

North West Staging Considerations

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Disclaimer

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Table of Contents

1	Introduction	1
1.1	Purpose.....	1
1.2	Background	1
2	Land Use and Transport Inputs	2
2.1	FULSS and Transport Assumptions	2
2.2	Land Use Forecasts	6
3	Staging Considerations	8
3.1	Principles	8
3.2	Interdependencies with other projects	8
3.3	Alternative Staging Scenario	10
4	Summary	23

Acronym/Term	Description
ADT	Average Daily Traffic
AFC	Auckland Forecasting Centre
AT	Auckland Transport
ATAP	Auckland Transport Alignment Plan
ASH	Alternative State Highway
AUPOIP	Auckland Unitary Plan - Operative in Part
Council	Auckland Council
DBC	Detailed Business Case
Development ready	Bulk infrastructure is in place to service development, including three waters, transport, and social infrastructure
FTN	Frequent Transit Network
FULSS	Future Urban Land Supply Strategy
FUZ	Future Urban Zone
GPS 2021	Draft Government Policy Statement on Land Transport 2021/22 – 2030/31
ha	hectare
HIF	Housing Infrastructure Fund
IBC	Indicative Business Case
ITA	Integrated Transport Assessment
MSM	Auckland Regional Transport Model (Macro Strategic Model)
NIMT	North Island Main Trunk Line
NoR	Notice of Requirement
NZUP	New Zealand Upgrade Programme
Partners	Collectively refers to Auckland Transport, Waka Kotahi NZ Transport Agency, manawhenua, Auckland Council and KiwiRail
PT	Public transport
RASF	Roads and Streets Framework
RLTP	Regional Land Transport Plan
RTC	Rapid Transit Corridor. Forms part of the overall Auckland Rapid Transit Network (RTN).

Acronym/Term	Description
RTN	Rapid Transit Network which is comprised of multiple Rapid Transit Corridors (RTC's) around Auckland.
SGA	Supporting Growth Alliance (referred to as Te Tupu Ngātahi)
SH16	State Highway 16
SH18	State Highway 18
SHA	Special Housing Area
Te Tupu Ngātahi	Supporting Growth Alliance
TFUG	Transport for Future Urban Growth
The Council	Auckland Council
The Programme	The Supporting Growth Programme
TOD	Transit Oriented Development
UDF	Te Tupu Ngātahi Urban Design Framework
Waka Kotahi	Waka Kotahi New Zealand Transport Agency

1 Introduction

1.1 Purpose

This report has been prepared to support the North West (NW) Detailed Business Case (DBC) and set out considerations relating to the potential implementation of the transport projects identified in the NW DBC. This report will inform the development of the Financial Case for the NW DBC.

1.2 Background

The considerations relating to the implementation of NW DBC transport projects will be driven by assumptions around the land use roll-out. The expected timeframes for the future land use roll-out in the NW growth areas has initially been guided by Auckland Council's Future Urban and Supply Strategy, released in July 2017 (FULSS).

Coupled with this land use context are the current expectations around the potential timing for key strategic transport projects in the NW, which will have a transformational impact on the transport choices for the future communities in the NW.

For the purposes of the NW DBC transport modelling, assumptions have been provided by Waka Kotahi NZ Transport Agency (Waka Kotahi) and Auckland Transport (AT) in relation to these key strategic transport projects that have informed the modelling. Noting this is not related to current commitments for funding of these projects. In addition to the key strategic projects within the NW DBC, these include:

- Full implementation of the NW Rapid Transit Network corridor (NWR TN) from the City Centre to a future Brigham Creek station (2021-31 RLTP only has seed funding for further investigation)
- Squadron Drive Interchange west facing ramps (2021-31 RLTP has committed funding)
- The other components of the SH16 / SH18 Connections project (Not in 2021-31 RLTP)
- SH18 RTN corridor from Westgate to Constellation (Not in 2021-31 RLTP).

In addition to the above, for the NW DBC, it is also necessary to consider alternatives to the staging of this transport infrastructure that provide an affordable implementation of the NW transport projects, whilst still supporting the NW growth areas and enabling transformational change and travel choice, as well as considering the uncertainty that exists in relation to the potential timing and location of growth. This is discussed further in Section 3.

2 Land Use and Transport Inputs

2.1 FULSS and Transport Assumptions

The FULSS for the NW growth areas is illustrated on Figure 2-1. Table 2-1 then compares the assumed staging of transport infrastructure for the NW growth areas based on the FULSS with the staging assumptions used in the transport modelling for the NW DBC (based on assumptions for the purposes of modelling (not funding) provided by Waka Kotahi and AT).

