Memorandum

To:	Holly Berry (AC)
From:	Nadine Perera, Principal Planner (AT)
Date:	11 February 2025
Subject:	Northwest Arterials and Collectors: Percentage Development Contribution and Developer Mitigation Estimates – DC included projects

BACKGROUND

This is a desk top exercise to ascertain the level of development contributions to be allocated towards the arterial and collector road network for the Inner North-west as assessed by BECA in their July 2024 outputs for council. It involves consideration of the proportion of project cost that may be provided by developers as mitigation on a per project basis.

The memo is to be read contemporaneously with the XCEL Final Developer Mitigation spreadsheet (mitigation spreadsheet) which outlines the level of Development Contribution (DC) funding. There may be various levels of land acquisition and construction percentages outlined for the same road project. The different percentages arise because of variations in road width, land owners, future development potential, and existing transport infrastructure. So an average is utlised to get a single percentage.

The numbering utilised in this memo and mitigation spreadsheet follows the numbering outlined in the BECA XCEL RWW Project List received 22.07.2024 (project list). This numbering is not sequential and bridge projects are referenced as separate project line items. Projects identified by Beca which are to be excluded from the DC Policy have not been assessed below and the mitigation spreadsheet cells are left blank.

Where costs are referenced below these are the base physical works costs from unit rates provided in June 2024 by BECA and noted at the end of this memo. A map of the network is also included at the end of this memo.

Assumptions

A fractional amount of a developer mitigation percentage between 0.1 and 0.9 is scaled upwards. For example 10.1% is scaled to 11.

AT is unlikely to acquire 1-1.5m from developed sites fronting collectors. Upgraded infrastructure would therefore be designed to fit within the existing road corridor.

Arterial, collector roads, and intersection construction and upgrades already undertaken by developers are included in the following assessments.

Based on AT's standard practice, developers are expected to fund and build frontages adjacent to development sites and to construct arterials and collectors within these sites.

For arterials, developers are expected to provide for roads up to collector standard with additional funding to arterial standard assessed as being provided through DC funding.

Bridges are assessed as needing 100% funding through DC's for both construction and land acquisition. This framework enables funding of the wider strategic network needed as a result of cumulative development.

Factors informing developer mitigation assessment framework

- Presence of existing activities that may not be subject to frontage upgrade requirements.

- Property and frontage size and ownership.
- Presence of constraints - streams, topography, ultitilies.
- Timing and degree to which 'gaps' may need to be funded.
- Factors relating to which upgrades of existing roads will need to be provided include consideration of:
    - Existing brownfield development.
    - Location alongside developable greenfield areas.

  For the later, generally developers are expected to contribute towards providing access to their development (intersections) and a frontage contribution up to collector road standard. This typically relies on development of adjoining land occurring ahead of the project. A key consideraton is the degree to which any road widening land is acquired at the time of development as this increases the ability to get frontage work put in its ultimate position, thereby avoiding rework.
- In brownfields, frontage upgrade provisions are not the same. So there is little prospect of developer contributions to frontage works or land.
- Land is treated separately to works and is influenced for existing roads by which side of the road the widening is to be from. For example, for roads where all the widening is on one side of the road it will not be possible to get two owners to contribute some land as mitigation.
- Major infrastrucuture, which is a bridge or structure components of a route, typically do not attract any mitigation contribution.

The below assessment is a high level desktop exercise on anticipated developer mitigation for the purpose of allocating charges for the DC Policy. These will be reviewed as Redhills, Westgate and Whenuapai progresses, and updated accordingly.

PROJECTS

1B Brigham Creek Road Arterial – Joseph McDonald Drive to Totara Road – Ultimate

Corridor Type – 4 Lane Arterial

Spreadsheet Row 6: 81% property and 80% construction costs to be covered by AT.

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

All widening is on the south side. There is a suggestion that the full 4-lane ultimate width is acquired at the time of subdivision. Currently the road is 22m wide. For land, council should get 1.5 metres at no charge when the adjoining land is subdivided/developed. 1.5m as a percentage of 8m is 19% of the land cost that the developer will provide if the land is acquired at this time. This leaves 81% to be funded through DC's for land acquisition.

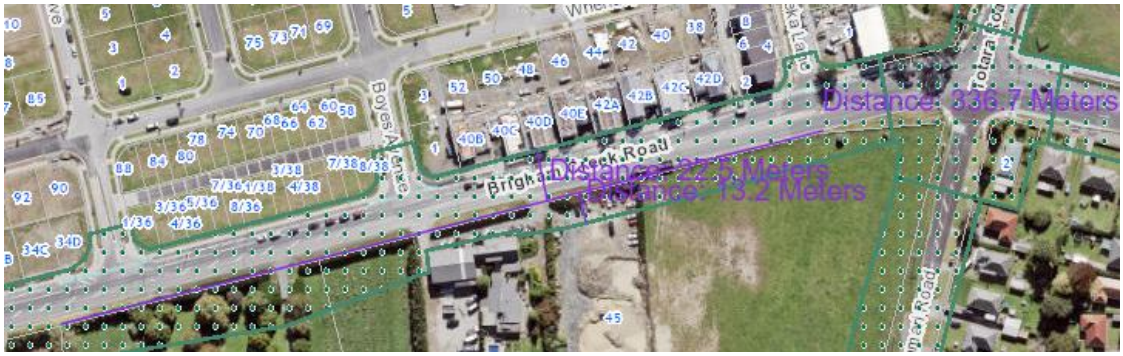
It is likely that frontage on the southern side is able to be obtained for the ultimate layout as there are only two lots on the south side. A through lot housing development is currently proposed with development on the corner lot unknown.

The developer is likely to pay for kerb and channelling and active modes on the southern side, with additional lanes in DC's. The existing road has parking on the

northern side so the ultimate requires additional land for approximately 337m (from the western lot boundary to double laneing) only along the south side to provide for the additional lane. The ultimate has no parking. Construction costs for the upgrade on the north side to remove parking 100% DC's.

For construction costs on the southern side the Developer pays berm cost road/footpath upgrade and kerb and channelling for 367m at $2020/m. The extra over cost of going from a 2 lane to 4 lane arterial is $5,000/m (costs refer to base physical works costs). So the developer is to pay 40% of this cost leaving 60% to be funded by DC's.

Overall, DC's are to provide for 80% of construction costs being the average of 100% on the northern side and 60% on the southern side.



3B Brigham Creek Road Arterial - Totara Road to Tamatea Ave – Ultimate

Corridor Type – 4-lane arterial

Spreadsheet Row 9: 100% property and 100% construction costs to be covered by AT.

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

The road width varies from 23 – 25m. A four lane arterial requires 30m. Land needed on northern and southern side needs various amounts from 5.0-7.0 metres. Council is unlikely to get any additional land on either side through developer mitigation as the northern side is developed and the southern side comprises part of the Whenuapai Airbase Defence Purposes Designation. Land acquisition cost and construction cost 100% DC's.

7 Hobsonville Road - Westpark Drive to Williams Road - Arterial

Corridor Type – 2-lane arterial

Spreadsheet Row 13: 100% property and 100% construction costs to be covered by AT.

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

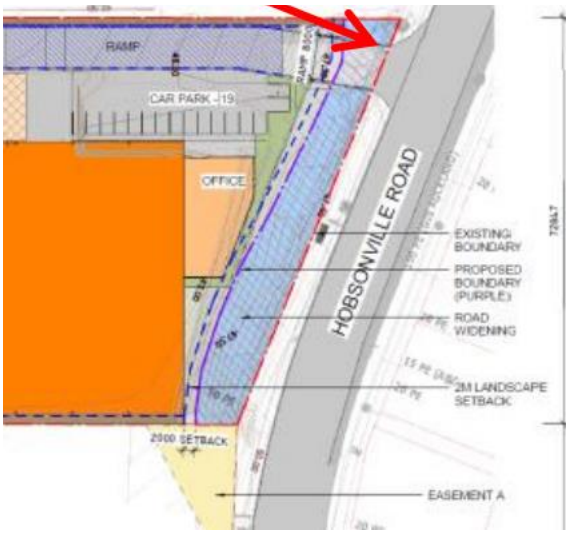
This project forms part of the Hobsonville Cycling Connection which is currently being progressed and is fully funded through the Climate Action Transport Targeted Rate (CATTR). The cycleway project involves a uni-directional cycleway between the existing kerbs, kerbside parking taken from the whole extent and reduced median to 1.0m.

Some intersections have already been upgraded and are considered elsewhere in this memo. The existing and proposed upgrades provided through the Cycling project are not entirely consistent with the SGA NoR for Hobsonville Road which requires additional land on each side of the road and potential realignment of existing infrastructure including primarily off road cycle lanes. The eastern side of the road is developed so provides limited opportunities for developer mitigation.

Upgrades are already commencing on the western side of the road as developer mitigation although the SGA NoR requires a different allocation of road transport elements in some locations. The total length of road to be upgraded on the western side is approximtely 1778m. The berm and footpath upgrades to be provided for by the cycleway project may not be in the ultimate location. Overall, additional land is required for ultimate upgrades.

A 2 lane arterial requires a road width of 24 metres. The only bit of this section of Hobsonville Road that is less than 24 metres is the portion along the road frontage of #92 lot 1 DP 531542. Although this can be taken from either side of Hobsonville Road. This comprises some 73 metres (4%) where the road width ranges in size from 20 – 23 metres meaning that some 1-4 additional metres would be required. Given this site is already used for commercial purposes it is unlikely that any of the additonal 1.0 - 4.0 metres of land would be able to be provided by the developer at no charge. So the cost of land acquisition of the 4% of land on the western side of this portion of Hobsonville Road should be 100% DC's.

For 92D Hobsonville Road resource consent has been obtained for 677m of frontage to be vested.



In addition the SGA NoR requires additional land above the 24m and reallocation of road infrastructure elements. These will need to be be 100% funded by DC's.

8B Hobsonville Road - Williams Road to Hobsonville Point Road - Ultimate

Corridor Type – 4 Lane arterial

Spreadsheet Row 15: 85% property and 100% construction costs to be covered by AT.

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

This road also forms part of the Hobsonville Cycling Connection.

This part of Hobsonville Road extends some 740 metres.

Subdivision/development of 120, 124 Hobsonville Road, 4 Rauroa Lane and 431B Hobsonville Road have provided partially for the SGA proposed upgrade. However, this roading infrastructure will require realignment though funding by DC's.

Currently the road is 20 metres wide for the most part. A 4-lane arterial has a width of 30m. Developers are expected to provide an additional 1.5m on the northern side at no cost. The south/eastern side of the road is developed so there is limited ability for developer mitigation. With the exception of the Hobsonville Road frontage to the multi-unit development at 4 Rauroa Lane and 431B Hobsonville Road (already owned by the Council). The additional 8.5 metres needed for the 4-lane arterial needs to be funded through DC's. Land is needed on both sides of the road. The SGA NoR concludes on the western side of the intersection of Memorial Park Lane and Hobsonville Road. An older (2012) NoR extends slightly further to the east. The 4-lane project extends to Hobsonville Point Road.

No additional land is needing to be acquired along the road frontage to #124 being some 154 metres along the northern side, or #431 being some 43 metres along the southern side. So, a total 8.5 metres of additional land (85% of the 10 metres needed) will need to be acquired along 74% of the 740 metres of road frontage.

9B.1 Fred Taylor Drive – Spring Garden Avenue to Don Buck Road – Ultimate Corridor Type – 4-Lane Arterial

Spreadsheet Row 17: 75% property and 75% construction costs to be covered by AT.

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

This is covered by the HIF (Spring Garden Avenue to intersection of Fred Taylor and Don Buck Road).

For the project area as the project is for a four-lane arterial any infrastructure already put in by developers may only be interim and will likely need to be realigned. In addition active modes have not been adequately provided for along this project. This portion of the road construction should be funded 75% by DC's.

A width of 30 metres is needed for a 4-lane arterial. Widening is required on both sides of the road to provide for realignment of transport infrastructure. Most of the road will need to be widened from its predominant 20m width. There are opportunities for developer mitigation of 1.5-2.0m for each site with the 8.5m shortfall to be provided by DC's. Some sites are already developed and are unable to provide developer mitigation therefore DC's for land acquisition will be the average of 50% and 100% being 75% due to improvements not being needed as mitigation specifically for the development.

9B.2 Fred Taylor Drive - Kakano Road to Spring Garden Lane – Ultimate

Corridor Type – 4-Lane Arterial

Spreadsheet Row 18: 81% property and 75% construction costs to be covered by AT.

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

This is covered by the SGA NoR, Fred Taylor Drive (RE2)

The roading project comprises some 527m.

For the project area as the project is for a four-lane arterial any infrastructure already put in by developers may only be interim and will likely need to be realigned. In addition active modes have not been adequately provided for along this project. Due to the need for additonal infrastructure and the uncertainty associated with the location of existing infrastructure this projects road construction should be funded 50-100% by DC's. This gives an average of 75%.

A width of 30 metres is needed for a 4-lane arterial. Widening is required on both sides of the road to provide for realignment of transport infrastructure. Most of the road will need to be widened to increse it from its 26m -28m width There are opportunities for developer mitigation of 1.5-2.0m for many sites with upto 2.5m (62%) shortfall to be provided by DC's. Some sites are already developed and are unable to provide developer mitigation therefore DC's for land acquisition will be the average of 62% and 100% being 81%.

9B.3 Don Buck Road – Fred Taylor Drive to Beauchamp Drive – Ultimate

Corridor Type – 4-Lane Arterial

Spreadsheet Row 19: 100% property and 90% construction costs to be covered by AT.

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

This is covered by the SGA NoR, Don Buck Road (RE1)

The roading project comprises some 714m.

For the area between Beauchamp Drive and Fred Taylor Drive to the north in relation to construction only the road frontage to 550 Don Buck Road 79 metres or 11% of the total road project, and 510 Don Buck Road 73 metres or 10% of the total road project have the potential to be constructed by Developers. So DC's will need to provide for 89% and 90% (average of 90%) of the construction costs for these portions of the road.

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A width of 30 metres is needed for a 4-lane arterial. Widening is required on both sides of the road to provide for realignment of transport infrastructure.

For land acquisition starting from Beachamp Drive in the south, Don Buck Road has the required 30 metres until #494 and #11/485 Don Buck Road. The less than 30 metres width extends northwards until 498 Don Buck Road and 42 Regents Park Place (both private accesses) some 46 metres or 6% of the 714m project road length. These sites are already developed so there are limited opportunities for developer mitigation even though the additional land required is close to the 1.5-2.0 metres generally provided by developers at no cost. So land acquistion would be 100% DC.

From 502 and the northern portion of 501 Don Buck Road northwards including #504 and #505 Don Buck Road some 37 metres or 5% of the 714m road length does not have the required 30m width. These sites are already developed so opportunities for developer mitigation to provide for the additional up to 2.5 metre width are limited. So land acquistion would be 100% DC.

For #510 Don Buck Road there are opportunities for developer mitigation along the southern portion of the road frontage to Don Buck Road. Road frontage widths needed range from 1-3 metres giving an average of 2 metres along a distance of 50 metres or 7% of the road frontage. This horseshoe shaped site also has road frontage to the north of 520 Don Buck Road. In this location the width of the road is over 30m. It is anticipated that developer mitigation will provide for land acquisition in this location.

Approximately 83m of the 714m project requires road widening. With 83m being 12% of the 714m to be funded by 100% DC's.

10 Dunlop Road and Baker Lane Arterials – Ultimate

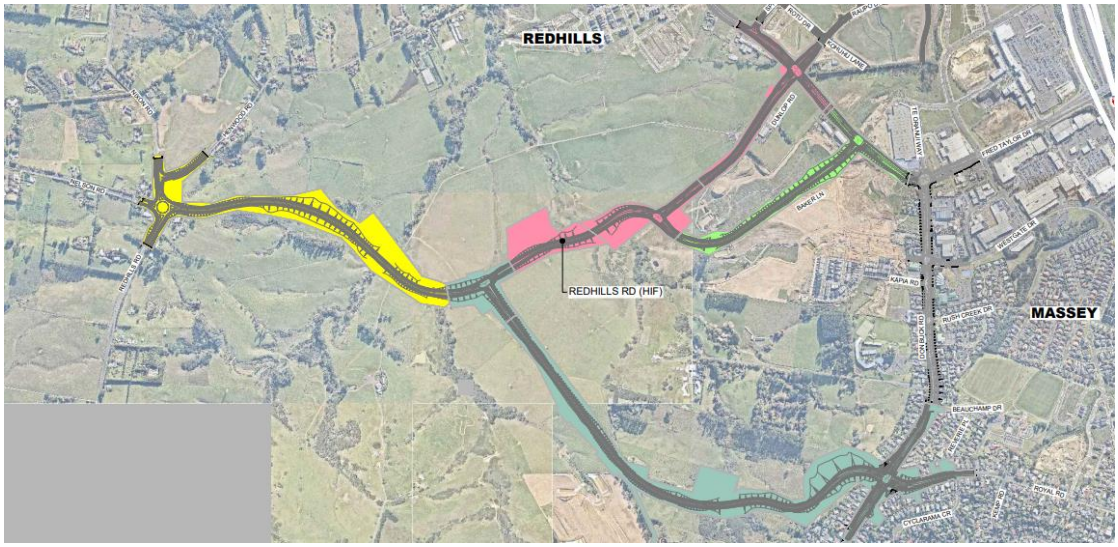
Corridor Type – 2 Lane Arterial.

