TE TUPU NGĀTAHI
SUPPORTING GROWTH

# North West Infrastructure Funding and Financing (NWIFF) - Cost Allowances

June 2022

Version 1.0

WAKA KOTAHI
NZ TRANSPORT AGENCY

New Zealand Government

## 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 growth in the North West. 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 indicative only, based on judgement and simplified unit rates, rather than from design and quantity measurements.

The following table sets out the cost allowances that can be adopted for the North West 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.

**Table 1: Cost Allowance Summary for NWIFF Programme**

| Ref | Description | Stage | Cost Range ($M) | |
|---|---|---|---|---|
| 1a | Brigham Creek Road - Joseph McDonald Drive to Totara Road | Interim | 1 | 2 |
| 1b | Brigham Creek Road - Joseph McDonald Drive to Totara Road | Ultimate | 12 | 15 |
| 3a | Brigham Creek Road - Totara Road to Tamatea Ave | Interim | 2 | 3 |
| 3b | Brigham Creek Road - Totara Road to Tamatea Ave | Ultimate | 23 | 28 |
| 2 | Totara Road - Brigham Creek Rd to Dale Road | Ultimate | Completed | |
| 18a | Intersection upgrade on Brigham Creek Rd/ Totara Road | Interim | Completed | |
| 4 | Intersection upgrade on Hobsonville Road/ Suncrest Dr | Ultimate | Completed | |
| 5 | Intersection upgrade on Hobsonville Road/ Dowdens Lane | Ultimate | Completed | |
| 6 | Intersection upgrade on Hobsonville Road/ Marina View Dr | Ultimate | 5 | 6 |
| 7 | Hobsonville Road - Westpark Drive to Williams Road | Ultimate | 93 | 116 |
| 8a | Hobsonville Road - Williams Road to Hobsonville Point Road | Interim | 8 | 10 |
| 8b | Hobsonville Road - Williams Road to Hobsonville Point Road | Ultimate | 28 | 34 |
| 9a | Fred Taylor Drive/ Don Buck Rd - Kakano Road to Beauchamp Dr | Interim | 13 | 16 |
| 9b | Fred Taylor Drive/ Don Buck Rd - Kakano Road to Beauchamp Dr | Ultimate | 77 | 97 |
| 10 | Dunlop Road and Baker Lane Arterials | Ultimate | 74 | 93 |
| 11 | Intersection upgrade on Hobsonville Road/ Brigham Creek Road | Ultimate | 18 | 22 |
| 12a | Intersection upgrade on Hobsonville Road/ Memorial Park Lane | Ultimate | Completed | |

| Ref | Description | Stage | Cost Range ($M) | |
|---|---|---|---|---|
| 13a | Intersection upgrade on Fred Taylor Drive/ Northside Dr | Interim | Completed | |
| 14a | Intersection upgrade on Fred Taylor Drive/ Kakano Road | Interim | Completed | |
| 15a | Intersection upgrade on Fred Taylor Drive/ Dunlop Road | Interim | 5 | 6 |
| 16a | Intersection upgrade on Fred Taylor Drive/ Baker Lane | Interim | 5 | 6 |
| 17 | Intersection upgrade on Fred Taylor Drive/ Don Buck Road | Ultimate | 10 | 13 |
| 19a | Intersection upgrade on Fred Taylor Drive/ Westgate Drive | Interim | 5 | 6 |
| 20a | Intersection upgrade on Fred Taylor Drive/ Rush Creek Drive | Interim | 5 | 6 |
| 12b | Intersection upgrade on Hobsonville Road/ Memorial Park Lane | Ultimate | 5 | 6 |
| 13b | Intersection upgrade on Fred Taylor Drive/ Northside Dr | Ultimate | 5 | 6 |
| 14b | Intersection upgrade on Fred Taylor Drive/ Kakano Road | Ultimate | 5 | 6 |
| 15b | Intersection upgrade on Fred Taylor Drive/ Dunlop Road | Ultimate | 5 | 6 |
| 16b | Intersection upgrade on Fred Taylor Drive/ Baker Lane | Ultimate | 5 | 6 |
| 19b | Intersection upgrade on Fred Taylor Drive/ Westgate Drive | Ultimate | 5 | 6 |
| 20b | Intersection upgrade on Fred Taylor Drive/ Rush Creek Drive | Ultimate | 5 | 6 |
| 21 | Hobsonville Road - Westpark Dr to Luckens Road | Ultimate | 16 | 20 |
| 22 | Hobsonville Road - Fred Taylor Dr to Luckens Road | Ultimate | 56 | 70 |
| 41 | Upgrade Fred Taylor Drive 'fit-for-purpose' section between Don Buck Road and Hobsonville Road | Ultimate | 0.8 | 1.0 |
| 23 | Trig Road - Brigham Creek Rd to SH18 | Ultimate | 54 | 68 |
| 70 | Trig Road - SH18 to Hobsonville Rd | Ultimate | 67 | 83 |
| 24 | Redhills N-S arterial (Redhills Local Centre to Royal Road) & Redhills E-W arterial (Dunlop Road to local Centre) | Ultimate | 213 | 266 |
| 25 | Royal Road upgrade | Ultimate | 97 | 121 |
| 26a | Brigham Creek Road - Tamatea Ave to Kauri Road | Interim | 8 | 10 |
| 26b | Brigham Creek Road - Tamatea Ave to Kauri Road | Ultimate | 53 | 66 |
| 27 | Kauri Road - Brigham Creek Rd to Rata Rd | Ultimate | 22 | 28 |
| 28 | Spedding Road East - SH18 to Hobsonville Rd | Ultimate | 60 | 75 |
| 36a | SH16 / Brigham Creek roundabout interim improvements - signalisation | Interim | 0.3 | 0.3 |
| 37 | Squadron Drive Interchange & SH18 Shared Path (Squadron Dr to BCR) | Ultimate | 68 | 68 |

| Ref | Description | Stage | Cost Range ($M) | |
|---|---|---|---|---|
| 38 | Northside Drive East Upgrade (part of SH16/18 Connections) | Ultimate | 21 | 27 |
| 29 | Spedding Road East - Trig Rd to SH18 | Ultimate | 60 | 75 |
| 30 | Brigham Creek Rd - SH16 interchange to overlap with 1b | Ultimate | 32 | 39 |
| 31 | Fred Taylor Drive - SH16 interchange to Northside Dr | Ultimate | 32 | 40 |
| 32 | Spedding Road West - Fred Taylor Drive to Trig Road | Ultimate | 134 | 167 |
| 33 | Mamari Road | Ultimate | 94 | 118 |
| 36b | SH16 / Brigham Creek Road interchange (grade separation) | Ultimate | 503 | 629 |
| 39 | SH16/18 Motorway-Motorway Ramps, SH16 Northside Dr Interchange Ramps, SH16 Shared path and SH Shared path (BCR to Hobsonville Rd) | Ultimate | 295 | 353 |
| 69 | SH18 BCR Interchange grade separation | Ultimate | 147 | 177 |
| 40 | Sinton Road Collector<br>from Kauri Road to Hobsonville Road | Ultimate | 60 | 75 |
| 34 | Key Collector Rd Network: Dale Road, Riverlea Rd, Bristol Rd, Rope Rd | Ultimate | 78 | 97 |
| 35 | Key Collector Rd Network through Whenuapai North: Trig Rd and Kauri Rd | Ultimate | 138 | 172 |
| 42 | Northside Drive West (Fred Taylor Dr - stream) | Ultimate | 44 | 55 |
| 71 | Northside Drive West (Stream - Nixon Rd) | Ultimate | 50 | 63 |
| 43 | Redhills N-S Arterial<br>Nixon Road to Redhills Local Centre | Ultimate | 57 | 71 |
| 44 | Intersection upgrade on Northside Drive/ Maki Street | Ultimate | Completed | |
| 45 | Intersection upgrade on Fred Taylor Drive/ Fernhill Dr | Ultimate | Completed | |
| 46 | Intersection upgrade on Fred Taylor Drive/ Maki St | Ultimate | Completed | |
| 47 | Intersection upgrade on Hobsonville Road/ Westpark Drive | Ultimate | 5 | 6 |
| 48 | Intersection upgrade on Hobsonville Road/ Trig Road | Ultimate | 5 | 6 |
| 49 | Intersection upgrade on Trig Road/ SH18 Off-ramp | Ultimate | 5 | 6 |
| 50 | Intersection upgrade on Trig Road/ SH18 On-ramp | Ultimate | 5 | 6 |
| 51 | Intersection upgrade on Trig Road/ Spedding Road East | Ultimate | 6 | 7 |

| Ref | Description | Stage | Cost Range ($M) | |
|---|---|---|---|---|
| 52a | Intersection upgrade on Trig Road/ Brigham Creek Rd | Interim | 6 | 7 |
| 52b | Intersection upgrade on Trig Road/ Brigham Creek Rd | Ultimate | 6 | 7 |
| 53 | Intersection upgrade on Hobsonville Road/ Luckens Road | Ultimate | 5 | 6 |
| 54a | Intersection upgrade on Don Buck Road/ Royal Road | Interim | 5 | 6 |
| 66a | Intersection upgrade on Don Buck Road/Beauchamp Dr | Interim | 5 | 6 |
| 54b | Intersection upgrade on Don Buck Road/ Royal Road | Ultimate | 5 | 6 |
| 55 | Intersection upgrade on Royal Road/ Beauchamp Dr | Ultimate | 5 | 6 |
| 56 | Intersection upgrade on Royal Road/ Westgate Dr | Ultimate | 10 | 13 |
| 57 | Intersection upgrade on Royal Road/ Makora Rd | Ultimate | 5 | 6 |
| 66b | Intersection upgrade on Don Buck Road/Beauchamp Dr | Ultimate | 5 | 6 |
| 58a | Intersection upgrade on Brigham Creek Rd/ Kauri Road | Interim | 5 | 6 |
| 58b | Intersection upgrade on Brigham Creek Rd/ Kauri Road | Ultimate | 7 | 8 |
| 59 | Intersection upgrade on Fred Taylor Dr / Spedding Road West | Ultimate | 10 | 13 |
| 61a | Intersection upgrade on Brigham Creek Rd/ Tamatea Ave | Interim | 6 | 8 |
| 61b | Intersection upgrade on Brigham Creek Rd/ Tamatea Ave | Ultimate | 5 | 6 |
| 65 | Intersection upgrade on Mamari Rd / Spedding Rd West | Ultimate | 10 | 13 |
| 67a | Intersection upgrade on Hobsonville Rd/ Buckley Ave | Interim | Completed | |
| 67b | Intersection upgrade on Hobsonville Rd/ Buckley Ave | Ultimate | 10 | 13 |
| 60 | Short term North West Bus improvements | Ultimate | 100 | 100 |
| 62 | North West RTN Full Implementation | Ultimate | No costs | No costs |
| 63 | State Highway 18 RTN | Ultimate | No costs | No costs |
| 68 | Fred Taylor Drive to Hobsonville Road - SH16 Active mode overbridge | Ultimate | 8 | 10 |

# Table of Contents

| Acronym/Term | Description |
|---|---|
| AEE | Assessment of Environmental Effects |
| CEM | SM014 Cost Evaluation Manual |
| DBC | Detailed Business Case |
| NWIFF | North West 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 |
| SH16 | State Highway 16 |
| SH18 | State Highway 18 |
| SM014 | SM014 Cost Evaluation Manual |
| SSBC | Single Stage Business Case |

# 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 NWIFF programme is set out in Figure 1-1 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.

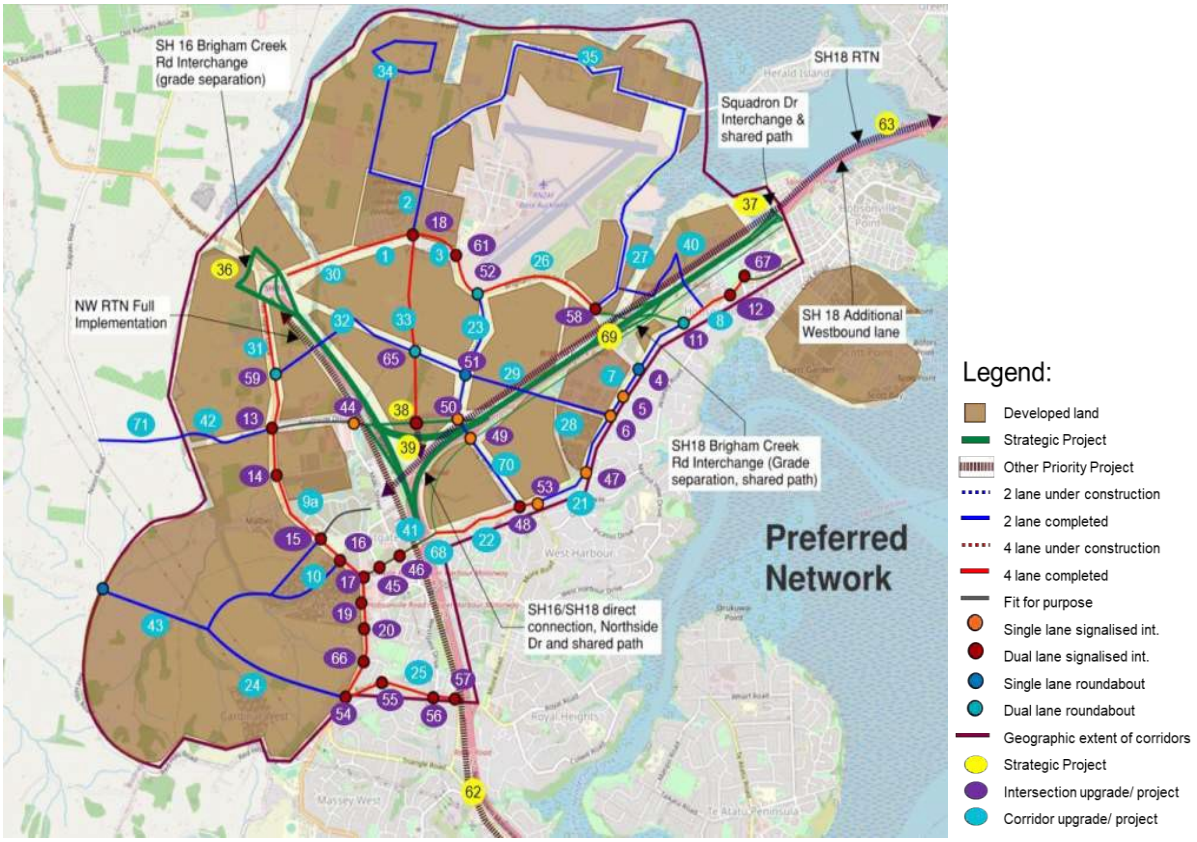



**Figure 1-1: North West Transport Network – NWIFF Programme Referencing**

# 2 Methodology for Developing Cost Allowances

The process for developing the cost allowances for each project within the NWIFF 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 North West Network[1], and therefore this information was used as the basis of the cost allowances where possible. The NW HIF DBC also provided a basis for 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 2-1), 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.

