
1.12	SERVICES RELOCATIONS				
1.13	Utilities	m	1	1,100.00	1,100
	Sub Total for Services Relocations				1,100
1.15	LANDSCAPING				
1.16	Kerb between cycleway and footpath	m	1	60.00	60
1.17	Footpath	m2	1.8	90.00	162
1.18	Cycle path	m2	2	90.00	180
1.19	0,5m wide berm	m2	0.5	7.30	4
1.20	2,3m wide berm	m2	2.3	16.50	38
1.21	Trees	No	0.1	350.00	35
1.22	New Fencing to boundaries where existing removed (Farm type, wire fencing)	m	1	30.00	30
	Sub Total for Landscaping				509
	Total for Linear Cost for Cross Section 1				2,016

DIF Cost Estimates

	Description	Unit	Quantity	Rate	Total
2.1	EARTHWORKS				
2.2	Site clearance	m2	7	3.00	21
2.3	Cut to waste	m3	5	90.00	450
	Sub Total for Earthworks				471
2.5	DRAINAGE				
2.6	Kerb & channel	m	1	60.00	60
2.7	Subsoil drain	m	1	50.00	50
	Sub Total for Drainage				110
2.9	RETAINING WALLS				
2.10	Timber retaining wall (1m retained height, cut wall)	m	1	650.00	650
2.11	Sub Total for Retaining Wall				
2.12	TRAFFIC SERVICES				
2.13	Cycle lane symbol and pedestrian symbol	No	0.1	60.00	6
2.14	Sub Total for Traffic Services				
2.15	SERVICES RELOCATIONS				
2.16	Utilities	m	1	1,100.00	1,100
	Sub Total for Services Relocations				1,100
2.18	LANDSCAPING				
2.19	Kerb between cycleway and footpath	m	1	60.00	60
2.20	Footpath	m2	1.8	90.00	162
2.21	Cycle path	m2	2	90.00	180
2.22	0.5m wide berm	m2	0.5	7.30	4
2.23	2.3m wide berm	m2	2.3	16.50	38
2.24	Trees	No	0.1	350.00	35
2.25	New Fencing to boundaries where existing removed (Farm type, wire fencing)	m	1	30.00	30
	Sub Total for Landscaping				509
	Total for Linear Cost for Cross Section 2				2,846

DIF Cost Estimates

	Description	Unit	Quantity	Rate	Total
4.1	EARTHWORKS				
4.2	Site clearance	m2	7	3.00	21
4.3	Cut to waste	m3	8	90.00	720
	Sub Total for Earthworks				741
4.5	DRAINAGE				
4.6	Kerb & channel	m	1	60.00	60
4.7	Subsoil drain	m	1	50.00	50
	Sub Total for Drainage				110
4.9	RETAINING WALLS				
4.10	Timber retaining wall (2m retained height, cut wall)	m	1	1,820.00	1,820
4.11	Sub Total for Retaining Wall				
4.12	TRAFFIC SERVICES				
4.13	Cycle lane symbol and pedestrian symbol	No	0.1	60.00	6
4.14	Sub Total for Traffic Services				
4.15	SERVICES RELOCATIONS				
4.16	Utilities	m	1	1,100.00	1,100
	Sub Total for Services Relocations				1,100
4.18	LANDSCAPING				
4.19	Kerb between cycleway and footpath	m	1	60.00	60
4.20	Footpath	m2	1.8	90.00	162
4.21	Cycle path	m2	2	90.00	180
4.22	0.5m wide berm	m2	0.5	7.30	4
4.23	2.3m wide berm	m2	2.3	16.50	38
4.24	Trees	No	0.1	350.00	35
4.25	New Fencing to boundaries where existing removed (Farm type, wire fencing)	m	1	30.00	30
	Sub Total for Landscaping				509
	Total for Linear Cost for Cross Section 2				4,286