Spreadsheet Row 20: 9% property and 9% construction costs to be covered by AT.

New 2-lane urban arterials

Both these roads are to be constructed by the developer and are to provide for urbanisation of the area. The form of the roads is not yet known though it is likely that the developer will provide for a road corridor width of at least 22 metres being collector standard. It is likely that DC's will need to provide for the additional 2 metres to make up the standard two lane arterial width of 24 metres to the SGA design. So there is a need for the additional 9% of construction and land acquisition to be funded by DC's.

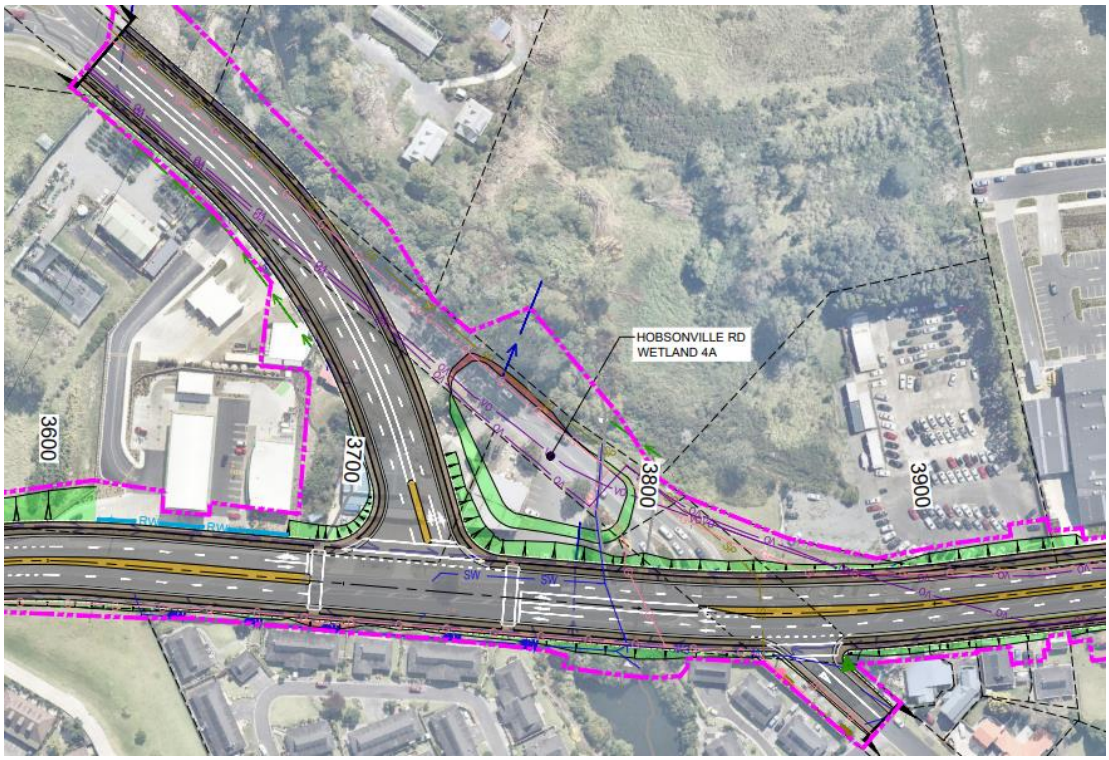
Dunlop Road is proposed to be extended to the north to intersect with the future Baker Lane to be constructed. Dunlop Road is initially intended to be funded by being part of the HIF. The total length of Dunlop Road is 677 metres and Baker Lane 2.7km.



11 Brigham Creek Road/ Hobsonville Road Intersection Upgrade – Ultimate Intersection Type – Ultimate dual lane roundabout.

Spreadsheet Row 21: 100% property and 100% construction costs to be covered by AT.

Upgrade intersection to Dual lane roundabout. The SGA NoR provides for a realigned signalised intersection. The purchase of 118 Hobsonville Road and 183 Brigham Creek Road will be needed. The adjoining properties to the west on Brigham Creek and Hobsonville Road have already been developed and have transport infrastructure that will need realignment. The land to the south is fully developed. There is no ability for developer mitigation for this intersection so acquisition and construction will need to be 100% DC's.



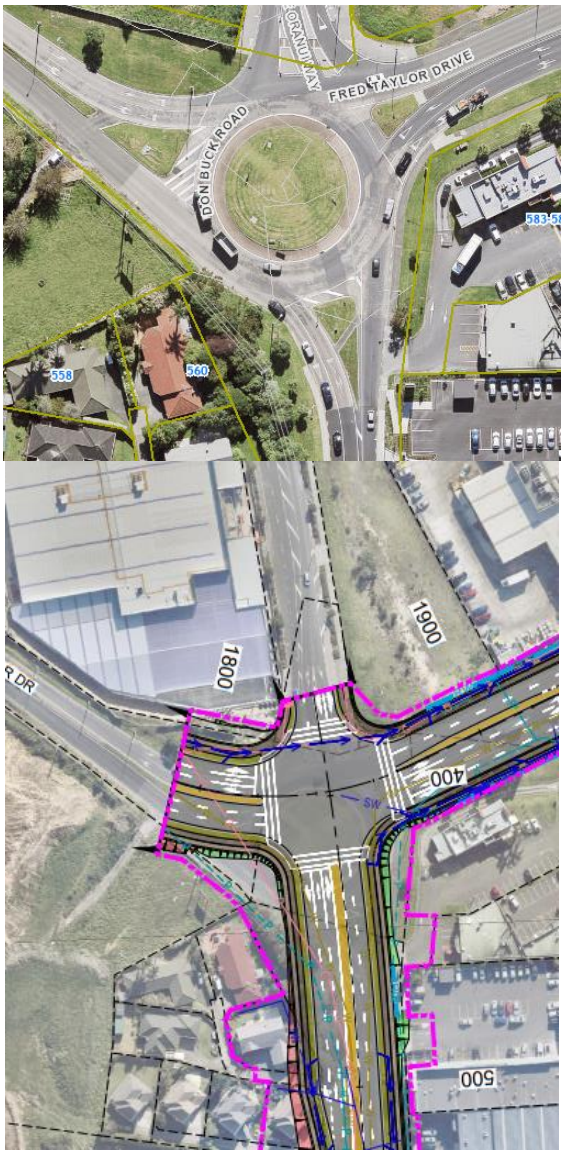
17 Fred Taylor Drive / Don Buck Road - Intersection Upgrade - Ultimate

Intersection Type – Ultimate dual lane signalised intersection

Spreadsheet Row 25: 0% property and 100% construction costs to be covered by AT.

Upgrade intersection to dual lane signalised intersection. This intersection is currently a dual lane roundabout with lane marking limiting the western portion to a single lane.

There is limited ability for developer mitigation. The only site that is not developed with road frontage to Fred Taylor Drive is 550 Don Buck Drive. Development of this site will not be able to provide the berm and kerb in its final form as it will be in the middle of the existing road. Cost of Construction 100% DC's. Limited additional land is needed since the signalised intersection takes up less space than the current roundabout. If additional land is needed on the south western corner it is anticiapted that this would be obtained via developer mitigation.



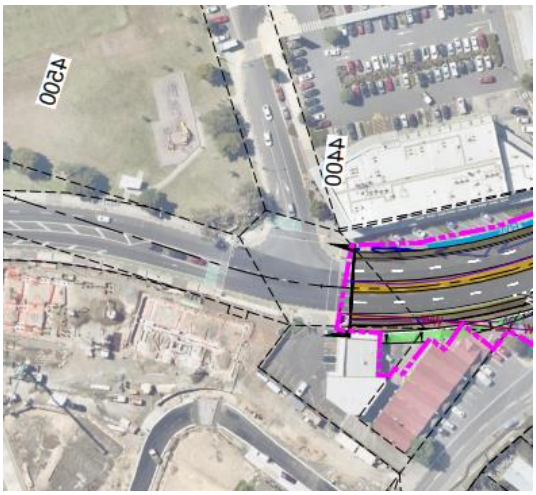
12B Hobsonville Road/Memorial Park Lane – Intersection upgrade – Ulimate

Intersection Type – Ultimate dual lane signalised intersection.

Spreadsheet Row 29: 0% property and 100% construction costs to be covered by AT.

Upgrade intersection to dual lane signalised intersection. The SGA NoR concludes on the western site of this intersection. An older (2012) NoR extends slightly further to the east. On this portion of the road an additonal 10m of road needs to be acquired as the road is currently only 20m. It is likely that 1.5 metres of road frontage is to be obtained as a result of the development at 4 Rauroa Lane so an additional 8.5 metres will be needed on the northern side of the road. This land forms part of the Memorial Park and is already owned by Council.

To construct an entirely dual lane intersection will need realignment of lanes and construction of a central median on the western side. This will need to be funded by 100% DC's.



13B Fred Taylor Drive / Northside Drive Intersection Upgrade – Ultimate

Intersection Type – Ultimate dual lane signalised intersection

Spreadsheet Row 30: 75% property and 75% construction costs to be covered by AT.

Upgrade intersection to dual lane signalised intersection. The ultimate intersection involves realignment of existing lanes and increased lanes. The western portion can be constructed to its final form by the developer so the developer should provide 25% of the total construction and acquisition cost. The remaining intersections have provided for the interim solution so upgrade construction costs and any additional land acquisition needed should be DC's.

So DC's to provide for 75% of both the land acquisition and construction costs for this ultimate solution.

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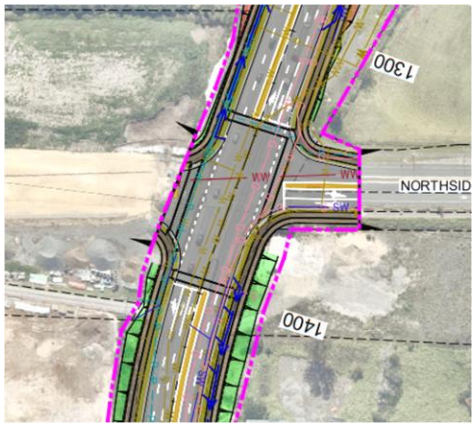
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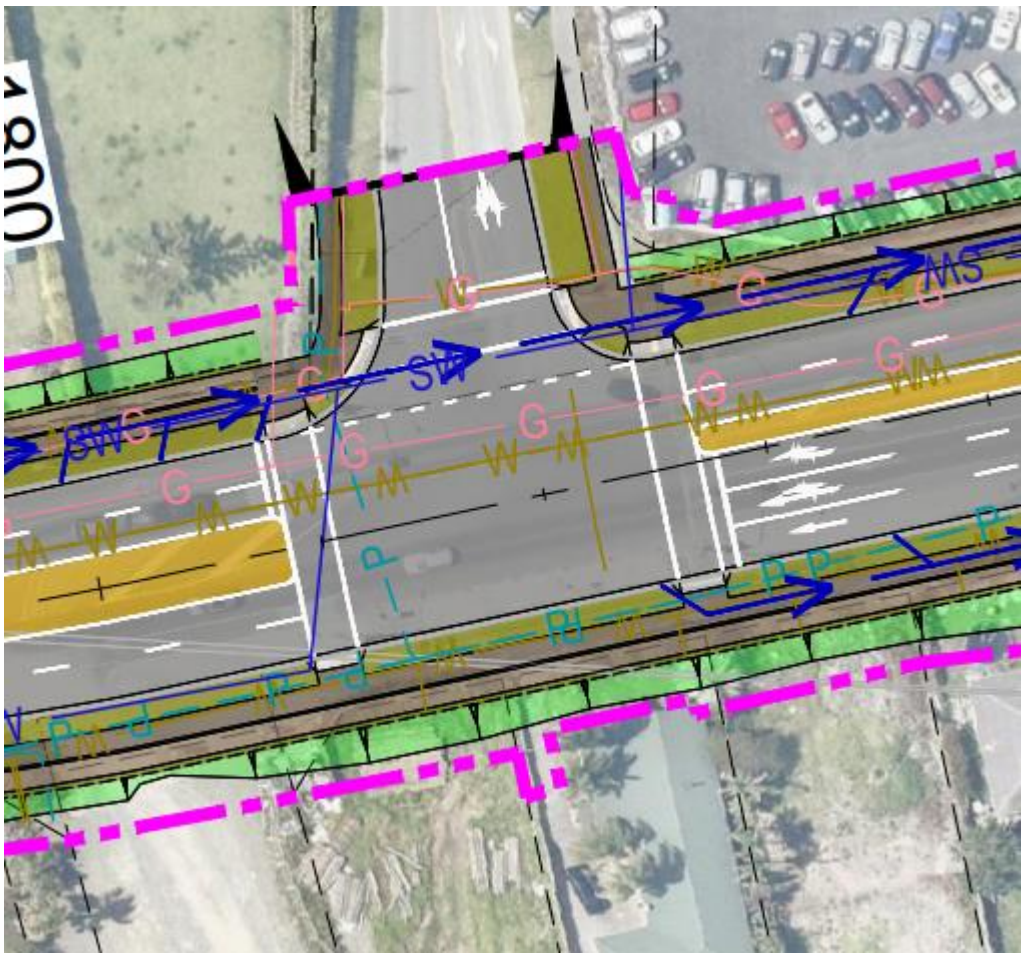
14B Fred Taylor Drive / Kakano Road – Intersection Upgrade - Ultimate

Corridor Type – Dual Lane Intersection

Spreadsheet Row 31: 0% property and 100% construction costs to be covered by AT.

Upgrade intersection to dual lane signalised intersection. On the eastern side of this intersection the kerb and active modes are already in their ultimate location although the extended active modes are not yet provided to the extent sought by the NoR. The intersection is currently a single lane with additonal turning lanes and a slip lane for access to dwellings on the western side of the intersection. The ultimate solution involves realignment of roading infrastructure involving additional lanes, removal of the slip lane and incorporation of active modes on the berm. The western side of the intersection will need to be rebuilt and additional land of at least 2m to make the road carriageway 30 metres wide will be needed. Land to the north of Kakano Road on the western side of Fred Taylor Drive #106-108 could potentially provide for the finished from of the road and the additional land as developer mitigation. However as development of this land is currently occurring its development is unlikely to integrate with construction and acquisition of land needed further south (#94-102 Fred Taylor Drive). As a result the upgrade of this intersection to its ultimate solution should be funded 100% by DC's.



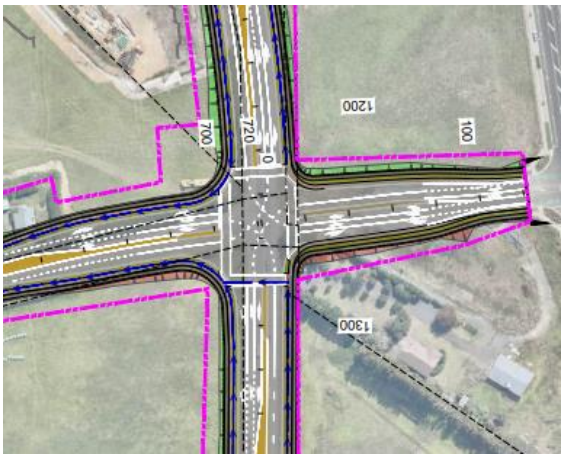
15B Fred Taylor Drive / Dunlop Road Intersection – Intersection Upgrade – Ultimate

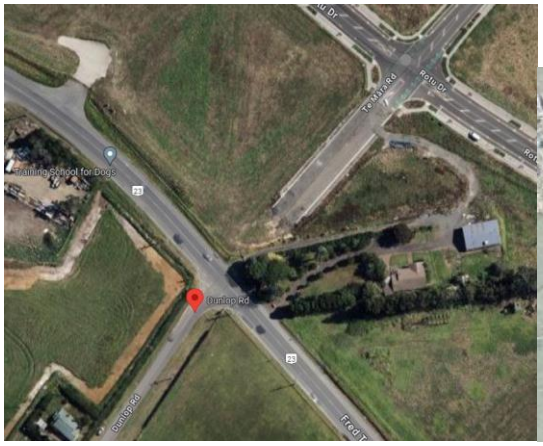
Intersection Type – Ultimate Dual Lane signalised arterial

Spreadsheet Row 32: 60% property and 60% construction costs to be covered by AT.