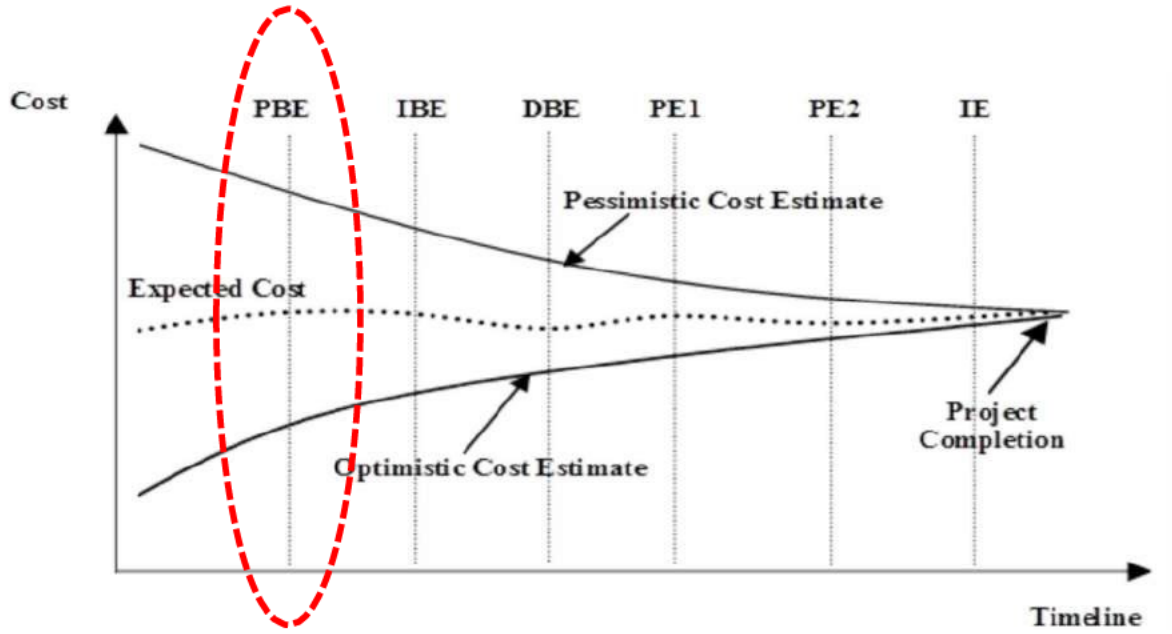



**Figure 2-1: Estimate Lifecycle (extracted from section 3.4.1 of the CEM)**

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 reasonable to expect the cost for full construction 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.

[1] "Supporting Growth – North West Detailed Business Case", Te Tupu Ngātahi, 20th August 2021

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

## 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 NWIFF programme, the final design solution is not known, and therefore the cost allowances have been based on a number of assumptions.

### 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 NWIFF projects has been based on the geographic extent of corridors shown in Figure 2-2. The area extent includes Whenuapai, Redhills, Westgate and an area of West Harbour located directly south of SH18. More detail of the extent of each individual project is outlined in Section 3 below.

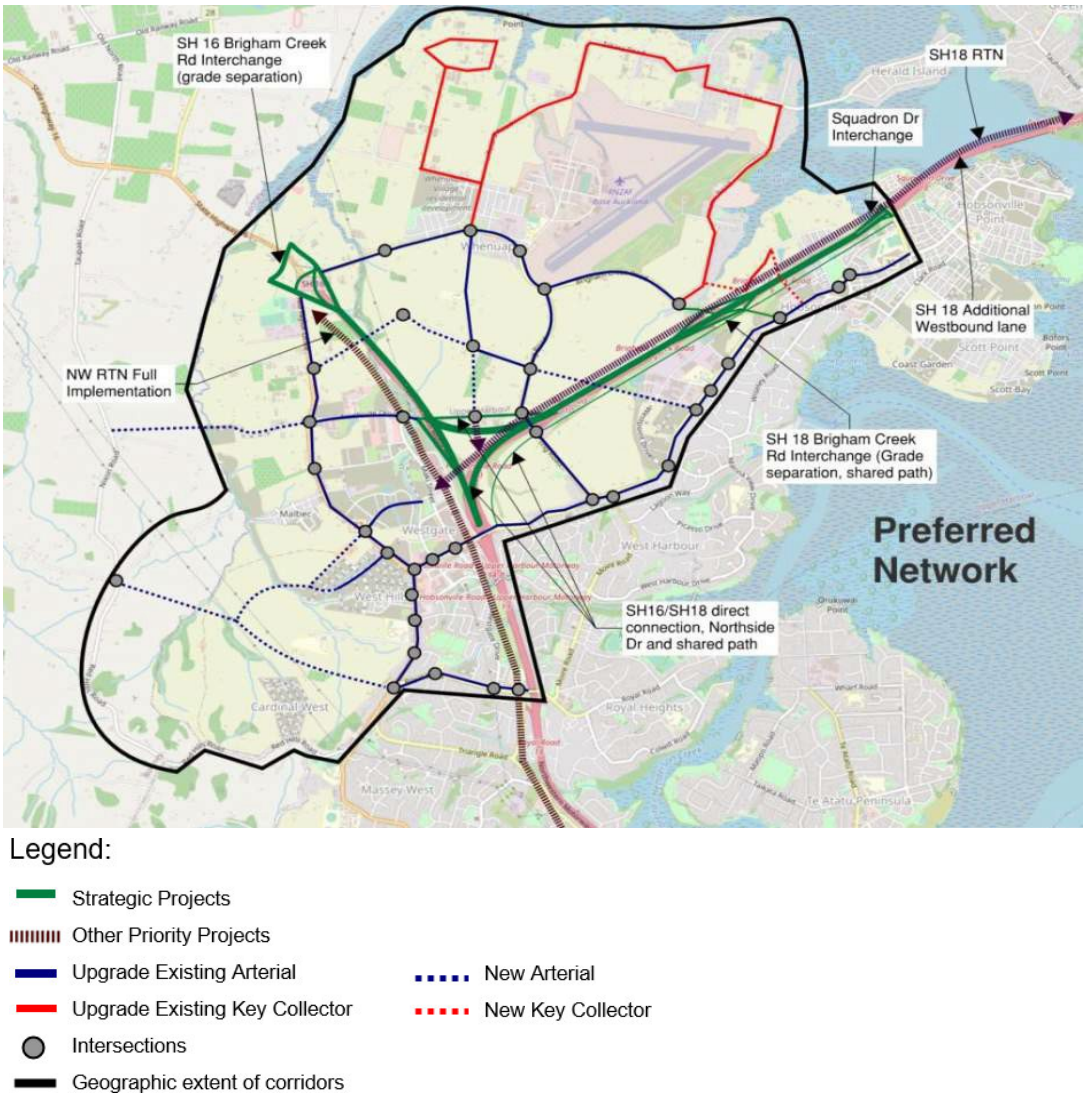



**Figure 2-2: Assumed extent of development**

The scope boundary refers to the areas included in Figure 2-3. The areas within this boundary area are included to cover the development areas that inform the beneficiary and causation assessment. This boundary area includes Massey, Scotts Point and all of West Harbour in addition to the geographic extent shown above.

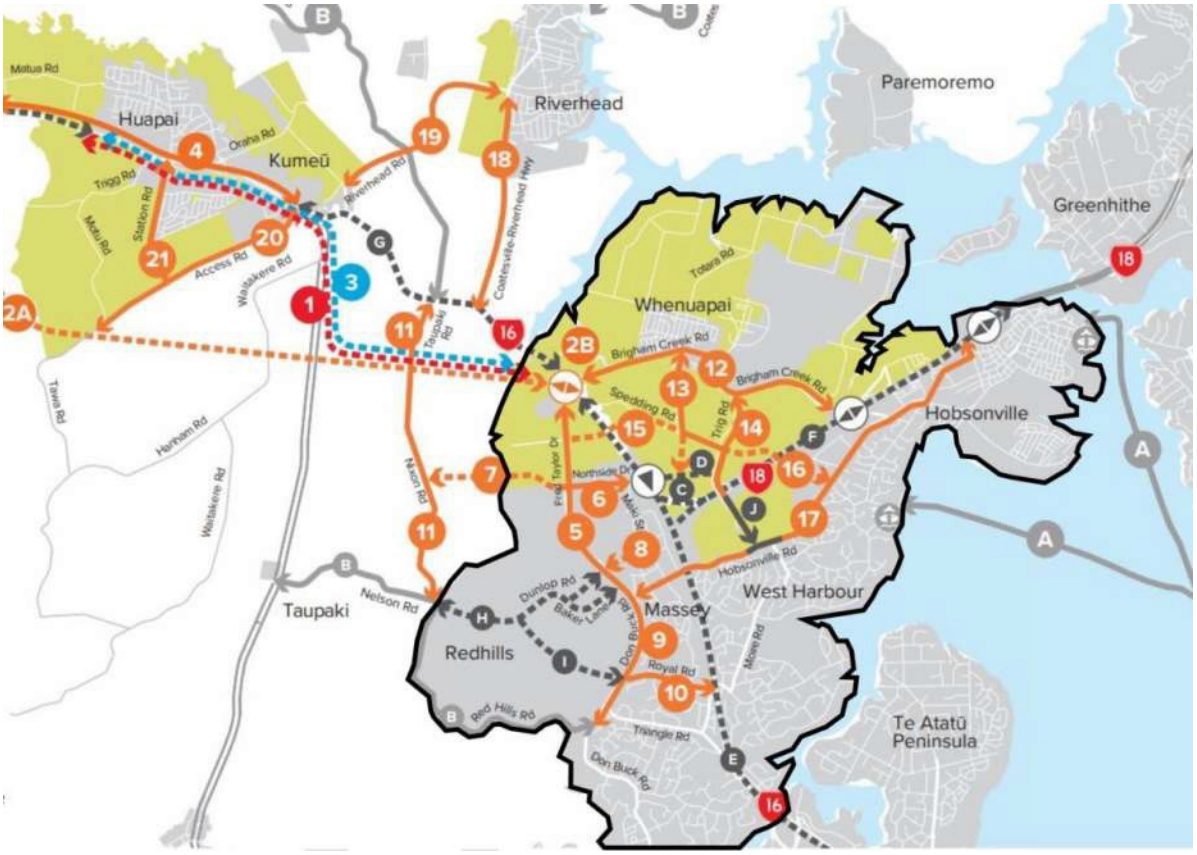



**Figure 2-3: Scope boundary**

### 2.1.2 Application of North West DBC Cost Estimates

Cost estimates have been developed for the North West DBC (to DBE level). These were based on the emerging preferred options included in the DBC (November 2021). However, the level of detail is not sufficient to obtain funding for the next design phase as the final project form and construction timing will need to integrate with the development of the adjacent land.

It is therefore anticipated that an implementation DBC will be required when more information on adjacent development is known. This will also incorporate information from geotechncial investigations, which will provide a greater level of cost certainty. While the cost estimates developed for the North West DBC are not adequate to obtain funding for the next phase, they can be used to provide an indication of the cost allowance for the NWIFF programme where consistent. The extent of the North West Network is provided in Figure 2-4.

The cost estimates for the North West 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 NWIFF programme are aligned with the scope and extent of the DBC projects.

However, in order to provide an indication of a cost allowance for NWIFF projects, the costs in the North West DBC have been proportioned based on relative length and/ or scope. The detailed assumptions for each of the relevant projects is included in Section 1 below.

The DBE cost estimates developed for the North West 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.