Upgrade intersection to Dual lane signalised intersection. This intersection forms part of the HIF funded upgrade from the south of Spring Garden Lane to the intersection of Fred Taylor and Don Buck Road. The intersection is needed as part of the Redhills residential development on the western side of Fred Taylor Drive.

It is therefore assumed that the intersection is to be competed to its final form and vested by the developer. Funding is assumed to be 60% DC's for land acquisition costs and 60% for construction.





16B Fred Taylor Drive / Baker Lane Intersection – Intersection Upgrade – Ultimate

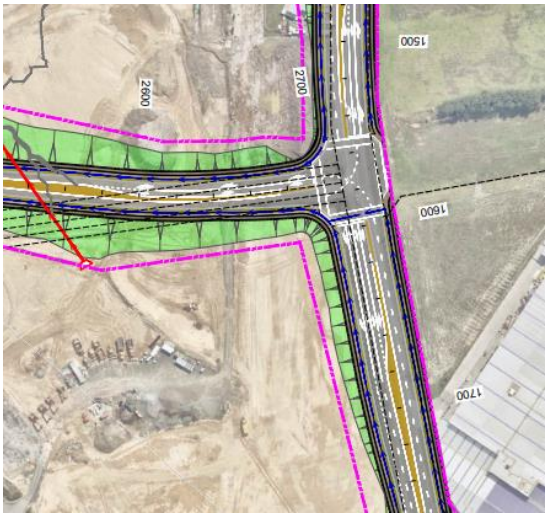
Intersection Type – Ultimate Dual Lane signalised arterial

Spreadsheet Row 33: 60% property and 60% construction costs to be covered by AT.

Upgrade intersection to Dual lane signalised intersection.

The intersection is needed as as part of the Redhills residential development. It is therefore assumed that the intersection is to be competed to its final form and vested

by the developer with funding at the same levels as the Dunlop Road / Fred Thomas Drive intersection via DC's of 60% for land acquisition and 60% for construction.



19B Don Buck Road / Westgate Drive – Intersection Upgrade

Intersection Type – Ultimate dual lane signalised arterial

Spreadsheet Row 34: 0% property and 100% construction costs to be covered by AT.

The intersection is currently being upgraded and it has been assumed this upgrade provides for signalisation.

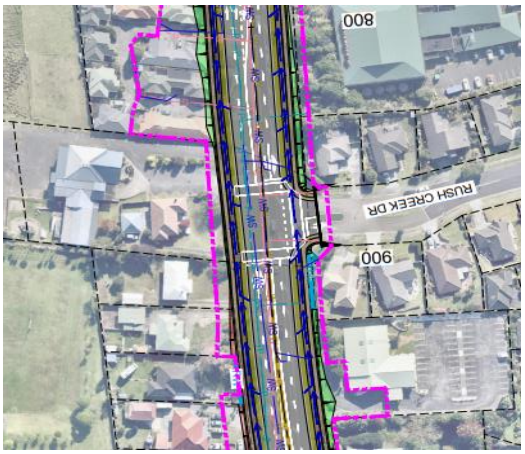
Manarini Lane is currently being constructured on the Western side of this intersection to provide access for land being developed further to the west. The land on the eastern side has been developed although the ultimate roading solution will likely need realignment of roading and active mode infrastructure. There is limited ability for developer mitigation on this eastern side. Development to the western side of the intersection currently being undertaken could provide for the upgrade to the intersection to a dual lane signalised intersection. However as it is occurring currently it is unlikely to be able to be integrated with the necessary upgrades to Don Buck Road. Development of this western side is therefore unlikely to be able to provide the berm and kerb in its final form as it will be in the middle of the existing road. Cost of Construction 100% DC's. There is no anticipated acquisition since the signalised intersection takes up less space than the current roundabout.

20B Don Buck Road / Rush Creek Drive – Intersection Upgrade

Intersection type – Ultimate dual lane signalised arterial

Spreadsheet Row 35: 100% property and 100% construction costs to be covered by AT.

Although there is potential for the frontage to 510 Don Buck Road to be upgraded when this site is developed there is no certainty that development will entail the road frontage alongside this intersection. This portion of the site is currently a church and the site has additional road frontage further to the north. The remaining sites adjacent to the intersection are developed so there is no opportunity for developer mitigtion. For these reasons the construction and and any land acquisition should be 100% DC's.



21 Hobsonville Road – Westpark Drive to Luckens Road - arterial

Corridor Type – 2 lane arterial – Ultimate

Spreadsheet Row 36: 63% property and 56% construction costs to be covered by AT.

Upgrade to 2 lane with active modes on both sides.

This road also forms part of the Hobsonville Cycling Connection and extends some 587 metres.

Currently the road is 20 metres wide for the most part. A 2-lane arterial has a width of 24m. The road is to be re-oriented towards the north. Developers are expected to provide an additional 1.5m (37%) on the northern side at no cost and potentially more

as the cycling project is to provide for active modes. The additional 2.5m (63%) needs to be provided by DC's.

The road frontage to the northern side and an upgrade to half of the road up to the median could be put in place at the time the land is developed. The width of the road up to the median is 10.75m (44%). So, developer mitigation could provide for 44% of the construction cost with a minimum median size of 2.5m as per the TDM chapter 7.9 Urban and Rural Roadway Design.

The south/eastern side of the road is developed so there is limited ability for developer mitigation. DC's will need to provide for 56% of the construction costs.

22 Hobsonville Road – Fred Taylor Drive to Luckens Drive – Ultimate

Spreadsheet Row 37: 85% property and 89% construction costs to be covered by AT.

4 Lane Urban upgrade with active modes on both sides. This road forms part of the Hobsonville cycle project and extends some 1.2km.

Currently the road varies from 21 to over 30 metres wide. A 4-lane arterial has a width of 30m. The road is to be re-oriented towards the north.

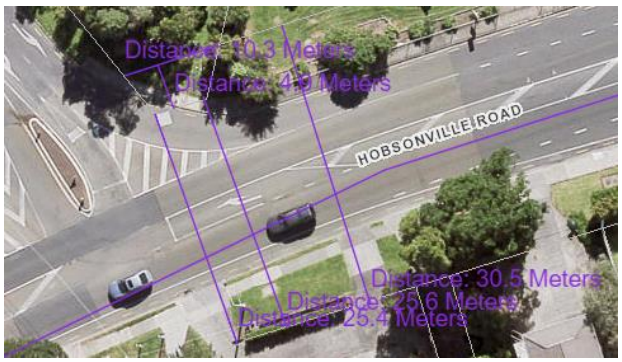
There is ability for developer mitigation to be provided at the time of development of 4-6 Hobsonville Road. This would involve construction of the road frontage kerb to boundary 6.8 metres (23% of the roadway) for a length of 86m (7% of the project roadway length).

30 Hobsonville Road is likely to be utilised as road to vest and could potentially contribute towards construction costs of road frontage. As the extent of this contribution is unknown it needs to be considered as zero.

For 76 Hobsonville Road there is ability for developer mitigation to be provided at the time of development. This would involve construction of the road frontage kerb to boundary of 6.8m (23% of the roadway) for a length of 86m (7%) of the project roadway length).

For land acquisition at #76 the developer would be expected to provide a contribution of 1.5m (30% of the 5m needed) of land along a length of 82 metres (7% of the road length) upon subdivision.

Other areas of the road that do not have the required 30m width are alongside 1 Trig Road, a vector substation, for which 5 metres of land will need to be acquired along a length of up to 10m. Although part of this site already lies within the road.



Land is also needed adjacent to #8, 8A, 8B, and #10 Hobsonville Road along a length of 138m. The width of the road adjacent these sites ranges from 21m to 28m. The land acquisition of an additional 2-9 metres on these sites will need to be 100% funded by DC's.

For #26-50 the road adjacent to these sites has a width of 25 metres and is 240 metres in length. The land acquisition of an additional 5 metres on these sites will need to be funded by DC's.

Overall, it is calculated that mitigation will be available for construction costs of 23% on 14% of the road. So, DC's will need to fund between 77% and 100% of construction cost. This provides for an average of 89%. For land acquisition DC's will need to fund between 70-100% of the costs providing for an average of 85%.

41 Fred Taylor Drive – Don Buck Road to Hobsonville Road - Ultimate

Corridor Type - Arterial

Spreadsheet Row 38: 100% property and 100% construction costs to be covered by AT.

Upgrade corridor to provide walking and cycling facilities

Only foot paths and on road cycle facilities are provided on this road. Adjacent sites are already developed and construction and acquisition of any additional upgrades would need to be funded by 100% DC's.

23 Trig Road – Brigham Creek Road to SH 18 - Arterial - Ultimate

Corridor type – 2-lane arterial

Spreadsheet Row 39: 25% property and 56% construction costs to be covered by AT.

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

A bridge and interchange over SH18 included in the SGA designation is a NZTA responsibility so is excluded from this analysis. The remaining 1.25 km of roading can be constructed at the time the land is developed with each developer on each side of the road providing up to the median. Using the minimum 2.5m median size each developer would need to construct 10.75m or 44%. Leaving 56% to be provided through DC's.

The road is primarily 20m wide. The two lane arterial is 24 metres wide. For land acquisition developers would be expected to provide a contribution of 1.5m (75%) on each side of the road. Leaving 0.5m (25% of the 2 metres needed on each side of the road).

70 Trig Road SH18 to Hobsonville Road – Arterial - Ultimate

Corridor type – 2-lane arterial

Spreadsheet Row 40: 63% property and 56% construction costs to be covered by AT.

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

This part of Trig Road is funded through the HIF and extends some 846 metres. For the eastern side of the road developer mitigation would provide for construction of 671 metres of road and berm up to the median. Each developer would construct 10.75m of the 24 metre wide road (89% of half the road leaving 11% of the road to be provided through DC's). The vector site at 1 Trig Road would not provide developer mitigation along a frontage of 54 metres (6%) of the eastern road frontage.

The Ministry of Education has undertaken some upgrades on the eastern side adjacent to the school site at 15 Trig Road. These upgrades are within the existing road corridor and involve localised road widening and the construction of a right turn bay when heading north. The upgrades do not involve active modes across the front of the site. This site is therefore not able to provide further mitigation along a frontage of 121 metres (15%).

The road is 20 metres wide. Development of the eastern sites would provide for a contribution of 1.5m (75%) along 671 metres (80%) of the eastern road frontage. Leaving the remaining 0.5 (25%) metres to be provided by DC's. DC's would need to 100% fund land acquisition along the road frontage to #1 and 15 Trig Road.

For the western side of the road developer mitigation would provide for construction of 366 metres of road and berm up to the median. Development of these western sites would also provide for a contribution of 1.5m, leaving the remaining 0.5 metres to be provided by DC's. The remaining 480 metres (57%) will need to be constructed through DC's. There is an area of land that is 20 metres wide that provides access to 22A Trig Road. This area is likely to be utilised as road to vest and could potentially contribute towards construction costs of road frontage. As the extent of this contribution is unknown it needs to be considered as zero.

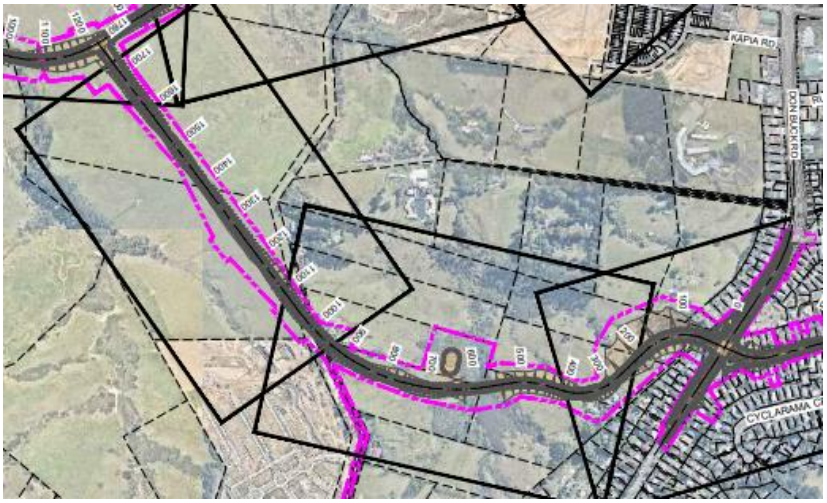
In all developer mitigation will be available for construction costs of between 0 and 89% for each side of the road. So, DC's will need to fund between 11 and 100% of construction costs. This provides for an average of 56%. For land acquisition DC's will need to fund between 25-100% of the costs providing for an average of 63%.

24 Redhills N-S arterial (Redhills Local Centre to Royal Road) & Redhills E-W arterial (Dunlop Road to local centre) - Arterial - Ultimate

Corridor type – 2 lane arterial

Spreadsheet Row 41: 9% property and 9% construction costs to be covered by AT.

A two lane arterial is 24 metres. Developer to construct to collector standard which is the same as arterial but doesn't have the central median. Developer generally constructs and vests a 22 metre road corridor which is 91% of the construction and acquisition costs. The remaining 9% is provided by DC's.



25 Royal Road – Arterial - Ultimate

Corridor Type – Arterial

Spreadsheet Row 42: 100% property and 100% construction costs to be covered by AT.

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

FTN Upgrade. This upgrade is part of the HIF and involves a new alignment of the intersection of Royal Road and Don Buck Road to link up with the new north south arterial through Redhills. It also involves widening to provide for the FTN upgrade. The form of the proposed upgrade is not currently known.

The area along Royal Road and Don Buck Road is developed and the project requires extensive land acquisition of existing developed properties. There is limited opportunity for Developer mitigation along Royal Road or this section of Don Buck Road so construction and property acquisition is 100% DC's. Analysis of the Royal Road / Don Buck Road Intersection is provided in Projects 54A and 54B below.

26A Brigham Creek Road – Tamatea Avenue to Kauri Road – Arterial - Interim

Corridor Type Arterial

Spreadsheet Row 43: 92% property and 63% construction costs to be covered by AT.

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

The land to the north is primarily Defence land as is #131-127 Brigham Creek Road.

On the northern side close to Kauri Road #150-152 Brigham Creek Road and 2-10 Kauri Road are likely to be developed. The remaining land on the southern side is also privately owned, with the exception of 153 Brigham Creek Road which is a Spark telecommunications site. The privately owned land is likely to be subject to a plan change for business purposes.

The project road is some 1.7km with likely developable land with road frontage of some 415m (24%) on the northern side and 857 metres (50%) on the southern side. There are difficulties with providing active mode upgrades on the southern side for its entirety due to the presence of the stream close to the road at its southern extremities. However there are options to provide active mode upgrades alongside Defence land to the north together with linkages to the south. The total road frontage is some 3.4km with 37% of the total road frontage being developable. Thus for construction costs 37% should be provided as developer mitigation and 63% DC's.

In considering land acquisition the ultimate project needs additonal land from the same landowners that will provide for the interim project. Because of this it has been determined that the land acquisiton needed at the ultimate stage is to be purchased at the interim stage with the exception of Lots 1 and 4 DP 154478 (1 Kauri Road and 162 BCR). Because the road is to be realigned to the north and widened at the ultimate stage all kerb lines may not necessarily be able to be constructed in their final position.

The road currently varies between 17 and 24 metres wide. A 4-lane arterial which is the ultimate project requires 30 metres. Land acquisition is needed along the entire length of the project road at varying widths from 6 to 13 metres with an average width of 9.5 metres. For the developable land which comprises 37% of the road frontage 1.5

metres is likely to be provided as developer mitigation. This leaves 84% of the land to be acquired along the frontage of developable land needing to be funded by DC's. For the remaining 63% of road frontage DC's will need to fund 100% of land acquisition. For land acquisition the extent of DC funding is an average of the percentages attributable to different parts of the road 84% and 100% being 92%.

26B Brigham Creek Road – Tamatea Avenue to Kauri Road – Arterial - Ultimate

Corridor Type Arterial

Spreadsheet Row 44: 82% property and 100% construction costs to be covered by AT.

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

Brigham Creek Road is to be realigned towards the north. Any interim upgrades are therefore unlikely to be in the required position. The 4 laneing will require a road width of 30 metres. As the ultimate option provides for the road to be primarily realigned to the north opportunities will be provided for active modes to be constructed along the southern road frontage.

Although most land is to be acquired at the interim stage it is not known if the interm stage will provide for kerb lines in their final position due to the northern realignment and widening required at the ultimate stage and developer mitigation often available only on one side of the road . Even if kerb lines are in their final position upgrades involving construction of medians and an additional lane where kerb lines do not have to be upgraded opportunity for development mitigation will be unlikely. Construction costs will therefore need to be 100% funded by DC's.

Most of the land is to be purchased at the interim stage except Lots 1 and 4 DP 154478 (1 Kauri Road and 162 BCR). Alongside these lots due to major road realignment up to 8 metres reducing to zero at the south eastern extremities of the road frontage to 162 BCR. As developer mitigation will provide for 1.5m being 18% of the upto 8 metres needed DC's will need to fund 82% of land acquisiton costs.

27 Kauri Road – Brigham Creek Road to Rata Road – Ultimate

Corridor Type - Collector

Spreadsheet Row 45: 0% property and 9% construction costs to be covered by AT.

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

The project road is 884 metres long. The north/west side of the road is likely to be developed so developer mitigation can provide the needed road frontage upgrades and active mode linkages as developer mitigation. The road is currently 20m wide. As a collector with active modes is 22 metres, and one side of the road is mostly developed the additional land would most likely be provided on the northwest side to ensure a linear design. With developer mitigation providing 1.5 metres the roading infrastrucutre would likely fit within this corridor so no additonal land would need to be acquired. So on the north/west side developer mitigation would provide 100% for construction and 100% for land acquisition.

On the south/east side it is unlikely that frontage upgrades to many of the smaller sites will be provided by developer mitigation. Frontage upgrades for #11-19, 49, 51, 55

and 59 being some 157 metres (18% or 9% of total road frontage) would need to be 100% funded by DC's.

For the road as a whole 9% of the road frontage upgrades would need to be funded by DC's. There is no need for land acquistion beyond that provided by the developer.

28 Spedding Road East – SH 18 to Hobsonville Road - Ultimate

Corridor Type - Arterial

Spreadsheet Row 46: 69% property and 78% construction costs to be covered by AT.

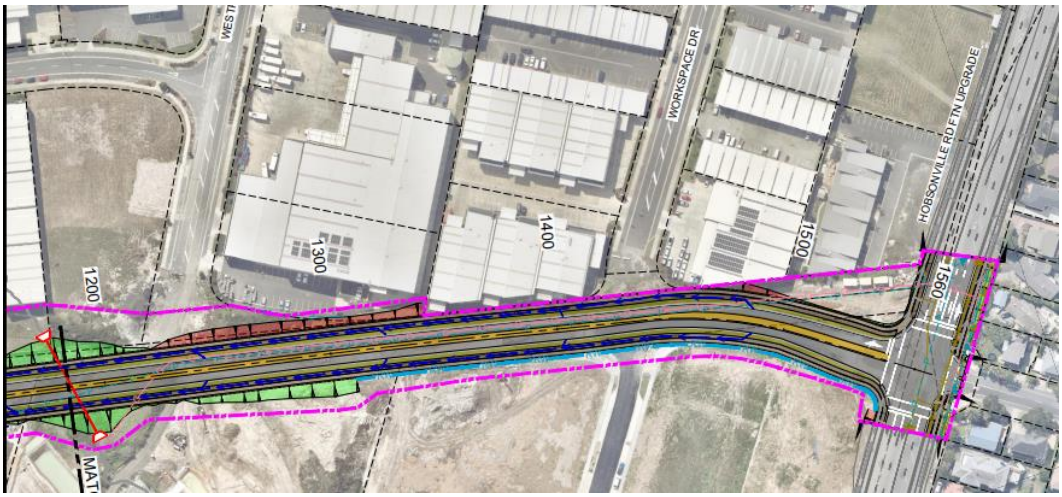
2-lane urban- with active modes on both sides + local intersection improvements
Connects to item 29 which includes an overbridge across SH 18.

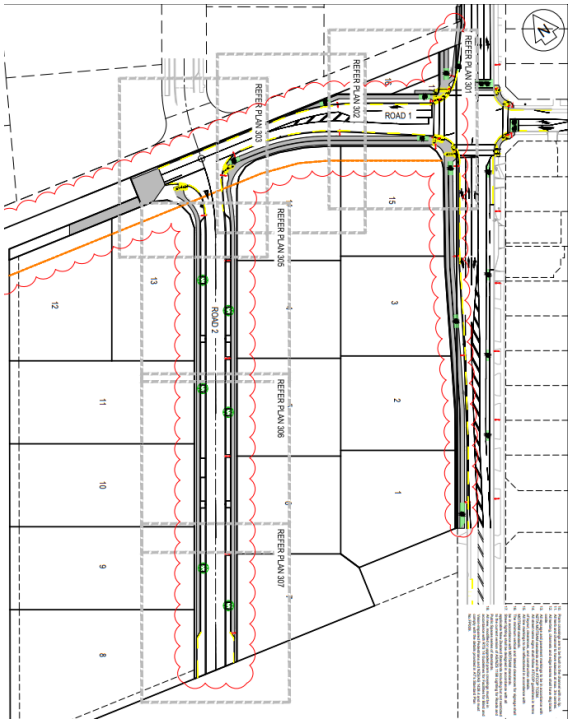
The project road is approximately 400m in length where it links in to the proposed motorway bridge of project 29. The point of linkage has been assumed to be to the east of the Raweri Stream. This road together with a signalised intersection to Hobsonville Road (refer project 6 above) has partly been constructed as Te Ahurea Street under the Resource consent for 96 Hobsonville Road. A further resource consent for 10 Te Ahurea Street provides for more of the road to be constructed further to the west with anticipated future development assumed to ensure that the road will be constructed for at least 368m.

The constructed road, and assumed future road, does not include a median or northern berm with active modes and is yet to be vested with Council. It is unlikely that the development to the north will provide the active modes and the site at 49 Westpoint Drive which has already been developed and is unlikely to provide opportunities for developer mitigation. Even those parts of the road that have been constructed are for a local road to a width of 15m and not to SGA standard with central median. The additional elements will need to be funded through DC's. It has therefore been assumed that the northern half to the consented and assumed road being the median and half the road comprising 56% will need to be constructed to the SGA design with funding from DC's for a length of 358m. For this portion of the road additional acquisiton is needed of upto 9m 38% to be funded through DC's.

For the remaining portion of road being some 42m as this site has already been developed DC's will need to fund 100% of land acquisition and construction.

So overall land acquisition is an average of 38% and 100% being 69% and construction is an average of 56% and 100% being 78%.





38A Northside Drive East – Interim

Road Corridor – Arterial 2 Lane

Spreadsheet Rows 49 and 181 : 100% property and 100% construction costs for project road to be covered by AT. 100% property and 100% construction costs to be covered by AT for bridge

New 2-lane 24m arterial road with bridge and dedicated walking and cycling facilities. Part of SH16/18 connections. Includes Northside Drive Bridge

The land has not yet been developed and it could be assumed that the developer will provide a 22 metre wide corridor for the land to provide for the bridge and approaches, and the project road. 22m is 91% of the construction and acquisition costs. In this instance the remaining 9% would be provided by DC's. However the road is in the bottom corner of land likely to be developed for business purposes and it may not be realistic to seek this level of developer mitigation as developers may only provide a

local road for access, or provide access from the north. In addition the NZTA SH16/18 upgrade project includes a widened 4 lane highway with on-ramps and off-ramps to SH16 via this road. Due to this uncertainty DC's may need to fund up to 100% for land acquisition and construction costs.

29 Spedding Road East - Trig Rd to SH18

Road Corridor – Arterial 2 Lane

Spreadsheet Rows 50 and 123: 9% property and 9% construction costs for project road to be covered by DC, 100% property and 100% construction costs to be covered by AT for the overbridge.

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

Includes SH18 overbridge.

Overbridge to be constructed 100% DC's. An overbridge is generally 16m wide. It is assumed that the developer will provide a 22 metre wide corridor for the land to provide for the bridge and approaches, and the project road. 22m is 91% of the construction and acquisition costs. Although some infrastructure could be provided within the 22 metre corridor DC's will need to provide for the additional 2 metres to make up the standard two lane arterial width of 24 metres. The remaining 9% is to be provided by DC's.

The bridge is likely to extend some distance across SH18 and the Raweri Stream to link with project 28 and is to be funded 100% by DC's for construction and land acquisition.

30 Brigham Creek Road – SH16 interchange to overlap with 1B – Ultimate

Corridor Type – 4- lane arterial

Spreadsheet Row 51: 76% property and 57% construction costs to be covered by AT.

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

Project 1B for Brigham Creek Road extends from Joseph McDonald Drive to Totara Road. So this analysis considers Brigham Creek Road from the SH16 interchange 590 metres eastwards to Joseph McDonald Drive.

The road is currently 20m wide with the exception of 133 metres (22%) alongside 108 Whenuapai Drive and 32A-D and 34A-D Brigham Creek Road which is 22 metres wide.

In this location only the southern side would need to be upgraded with the developer paying for kerb and channelling and active modes along south side to provide for the additional lane. The existing road has parking on the northern side so the ultimate project needs additional land for approximately 133 metres along the south side to provide for the additional lane. The ultimate project has no parking. The upgrade on the north side to remove parking is therefore 100% DC's.

For the south side the Developer pays berm cost road/footpath upgrade and kerb and channelling for 133m at $2020/m. The extra over cost of going from a 2 lane to 4 lane arterial is $5,000/m (costs refer to base physical works costs only). So the developer is to pay 40% of this cost.

A four lane arterial is 30 metres wide. For 133m Brigham Creek Road is 22 metres wide and all land acquisition (8 metres) is needed on the southern side. For land, council should get 1.5-2 metres at no charge when the adjoining land is subdivided/developed. 1.5m as a percentage of 8m is 18% of the land cost that the developer will provide if the land is acquired at this time.

For the remaining 457 metres being 78% of the project road which is 20 metres wide an additional 10 metres is needed. Developer mitigation is likely to provide 3.0 metres being 1.5 metres on either side at no cost. The remaining 70% of land will need to be funded through DC's.

For construction costs on the 457 metre portion of the project developer mitigation will provide for 10.75 metres on each side of the road or 89%. This calculation utilises a minumum median size of 2.5metres. Leaving 11% to be provided through DC's.

In all developer mitigation will be available for construction costs of between 40% and 89% for parts of each side of the road. For some parts of the road upgrades will need to be funded 100% by DC's. In all DC's will need to fund on average 57% of construction costs. For land acquisition DC's will need to fund an average of 70% and 81% of the costs being 76%.

31 Fred Taylor Drive – SH16 interchange to Northside Drive – Ultimate

Road Corridor – Arterial

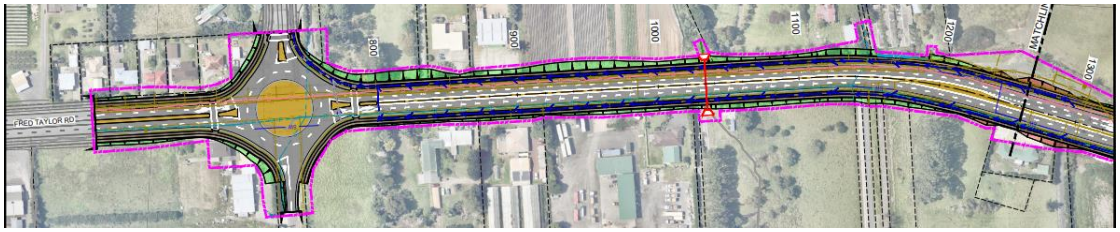
Spreadsheet Row 52: 60% property and 56% construction costs to be covered by AT.

4-lane urban- upgrade 2-lane urban with active modes on both sides (SGA design). This project forms part of the FTN upgrades and extends from just north of the proposed Speddings Road extension to Northside Drive some 755 metres.

Some local intersection improvements will be provided as developer mitigation as will road frontage upgrades including active modes. The eastern portion of this project to the north of Speddings Road is developed #127–139 for some 152 metres (10% of total upgrades needed on both sides of the road). Opportunity for developer mitigation on this section is therefore limited and upgrades will need to be 100% funded by DC's.

For construction costs on the remaining 90% of the project developer mitigation will provide for 10.75 metres on each side of the road or 89%. This calculation utilises a minumum median size of 2.5m. Leaving 11% to be provided through DC's.

The project road width predominantly ranges from 20 to 24 metres. So an additional 6-10 metres, i.e. 3-5 metres is needed to be acquired on each side of the road to provide for the 30 metre arterial. Developers will provide for 1.5 metres at the time of development and the remaining 1.5-3.5 metres (50-70%) will need to be funded 60% as an average of 50% and 70% by DC's.



32 Spedding Road West – Fred Taylor Drive to Trig Road - Ultimate

Road Corridor - Arterial

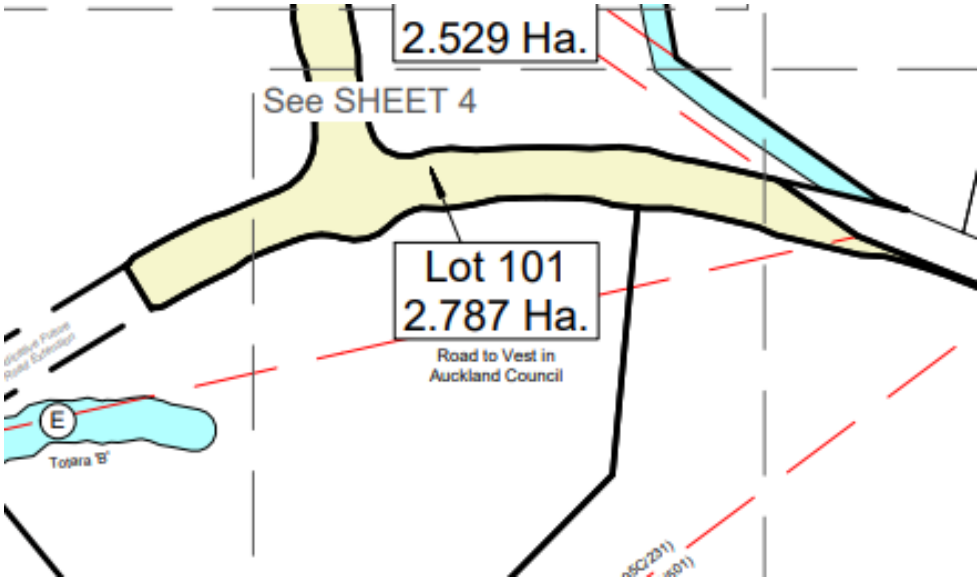
Spreadsheet Rows 53 and 124: 60% property and 55% construction costs to be covered by AT for project road, 100% property and 100% construction costs to be covered by AT for overbridges.

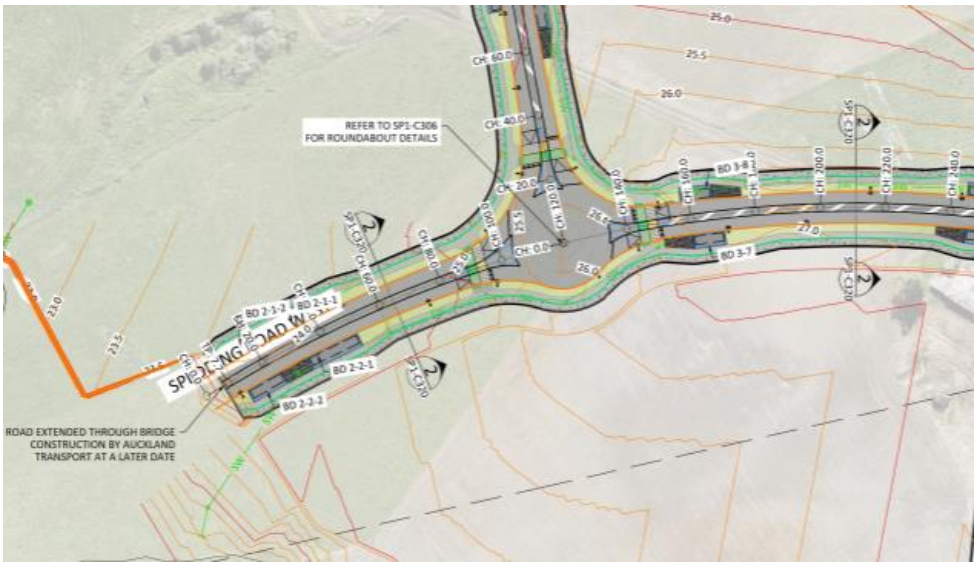
New 2-lane urban- with active modes on both sides + local intersection improvements. This project includes a motorway and stream overbridge.

On the western side of SH16 developers would likely construct and vest a 22 metre road corridor which is 91% of the construction and acquisition costs. The remaining 9% is provided by DC's.

Construction of the overbridge and funding of access roading is to be funded 100% by DC's.

Part of the project road to the east of the motorway (SH16) being Spedding Road West is subject to developer mitigation provided for in the Spedding Block Precint. For the land from the motorway to the roundabout providing linkage to Brigham Creek Road the Precinct provisons identify a protected corridor to be kept clear of structures and buildings though an interim road may be constructed by the developer. The corridor will cease to have effect once the Notice of Requirement is confirmed. The resource consent for the Speddings Road precinct provides a stubb road to link up with the future over bridge and does not provide any roading beyond the stubb. The stubb road is to be vested. As it is not known how this portion of the Block will be accessed any further upgrades, extension or land acquisition, including land needed to access the S18 overbridge will need to be 100% DC's as this portion of the project road is located within the precinct and developer mitigation is outlined within the precinct provisions.