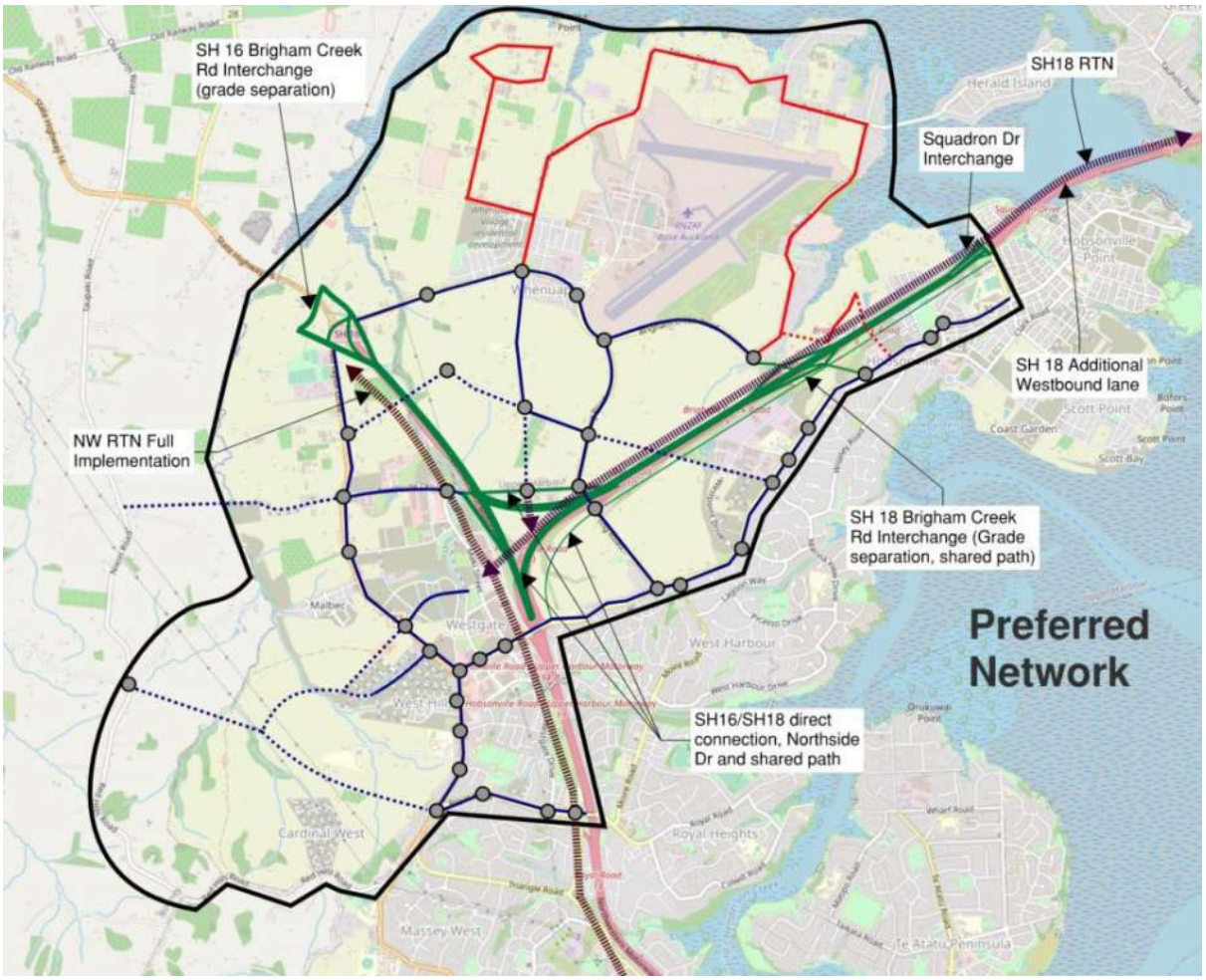



**Figure 2-4: North West Network Overview**

### 2.1.3 Use of Generic Cross Sections

The NWIFF programme includes a number of transport corridors that were not included in the North West 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 2.3 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. Some roads in the the North West study 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 potentailly 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 degress 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 inidividual project within the NWIFF programme are set out in the respective cost descriptions included in Section 1 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 Managment 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 NWIFF 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 NWIFF Project, 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 2-1: Allowances for Client Managed Costs**

| Phase | Description | Allowance<br>% 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 determined by the scope for each project as set out in Section 1 below. The additional components that are required for managing the site are:

- ***Environmental Compliance:*** Management of environmental compliance requirements, preparation and management of compliance managements 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 NWIFF programme are set out in the table below.

**Table 2-2: Physical Works Allowances**

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

## 2.3 Unit Rates for Generic Cross sections

As set out in Section 2.1.3 above, as there is minimal scope definition for each of the projects, 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 degress of influence on the overall cost allowance. Therefore, a number of 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 2. 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 2.6 below).

The Ponga Road upgrade project included a 24m wide transport corridor, with the typical cross section identified in Figure 2-5 below.


**Figure 2-5: Typical Cross Section for Ponga Road included within the Drury Arterial Network DBC**

As the North West DBC was focussed on a future transport Network with construction beyond a 10 to 20-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 North West 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 development. Therefore, staging can impact on the cost forecast, and in some instances, it will be preferable to construct a 2-lane transport corridor.

#### 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 2-6.

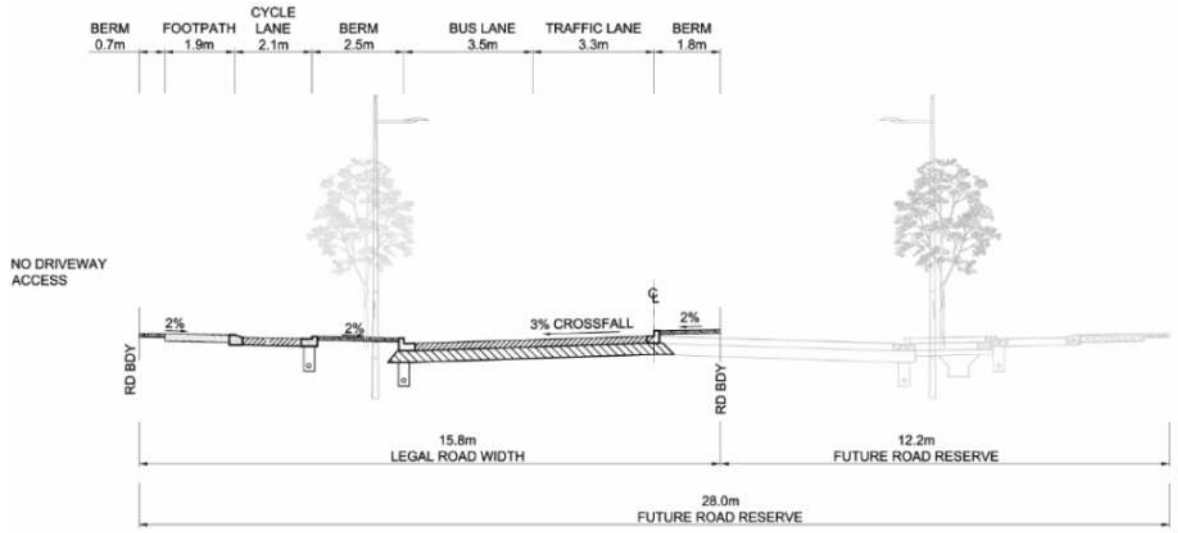



**Figure 2-6: Indicative Cross section for interim 2-lane construction**

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 (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 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 North West DBC is provided in Figure 2-7 below.

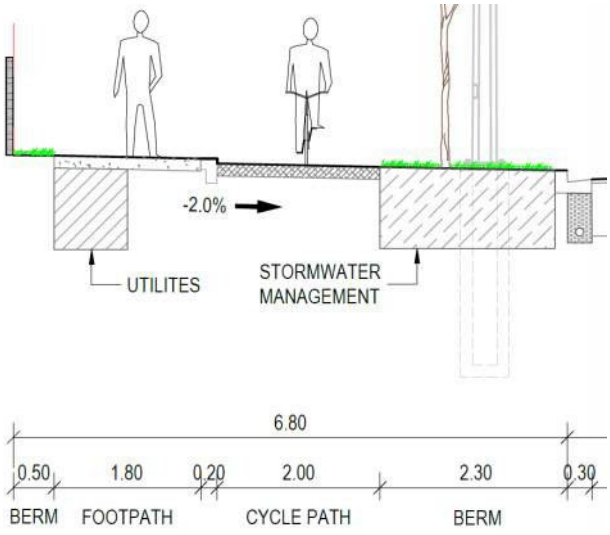



**Figure 2-7: Indicative layout for walking and cycling facilities within the Berm area**

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, 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 (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 also the provision of a retaining wall. Two additional scenarios have been developed:

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 our Quantity Surveyors, we have developed generic unit rates that can be applied in addition to the linear corridor rates where applicable. These rates are set out in Table 2-3 below. Application of these rates needs to be considered for each project within the NWIFF programme

**Table 2-3: 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 NWIFF programme is included in Table 2-4.

**Table 2-4: 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 |

| Ref | Description | Unit Rate |
|---|---|---|
| 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

The property costs developed for the North West DBC have been used to inform the property allowances to be included within the NWIFF programme. The North West 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 likely property liability that could be expected as a result of the designation. They were not developed for the purpose of property acquisition.

As the NWIFF 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:

a) The final design – this will determine the actual extent of land that will be impacted by the works.
b) 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.
c) A Property Strategy will be prepared at the time of implementation to understand the impacts on each indidivual property, including site operations and commercial arrangements (e.g. lease agreements)
d) 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).
e) Risk of loss of business or potential for business reolocation
f) There may be opporuntinities to integrate road construction with adjacent development, whereby land can be vested with Council
g) Opportunities to use easements for access rather than acquisition (e.g. culvert maintenance)
h) Some properties may benefit from betterment – this will be considered at the time fo formal acquisition whan compensation under the PWA is considered.
i) Changing land use – the value of property will vary depending on the underlying zoning, and as the costs for the NWIFF propramme are incrred over a period of time, an assumption needs to be made over the actual underlying land use (e.g. cost of property wihtin a Future Urban Zone would cost more than rural zoned land).
j) Property Escalation Rates

The property costs for the North West 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

### 2.4.1 Application to the NWIFF Programme

The property costs for the North West DBC were developed based on an assessment of each individual property impacted by the project. However, given the lack of scope and design for the NWIFF programme, this level of detail cannot be provided. Therefore, the approach adopted was to utilise the DBC information where the NWIFF programme was aligned with the North West DBC. This required an assessment of the areas that may need to be aquired for each project. Further consideration of staging was also needed, as it may be preferable to acquire the full property in the interim rather than progressing a 2-stage property acquisition process.

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)

Where property costs were not available from the DBC, a generic rate of $1,000/m$^2$ has been applied.

## 2.5 Contingency and Risk Allowance

The cost allowances for the NWIFF programme include a 30% contingency and a Funding Risk Contingency fo 25%. These contingencies are required for cost estimation in accordance with the CEM and have been developed by an experienced Quanitity Surveyor based on judgement/ experience rather than any assessment of previous projects. The rates have been peer reviewed by another Quanity Surveyor and deemed to be reasonable for the limited scope available.

Definitions for these are as follows:

#### Contingency

> A financial provision 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 to derive the Expected Estimate. The ‘Contingency’ represents the statistical mean.

#### Funding Risk

> An additional financial provision to provide for uncertainty in relation to the estimate inputs and project related threats and opportunities with a cost impact which represents the difference between the Expected Estimate and the 95th Percentile estimate. The Funding Risk Contingency provides for the difference between the statistical mean and the statistical 95th percentile value.

## 2.6 Review and Verification

### 2.6.1 North West DBC Cost Estiamtes

The cost estimates prepared for the DBC were subjected 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 North West 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 NWIFF Cost Allowances

The process for reviewing the cost allowances prepared for the NWIFF 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 estimates.

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

## 1 Brigham Creek Road - Joseph McDonald Drive to Totara Road

This project extends from the intersection with Totara Road to the Joseph McDonald Drive. There are two stages proposed for this corridor:

1a. 2-lane urban- with active modes on both sides and local intersection improvements
1b. 4-lane urban- upgrade with active modes on both sides (SGA design)

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

Interim Design for 2-lane urban corridor with active modes on both sides and local intersection improvements.

**Existing Corridor:**

- 2-Lane corridor
- Active mode and on-street parking on Northern side of corridor.
- Level Berm on southern side.


**Figure 3-1: Existing Brigham Creek Road Cross Section.**

**Assumptions:**

- Assume active mode facilities on south side are constructed as a footpath retrofit, (footpath and cycleway only, at grade.)
- Assume existing southern kerb and channel and berm are maintained and cycle and footpath corridor are constructed with recommended 2.3m berm between corridors.

- Alternative of maintaining existing designation and retrofitting active mode for interim design, is not considered due to following;
    - increased traffic disruption due to relocation of carriageway centreline,
    - potential safety implications of reducing median width in proximity to intersections,
    - costs associated with removing infrastructure such as tree pits, raised concrete cycleway separators, and existing drainage infrastructure (V-dish channel adjacent the on street parking.)

**Property:**

- Property acquisition required on southern side.
- Permanent acquisition only. Temporary and additional permanent land to be acquired at time of ultimate design construction.

## 1b - Ultimate Design: 4-lane urban corridor with active modes on both sides (SGA design)

Ultimate Design for 4-lane urban - upgrade with active modes on both sides (SGA design).