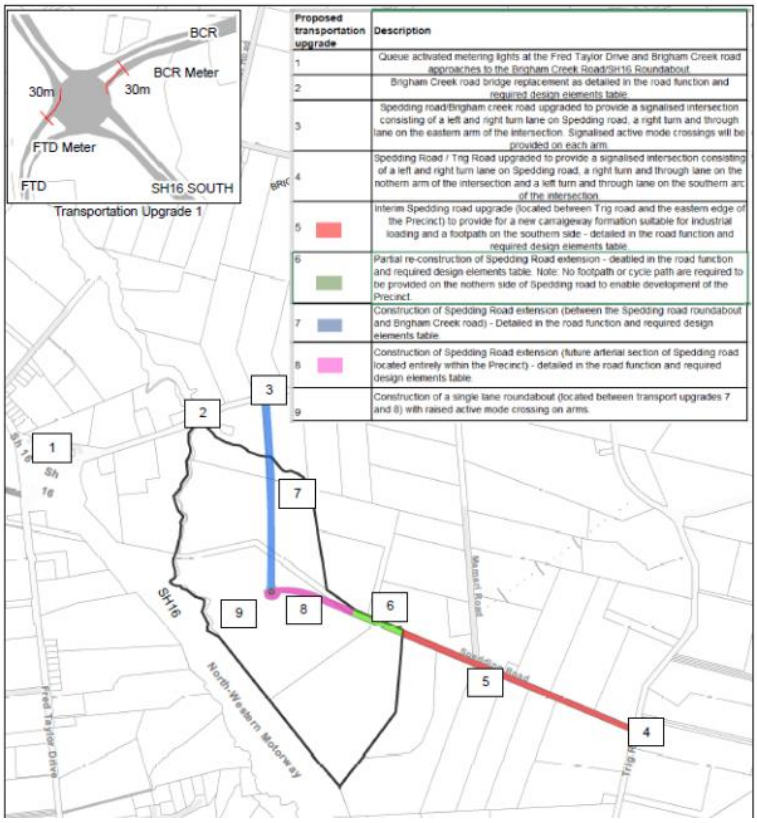
For the area from the roundabout to Trig Road, the developer is to upgrade the intersection with signalisation, construct various upgrades and re-construction to Speddings Road and construct the Spedding Road extension (refer project W8B - collector). Some of the upgrades are within the precinct and further upgrades within the precinct will need to be funded 100% by DC's for construction and land acquisition. Developer mitigation may be available for active modes on the northern side of Speddings Road to enable future development as parts of the northern side of this portion of the project road lies on the edge of the precinct or outside it. It is noted that the upgrades to Speddings Road utilise swales instead of kerb and channelling in certain constrained locations outside the Precinct. Land acquisition for part of the road is likely needed only on the northern side of the road to provide for the northern cycle lane and a future median to provide a 4 metre increase to the existing 20 metre road corridor. Although existing resource consent plans show that the median is to be confirmed. As developer mitigation will only provide for 1.5 metres the remaining 2.5 metres or 63% will need to be funded by DC's.

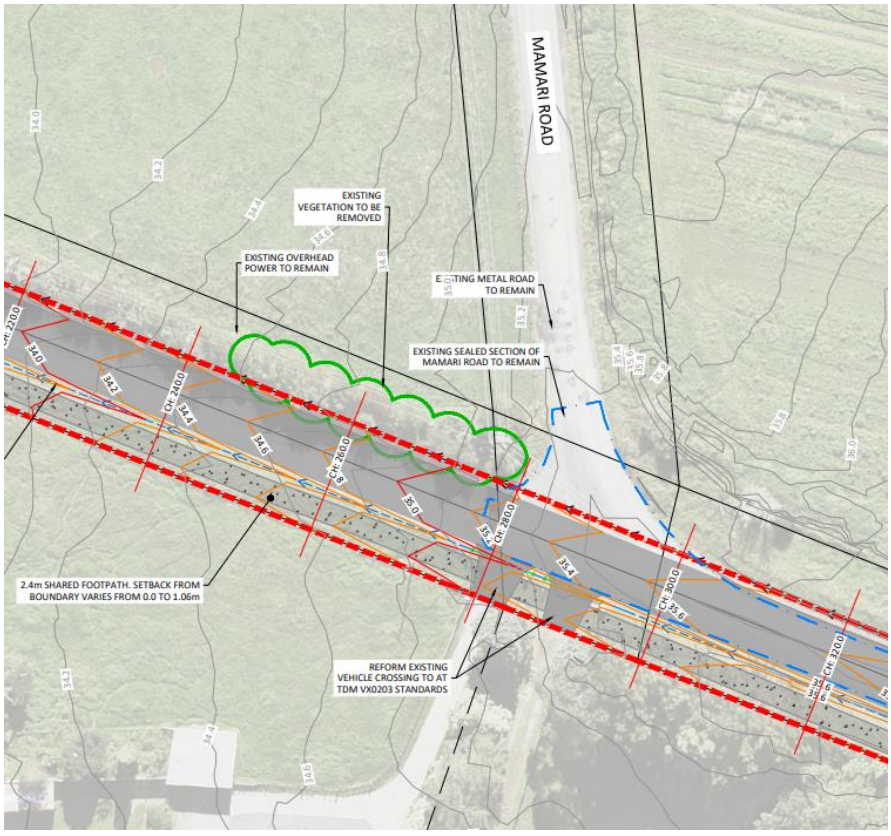
For the remaining road from the eastern edge of the precinct to Trig Road Developer Mitigation could provide for 10.75 metres of upgraded road up to the median on each side of the road being 89%. Leaving 11% to be provided through DC's. At this point of the road it is assumed that developer mitigation will provide for 1.5 metres on each side of the road leaving 0.5 metres (25%) of land to be acquired through DC's. The current resource consent plans depict a 27m wide road corridor for this portion of the road. As it is not known if this is to be constructed and vested in its entirety at no cost the above percentages of DC's have been assumed.

Overall for construction the extent of DC funding is an average of the percentages attributable to different parts of the road 9%, 100%, 100%, and 11% being 55%.

For land acquisition the extent of DC funding is an average of the percentages attributable to different parts of the road 9%, 100%, 100%, 63% and 25% being 60%.

I616.9.3 Name: Precinct plan 3 - Required transport infrastructure upgrades



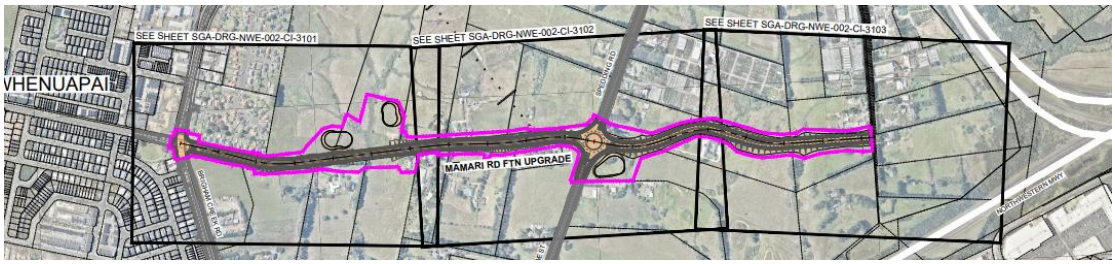


33 Mamari Road - Ultimate

Road Corridor Arterial

Spreadsheet Row 54 and 183: 75% property and 41% construction costs to be covered by AT. 100% property and 100% construction costs for bridge to be covered by AT.

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



The project road is approximately 1.8 km and culminates at Northside Drive. It involves an upgraded intersection at Mamari Road, an over bridge over a stream and a two lane roundabout at the intersection with the New Speddings Road.

There is a small portion of land on the eastern side of this road close to Brigham Creek Road that forms part of the Whenuapai Airbase Defence Purposes Designation. Developer mitigation will not be available for this land. In any case land acquisition is proposed to occur only on the western side for this part of the project. Mamari Road is currently formed past the Defence Purposes designation and is also formed close to its intersection with Speddings Road. The area of road in between and the remainder of the road to the south beyond Speddings Road is unformed.

The road corridor north of Speddings Road has a width of 20 metres and additional land will need to be acquired to provide for a 30m wide corridor. At the northern end of the road upgrades and land acquisition is to focus on the western side along a distance of 185m. For this piece of road developer mitigation will likely provide for an upgraded road frontage upto 10.75 metres which is 35% of the 30 metres road width leaving 65% to be funded through DC's as there will be no opportunity for developer mitigation to upgrade the eastern side of this portion of the road.

There is a suggestion that the full 4-lane ultimate width is acquired at the time of subdivision. A through lot housing development is currently proposed with development on the corner lot unknown. Currently the road is 20m wide. For land, council should get 1.5-2 metres at no charge when the adjoining land is subdivided/developed. 1.5m as a percentage of 10 metres is 15% of the land cost that the developer will provide if the land is acquired at this time. The remaining 85% will need to be provided by DC's.

For the land to the south of the Defence land through to Speddings Road developers on each side of the road will likely construct 10.75m (being 71% of the total road width) on each side of the road at the time of subdivison with 29% being provided through DC's.

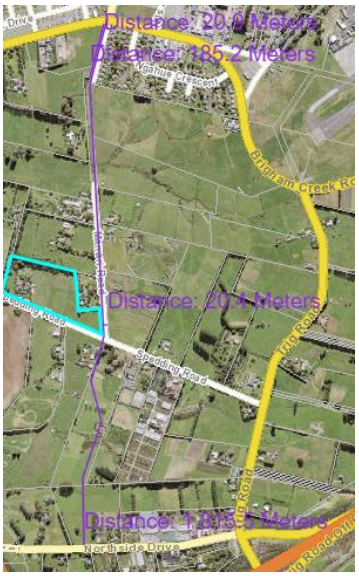
For land acquisition on the unformed portion of the road and the formed portion to the north of Speddings Road which is 20m wide, council should get 1.5-2 metres on each side of the road at no charge when the adjoining land is subdivided/developed. 3.0 metres as a percentage of 10 metres is 30% of the land cost that the developer will

provide if the land is acquired at this time. The remaining 70% will need to be provided by DC's.

For the remainder of the road from Speddings Road south to Northside Drive developer mitigation will provide for 10.75 metres on each side of the road or 71%. This calculation utilises a minumum median size of 2.5m. Leaving 29% to be provided through DC's for construction and land acquisition. For land acquisition developers should provide 1.5-2 metres on each side of the road at no charge when the adjoining land is subdivided/developed. 3.0 metres as a percentage of the additional 10 metres needed is 30% of the land cost that the developer will provide if the land is acquired at this time. The remaining 70% will need to be provided by DC's.

Overall, for construction the extent of DC funding is an average of the percentages attributable to different parts of the road 65%, 29%, and 29% being 41%.

For land acquisition the extent of DC funding is an average of the percentages attributable to different parts of the road 85%, 70% and 70% being 75%.



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

Road Corridor – Collector

Spreadsheet Row 59: 0% property and 14% construction costs to be covered by AT.

2-lane urban- with active modes on both sides + local intersection improvements. These roads are all approximately 20 metres wide. The total amount of road frontage counting both sides of the road is 6.1 km. Of this Riverlea Road has smaller lots where opportunities for developer mitigation are limited specifically #12, #5-9, #11-19, #27-31, #35-39 and #45 being some 258 metres. Dale Road for a distance of 554 metres although developed is not up to collector standard on the southern side having no bike paths. Thus for some 812 metres some 14% of the road frontage upgrades will need to be funded by DC's.

It has been assumed that either upgraded infrastructure wil be located in the existing road reserve or developers will provide 1.5-2.0 metres for widening on each side of the

road, with widening on Riverleigh Road largely focused on the western side to provide for the 22 metre collector width. So no land acquisition is needed.

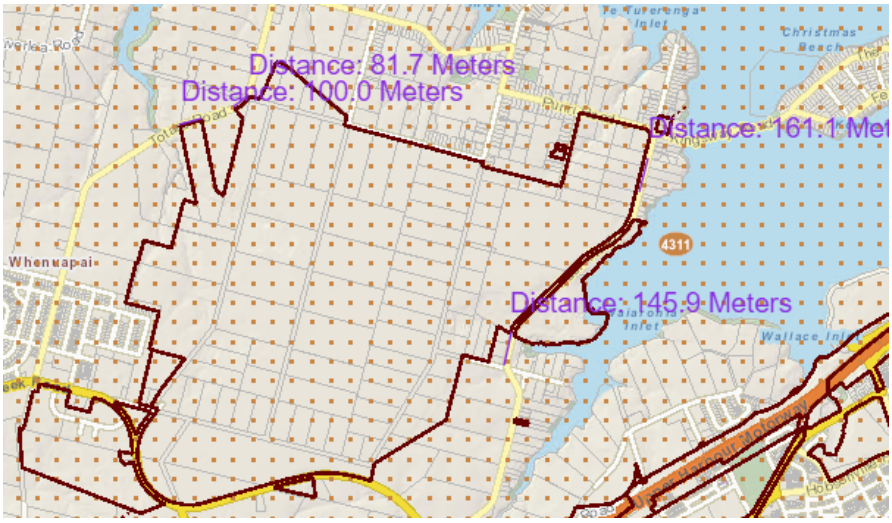
35 Key Collector Rd Network through Whenuapai North: Totara Rd and Kauri Rd -Ultimate

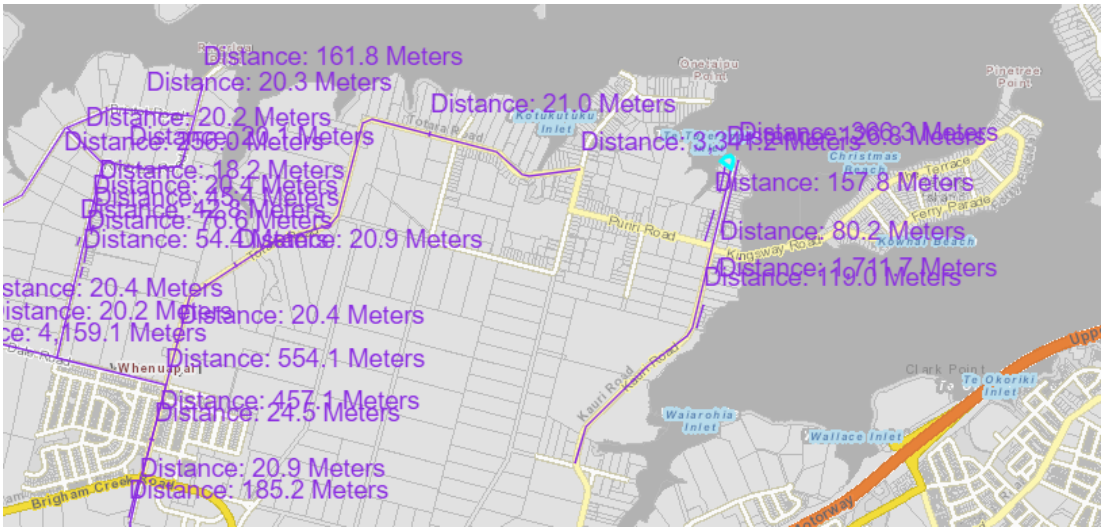
Road Corridor – Collector

Spreadsheet Row 60: 0% property and 70% construction costs to be covered by AT.

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

For Totara Road with road frontage on both sides of the road of some 6.7km road frontage upgrades and cycle lanes have already been installed within the 24m wide road corridor from Brigham Creek Road to Dale Road / McCaw Avenue some 457m. For the remaining primarily 20 metre wide road corridor comprising some 9.5 km road frontage developers for the most part will fund upgrades on each side of the road and may provide up to 1.5 metres for widening on each side of the road enabling the 22 metre collector width. Although there are two small portions of Totara Road comprising some 282 metres that will not be able to be upgraded by developers, as these are part of the Whenuapai Airbase Defence Purposes Designation. In addition the smaller sites on the south side of Totara Road between Karaka Road and Waimarie Road, a distance of 663 metres, comprise smaller sites that are likewise unlikely to have upgraded frontages provided by developer mitigation. Accordingly, DC's will need to fund 10% of road frontage upgrades. For these areas it is assumed that any upgrades would be done within the available road corridor so no land acquisition will be needed.