**Assumptions:**

- Cost taken from SGA DBC Appendix D, Section 1.1 – Brigham Creek Road Upgrade.
    - Project base estimate – Implementation phase $81,920,000
        - Includes traffic management, Environmental compliance, and P&G.
- Intersections:
    - 18a – Totara Road – Completed
    - 58b – Kauri Road (Dual lane signalised.)
    - 61b – Tamatea Ave (Dual lane signalised.)
    - Total base physical works allowance (before risk and pre-implementation costs = (2 x $7M) = $14M
    - Allow 15% of total SGA estimate for Brigham creek road for intersection upgrades.
- Cost split between items on pro rata basis. Assume SGA estimate is linear and can be divided by length. Brigham Road corridor items:
    - Total length of Brigham creek approximately = 3,540m
    - 30 - SH16 interchange to 1b (940m)
    - **1b - Joseph McDonald Drive to Totara Road (360m) = 9% of total corridor upgrade.**
    - 3b – Totara Road to Tamatea Ave (560m)
    - 26b - Tamatea Ave to Kauri Road (1680m)

**Property:**

Property requirements and acquisition costs as per SGA design.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 1a | Brigham Creek Road - Joseph McDonald Drive to Totara Road | Interim | | 0.0 | 0.1 | 0.0 | 0.8 | |
| 1b | Brigham Creek Road - Joseph McDonald Drive to Totara Road | Ultimate | | 0.2 | 1.0 | 0.7 | 11.5 | |

# 2 Totara Road - Brigham Creek Rd to Dale Road

Ultimate design for 2-lane urban- with active modes on both sides + local intersection improvements.

**Existing Corridor:**

- 2-Lane corridor
- Separated Cycle lanes and footpaths on both sides.


**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

**Property:**

- No property required.

# 3 Brigham Creek Road - Totara Road to Tamatea Ave

This project extends from the intersection with Totara Road to Tamatea Avenue. There are two stages proposed for this corridor:

- 3a. 2-lane urban- with active modes on both sides and local intersection improvements
- 3b. 4-lane urban- upgrade with active modes on both sides (SGA design)

## 3a - Interim Option: Existing 2-lanes with active modes provided

**Existing Corridor:**

Existing corridor is an established 2 lane arterial. Cycle lanes on the Eastbound side terminate East of Nils Andersen Road. Cyclist hold box at the Totara signalised intersection, cycle lane on westbound side terminate west of Ngahue Cres. Intersections along the 3a corridor include;

- Ngahue Cres – shown in figure below (left),
- Nils Andersen Road – shown in figure below (right),
- Airport Road and
- Tamatea Ave.

**Assumptions:**

- Cycle lane on Eastbound can extend from Nils Andersen Road to Tamatea Ave without widening designation. Eastbound cycle facility to extend through Tamatea intersection and terminate a safe distance after.
- Cycle lane on Westbound can extend from Ngahue Cres to Tamatea Ave without widening designation.
- Footpath retrofit for active mode on each sides:
    - Eastbound: 400m
    - Westbound:  520m
    - Total Linear length: 920m
- On-street parking to be removed in some location to provide cycle facilities and insure visibility and safety (on intersection approaches.)

**Property:**

- No property required in the Interim as active modes can be provided within existing road corridor in the interim.

## 3b - Ultimate Design: 4-lane urban corridor with active modes on both sides (SGA design)

**Assumptions:**

- Cost taken from SGA DBC Appendix D, Section 1.1 – Brigham Creek Road Upgrade.
    - Project base estimate – Implementation phase $81,920,000
        - Includes traffic management, Environmental compliance, and P&G.
- Intersections:
    - 18a – Totara Road – Completed
    - 58b – Kauri Road (Dual lane signalised.)
    - 61b – Tamatea Ave (Dual lane signalised.)

- Total base physical works allowance (before risk and pre-implementation costs = (2 x $7M) = $14M
- Allow 15% of total SGA estimate for Brigham creek road for intersection upgrades.

- Cost split between items on pro rata basis. Assume SGA estimate is linear and can be divided by length. Brigham Road corridor items:
  - Total length of Brigham creek approximately = 3540m
  - 30 - SH16 interchange to 1b (940m)
  - 1b - Joseph McDonald Drive to Totara Road (360m)
  - **3b – Totara Road to Tamatea Ave (560m) = 13% of total corridor upgrade.**
  - 26b - Tamatea Ave to Kauri Road (1680m)

**Property:**

- Property requirements and acquisition costs as per SGA design.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 3a | Brigham Creek Road - Totara Road to Tamatea Ave | Interim | [redacted] | 0.0 | 0.2 | 0.1 | 2.1 | [redacted] |
| 3b | Brigham Creek Road - Totara Road to Tamatea Ave | Ultimate | | 0.4 | 1.6 | 1.1 | 17.9 | |

## 4 Intersection upgrade on Hobsonville Road/ Suncrest Dr

Ultimate design for upgrade intersection to single lane roundabout.

**Existing Intersection:**

- Newly instated single lane roundabout.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

**Property:**

- No property required.

# 5 Intersection upgrade on Hobsonville Road/ Dowdens Lane

Ultimate design for upgrade intersection to single lane signalised intersection.

**Existing Intersection:**

- Signalised intersection with cycle facilities on all approaches.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

**Property:**

- No property required.

## 6 Intersection upgrade on Hobsonville Road/ Marina View Dr

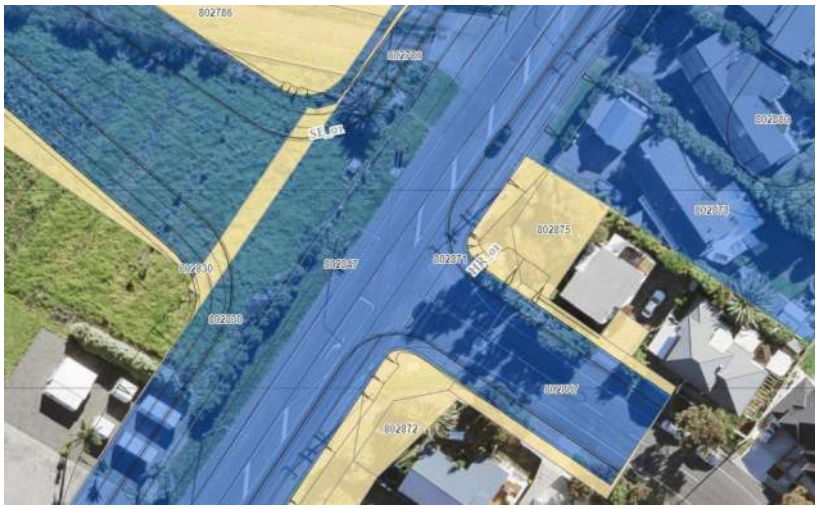
Ultimate design for upgrade intersection to single lane signalised intersection.

**Existing Intersection:**

- Priority controlled “Stop” intersection.

**Assumptions:**

- Design shown below for SGA planned intersection with future proposed Spedding Road East.



- Construction phasing shows intersection construction prior to Hobsonville Road upgrade (2022) and Spedding Road East (2026.)

- Item description is for Ultimate intersection design not Interim. Therefore, costing should assume intersection design that facilitates future works to tie-into.

**Property:**

- Assume property for Marina View Dr only.
- Hobsonville property acquisition costs included within item No 7
- Spedding Road East property acquisition costs included within item No 28

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 6 | Intersection upgrade on Hobsonville Road/ Marina View Dr | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

## 7 Hobsonville Road - Westpark Drive to Williams Road

Ultimate design for 2-lane urban- with active modes on both sides + local intersection improvements.

**Existing Corridor:**

- 2-lane urban- with footpaths, Berms and on-street parking on both sides

Intersections within this road corridor include:

- Brigham Creek Road / Williams Road (No. 11 – Dual lane roundabout)
- Hobsonville Road/ Suncrest Dr (No. 4 – completed roundabout)
- Signalised pedestrian crossing outside Hobsonville School
- Hobsonville Road/ Dowdens Lane (No. 5 – completed signals)
- Hobsonville Road/ Marina View Dr (No. 6 – Single lane signalised intersection)
- Westpark Drive (No 47 - Single lane signalised intersection)

**Assumptions:**

- Assume design and cost of SGA Corridor. Cost split between Hobsonville items on pro rata basis. Assume SGA estimate is linear and can be divided by length.
    - Total Hobsonville Road upgrade length – Approximately 4380m
    - Item 7 - Hobsonville Road - Westpark Drive to Williams Road (1750m)
    - Item 8b - Hobsonville Road - Williams Road to Hobsonville Point Road (750m)
    - Item 21 – Hobsonville Road - Westpark Dr to Luckens Road (580m)
    - Item 22 – Hobsonville Road - Fred Taylor Dr to Luckens Road (1300m)
- Intersection costs include Dual lane roundabout (item 11) and 2 x Single lane signalised intersections (items 6 & 47.) Total base physical works allowance (before risk and pre-implementation costs = $7M + (2 x $3M) = $13M
- Cost taken from SGA DBC Appendix D, Section 1.6 – Hobsonville Road FTN Upgrade.
    - Project base estimate – Implementation phase $83,399,998
        - Includes traffic management, Environmental compliance, and P&G.
        - Allow 15% for intersection costs ($13M) associated with Hobsonville Road Upgrade.
        - Remaining 85% divided between items 7, 8b, 21 and 22 on pro rata basis.

- This item (Hobsonville Road - Westpark Drive to Williams Road (1750m)) accounts for 34% of the total SGA physical works.

**Property:**

- Property requirements and acquisition costs as per SGA design.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%[1]) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 7 | Hobsonville Road - Westpark Drive to Williams Road | Ultimate | [redacted] | 0.9 | 4.1 | 2.8 | 46.1 | [redacted] |

# 8 Hobsonville Road - Williams Road to Hobsonville Point Road

This project extends from the intersection with Williams Road to Hobsonville Point Road. There are two stages proposed for this corridor:

- 8a. 2-lane urban- with active modes on both sides and local intersection improvements
- 8b. 4-lane urban- upgrade 2-lane urban with active modes on both sides (SGA design)

## 8a - Interim Option: Existing 2-lanes with active modes provided

**Existing Corridor:**

- 2-lane urban-with footpaths, berms and on-street parking.

**Assumptions:**

- Assume existing 2 lane carriageway is retained and active modes are added either side.
- Assume 60% at grade (Linear Rate 1) and 40% require retaining (Linear Rate 2).
- Adjacent Hobsonville shops, assume Interim cycle facilities can be retrofitted inside of gardens by removing parking (see figure below) and footpath utilised on outside. Landscaping / retaining may be required so Linear Rate 2 has been applied.


**Property:**

- Assume active modes can be retrofitted within existing designation (red lines seen on figure below.) Minimum dist. from edge of lane to designation exceeds 5m.

## 8b - Ultimate Design: 4-lane urban corridor with active modes on both sides (SGA design)

**Assumptions:**

- Assume design and cost of SGA Corridor. Cost split between Hobsonville items on pro rata basis. Assume SGA estimate is linear and can be divided by length.
    - Total Hobsonville Road upgrade length – Approximately 4380m
    - Item 7 - Hobsonville Road - Westpark Drive to Williams Road (1750m)
    - Item 8b - Hobsonville Road - Williams Road to Hobsonville Point Road (750m)
    - Item 21 – Hobsonville Road - Westpark Dr to Luckens Road (580m)

- Item 22 – Hobsonville Road - Fred Taylor Dr to Luckens Road (1300m)

- Intersection costs include Dual lane roundabout (item 11) and 2 x Single lane signalised intersections (items 6 & 47.) Total base physical works allowance (before risk and pre-implementation costs = $7M + (2 x $3M) = $13M
- Cost taken from SGA DBC Appendix D, Section 1.6 – Hobsonville Road FTN Upgrade.
  - Project base estimate – Implementation phase $83,399,998
    - Includes traffic management, Environmental compliance, and P&G.
    - Allow 15% for intersection costs ($13M) associated with Hobsonville Road Upgrade.
    - Remaining 85% divided between items 7, 8b, 21 and 22 on pro rata basis.
- This item (Hobsonville Road - Westpark Drive to Williams Road (1750m)) accounts for 15% of the total SGA physical works.

**Property:**

- Property requirements and acquisition costs as per SGA design.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2[nd]) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 8a | Hobsonville Road - Williams Road to Hobsonville Point Road | Interim | [redacted] | 0.2 | 0.8 | 0.5 | 8.4 | [redacted] |
| 8b | Hobsonville Road - Williams Road to Hobsonville Point Road | Ultimate | | 0.5 | 2.4 | 1.6 | 26.7 | |

## 9 Fred Taylor Drive/ Don Buck Rd - Kakano Road to Beauchamp Dr

This project extends from the intersection with Kakano Road to Beauchamp Drive. There are two stages proposed for this corridor:

- 9a. 2-lane urban- with active modes on both sides and local intersection improvements
- 9b. 4-lane urban- upgrade 2-lane urban with active mo des on both sides (SGA design)

### 9a - Interim Option: Existing 2-lanes with active modes provided

**Existing Corridor:**

- Active mode facilities on Southbound side between Kakano Road and Kedgley Road.
- Active mode on Northbound side extends approximately 200m south of Kakano Road. Sudden corridor termination suggests plans to construct further south to match other side.
- Assume 2 lane carriageway is retained and active mode corridors retrofitted each side.

Local Road intersections within this road corridor include:

- Kakano Road Intersection
- Pua Street Intersection

- Spring Garden Avenue Intersection
- Matakohe Road Intersection - appears to be newly constructed
- Dunlop Road
- Baker Lane
- Fred Taylor Drive / Don Buck Road Roundabout
- Westgate Drive roundabout
- Kapia Road
- Rush Creek Drive
- Beauchamp Drive

**Assumptions:**

- Active mode continues from already constructed active mode length.
- Assume Linear Rate 1 as there is no existing kerb and channel and corridor is relatively flat along Fred Taylor Drive:
    - Northbound: 750
    - Southbound: 1050
- Assume Footpath retrofit for remining corridor length (along Don Buck Road.)

**Property:**

- No additional property required for interim design.
- Active modes to be retrofitted within existing designation.

## 9b - Ultimate Design: 4-lane urban corridor with active modes on both sides (SGA design) and FTN Upgrade

**Assumptions:**

- Assume design and cost of SGA Design for Fred Taylor Drive / Don Buck Road Ultimate design.

- Assume estimate for Fred Taylor Drive from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
    - Total base estimate for Fred Taylor Drive = $3,460,000
- Cost taken from SGA DBC Appendix D, Section 1.4 – Don Buck Road.
    - Project base estimate for Physical works = $45,509,999
        - Includes traffic management, Environmental compliance, and P&G.
- Intersection costs included within the SGA Don Buck corridor include 3x Dual lane roundabout (items 17, 54b and 66b.) Total base physical works allowance (before risk and pre-implementation costs = 3 x $7M = $21M.
    - Item 17 - Fred Taylor Drive/ Don Buck Road
    - Item 54b – Royal Road / Don Buck Road (Assume half this cost is included in SGA estimate for Don Buck Road.)
    - Item 66b – Beauchamp Drive / Don Buck Road
- Assume this item accounts for 65% of the total SGA physical works.
- Escalation to be applied from June 2018 when NW HIF estimate was prepared

**Property:**

- Property requirements and acquisition costs as per SGA design.

- Include Property Escalation – graph below is from the reserve Bank: https://www.rbnz.govt.nz/statistics/key-graphs/key-graph-house-price-values
  Value of Housing June 2018 $1.09Bn and Mar 2021 $1.51. Therefore adopt 40% escalation over 3-year period


## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%[1]) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 9a | Fred Taylor Drive/ Don Buck Rd - Kakano Road to Beauchamp Dr | Interim | | 0.3 | 1.2 | 0.8 | 13.7 | |
| 9b | Fred Taylor Drive/ Don Buck Rd - Kakano Road to Beauchamp Dr | Ultimate | | 1.2 | 5.2 | 3.5 | 57.9 | |

# 10 Dunlop Road and Baker Lane Arterials

New 2-lane urban arterials

**Assumptions:**

- Road extents not specified.
- Assume SGA design for Baker and Dunlop Road arterial upgrade. Assume estimate from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
  - Total base estimate for Dunlop Road = $17,360,000
  - Total base estimate for Baker Road = $27,600,000
    - Includes traffic management, Environmental compliance, and P&G.
  - Total base estimate = $44,960,000

- Allow 2 x $7M for Dunlop / Fred Taylor and Baker / Fred Taylor intersections (18% of total base estimate.)

- Apply escalation from 2018 (3 x 4%)

**Property:**

- The SGA DBC Redhills package was priced collectively for the total acquisition. The gross land acquisition cost has been divided between The Dunlop and Baker arterial upgrades (item 10), The Redhill N-S (item 24) and the Redhill E-W (item 43) arterials.
- This item accounts for 30% SGA land acquisition.
- Property escalation rate of 40% applied as above

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (29%) | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 10 | Dunlop Road and Baker Lane Arterials | Ultimate | [redacted] | 1.3 | 6.0 | 4.0 | 67.1 | [redacted] |

## 11 Intersection upgrade on Hobsonville Road/ Brigham Creek Road

Upgrade intersection to Dual lane roundabout

**Assumptions:**

- SGA Design is for dual lane signalised intersection. Assume roundabout has the same area requirements.
- Assume same length of Brigham Creek Road between SH1 roundabout is required to tie-into roundabout.


**Property:**

- Land requirements as per SGA Design (Including retention / treatment area shown below.) As property acquisition will likely occur at the same time.


## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 11 | Intersection upgrade on Hobsonville Road/ Brigham Creek Road | Ultimate | [redacted] | 0.2 | 1.0 | 0.6 | 10.8 | [redacted] |

# 12 Hobsonville Road/ Memorial Park Lane Intersection

- 12a: Single lane signalised intersection
- 12b: Dual lane signalised intersection

## 12a - Interim Option: Single lane signalised intersection

Interim design for upgrade intersection to single lane signalised intersection.

**Existing Intersection:**

- Signalised intersection with cycle facilities on all approaches.


**Assumptions:**

- Assume works already completed. No additional costs associated with this interim intersection design.

**Property:**

- No property required.

## 12b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection

**Assumptions:**

- Assume Memorial Park Lane remains 2 lane (no forecasted upgrade.)
- Dual lane intersection property requirements are absorbed in Item 8b ( 4-lane upgrade of Hobsonville Road between Williams Road to Hobsonville Point Road.)

**Property:**

- No property required (acquired in Item 8b - Hobsonville Road between Williams Road to Hobsonville Point Road.)

## Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (2 | Pre-implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 12b | Intersection upgrade on Hobsonville Road/ Memorial Park Lane | Ultimate | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |

# 13 Fred Taylor Drive/ Northside Dr Intersection

- 13a: Single lane signalised intersection
- 13b: Dual lane signalised intersection

## 13a - Interim Option: Single lane signalised intersection

Interim design for upgrade intersection to single lane signalised intersection.

**Existing Intersection:**

- Signalised intersection with cycle facilities on all approaches.

**Assumptions:**

- Assume works already completed. No additional costs associated with this interim intersection design.

**Property:**

- No property required.

## 13b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection

**Assumptions:**

- Assumes roads are upgrade simultaneous with intersections and therefore property acquisition has already occurred.

**Property:**

- No property required (acquired in Corridor upgrades as there are no additional property requirements specific to the intersection.)

## Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (2 | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 13b | Intersection upgrade on Fred Taylor Drive/ Northside Dr | Ultimate | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |

# 14 Fred Taylor Drive/ Kakano Road Intersection

- 14a: Single lane signalised intersection
- 14b: Dual lane signalised intersection

## 14a - Interim Option: Single lane signalised intersection

**Existing Intersection:**

- Signalised intersection with cycle facilities on all approaches.

**Assumptions:**

- Assume works already completed. No additional costs associated with this interim intersection design.

**Property:**

- No property required.

## 14b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection

**Assumptions:**

- Assumes Arterial Roads Upgrades are simultaneous with ultimate intersection construction, therefore property acquisition has already occurred.
- Assume Kakano remains 2-lane corridor approach and Fred Taylor Drive 4-lane corridor.

**Property:**

- No property required (acquired in Corridor upgrades as there are no additional property requirements specific to the intersection.)

### Cost Allowance Summary:

| No | Project Schedule | Project Sta | | Gross Property Cost (P95) ($M) | Project Development (2 | Pre-implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|---|
| 14b | Intersection upgrade on Fred Taylor Drive/ Kakano Road | Ultimate | | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |

## 15 Fred Taylor Drive/ Dunlop Road Intersection

- 15a: Single lane signalised intersection
- 15b: Dual lane signalised intersection

### 15a - Interim Option: Single lane signalised intersection

Upgrade intersection to single lane signalised intersection

**Existing Intersection:**

- Priority Give way intersection with no active mode facilities.

**Assumptions:**

- Single lane intersection will include provision for cycle and pedestrian facilities costed in item No. 9a and 9b (Fred Taylor Drive) and item No. 10 (Dunlop Road.)
- Land requirements will be absorbed within these items. Assume this intersection does not require additional land acquisition.

**Property:**

- No property required (acquired in corridor upgrades)

### 15b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to dual lane signalised intersection

**Assumptions:**

- Assumes Arterial Roads Upgrades are simultaneous with ultimate intersection construction; therefore, property acquisition has already occurred.
- Baker and Dunlop to be developed as 2-lane arterial, Fred Taylor 4-lane corridor.

**Property:**

- No property required (acquired in Corridor upgrades as there are no additional property requirements specific to the intersection.)

### Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (25 | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 15a | Intersection upgrade on Fred Taylor Drive/ Dunlop Road | Interim | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |
| 15b | Intersection upgrade on Fred Taylor Drive/ Dunlop Road | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 16 Fred Taylor Drive/ Baker Lane Intersection

- 16a: Single lane signalised intersection
- 16b: Dual lane signalised intersection

## 16a - Interim Option: Single lane signalised intersection

Upgrade intersection to Single lane signalised intersection

**Existing Intersection:**

- Existing Baker Road is a dirt road with no formal intersection controls.

**Assumptions:**

- Single lane intersection will include provision for cycle and pedestrian facilities costed in item No. 9a and 9b (Fred Taylor Drive) and item No. 10 (Baker Road.)
- Land requirements will be absorbed within these items. Assume this intersection does not require additional land acquisition.

**Property:**

- No property required (acquired in corridor upgrades)

## 16b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection

**Assumptions:**

- Assumes Arterial Roads Upgrades are simultaneous with ultimate intersection construction, therefore property acquisition has already occurred.
- Baker and Dunlop to be developed as 2-lane arterial, Fred Taylor 4-lane corridor.

**Property:**

- No property required (acquired in Corridor upgrades as there are no additional property requirements specific to the intersection.)

## Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (25 | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 16a | Intersection upgrade on Fred Taylor Drive/ Baker Lane | Interim | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |
| 16b | Intersection upgrade on Fred Taylor Drive/ Baker Lane | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 17 Intersection upgrade on Fred Taylor Drive/ Don Buck Road

Upgrade intersection to dual lane signalised intersection

**Existing Intersection:**

- Dual Lane Roundabout.

**Assumptions:**

- Assume Fred Taylor (north) / Don Buck Road land requirements are absorbed in corridor upgrade.

**Property:**

- Fred Taylor Drive East of intersection to be upgraded to tie into signals (property requirements included in this item.)

## Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (2 | Pre-Implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 17 | Intersection upgrade on Fred Taylor Drive/ Don Buck Road | Ultimate | [redacted] | 0.2 | 1.0 | 0.6 | 10.8 | [redacted] |

# 18 Intersection upgrade on Brigham Creek Rd/ Totara Road

Interim design for upgrade intersection to single lane signalised intersection.

**Existing Intersection:**

- Signalised intersection with cycle facilities on all approaches.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

**Property:**

- No property required.

# 19 Fred Taylor Drive/ Westgate Drive Intersection

- 19a: Single lane signalised intersection
- 19b: Dual lane signalised intersection

## 19a - Interim Option: Single lane signalised intersection

Upgrade intersection to Single lane signalised intersection

**Existing Intersection:**

- Existing intersection is a single lane roundabout with left slip lane and straight through lane from Don Buck Road.

**Assumptions:**

- Assume this intersection does not require additional land acquisition.

**Property:**

- No property required (No property required (acquired in corridor upgrades.)

## 19b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection

**Assumptions:**

- Assume this intersection does not require additional land acquisition. Interim design for single lane to be upgraded to dual.

**Property:**

- No property required (acquired in other corridors Don Buck Road and Westgate Drive upgrades.)

## Cost Allowance Summary:

| No | Project Schedule | Project Sta | Gross Property Cost (P95) ($M) | Project Development (2 | Pre-implementation (9%) | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($ |
|---|---|---|---|---|---|---|---|---|
| 19a | Intersection upgrade on Fred Taylor Drive/ Westgate Drive | Interim | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |
| 19b | Intersection upgrade on Fred Taylor Drive/ Westgate Drive | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 20 Fred Taylor Drive/ Rush Creek Drive Intersection

- 20a: Single lane signalised intersection
- 20b: Dual lane signalised intersection

## 20a - Interim Option: Single lane signalised intersection

Upgrade intersection to Single lane signalised intersection

**Existing Intersection:**

- Existing intersection is a priority-controlled give way intersection with raised median and cycle facilities.

**Assumptions:**

- Assume this intersection does not require additional land acquisition.

**Property:**

- No property required (acquired in corridor upgrades)

## 20b - Intersection upgrade: Dual lane signalised intersection

Upgrade intersection to Dual lane signalised intersection.

**Assumptions:**

- Assume this intersection does not require additional land acquisition.

**Property:**

- No property required (acquired in Don Buck Road property requirements as no additional property is required specifically for the intersection.)