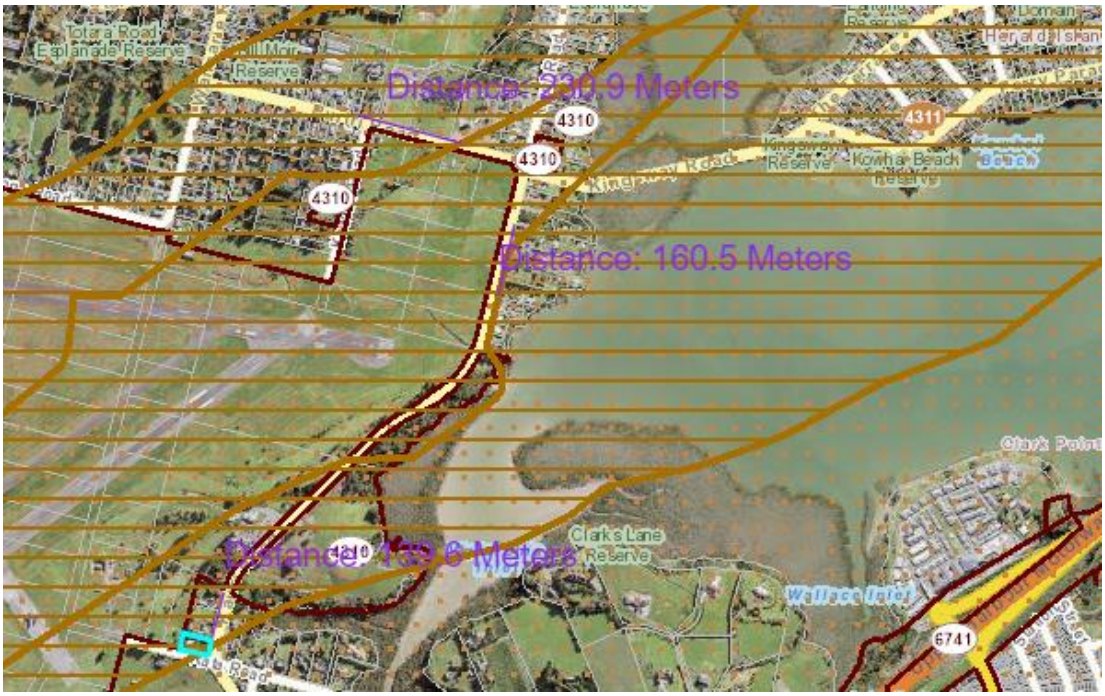
For Waimarie Road, as the area along the road is developed construction of the upgrades should be funded 100% by DC's. Upgrades will be undertaken within the existing road reserve.

For Puriri Road approximately 240 metres of northern road frontage is adjacent developable land being 17% of the total land frontage of 1.4 km. The remaining parts of this road are subject to the 65 dB Ldn Aircraft Noise contour (noise measurement under the AUP) with new dwellings a prohibited activity. Land beneath the 65 dB Ldn is therefore not developable. The otherwise developable southern frontage also forms part of the Whenuapai Airbase Defence Purposes Designation.

No land acquisition is needed as the 20-metre-wide road corridor is anticipated to accommodate the upgrades.

Kauri Road, Brigham Creek Road to Rata Road is considered in project 27 above. Kauri Road to Kauri Esplanade to the north of Puriri Road is not considered a collector so is excluded from this analysis.

For Kauri Road, Rata Road to Puriri Road some 1.4km providing for some 2.8km of road frontage much of this part of the road forms part of the Wheuapai Airbase Defence Purposes Designation. In addition, there are some areas with smaller lots particularly towards the esplanade. These comprise #101-111 and #133-145. Parts or all of these lots also lie within the 65 dB Ldn Aircraft Noise contour. Therefore there is only a very small area of road frontage being some 440 metres or 16% of total road frontage to Kauri Road that developers will provide some mitigation for. Accordingly for Kauri Road DC's will need to fund 84% of roading upgrades. It is assumed that any upgrades would be done within the available road corridor so no land acquisition will be needed.



Overall, DC funding is only needed for construction upgrades. The extent of this DC funding is an average of the above percentages attributable to each road and/or portion of each road 10%, 100%, 83%, and 84% being 70%.

42B Northside Drive East Extension from Fred Taylor Dr to Stream – Ultimate Road Corridor – Arterial 2 Lane

Spreadsheet Row 182: 9% property and 9% construction costs to be covered by AT.

New 2-lane arterial road with dedicated walking and cycling facilities. Northside Drive East from Fred Taylor Dr to Stream eastern portion

This road is an extension to the completed road in project 42A currently under construction by the developer which is excluded fom this analysis.

The extension is to be constructed by the developer to provide for urbanisation of the area. The form of the road is not yet known through it is likely that the developer will provide for a road corridor width of at least 22 metres being collector standard. It is likely that DC's will need to provide for the additonal 2 metres to make up the standard two lane arterial width of 24 metres to SGA design. So there is a need for the additional 9% of construction and land acquisition costs to be funded by DC's.

71 Northside Drive West from Fred Taylor Dr to Stream – Ultimate Road Corridor – Arterial 2 Lane

Spreadsheet Row 62 and 180: 9% property and 9% construction costs for road to be covered by AT. 100% property and 100% construction costs for bridge to be funded by DC's.

This project includes a bridge which needs to be 100% funded for property and construction by DC's.

New 2-lane urban- with active modes on both sides + local intersection improvements. This road is to be constructed by the developer to provide for urbanisation of the area. The form of the road is not yet known through it is likely that the developer will provide for a road corridor width of at least 22 metres being collector standard. It is likely that DC's will need to provide for the additonal 2 metres to make up the standard two lane arterial width of 24 metres to SGA design. So there is a need for the additonal 9% of construction and land acquisition costs to be funded by DC's.

43 Redhills N-S Arterial Nixon Road to Redhills Local Centre – Ultimate

Road Corridor – Arterial 2 Lane

Spreadsheet Row 63: 9% property and 9% construction costs to be covered by AT.

New 2-lane urban- with active modes on both sides + local intersection im provements

A two lane arterial is 24 metres. The developer is likely to construct to collector standard which is the same as arterial but doesn't have the central median. Developer generally constructs and vests a 22 metre road corridor which is 91% of the construction and acquisition costs. The remaining 9% is provided by DC's. (Also considered in projects 10 and 24 above).

48 Intersection upgrade on Hobsonville Road/ Trig Road – Ultimate

Road Corridor – Arterial

Spreadsheet Row 68: 100% property and 100% construction costs to be covered by AT.

Upgrade to Dual lane signalised intersection

This is a T intersection. Land to the south is aready develped, to the north east it is a Vector sub station and to the north west a developed commercial premises. So there is limited opportunity for developer mitigation for any land acquisition or construction cost. DC's need to 100% fund construction and acquisition.

51 Intersection upgrade on Trig Road/ Spedding Road East – Ultimate

Road Corridor – Arterial

Spreadsheet Row 71: 0% property and 0% construction costs to be covered by AT.

Upgrade to Single lane roundabout. The recently approved Speddings Block Precinct provisons outline interim upgrades to this intersection although the intersection is outside the precinct. The upgrades involve a signalised intersection consisting of a left and right turn lane on Spedding road, a right turn and through lane on the northern arm and and a left turn lane and through lane on the southern arc of the intersection. The construction of further upgrades and land acquisition to the SGA design for a single

lane roundabout has been assumed to be funded by developer mitigation when the adjacent land is developed.

52A Intersection Intersection upgrade on Trig Road/ Brigham Creek Rd - Interim

Road Corridor - Arterial

Spreadsheet Row 72: 98% property and 0% construction costs to be covered by AT.

Upgrade to Single lane roundabout. Construction can be undertaken as developer mitigation. It is likely that a plan change will seek to rezone the land on the east and west of the intersection for business purposes.

The interim roundabout could be designed to utilise the plan change land without impacting on the defence land to the north. However, this location would probably not involve kerb lines to the ultimate SGA design for a dual lane roundabout considered in project 52B and would require rework. Because of this it has been determined that the land acquisition needed at the ultimate stage is to be purchased at the interim stage.

For land acquisition AT may need to purchase the entire site at #96 Trig Road as it is needed for stormwater mitigation of the proposed upgrade to Brigham Creek Road as well as for the roundabout. For the land on the southern side of the intersection upto 33 metres of additional land width will be needed to provide for the SGA design. Although the developer may provide slightly more than 1.5 metres road frontage (4%) the extent of developer mitigation for the roundabout is not known. Given the final form of the roundabout as shown in the SGA design and the realignment of the intersection to the south, DC's should fund 98% of any needed land acquisition for the ultimate project being an average of 100% and 96%.

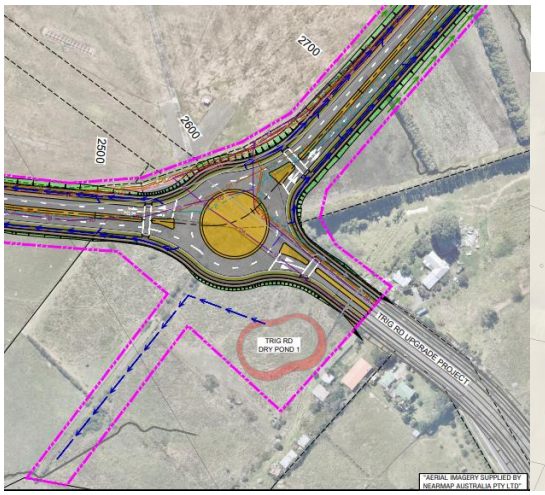
52B Intersection Intersection upgrade on Trig Road/ Brigham Creek Rd - Ultimate

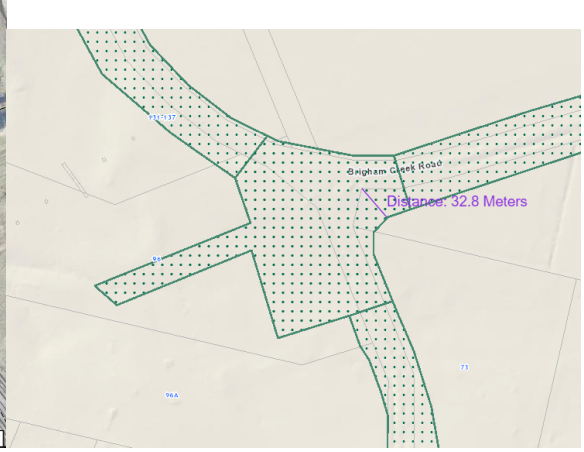
Road Corridor - Arterial

Spreadsheet Row 73: 0% property and 100% construction costs to be covered by AT.

Upgrade to dual lane roundabout. Developers would likely provide a single lane roundabout as mitigation which is the interim project. The cost of a single lane roundabout is $2.5 million and a dual lane roundabout $4.5 million. For construction costs DC's should therefore fund $2.0. Although this is currently 45% of the total cost (base physical works cost only) to upgrade the intersection as it is to be undertaken at a later ultimate stage these upgrade works need to be funded 100% by DC's.

The upgrade to Brigham Creek Road realigns the road to the south in this location and means that the roundabout will need land primarily on the southern side of Brigham Creek Road on both sides of Trig Road. Land on the northern side is Defence land so is unlikely to provide developer mitigation for construction or land acquisition. As all the land needed for the project is to be purchased at the interim stage no additional land is needed at the ultimate stage.

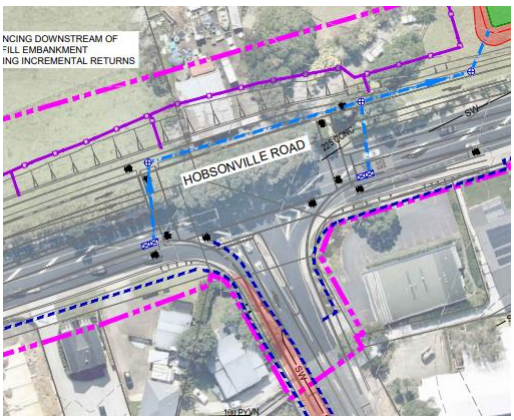




53 Intersection upgrade on Hobsonville Road/ Luckens Road – Ultimate Road Corridor – Arterial

Spreadsheet Row 74: 82% property and 50% construction costs to be covered by AT.

Upgrade to Single lane signalised intersection. The land to the south is already developed for residential purposes so developer mitigation is unlikely to be available. It is likely that the developer will provide some upgrades to the intersection when the land to the north is developed. Ultimately Hobsonville Road is to be upgraded and needs realignment of transport infrastructure on the southern side and realignment of the intersection to the north. Developer mitigation is likely to provide for 50% of construction costs. For land acquisition approximately 8 metres is needed. The developer would be expected to provide 1.5 metres leaving 6.5 metres (82%) to be funded by DC's .



54B Intersection upgrade on Don Buck Road/ Royal Road – Ultimate

Road Corridor – Arterial

Spreadsheet Row 77: 100% property and 100% construction costs to be covered by AT.

Upgrade to Dual lane signalised intersection

This upgrade is part of the HIF and involves a new alignment of the intersection to link up with the new north south arterial through Redhills. It also involves widening to provide for the FTN upgrade.

The area along Royal Road and Don Buck Road is developed and the project requires extensive land acquisition of existing developed properties. There is limited opportunity for Developer mitigation along Royal Road or this section of Don Buck Road so property acquisition is 100% DC's. For construction although the intersecion will provide for the development of the land to the north west developer mitigation does not provide for downstream inprovements so construction costs for the entire intersection need to be 100% funded by DC's.

55 Intersection upgrade on Royal Road/ Beauchamp Dr - Ultimate

Road Corridor - Arterial

Spreadsheet Row 78: 100% property and 100% construction costs to be covered by AT.

Upgrade to Dual lane signalised intersection. The intersection upgrade adjoins the upgrade to the Don Buck Road / Royal Road intersection upgrade which is part of the HIF. The upgrade to Royal Road includes widening and alignment changes to provide for the FTN upgrade. The form of the proposed upgrade is not currently known.

The area along Royal Road and Beauchamp Drive is developed and the project requires extensive land acquisition of existing developed properties. There is limited opportunity for Developer mitigation along Royal Road or Beauchamp Road so construction and property acquisition is 100% DC's.

66B Intersection upgrade on Don Buck Road/Beauchamp Dr – Ultimate

Road Corridor – Arterial

Spreadsheet Row 81: 100% property and 100% construction costs to be covered by AT.

Upgrade to Dual lane signalised intersection. The land along Don Buck Road and Royal Road at this intersection is developed. The project requires limited land acquisition of existing developed properties due to existing property setbacks. There is limited opportunity for Developer mitigation along Don Buck Road or this section of Beauchamp Road so construction and any property acquisition is 100% DC's.

58A Intersection upgrade on Brigham Creek Rd/ Kauri Road – Interim

Road Corridor – Arterial

Spreadsheet Row 82: 91% property and 0% construction costs to be covered by AT.

Upgrade intersection to single lane signalised intersection. The land surrounding the intersection is likely to be developed in the future. Construction can be undertaken as developer mitigation.

Although the project requires limited land acquisition to signalise the intersection for the interim project it is intended to purchase some of the land to the north and west of the intersection needed for the ultimate project at the interim stage. The land to be purchased relates to all land that one landowner ether holds or has an interest in. Accordingly most land is to be purchased at the interm stage except Lot 1 DP 154478 (1 Kauri Road) and Lot 4 DP154478 (162 BCR) which is to be purchased at the ultimate stage.

For land acquisition the ultimate 4 laneing of the intersection needs an additional 16 metres. The developer will likely provide 1.5m (9%) at no cost leaving 91% to be provided by DC's

58B Intersection upgrade on Brigham Creek Rd/ Kauri Road – Ultimate

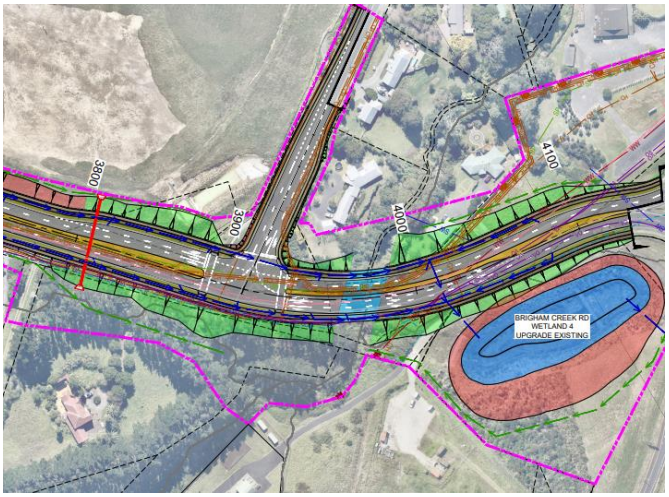
Road Corridor - Arterial

Spreadsheet Row 81\3: 91% property and 100% construction costs to be covered by AT.

Upgrade intersection to Dual lane signalised intersection. Brigham Creek Road and the intersection is to be realigned towards the north to enable the 4 laneing to be put in place together with active modes. The land surrounding the intersection is likely to be developed in the future and the interim project put in place by developer mitigation. Development of #161 Brigham Creek Road immediately to the south of the intersection is constrained by the stream which flows along beside the road. This site is owned by Council. As developer mitigation will provide for the interim project and given the

Council ownership of land the additional construction costs to upgrade to the 4 lane signalised intersection are to be funded 100% by DC's.