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 20a | Intersection upgrade on Fred Taylor Drive/ Rush Creek Drive | Interim | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |
| 20b | Intersection upgrade on Fred Taylor Drive/ Rush Creek Drive | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 21 Hobsonville Road - Westpark Dr to Luckens Road

Ultimate design for 2-lane urban: with active modes on both sides and local intersection improvements

**Existing:**

- 2-lane arterial road
- No provision for cyclist or pedestrians on Northbound side.
- Pedestrian footpath on Southbound side.
- Intersections with laneways to access private residential areas

**Assumptions:**

- Assume design and cost of SGA Corridor. Cost split between Hobsonville items on pro rata basis. Assume SGA estimate is linear and can be divided by length.
    - Total Hobsonville Road upgrade length – Approximately 4380m
    - Item 7 - Hobsonville Road - Westpark Drive to Williams Road (1750m)
    - Item 8b - Hobsonville Road - Williams Road to Hobsonville Point Road (750m)
    - Item 21 – Hobsonville Road - Westpark Dr to Luckens Road (580m)
    - Item 22 – Hobsonville Road - Fred Taylor Dr to Luckens Road (1300m)
- Intersection costs include Dual lane roundabout (item 11) and 2 x Single lane signalised intersections (items 6 & 47.) Total base physical works allowance (before risk and pre-implementation costs = $7M + (2 x $3M) = $13M
- Cost taken from SGA DBC Appendix D, Section 1.6 -Hobsonville Road FTN Upgrade.
    - Project base estimate – Implementation phase $83,399,998
        - Includes traffic management, Environmental compliance, and P&G.
        - Allow 15% for intersection costs ($13M) associated with Hobsonville Road Upgrade.
        - Remaining 85% divided between items 7, 8b, 21 and 22 on pro rata basis.
- This item (Hobsonville Road - Westpark Drive to Williams Road (1750m)) accounts for 11% of the total SGA physical works.

**Property:**

- Property requirements as per SGA design for Hobsonville Road.
- SGA property terminates prior to Luckens Road. Assume Same requirements (Additional 12m Permanent and 15m Temporary for length 220m.)
- Additional 60% of SGA gross estimated property acquisition costs.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 21 | Hobsonville Road - Westpark Dr to Luckens Road | Ultimate | [redacted] | 0.3 | 1.4 | 0.9 | 15.4 | [redacted] |

## 22 Hobsonville Road - Fred Taylor Dr to Luckens Road

4-lane urban- upgrade 2-lane urban with active modes on both sides (SGA design)

**Existing:**

- 2-lane arterial road
- No provision for cyclist or pedestrians on Northbound side.
- Pedestrian footpath on Southbound side.
- Intersections with laneways to access private residential areas

**Assumptions:**

- Assume design and cost of SGA Corridor. Cost split between Hobsonville items on pro rata basis. Assume SGA estimate is linear and can be divided by length.

- Total Hobsonville Road upgrade length – Approximately 4380m
- Item 7 - Hobsonville Road - Westpark Drive to Williams Road (1750m)
- Item 8b - Hobsonville Road - Williams Road to Hobsonville Point Road (750m)
- Item 21 – Hobsonville Road - Westpark Dr to Luckens Road (580m)
- Item 22 – Hobsonville Road - Fred Taylor Dr to Luckens Road (1300m)

- Intersection costs include Dual lane roundabout (item 11) and 2 x Single lane signalised intersections (items 6 & 47.) Total base physical works allowance (before risk and pre-implementation costs = $7M + (2 x $3M) = $13M
- Cost taken from SGA DBC Appendix D, Section 1.5 -Royal Road Upgrade.
  - Project base estimate – Implementation phase $83,399,998
    - Includes traffic management, Environmental compliance, and P&G.
    - Allow 15% for intersection costs ($13M) associated with Hobsonville Road Upgrade.
    - Remaining 85% divided between items 7, 8b, 21 and 22 on pro rata basis.
- This item (Hobsonville Road - Westpark Drive to Williams Road (1750m)) accounts for 25% of the total SGA physical works.

**Property:**

- Property requirements as per SGA design for Hobsonville road.
- SGA design average property requirements and costs per metre upgrade to carry design through to Luckens Road.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 22 | Hobsonville Road - Fred Taylor Dr to Luckens Road | Ultimate | | 0.7 | 3.1 | 2.1 | 34.9 | |

## 23 Trig Road - Brigham Creek Rd to SH18

2-lane urban with active modes on both sides and local intersection improvements

**Assumptions:**

- Existing road is a 2-lane Local corridor with pedestrian footpath on one side.
- Design as per SGA design. Assume SGA design for Trig Road upgrade. Assume estimate from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
  - Total base estimate for Trig Road = $29,810,000
    - Includes traffic management, Environmental compliance, and P&G.
  - SGA estimate includes provision for a portion of the Intersections within the corridor:
    - 48 – Hobsonville / Trig Road – Dual lane signalised ($7M)
    - 51 – Spedding East Road – Single lane roundabout ($4M)
    - 52b – Brigham Creek Road - Dual lane roundabout ($7M)
  - Assume 85% of total SGA costs for item 23.
  - 30% contingency added to existing contingency. Total 45% contingency

**Property:**

- Property Requirements as per SGA design.
- 12% escalation applied to NWHIF section only

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 23 | Trig Road - Brigham Creek Rd to SH18 | Ultimate | | 1.1 | 4.8 | 3.2 | 52.8 | |

## 24 Redhills N-S & E-W Arterials

New 2-lane urban with active modes on both sides and local intersection improvements.

Redhill N-S arterial is proposed to be from the Redhills Local Centre to Royal Road. Redhills E-W arterial is proposed to be from Dunlop Road to the Redhills Local Centre.

**Assumptions:**

- Road extents not specified.
- Assume SGA design for arterial upgrade. Assume estimate from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
    - Total base estimate for E-W Arterial = $30,090,000
    - Total base estimate for Royal Road intersection to Hugh Green Group Landholdings = 69,990,000
    - Total base estimate for Baker / Dunlop intersection to town centre = $22,090,000
        - Includes traffic management, Environmental compliance, and P&G.
    - Total base estimate = $122,090,000

**Property:**

- Property requirements as per SGA design
- The SGA DBC Redhills package was priced collectively for the total acquisition. The gross land acquisition cost has been divided between The Dunlop and Baker arterial upgrades (item 10), The Redhill N-S (item 24) and the Redhill E-W (item 43) arterials.
- This item accounts for 47% SGA land acquisition.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 24 | Redhills N-S arterial (Redhills Local Centre to Royal Road) & Redhills E-W arterial (Dunlop Road to local Centre) | Ultimate | | 0.7 | 3.1 | 2.1 | 228.9 | |

## 25 Royal Road Upgrade

4-lane urban- upgrade 2-lane urban with active modes on both sides (SGA design) FTN Upgrade

**Assumptions:**

- SGA design for Royal Road Upgrade extends from Don Buck Road to Makora Road.
- Item does not include SH16 overpass bridge widening to accommodate 4-lanes.

- Assumer corridor to match SGA design, Cost taken from SGA DBC Appendix D, Section 1.5 - Royal Road Upgrade.
    - Project base estimate – Implementation phase $33,049,999
        - Includes traffic management, Environmental compliance, and P&G

**Property:**

- Assume property costs and requirements as per the SGA design

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 25 | Royal Road upgrade | Ultimate | | 1.0 | 4.5 | 3.0 | 49.8 | |

## 26 Brigham Creek Road - Tamatea Ave to Kauri Road

- 26a: 2-lane urban with active modes on both sides and local intersection improvements
- 26b: 4-lane urban with active modes on both sides (SGA design). Includes FTN upgrade

### 26a - Interim Option: Existing 2-lanes with active modes

2-lane urban corridor with active modes on both sides and local intersection improvements

**Assumptions:**

- Existing corridor consists of two-lane carriageway and a shared path on the Northern side. Assume both are retained for interim design
- Assume an interim active mode corridor can be retrofitted on the southern side within the existing designation.
- The area adjacent the Kauri Road intersection appears to be under construction. It is assumed these works are not related to the interim design.
- Linear rate 1 has been assumed for the length, except for approach to Kauri intersection, were a retaining wall and landscaping will be required (linear rate 2.)
- 

**Property:**

- Include property at 163 Brigham Road, required to extend active mode corridor with retaining structure.
- Location shown in picture above.

## 26b - Ultimate Design: 4-lane urban corridor with active modes on both sides (SGA design)

4-lane urban - upgrade 2-lane urban with active modes on both sides (SGA design) FTN Upgrade

**Assumptions:**

- Cost taken from SGA DBC Appendix D, Section 1.1 – Brigham Creek Road Upgrade.
    - Project base estimate – Implementation phase $81,920,000
        - Includes traffic management, Environmental compliance, and P&G.
- Intersections:
    - 18a – Totara Road – Completed
    - 58b – Kauri Road (Dual lane signalised.)
    - 61b – Tamatea Ave (Dual lane signalised.)
    - Total base physical works allowance (before risk and pre-implementation costs = (2 x $7M) = $14M
    - Allow 15% of total SGA estimate for Brigham creek road for intersection upgrades.
- Cost split between items on pro rata basis. Assume SGA estimate is linear and can be divided by length. Brigham Road corridor items:
    - Total length of Brigham creek approximately = 3,540
    - 30 - SH16 interchange to 1b (940m)
    - 1b - Joseph McDonald Drive to Totara Road (360m)
    - 3b – Totara Road to Tamatea Ave (560m)
    - **26b - Tamatea Ave to Kauri Road (1680m) = 40% of total corridor upgrade.**

**Property:**

- Property requirements as per SGA design.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | [redacted] | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|---|
| 26a | Brigham Creek Road - Tamatea Ave to Kauri Road | Interim | [redacted] | [redacted] | 0.2 | 0.8 | 0.5 | 8.3 | [redacted] |
| 26b | Brigham Creek Road - Tamatea Ave to Kauri Road | Ultimate | [redacted] | [redacted] | 1.1 | 4.8 | 3.2 | 53.7 | [redacted] |

# 27 Kauri Road - Brigham Creek Rd to Rata Rd

2-lane urban corridor with active modes on both sides and local intersection improvements.

**Assumptions:**

- 2-Lane linear rate 6 has been applied for the full length.
- Existing corridor is a 2-lane local (approximate width including berm 24m)

**Property:**

- SGA land acquisition estimate allows for the Temporary and permanent land requirements for the following properties:
    - 1 Kauri Road
    - 2-10 Kauri Road
    - 3 Kauri Road.
- Assume same requirements for length of corridor as adjacent conditions and existing corridor remain similar.
- Temporary land acquisition on Southbound edge to match batter slopes as shows below (approx. 20m width) for full length. Additional temporary land on Northern side (approx. 15m) at northern end to level corridor.
- 


## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 27 | Kauri Road - Brigham Creek Rd to Rata Rd | Ultimate | [redacted] | 0.4 | 2.0 | 1.3 | 22.5 | [redacted] |

# 28 Spedding Road East - SH18 to Hobsonville Rd

2-lane urban corridor with active modes on both sides and local intersection improvements. This project item connects to item 29 to form an overbridge across SH18.

**Assumptions:**

- Existing corridor is a 2-lane local (approximate width incl berm 24m)
- SH18 overbridge cross section is assumed to be SGA standard 2 lane arterial bridge (18m).
- Cost taken from SGA DBC Appendix D, Section 1.5 -Spedding Road East Upgrade.
    - Project base estimate – Implementation phase $70,150,000
        - Includes traffic management, Environmental compliance, and P&G.

- Implementation cost has been split between item 28 and 29 on a pro-rata basis. 45% of the SGA base implementation estimate for Spedding Road East Corridor upgrade is assumed for this item.
- Total corridor length is approximately 1600m with the SH18 overbridge located half-way along the corridor.
- Assume provision for intersection upgrades accounts for 10% of the total SGA base implementation estimate for Spedding Road East Corridor:

**Property:**

- Property requirements as per SGA estimate.
- Total Spedding Road East property requirements (from Hobsonville Road to Trig Road) have been split evenly between Item 28 and 29.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 28 | Spedding Road East - SH18 to Hobsonville Rd | Ultimate | | 1.1 | 4.8 | 3.2 | 52.8 | |

## 29 Spedding Road East - Trig Rd to SH18

2-lane urban corridor with active modes on both sides and local intersection improvements.

Connects to item 28 to form an overbridge across SH18.

**Assumptions:**

- Existing corridor is a 2-lane local (approximate width incl berm 24m)
- SH18 overbridge cross section is assumed to be SGA standard 2 lane arterial bridge (18m).
- Cost taken from SGA DBC Appendix D, Section 1.5 -Spedding Road East Upgrade.
    - Project base estimate – Implementation phase $70,150,000
        - Includes traffic management, Environmental compliance, and P&G.
        - Implementation cost has been split between item 28 and 29 on a pro-rata basis. 45% of the SGA base implementation estimate for Spedding Road East Corridor upgrade is assumed for this item.
        - Total corridor length is approximately 1600m with the SH18 overbridge located half-way along the corridor.
        - Assume provision for intersection upgrades accounts for 10% of the total SGA base implementation estimate for Spedding Road East Corridor

**Property:**

- Property requirements as per SGA estimate.
- Total Spedding Road East property requirements (from Hobsonville Road to Trig Road) have been split evenly between Item 28 and 29.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 29 | Spedding Road East - Trig Rd to SH18 | Ultimate | | 1.1 | 4.8 | 3.2 | 52.8 | |

## 30 Brigham Creek Rd – Section adjacent to SH16 Interchange

4-lane urban corridor - upgrade 2-lane urban with active modes on both sides (SGA design). Corridor section is directly east of SH16/ Brigham Creek Road interchange and is west of and connects to item 1b.