For land acquisition for the remaing land to the south and east being lot 1 DP 154478 1 Kauri Road and 162 BCR that was not purchased at the interim stage, the 4 laneing of the intersection needs an additional 16 metres. The developer will likely provide 1.5m (9%) at no cost leaving 91% to be provided by DC's.



59 Intersection upgrade on Fred Taylor Dr / Spedding Road West - Ultimate Road Corridor – Arterial

Spreadsheet Row 84: 93% property and 59% construction costs to be covered by AT.

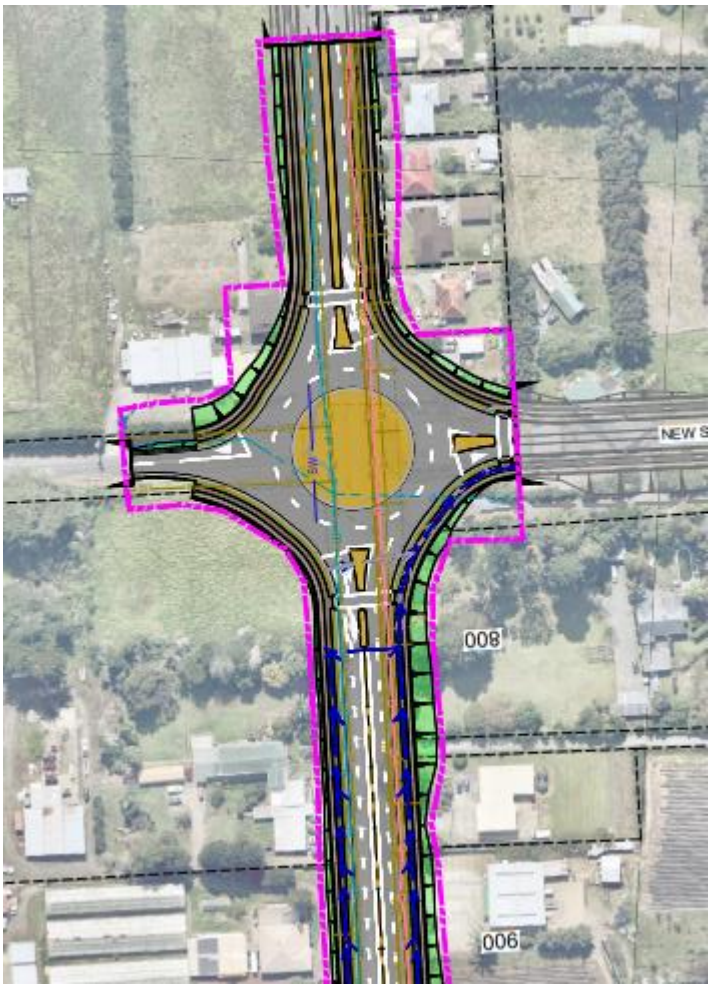
Upgrade to Dual lane roundabout.

Some of the intersection improvements will be provided as developer mitigation. The area to the north of Speddings Road is developed comprising #127–139 for some 152 metres. Opportunity for developer mitigation on this section is therefore limited so developer mitigation is limited to 75% of the intersection frontage with DC's funding 25%. 75% of the single lane cost ($2.5m) is $1.875 so DC's will need to fund the additional $2.63 million cost (59%) of a dual lane intersection (costs refer to base physical works costs only).

DC's will also need to 100% fund the land acquisition cost for purchase of 127 Fred Taylor Drive and additional land located within the developed area to the north.

For the remaining land acquisition with a road width of 20 metres an additional 10 metres, is needed to be acquired on each side of the road to provide for the 30 metre arterial. Developers will provide for 1.5 metres at the time of development and the remaining 8.5 metres (85%) will need to be funded by DC's.

Overall, for land acquisition the extent of DC funding is an average of the percentages attributable to different land areas needing to be acquired 100% and 85%, being 93% being 75%.



61A Intersection upgrade on Brigham Creek Rd/ Tamatea Ave – Interim

Road Corridor – Arterial

Spreadsheet Row 85: 100% property and 100% construction costs to be covered by AT.

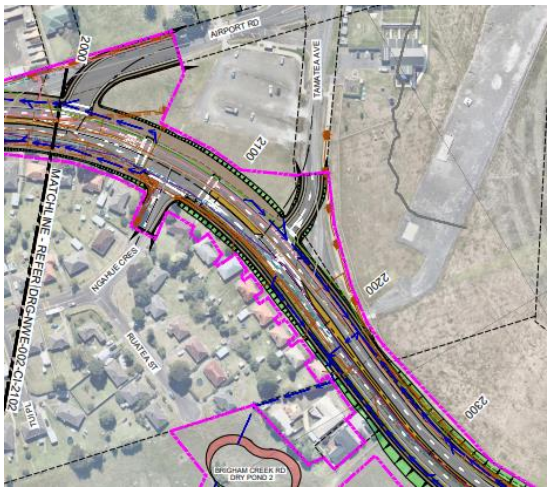
Upgrade to Single lane signalised intersection. The adjacent land is primarily defence land with no ability for developer mitigation. Construction and Land acquisition needs to be 100% funded by DC's. For this project as all the land needed for both the interim and ultimate project is defence land the ultimate land is to be purchased at the interim stage.

61B Intersection upgrade on Brigham Creek Rd/ Tamatea Ave – Ultimate

Road Corridor - Arterial

Spreadsheet Row 86: 0% property and 100% construction costs to be covered by AT.

Upgrade to Dual lane signalised intersection. The adjacent land is primarily defence land with no ability for developer mitigation. Construction and Land acquisition needs to be 100% funded by DC's. As all the land needed for the project is to be purchased at the interim stage no additional land is needed at the ultimate stage.



65 Intersection upgrade on Mamari Rd / Spedding Rd West - Ultimate

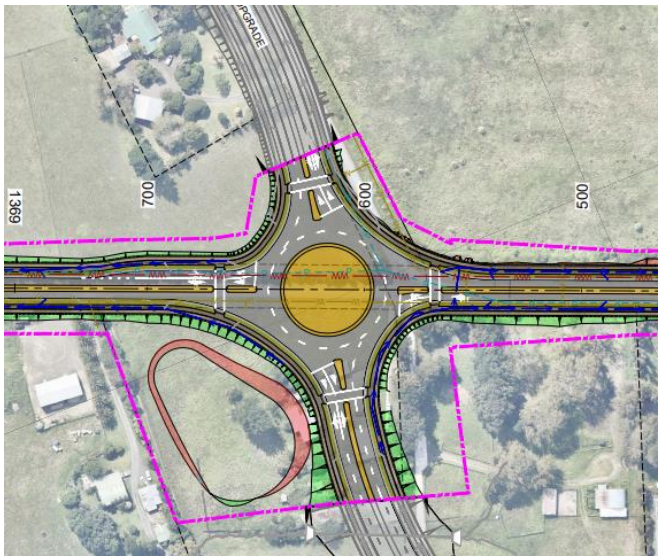
Road Corridor - Arterial

Spreadsheet Row 87: 45% property and 0% construction costs to be covered by AT.

Upgrade to Dual lane roundabout. The Spedding Block Precinct Provisions include upgrades to Spedding Road in this vicinity however they do not extend to the intersection. The construction of further upgrades and land acquisition to the SGA design for the intersection is likely to be partially funded by developer mitigation as the adjacent land lies outside the Spedding Block Precinct.

As further developer mitigation would likely be available it has been assumed that the cost of a single lane roundabout is $2.5 million and a dual lane roundabout $4.5 million (costs refer to base physical works costs only). For construction costs DC's should therefore fund $2.0 being 45% of the total physical works base cost.

For land acqusition it is assumed that costs are 100% funded by developer mitigation.

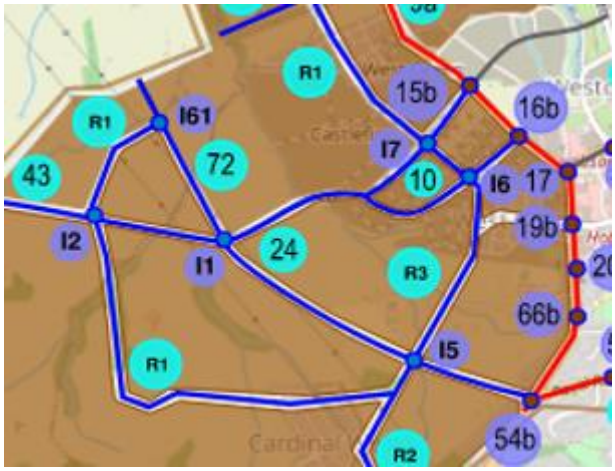


72 Redhills North South Arterial Henwood Road to Redhills Local Centre – Ultimate

Road Corridor – Arterial

Spreadsheet Rows 94 and 126: 9% property and 9% construction costs to be covered by AT for project road, 100% property and 100% cnstruction costs for bridge.

New 2-lane urban- with active modes on both sides + local intersection improvements. This road is likely to be constructed by the developer and is needed to provide for urbanisation of the area. The form of the road is not yet known though it is likely that the developer will provide for a road corridor width of at least 22 metres being collector standard. DC's will need to provide for the additional 2 metres to make up the standard two lane arterial width of 24 metres with all infrastructure being provided within a 22 metre width. So there is need for the 9% additional construction land acquisition to be funded by DC's. In addition if a bridge is required it will need to be funded 100% by DC's.



ADDITIONAL COLLECTORS

W2 New collector of 900m length Dale Road to Brigham Creek Road – Ultimate

Corridor Type – Collector

Spreadsheet Rows 95 and 127: 0% property and 0% construction costs to be covered by AT. 100% property and 100% construction costs for bridge to be funded by DC's.

New 830 metre 2 lane link plus bridge. The road is through developable land so can be provided through developer mitigation. The bridge would need to be provided 100% through DC's.

W3 Key Collector - Dale Rd, west of Riverlea

Corridor Type – Collector

Spreadsheet Row 96: 0% property and 12% construction costs to be covered by AT.

2-lane urban- with active modes on both sides + local intersection improvements. This road is approximately 20 metres wide. The total amount of road frontage counting both sides of the road is 1.4 km. Of this the Defence Purposes designated land on the northern side of Dale Road having frontage of 156 metres is unlikely to be developed. Thus 12% of the road frontage upgrades will need to be funded by DC's.

It has been assumed that either upgraded infrastructure will be located in the existing road reserve or developers will provide 1.5-2.0 metres for widening largely on the southern side to provide for the 22 metre collector width. So no land acquisition is needed.

W4 Key Collector - Bristol Rd, from Dale Rd to Rope Rd

Road Corridor - Collector

Spreadsheet Row 97: 0% property and 7% construction costs to be covered by AT.

2-lane urban- with active modes on both sides + local intersection improvements. This road is approximately 20 metres wide. The total amount of road frontage counting both sides of the road is 2.3 km. Of this the Defence Purposes designated land on the western side of the road having frontage of 149 metres is unlikely to be developed. Thus 7% of the road frontage upgrades will need to be funded % by DC's.

It has been assumed that either upgraded infrastructure will be located in the existing road reserve or developers will provide 1.5-2.0 metres for widening largely on the southern side to provide for the 22 metre collector width. So no land acquisition is needed.

W8B Spedding Road Extension – Collector

Corridor Type – Collector

Spreadsheet Row 98: - 0% property and 0% construction costs to be covered by AT.

New 710 metre 2 lane link including stream culverting. The road is through developable land and the resource consent provides for the construction of the road and culvert and so can be funded through developer mitigation.

W22 Sinton Road Collector from Kauri Road to SH18 Hobsonville Road – Ultimate

Corridor Type – Collector

Spreadsheet Row 168 and 170: 0% property and 0% construction costs for road to be covered by AT. 100% property and 100% construction costs for bridge across stream crossing to be covered by AT.

Project W22 (formerly part of project 40) comprises a new collector from Kauri Road to SH18. It is needed as the Brigham Creek Road roundabout with access from Sinton road is to reach capacity and the Sinton Road leg is to ultimately be removed, to be replaced by a signalised intersection at Kauri Road and Brigham Creek Road. This necesitates the need for W22 as a link to Kauri Road and involves construction of a bridge across the Waiarohia Stream. A further link is to be provided over SH18 via a bridge through to Hobsonville Road as part of W24. Both bridges are to be funded entirely by AT. The surrounding land is developable and construction of the new collector and upgrades to the existing roading together with any land acquisition is assumed to be funded by developer mitigation.

W24 Sinton Road Collector from SH 18 (East side to Hobsonville Road and Bridge over SH18

Corridor Type - Collector

Spreadsheet Row 169 and 171: 0% property and 100% construction costs for road to be covered by AT. 100% property and 100% construction costs for bridge across stream crossing to be covered by AT.

Project W24 (formerly part of project 40) comprises a new collector across SH18 to Hobsonville Road. W24 is to link up with W22 from Kauri Road to SH18. Both roads are needed due to the existing Sinton Road/Brigham Creek Road intersection ultimately reaching capacity and the Sinton Road leg is to ultimately be removed, to be replaced by a link across to Hobsonville Road W24 and the further link to Kauri Road W22 and the upgraded signalised intersection at Kauri/Brigham Creek Roads. The bridge over SH18 is to be funded entirely by AT.

To the south of SH18 Sinton Road East has already been developed to a width of 20 metres. It has been assumed that any upgrades will be undertaken within the existing roading corridor so no land acquisition is likely to occur. Any transport upgrades will need to be funded 100% by DC's.

W32A New collector from Brigham Creek Road/SH18 interchange to existing Westpoint Drive – Ultimate

Corridor Type – Collector

Spreadsheet Row 100: 0% property and 0% construction costs to be covered by AT.

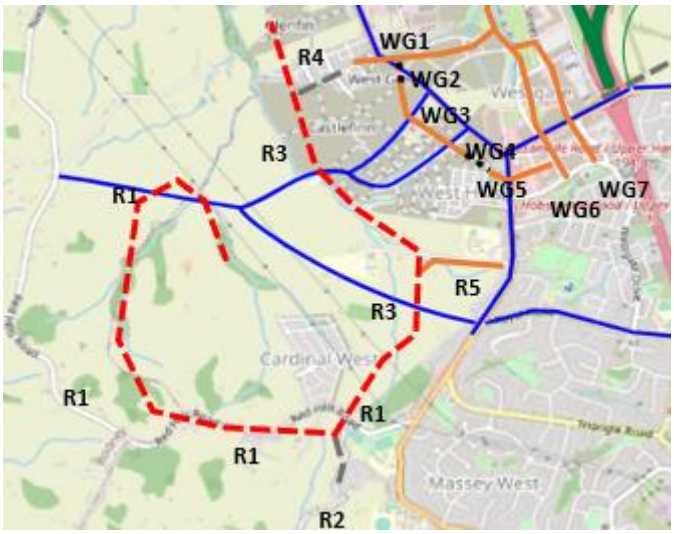
New 250 metre 2 lane link. The road is through developable land so can be provided through developer mitigation.

R1 **Redhills Key north-south collector spine within the Redhills growth area**.

Corridor Type – Collector

Spreadsheet Row 101 and 129: 0% property and 0% construction costs for road project to be covered by AT. 100% property and 100% construction cost to be covered by AT for bridges.

This collector road is a likely bus route. Assume design will be standard 2 lane 20m SGA cross section – Developers to fund construction and land acquisition of road. Bridges x2 will need to be funded by DC's.



R3 **New Key collector from I5 on Octans Road/Northside Drive to I9 on N-S Redhills arterial.**

Corridor Type – Collector

Spreadsheet Rows 103 and 130: 0% property and 0% construction costs to be covered by AT for project road.100% property and 100% construction costs to be covered by AT for bridges.

New 3100m collector including 10 stream crossings. Road construction and acquisition to be provided by developer. Bridges 100% DC's.

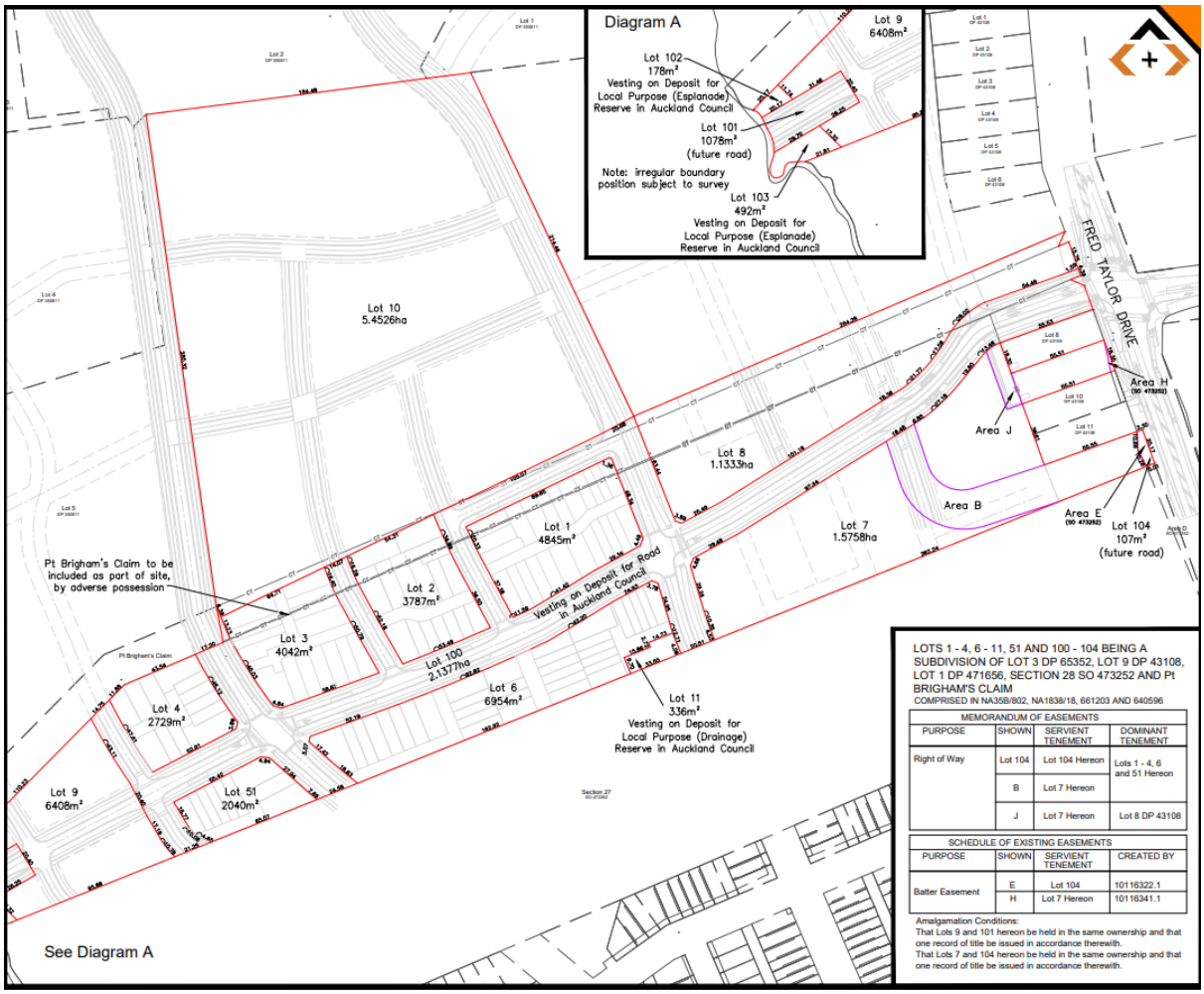
R4 **Henwood Road extension – Kakano Road to Henwood Road intersection**

Corridor Type – Collector

Spreadsheet Row 104: 100% property and 100% construction costs to be covered by AT.

2-lane urban with active modes on both sides and local intersection improvements. New 130m link to connect recently constructed road and Henwood Avenue. Includes stream overbridge. As the development is consented and under construction and acquisition costs associated with the link are to be 100% funded by DC's.

Memorandum



I1 **Intersection of Redhills N-S arterial (Redhills Local Centre to Royal Road) and Redhills E-W arterial (Dunlop Road/Baker Lane to local centre).**

Corridor Type – Arterial

Spreadsheet Row 105: 0% property and 0% construction costs to be covered by AT.

New single lane arterial roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I2 **Intersection 0f Redhills E-W arterial and R1 new collector**

Corridor Type – Arterial to collector

Spreadsheet Row 106: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I5 **Intersection of R2 new collector and Redhills N-S Arterial - Ultimate**

Corridor Type – Collector to Arterial.

Spreadsheet Row 108: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I6 Intersection of Baker Lane and R3 new key collector - Ultimate

Corridor Type – Collector to Arterial.

Spreadsheet Row 109: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I7 Intersection of Dunlop Road and R3 new key collector - Ultimate

Corridor Type –Arterial to Collector.

Spreadsheet Row 110: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I9 Intersection of Baker Lane and R3 new key collector - Ultimate

Corridor Type – Arterial to Collector.

Spreadsheet Row 111: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I10 Intersection of R2 new collector and Project 38A Northside Drive East from Fred Taylor Drive to Stream - Ultimate

Corridor Type – Collector to Arterial

Spreadsheet Row 112: 0% property and 0% construction costs to be covered by AT.

New single lane arterial to collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

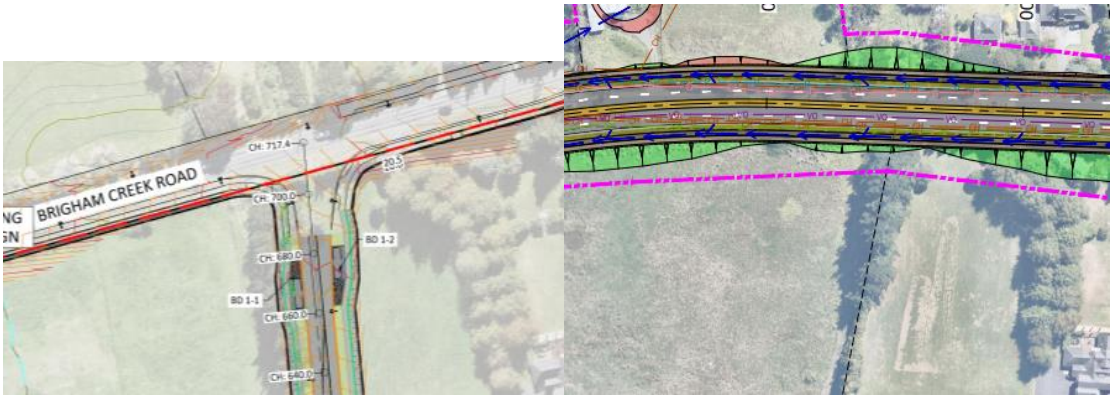
I12 Intersection of Brigham Creek Road, Spedding Road and new W2 collector - Ultimate

Corridor Type –Arterials to Collector.

Spreadsheet Row 113: 0% property and 0% construction costs to be covered by AT.

New dual lane signalised intersection. The precinct provisons for the Speddings block provide for this intersection to be constructed by the developer on the southern side. The intersection is to have a left and right turn lane on Spedding Road, a right turn turn and through lane on the eastern arm of the intersection. Signalised active mode crossings are to be provided on each arm of the intersection. NB the business zoning of the Speddings Block does not extend to this intersection.

The land to the north of the proposed intersection is developable as is the land in between the urban zoned Spedding Block and Brigham Creek Road. It is therefore considered that any additional upgrades will be developer funded.



I13 Intersection of W2 new key collector and Dale Road - Ultimate

Corridor Type – Collector.

Spreadsheet Row 114: 0% property and 0% construction costs to be covered by AT.

New single lane collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I17 Intersection of Dale, Totara Road and McCaw Avenue - Ultimate

Corridor Type – Collector.

Spreadsheet Row 115: 0% property and 0% construction costs to be covered by AT.

New single lane collector roundabout. The land to the south of the intersection has already been developed with active mode linkages across the southern arm of the intersection. The land to the north of the proposed intersection is developable as is the land in between the urban zoned Speddigns Block and Brigham Creek Road. It is therefore considered that any additional upgrades will be developer funded.

I23 Intersection of Puriri and Kauri Roads - Ultimate

Corridor Type – Collector.

Spreadsheet Row 118: 100% property and 100% construction costs to be covered by AT.

New single lane collector roundabout. This intersection lies within the 65 dB Ldn 65 Aircraft Noise contour where the establishment of new noise sensitive activities (dwellings etc) are a prohibited activity. Construction and any land purchase necessary for the roundabout will need to be 100% funded by DC's.

I24 Intersection of Kauri Road and W22 (formerly part of Project 40) Sinton Road collector from Kauri Road to SH18 - Ultimate

Corridor Type – Collector

Spreadsheet Row 119: 0% property and 0% construction costs to be covered by AT.

New single lane collector roundabout. Projects W22 and W24 (formerly part of project 40) comprise a new collector from Kauri Road to Hobsonville Road and involves construction of a bridge across the stream and another over SH18. Both bridges are to be funded entirely by AT. The surrounding land is developable and construction of the roundabout and any land acquisition is assumed to be funded by developer mitigation.

I25 Intersection along W22 (formerly part of Project 40) Sinton Road collector from Kauri Road to Hobsonville Road - Ultimate

Corridor Type – Collector to Arterial

Spreadsheet Row 120: 0% property and 0% construction costs to be covered by AT.

Projects W22 and W24 (formerly part of project 40) comprise a new collector from Kauri Road to Hobsonville Road and involve construction of a bridge across the stream and another over SH18. Both bridges are to be funded entirely by AT. The surrounding land is developable and construction of the roundabout and any land acquisition is assumed to be funded by developer mitigation.

I26 Intersection of Sinton Road and Hobsonville Road - Ultimate

Corridor Type – Collector to Arterial

Spreadsheet Row 121: 63% property and 0% construction costs to be covered by AT.

This intersection forms part of the Hobsonville Cycling Connection.

New dual lane signalised intersection at Hobsonville Road at culmination of Project W24 (formerly part of project 40) Sinton Road collector from SH18 to Hobsonville Road. W24 links to a new collector W22 on the north western side of SH18. W22 and W24 involves construction of a bridge across the stream and another over SH18. Both bridges are to be funded entirely by AT.

The intersection has already been upgraded to a signalised intersection, however, it is not to the SGA design as it does not provide for the full extent of double laneing to Hobsonville Road. It has been assumed that any upgrades to the north eastern side of Sinton Road will be upgraded within the existing road corridor or through developer mitigation.

Land to the south/east is developed and is unlikley to provide opportunities for developer mitigation.

For the north/western side the road frontage to 120 Hobsonville Road is in place to enable the ultimate intersection solution and no additional construction is needed. Although the road frontage has been set aside it currently does not form part of the

road. It has been assumed that the developer would provide 1.5-2m at no charge. Land acquisition of at least an additional 2.5 metres is therefore needed through DC's.

122 Hosonville Road is the only land that has not yet been developed. It is anticpated that the developer will provide roading infrastructure frontage and intersection upgrades at the time of subdivision/development or these may be provided through the cycle project funded by the targeted rate. This developer would also provide for 1.5-2m (37%) at no charge. Up to 4 metres may be needed. Similar to the north-western side of this intersection land frontage has been set aside but has not yet been upgraded and is not yet vested as road.

Land acquisition will therefore need to be 63% funded by DC's and any additional roading upgrades/realignment of infrastructure is assumed to be funded by developer mitigation rather than DC's.

I61 Intersection of R1 Redhills North South Collector and Project 72 N-S Arterial - Ultimate

Corridor Type – Collector to Arterial

Spreadsheet Row 122: 0% property and 0% construction costs to be covered by AT.

New single lane collector roundabout. The construction of the roundabout and any land acquisition has been assumed to be funded by developer mitigation.

I62 Intersection of Dunlop Road and Baker Lane Arterial - Ultimate

Corridor Type – Arterial

Spreadsheet Row 167: 50% property and 50% construction costs to be covered by AT.

New dual lane signalised intersection. This intersection provides strategic access to the surrounding developable areas as well as to immediately adjacent land and the land on which it is located.. Because of this and given the intersection is SGA designed, arterial to arterial, it has been assumed to be only partially funded by developer mitigation. It has been assumed that DC's will equate to 50% of the construction and land acquisition costs.

I63 Intersection of Birdwood Road and Redhills Road

Corridor Type – Collector to collector.

Spreadsheet Row 184: 100% property and 100% construction costs to be covered by AT.

New single lane roundabout. It is unlikely given existing development that this intersection upgrade will be able to be developer funded. The upgrade is needed to provide increased connectivity between Redhills and Birdwood Roads and is needed because of Redhills growth. Upgrades to be 100% DC's for acquisition and for construction.

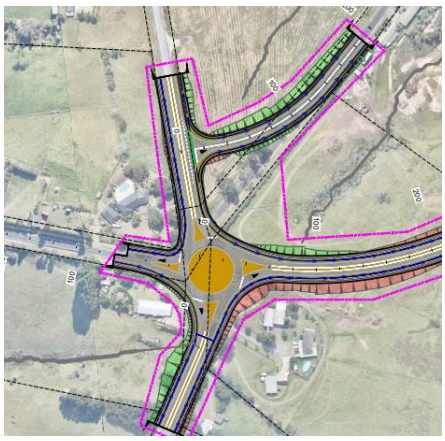
73 Intersection of Nixon/Nelson/Redhills Roads

Corridor Type – Arterial

Spreadsheet Row 185: 91% property and 91% construction costs to be covered by AT.

The intersection at the western end of project 43 Redhills arterial involves realignment of Henwood Road to the north creating a new intersection and a roundabout at the intersection of the arterial/Nixon/ Nelson/Redhills Roads.

Developable land is limited in this location. The only developable land is to the south and east of Henwood and Redhill Road and is one single lot. The land is zoned single house zone and accordingly it is considered that the developer should contribute a maximum of 9% to the cost of the intersection improvements. DC funding of 91% is therefore needed for construction and land acquisition.



Memorandum

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BROWNFIELD/GREENFIELD UNIT RATES

GREENFIELD

Table 2-1: Generic Linear Rates for Transport Elements (Greenfield)

Ref	Description	Rate	Unit	Assessment year (Baseline)
1	2-lane transport corridor	$10,220	m	2021
2	2-lane interim transport corridor	$12,630	m	2021
3	Extra over for future 4-lane corridor	$5,000	m	2021
4	4-lane transport corridor – new road	$15,130	m	2021
5	Roadside Berm Construction – level topography	$2,020	m	2021
6	Roadside Berm Construction – rolling topography	$2,850	m	2021
7	Roadside Berm Construction – steep topography	$4,290	m	2021
8	2-Lane collector	$9,550	m	2024
9	Urban frontage	$4,610	m	2024
10	Footpath only	$370	m	2024
11	Footpath/cycle path retrofit	$480	m	2024
12	4-lane transport corridor – converting rural road	$15,490	m	2021

Table 2-2: Generic unit rates for transport elements

Description	Rate	Unit	Assessment year (Baseline)
Bridge Construction	**$4,500**	**m2**	2021
2-lane roundabout	**$2.5m**	**each**	2021
4-lane roundabout	**$4.5m**	**each**	2021
New signalised intersection – simple	**$2m**	**each**	2021
New signalised intersection – complex	**$4.5m**	**each**	2021
Rural road reseal (chipseal)	**$56**	**m2**	2024
Rural road pavement upgrade	**$116**	**m2**	2024

BROWNFIELD

Table 2-1: Generic Rates for Transport Elements (Brownfield)

Ref.	Description, application and schedule reference (where applicable)	Rate	Unit	Assessment year (Baseline)
1	**Intersection upgrade low** - upgrade to an existing intersection with low level intervention.	$200,000	each	2024
2	**Intersection upgrade medium** - upgrade to an existing intersection with medium level intervention. This includes: • medium level roundabout (Ref 2-P1) • medium level signals (Ref 2-P2)	$600,000	each	2024
3	**Intersection upgrade medium/high -** Upgrade to an existing intersection with medium/high level intervention. This includes: • medium/high level roundabout (Ref 3-P1) • medium/high level signals (Ref 3-P2)	$750,000	each	2024
4	**Intersection upgrade high** - upgrade to an existing intersection with high level intervention. This includes: • high level roundabout (Ref 4-P1) • high level signals (Ref 4-P2)	$1,500,000	each	2024
5	**Midblock low** - upgrade to a midblock section with low level of intervention. • Local and collector road upgrade with no changes to carriageway width or kerb lines • On-road cycle lanes	$2,000	m	2024
6	**Midblock medium -** upgrade to a midblock section with medium level of intervention. • A bidirectional facility with a kerb line moved on one side. • A shared path with a kerb line moved on one side.	$4,200	m	2024
7	**Midblock high** - upgrade to a midblock section with medium level of intervention. • Collector/arterial road upgrades with more significant changes involving reconfiguration of the kerb lines on both sides.	$6,900	m	2024
8	**Local area traffic management** • Speed table (Ref 8-P1) • Speed threshold signage and marking. (Ref 8-P2) • Chicane with traffic island (Ref 8-P3)	• $100,000 • $5,000 • $10,000	each	2024
9	**Zebra crossing (At-grade)**	$50,000	each	2024

Ref.	Description, application and schedule reference (where applicable)	Rate	Unit	Assessment year (Baseline)
10	**Footpath** - Upgrading an existing sub-standard footpath	$470	m	2024
11	**4 lane transport corridor (urban)**	$13,500	m	2024
12	**Footpath/cycle path retrofit** • Active mode facility	$480	m	2021

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Network map

Includes all projects included in DC as well as necessary projects for full network buildout that have already been completed.