**Assumptions:**

- Assume no overlap but adjacent to item 1b.
- Cost taken from SGA DBC Appendix D, Section 1.1 – Brigham Creek Road Upgrade.
    - Project base estimate – Implementation phase $81,920,000
        - Includes traffic management, Environmental compliance, and P&G.
- Intersections:
    - 18a – Totara Road – Completed
    - 58b – Kauri Road (Dual lane signalised.)
    - 61b – Tamatea Ave (Dual lane signalised.)
    - Total base physical works allowance (before risk and pre-implementation costs = (2 x $7M) = $14M
    - Allow 15% of total SGA estimate for Brigham creek road for intersection upgrades.
- Cost split between items on pro rata basis. Assume SGA estimate is linear and can be divided by length. Brigham Road corridor items:
    - Total length of Brigham creek approximately = 3540m
    - **30 - SH16 interchange to 1b (940m) = 23% of total corridor upgrade.**
    - 1b - Joseph McDonald Drive to Totara Road (360m)
    - 3b – Totara Road to Tamatea Ave (560m)
    - 26b - Tamatea Ave to Kauri Road (1680m)

**Property:**

- Property requirements as per SGA design

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 30 | Brigham Creek Rd - SH16 interchange to overlap with 1b | Ultimate | | 0.6 | 2.8 | 1.9 | 30.9 | |

## 31 Fred Taylor Drive - SH16 interchange to Northside Dr

4-lane urban corridor - upgrade 2-lane urban with active modes on both sides.

**Assumptions:**

- Assume SGA design.

**Property:**

- Property requirements as per SGA design.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 31 | Fred Taylor Drive - SH16 interchange to Northside Dr | Ultimate | | 0.5 | 2.4 | 1.6 | 26.7 | |

# 32 Spedding Road West - Fred Taylor Drive to Trig Road

2-lane urban corridor with active modes on both sides and local intersection improvements.

Connects to item 28 and item 29 (Spedding Road East) at Trig Road intersection.

**Assumptions:**

- Existing corridor is a 2-lane local (approximate width incl berm 24m)
- Cost taken from SGA DBC Appendix D, Section 1.5 – Spedding Road West Upgrade.
    - Project base estimate – Implementation Phase Total = $79,740,000
        - Includes traffic management, Environmental compliance, and P&G.

**Property:**

- Property requirements as per SGA estimate.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 32 | Spedding Road West - Fred Taylor Drive to Trig Road | Ultimate | | 2.4 | 10.8 | 7.2 | 120.1 | |

# 33 Mamari Road

New 4-lane urban corridor with active modes on both sides and local intersection improvements.

**Assumptions:**

- Combination of Greenfield and Brownfield (Linear rates 4 and 5)
- Assume brownfield rate where existing adjacent housing and access road (including existing unsealed road.)
- Cost taken from SGA DBC Appendix D, Section 1.2 – Mamari Road Upgrade.
    - Project base estimate – Implementation Phase Total = $59,620,000
        - Includes traffic management, Environmental compliance, and P&G.

**Property:**

- Property requirements as per SGA estimate.
    - Project expected estimate – Nett project property cost expected estimate $10,425,300

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 33 | Mamari Road | Ultimate | | 1.8 | 8.1 | 5.4 | 89.8 | |

## 34 Key Collector Rd Network: Dale Road, Riverlea Rd, Bristol Rd, Rope Rd

2-lane urban corridor with active modes on both sides and local intersection improvements.

**Property:**

- Existing designation appears on average 20m. Assume additional 6m for length of Collector (24m corridor and 1m berm each side.)
- Entire corridor appears relatively flat, assume temporary land acquisition for construction envelope of 6m.
- Assume Rate of $150m2 for future urban zone.
- Temporary acquisition at 7% of land value as per SGA estimates.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 34 | Key Collector Rd Network: Dale Road, Riverlea Rd, Bristol Rd, Rope Rd | Ultimate | | 1.5 | 6.8 | 4.5 | 75.8 | |

## 35 Key Collector Rd Network through Whenuapai North: Trig Rd and Kauri Rd

**Assumptions:**

- Link from Kauri Road (item 27) to Totara Road intersection with Dale Road. See Totara to Brigham Creek Road (item 2.)
- Assume bridge on Totara Road over the Ratara Stream. Unsure of Stream capacity, a culvert may suffice, however a 50m length (18m cross section bridge) is included.

**Property:**

- Existing designation appears on average 20m. Assume additional 6m for length of Collector (24m corridor)
- Additional temporary land acquisition required for batter slopes to level 24m collector corridor along Kauri Road. Adopt same principal as Kauri Road improvements (item 27). Average 20m temporary land acquisition for 1000m length of Kauri Road. Temporary acquisition at 7% of land value as per SGA estimates.
- Assume Rate of $150m2 for future urban zone.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 35 | Key Collector Rd Network through Whenuapai North: Trig Rd and Kauri Rd | Ultimate | | 2.7 | 12.0 | 8.0 | 132.9 | |

# 36 SH16/ Brigham Creek Roundabout/ Interchange

- 36a: Roundabout interim improvements - signalisation
- 36b: Interchange grade separation – split fork interchange

## 36a - Interim Option: SH16/ Brigham Creek Roundabout interim improvements - signalisation

Roundabout signalisation, Strategic Corridor is part of the SH16/ SH18 SSBC. Property and Physical works are outside the SGA scope. Refer to the SH16/ SH18 SSBC completed by others for baseline property cost and Construction. Refer to Stage 2 in Table 0-2 Estimate Outcome.


## 36b - Ultimate Form: SH16/ Brigham Creek Interchange – Grade Separation

Split Fork Interchange. Strategic Corridor is part of the SH16/ SH18 SSBC. Property and Physical works are outside the SGA scope. Refer to the SH16/SH18 SSBC completed by Aurecon & Waka Kotahi for baseline property cost and Construction. Refer to Stage 4 in Table 0-2 Estimate Outcome.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P50) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 36b | SH16 / Brigham Creek Road interchange (grade separation) | Ultimate | | 8.8 | 39.6 | 26.4 | 440.0 | |

# 37 Squadron Drive Interchange & SH18 Shared Path (Squadron Dr to BCR)

Squadron Dr ramps in RLTP and Shared path part of SH16/18 Connections. Property and Physical works are outside the SGA scope. Refer to the SH16/SH18 SSBC completed by others for baseline property cost and Construction.

New interchange west-facing ramps will complement the existing east-facing ramps to create a full interchange.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 37 | Squadron Drive Interchange & SH18 Shared Path (Squadron Dr to BCR) | Ultimate | | | | | | |

# 38 Northside Drive East Upgrade (part of SH16/18 Connections)

Part of the SH16/18 Connections project. 4-lane arterial road with dedicated walking and cycling facilities. Excludes SH16 Northside Dr Interchange City facing ramps.

**Assumptions:**

- Cost taken from SGA DBC Appendix D, Section 1.2 – Northside Drive East Upgrade
  - Project base estimate for Northside Drive East works = $13,669,999
    - Includes traffic management, Environmental compliance, and P&G.

**Property:**

- Assume no addition land acquisition associated with corridor upgrade.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 38 | Northside Drive East Upgrade (part of SH16/18 Connections) | Ultimate | | 0.5 | 2.1 | 1.4 | 22.9 | |

# 39 SH16/18 Motorway-Motorway Ramps, SH16 Northside Dr Interchange Ramps, SH16 Shared path and SH Shared path (BCR to Hobsonville Rd)

SH16/ SH18 improvements & shared path. Strategic Corridor is part of the SH16/ SH18 Single Stage Business Case (SSBC). Property and Physical works are outside the SGA scope. Refer to the SH16/ SH18 SSBC for baseline property cost and Construction. SH16/18 Connections SSBC was completed by Aurecon and Waka Kotahi in August 2019. Refer to stage 3 in Table 0-2 Estimate Outcome. The P95 cost for Stage 3 of the works was adopted and the costs for Northside Drive East Upgrade (Item 38) was subtracted from the estimates.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 39 | SH16/18 Motorway-Motorway Ramps, SH16 Northside Dr Interchange Ramps, SH16 Shared path and SH Shared path (BCR to Hobsonville Rd) | Ultimate | | | | | | |

# 40 Sinton Road Collector from Kauri Road to Hobsonville Road

Road overbridge across SH18, supplementing existing pedestrian / cycle bridge.

**Assumptions:**

- SH18 overpass bridge approx. 200m long.
- Bridge over Waiarohia Stream approx. 30m.
- Assume corridor is retrofitted with 20m corridor where existing Sinton Road is located. Land acquired for new Sinton Road connection to Kauri Road.
- Assume 90% cost for 24m Collector 2-lane rate.
- New Road. Estimate based on indicative figures below.


**Property:**

- Property estimate based on land acquisition values used by SGA on adjacent corridors. Assume $150m$^2$ for FUZ.
- Assume 20m of greenfield acquisition where new Sinton Road (400m length) is to be constructed.
- Existing designation is approximately 20m wide. No property acquisition required through existing Sinton Road Corridor. Corridor to be retrofitted with designation.
- Property contingency of 30% applied

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 40 | Sinton Road Collector from Kauri Road to Hobsonville Road | Ultimate | | 1.2 | 5.4 | 3.6 | 60.4 | |

# 41 Upgrade Fred Taylor Drive 'fit-for-purpose' section between Don Buck Road and Hobsonville Road

Upgrade corridor to provide walking and cycling facilities.

**Assumptions:**

- Assume no additional land is required to retrofit active mode corridors on both sides.
- Assume existing cycle lanes and footpaths on existing SH16 overpass are 'fit-for-purpose' (see below.) Note – new cycle bridge across SH16 is included in Project 68.

- No retaining walls required, assume footpaths retrofitted linear rate for remaining length of corridor.

**Property:**

- No additional property required.

## Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 41 | Upgrade Fred Taylor Drive 'fit-for-purpose' section between Don Buck Road and Hobsonville Road | Ultimate | 0 | 0.0 | 0.1 | 0.0 | 0.8 | |

# 42 & 71 Northside Drive West

New 2-lane arterial road with dedicated walking and cycling facilities. 24m Cross Section. Item 42 includes Northside Drive West section between Fred Taylor Drive and Ngongetepara Stream. Item 71 includes the Northside Drive West section between Ngongetepara Stream and Nixon Road.

**Assumptions:**

- Design and estimate based off SGA design.
- Greenfield corridors assume 2% traffic management.

- Cost taken from SGA DBC Appendix D, Section 1.3 - Northside Drive West Upgrade.
    - Project base estimate – Implementation Phase Total = $48,549,999
        - Includes traffic management, Environmental compliance, and P&G.
- Cost prorated over length to give SGA Cost %

**Property:**

- Assume SGA cost and property requirements.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M |
|---|---|---|---|---|---|---|---|---|
| 42 | Northside Drive West (Fred Taylor Dr - stream) | Ultimate | [redacted] | 0.8 | 3.8 | 2.5 | 42.3 | [redacted] |
| 71 | Northside Drive West (Stream - Nixon Rd) | Ultimate | | 0.8 | 3.5 | 2.3 | 39.0 | |

## 43 Redhills N-S Arterial Nixon Road to Redhills Local Centre

New 2-lane urban corridor with active modes on both sides and local intersection improvements.

**Assumptions:**

- Length and based off SGA design.
- Greenfield corridor.
- Assume SGA design for N-S Arterial upgrade. Assume estimate from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
    - Total base estimate for Nixon Road to Hugh Green Landholding = $15,120,000
    - Total base estimate for Hugh Green Landholding to town centre = $12,480,000
        - Includes traffic management, Environmental compliance, and P&G.
    - Total base estimate = $27,600,000

**Property:**

- Assume SGA cost and property requirements.
- The SGA DBC Redhills package was priced collectively for the total acquisition. The gross land acquisition cost has been divided between The Dunlop and Baker arterial upgrades (item 10), The Redhill N-S (item 24) and the Redhill E-W (item 43) arterials.
- This item accounts for 23% SGA land acquisition.
- 40% escalation has been applied as estimate was 2018.

### Cost Allowance Summary:

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M |
|---|---|---|---|---|---|---|---|---|
| 43 | Redhills N-S Arterial Nixon Road to Redhills Local Centre | Ultimate | [redacted] | 1.0 | 4.7 | 3.1 | 51.7 | [redacted] |

## 44 Intersection upgrade on Northside Drive/ Maki Street

Single lane signalised intersection.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

- Signalised intersection with cycle lane provisions as shown below:

**Property:**

- No property required.

## 45 Intersection upgrade on Fred Taylor Drive/ Fernhill Dr

Dual lane signalised intersection.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.
- Dual signalised intersection with cycle lane provisions as shown below:


**Property:**

- No property required.

## 46 Intersection upgrade on Fred Taylor Drive/ Maki St

Dual lane signalised intersection.

**Assumptions:**

- Assume works already completed. No additional costs associated with this corridor.

**Property:**

- No property required.

## 47 Intersection upgrade on Hobsonville Road/ Westpark Drive

Single lane signalised intersection.

**Property:**

- Property required refers to Westpark Drive only. Hobsonville Road land acquired in corridor upgrade.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) | |
|---|---|---|---|---|---|---|---|---|---|
| 47 | Intersection upgrade on Hobsonville Road/ Westpark Drive | Ultimate | 0 | 0.1 | 0.4 | 0.3 | 4.8 | 5 | 6 |

## 48 Intersection upgrade on Hobsonville Road/ Trig Road

Dual lane signalised intersection.

**Property:**

- No property required.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 48 | Intersection upgrade on Hobsonville Road/ Trig Road | Ultimate | 0 | 0.1 | 0.4 | 0.3 | 4.8 | |

## 49 Intersection upgrade on Trig Road/ SH18 Off-ramp

Single lane signalised intersection.

**Property:**

- No property required.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 49 | Intersection upgrade on Trig Road/ SH18 Off-ramp | Ultimate | 0 | 0.1 | 0.4 | 0.3 | 4.8 | |

## 50 Intersection upgrade on Trig Road/ SH18 On-ramp

Single lane roundabout

**Assumptions:**

- Assume SGA design for intersection upgrade.

**Property:**

- Property required as per SGA design.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 50 | Intersection upgrade on Trig Road/ SH18 On-ramp | Ultimate | 0 | 0.1 | 0.4 | 0.3 | 4.8 | |

## 51 Intersection upgrade on Trig Road/ Spedding Road East

Single lane roundabout

**Assumptions:**

- Assume SGA design for intersection upgrade.

**Property:**

- Property acquisition costs associated with Corridor upgrades. Assume no additional land requirements specific to intersection.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 51 | Intersection upgrade on Trig Road/ Spedding Road East | Ultimate | 0 | 0.1 | 0.5 | 0.4 | 6.0 | |

# 52 Trig Road/ Brigham Creek Rd Intersection

- 52a: Single lane roundabout
- 52b: Dual lane roundabout

## 52a - Interim Option: Single lane roundabout

Single lane roundabout

**Property:**

- No property required.

## 52b - Ultimate intersection form: Dual lane roundabout

Dual lane roundabout

**Property:**

- No property required.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 52a | Intersection upgrade on Trig Road/ Brigham Creek Rd | Interim | | 0.1 | 0.5 | 0.4 | 6.0 | |
| 52b | Intersection upgrade on Trig Road/ Brigham Creek Rd | Ultimate | | 0.1 | 0.5 | 0.4 | 6.0 | |

# 53 Intersection upgrade on Hobsonville Road/ Luckens Road

Single lane roundabout

**Property:**

- No property required.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 53 | Intersection upgrade on Hobsonville Road/ Luckens Road | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 54 Don Buck Road/ Royal Road Intersection

- 52a: Single lane signalised intersection
- 52b: Dual lane signalised intersection

## 54a - Interim Option: Single lane signalised intersection

Single lane signalised intersection

**Existing Intersection:**

- Existing intersection is a three leg roundabout.
- Proposed SGA ultimate design is a Dual lane signalised intersection between new Redill arterial, Royal Road and Don Buck Road. Proposed ultimate intersection location is approximately 50m North of existing.
- NWIFF staging maps indicates Ultimate design will be constructed simultaneously with Item No.24 (Redhill arterial link.) However Item No.25 (Royal Road upgrade) Is not constructed until later.

**Assumptions**

- Therefore, it is assumed the interim intersection (Item No. 54a) will be instated in the existing intersection location (T-intersection between Royal Road and Don Buck Road.)
- All cost associated with realigning Royal Road to relocate the intersection will be absorbed within item 54b (Ultimate Dual lane signalised intersection.)

**Property:**

- No property required.

## 54b - Ultimate intersection form: Dual lane signalised intersection

Dual lane signalised intersection.

**Assumptions:**

- Assume SGA design for intersection upgrade.
- Costs associated with realigning Royal road have been included in Royal Road upgrade (item 25) including property acquisition costs.
- Intersection to tie-into proposed SGA design for Redhill's arterial.

**Property:**

- No property required.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2%) | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 54a | Intersection upgrade on Don Buck Road/ Royal Road | Interim | | 0.1 | 0.4 | 0.3 | 4.8 | |
| 54b | Intersection upgrade on Don Buck Road/ Royal Road | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

## 55 Intersection upgrade on Royal Road/ Beauchamp Dr

Dual lane signalised intersection.

**Assumptions:**

- Assume SGA design for intersection upgrade.
- Intersection construction requires approximately 200m of Beauchamp Drive to be realigned and reconstructed. Linear rate 6 has been applied for costing purposes.

**Property:**

- No property required.
- Land acquired for Royal Road 4-laning is accounted for in item No.25.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 55 | Intersection upgrade on Royal Road/ Beauchamp Dr | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

## 56 Intersection upgrade on Royal Road/ Westgate Dr

Dual lane signalised intersection.

**Existing:**

- Single lane signalised intersection with cycle and pedestrian facilities.

**Assumptions:**

- Assume SGA design for intersection upgrade.
- 75m Westgate Drive tie in and 25m Vadam Road tie in required.
- Vadam Road tie-in is within road designation, Westgate Drive tie in requires minor property acquisition considered negligible (<60m$^2$)

**Property:**

- Land acquired for Royal Road 4-laning is absorbed in item No.25.
- Land required for Westgate Drive tie-in is included in this item.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 56 | Intersection upgrade on Royal Road/ Westgate Dr | Ultimate | | 0.2 | 1.0 | 0.6 | 10.8 | |

# 57 Intersection upgrade on Royal Road/ Makora Rd

Dual lane signalised intersection.

**Existing:**

- Aerial imagery shows there is current construction at this site. SGA design shows a tie-in to existing intersection.

**Assumptions:**

- For costing purposes, it is assumed these works are not associated with a dual lane signalised intersection upgrade.

**Property:**

- No property required.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 57 | Intersection upgrade on Royal Road/ Makora Rd | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 58 Brigham Creek Rd/ Kauri Road Intersection

- 58a: Single lane signalised intersection
- 58b: Dual lane signalised intersection

## 58a - Interim Option: Single lane signalised intersection

Single lane signalised intersection

**Assumptions:**

- Intersection as per SGA design for Brigham Creek Road.

**Property:**

- No property required.

## 58b - Ultimate intersection form: Dual lane signalised intersection

Dual lane signalised intersection.

**Assumptions:**

- Assume SGA design for intersection upgrade.

**Property:**

- Property required as per SGA design. Property associated with 4-lane construction of Brigham Creek Road is not included in this item.

- No permanent property acquired, temporary acquisition for intersection construction only.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 58a | Intersection upgrade on Brigham Creek Rd/ Kauri Road | Interim | [redacted] | 0.1 | 0.4 | 0.3 | 4.8 | [redacted] |
| 58b | Intersection upgrade on Brigham Creek Rd/ Kauri Road | Ultimate | | 0.4 | 1.6 | 1.1 | 4.8 | |

## 59 Intersection upgrade on Fred Taylor Dr/ Spedding Road West

Dual lane roundabout

**Assumptions:**

- Assume SGA design for intersection upgrade.

**Property:**

- No property required.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 59 | Intersection upgrade on Fred Taylor Dr / Spedding Road West | Ultimate | [redacted] | 0.2 | 1.0 | 0.6 | 10.8 | [redacted] |

## 60 Short Term North West Bus Improvements

Extending bus shoulders on the North Western motorway between Westgate and Newton Road with a new bus interchange at Westgate. Strategic Corridor is part of the RTN SSBC. Property and Physical works are outside the SGA scope. Refer to the NW RTN IBC completed by others for baseline property cost and Construction.

Costs are based on RLTP with $85 million allocated. Waka Kotahi will deliver $15 million of improvements. This is in addition to the improvements that will be delivered by AT.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 60 | Short term North West Bus Improvements | Ultimate | | | | | | [redacted] |

## 61 Intersection upgrade on Brigham Creek Rd/ Tamatea Ave

- 61a: Single lane signalised intersection

- 61b: Dual lane signalised intersection

## 61a - Interim Option: Single lane signalised intersection

Single lane signalised intersection.

**Assumptions:**

- Ultimate dual lane intersection shifted north slightly to allow an improved approach angle from Tamatea Ave.
- Assume SGA ultimate design location for interim single lane intersection upgrade.

**Property:**

- No property required.

## 61b - Ultimate intersection form: Dual lane signalised intersection

Dual lane signalised intersection.

**Assumptions:**

- Assume SGA design for ultimate dual lane intersection upgrade.
- 65m length of Tamatea road to be diverted to tie into new intersection location.

**Property:**

- No additional property required; property required for the diversion of Tamatea road is acquired in Brigham Creek Road upgrade.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 61a | Intersection upgrade on Brigham Creek Rd/ Tamatea Ave | Interim | [redacted] | 0.1 | 0.6 | 0.4 | 6.4 | [redacted] |
| 61b | Intersection upgrade on Brigham Creek Rd/ Tamatea Ave | Ultimate | | 0.1 | 0.4 | 0.3 | 4.8 | |

# 62 North West RTN Full Implementation

Strategic Corridor is part of the RTN SSBC. Prices and property are as per the business case. Property and Physical works are outside the SGA scope. Refer to the NW RTN IBC completed by others for baseline property cost and Construction.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 62 | North West RTN Full Implementation | Ultimate | | | | | | [redacted] |

## 63 State Highway 18 RTN

Strategic Corridor is part of the RTN SSBC. Property and Physical works are outside the SGA scope. Refer to the NW RTN IBC completed by others for baseline property cost and Construction.

No Costs were able to be sourced at this stage.

## 65 Intersection upgrade on Mamari Rd/ Spedding Rd West

Dual lane roundabout

**Existing:**

- Priority controlled Give way intersection.

**Assumptions:**

- Assume SGA design for ultimate dual lane intersection upgrade.

**Property:**

- No property required.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 65 | Intersection upgrade on Mamari Rd / Spedding Rd West | Ultimate | [redacted] | 0.2 | 1.0 | 0.6 | 10.8 | [redacted] |

## 66 Don Buck Road/Beauchamp Dr Intersection

- 66a: Single lane signalised intersection
- 66b: Dual lane signalised intersection

### 66a - Interim Option: Single lane signalised intersection

Single lane signalised intersection.

**Property:**

- No property required.

### 66b - Ultimate intersection form: Dual lane signalised intersection

Dual lane signalised intersection.

**Assumptions:**

- Assume SGA design for intersection upgrade.

**Property:**

- No property required.

## Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 66a | Intersection upgrade on Don Buck Road/Beauchamp Dr | Interim | 0 | 0.1 | 0.4 | 0.3 | 4.8 | |
| 66b | Intersection upgrade on Don Buck Road/Beauchamp Dr | Ultimate | 0 | 0.1 | 0.4 | 0.3 | 4.8 | |

# 67 Intersection upgrade on Hobsonville Rd/ Buckley Ave

- 67a: Single lane signalised intersection
- 67b: Dual lane signalised intersection

## 67a - Interim Option: Single lane signalised intersection

Single lane signalised intersection

**Existing:**

- Newly constructed signalised intersection with cycle and pedestrian facilities.

**Assumptions:**

- Assume works already completed.

**Property:**

- No property requirements.

## 67b - Ultimate intersection form: Dual lane signalised intersection

Dual lane signalised intersection.

**Existing:**

- Newly constructed signalised intersection with cycle and pedestrian facilities.

**Assumptions:**

- Upgrade to Dual lane intersection on all Hobsonville Road, Hobsonville Point Road and Buckley Ave Approaches.
- Assume TeRito Road remains as is to be developed at a later stage.

**Property:**

- No property requirements.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 67a | Intersection upgrade on Hobsonville Rd/ Buckley Ave | Interim | | | | | | |
| 67b | Intersection upgrade on Hobsonville Rd/ Buckley Ave | Ultimate | [redacted] | 0.2 | 1.0 | 0.6 | 10.8 | [redacted] |

## 68 Fred Taylor Drive to Hobsonville Road - SH16 Active mode overbridge

Active mode overbridge in addition to existing vehicle overbridge.

**Assumptions:**

- Assume footbridge is a separated add on structure to the existing Hobsonville Road Bridge. (see example from Northcote Road shown below.)


- Assume width of 5m for active mode corridor.
- Assume 25% extra on Bridge rate ($m^2$).

**Property:**

- No property required.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 68 | Fred Taylor Drive to Hobsonville Road - SH16 Active mode overbridge | Ultimate | 0 | 0.2 | 0.7 | 0.5 | 7.7 | [redacted] |

## 69 SH18/ Brigham Creek Road Interchange Grade Separation

Property and Physical works are outside the SGA scope. Refer to the SH16/ SH18 SSBC completed by Aurecon and Waka Kotahi for baseline property cost and Construction. Refer to Stage 5 in Table 0-2 Estimate Outcome.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 69 | SH18 BCR Interchange grade separation | Ultimate | | | | | | |

## 70 Trig Road – SH18 to Hobsonville Road

Extracted NW HIF DBC costs and applied an escalation of 4% per annum for 2 years (8%).

**Assumptions:**

- Existing road is a 2-lane Local corridor with pedestrian footpath on one side.
- Design as per SGA design. Assume SGA design for Trig Road upgrade. Assume estimate from NW HIF DBC Appendix E2 – Detailed Business Case Estimate.
    - Total base estimate for Trig Road = $29,810,000
        - Includes traffic management, Environmental compliance, and P&G.
    - SGA estimate includes provision for a portion of the Intersections within the corridor:
        - 48 – Hobsonville / Trig Road – Dual lane signalised ($7M)
        - 51 – Spedding East Road – Single lane roundabout ($4M)
        - 52b – Brigham Creek Road - Dual lane roundabout ($7M)
    - Assume 85% of total SGA costs for item 23.
- 10% was removed for the cost of Luckens Road intersection and Hobsonville Road corridor costs.

**Property:**

- Property Requirements as per NW HIF project.

### Cost Allowance Summary

| No | Project Schedule | Project Stage | Gross Property Cost (P95) ($M) | Project Development (2% | Pre-Implementation | Implementation (6%) | Physical Works ($M) | Indicative Allowance Envelope ($M) |
|---|---|---|---|---|---|---|---|---|
| 70 | Trig Road - SH18 to Hobsonville Rd | Ultimate | | | 4.3 | 2.5 | 48.3 | |