Figure 2-1: FULSS for North West

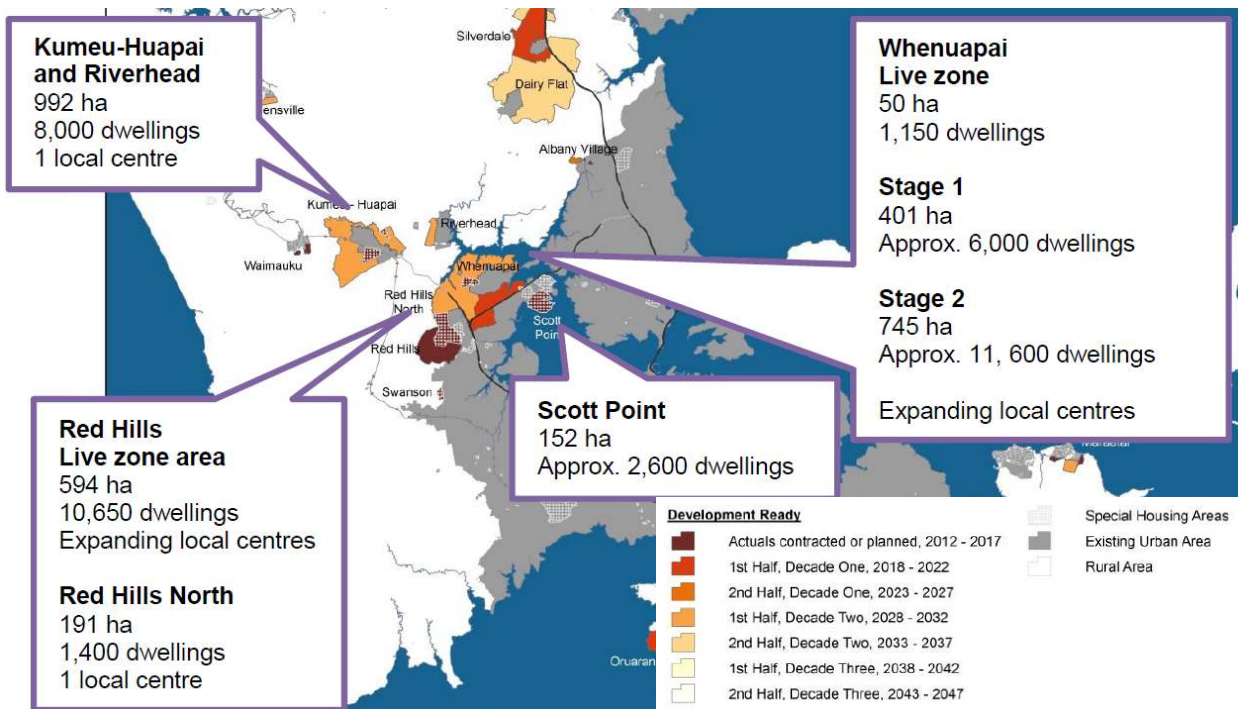


Table 2-1: FULSS versus NW DBC Modelling Staging Assumptions

Transport Project	FULSS Staging	NW DBC Modelling Staging
NW Strategic Projects		
1. Rapid Transit Corridor (RTC) Brigham Creek to Kumeū / Huapai	2028-32 Aligns planned growth in Kumeū - Huapai (1 st Half, Decade 2)	2033-37 Follows assumed NWRTRN Full Implementation (2028-32)
2. Alternative State Highway (ASH) including Brigham Creek Interchange	2028-32 Aligns planned growth in Kumeū - Huapai (1 st Half, Decade 2)	2033-37 Follows assumed SH16/SH18 Connections (2028-32)
3. Regional Active Mode Corridor (RAMC)	2028-32 Aligns planned growth in Kumeū - Huapai (1 st Half, Decade 2)	2033-37 With RTC

Transport Project	FULSS Staging	NW DBC Modelling Staging
4. SH16 Main Road Upgrade From Old Railway Road to Foster Road	2028-32 Aligns planned growth in Kumeū -Huapai (1 st Half, Decade 2)	2033-37 Align with RTC – assumes delayed growth in Kumeū - Huapai
Redhills – Local Projects		
5. Fred Taylor Drive FTN Upgrade	2028-32 Aligns planned growth in Redhills North (1 st Half, Decade 2)	2023-27 Align with expected growth in Redhills Live-zoned and North
7. New Northside Drive West From Fred Taylor Drive to Nixon Road	2028-32 Aligns planned growth in Redhills North (1 st Half, Decade 2)	2028-32 Align with expected growth in Redhills North
9. Don Buck Road FTN Upgrade Fred Taylor Drive to Redhills Road	2018-22 Aligns planned growth in Redhills Live-zoned (1 st Half, Decade 1)	2023-27 Align with expected growth in Redhills Live-zoned
10. Royal Road FTN Upgrade	2018-22 Aligns planned growth in Redhills Live-zoned (1 st Half, Decade 1)	2028-32 Align with assumed NWRTC Full Implementation
Whenuapai – Local Projects		
12. Brigham Creek Road Upgrade	2028-32 Aligns planned growth in Whenuapai Stage 2 (1 st Half, Decade 2)	2028-32 Align with assumed NWRTC Full Implementation and SH16/SH18 Connections
13. Māmari Road FTN Upgrade	2028-32 Aligns planned growth in Whenuapai Stage 2 (1 st Half, Decade 2)	2028-32 Align with assumed NWRTC Full Implementation and SH16/SH18 Connections
14. Trig Road Upgrade SH18 to Brigham Creek Road	2018-22 Aligns planned growth in Whenuapai Stage 1 (1 st Half, Decade 1)	2028-32 Align with assumed NWRTC Full Implementation and SH16/SH18 Connections
15. New Spedding Road West Māmari Road to SH16	2028-32 Aligns planned growth in Whenuapai Stage 2 (1 st Half, Decade 2)	2028-32 Align with assumed NWRTC Full Implementation and SH16/SH18 Connections

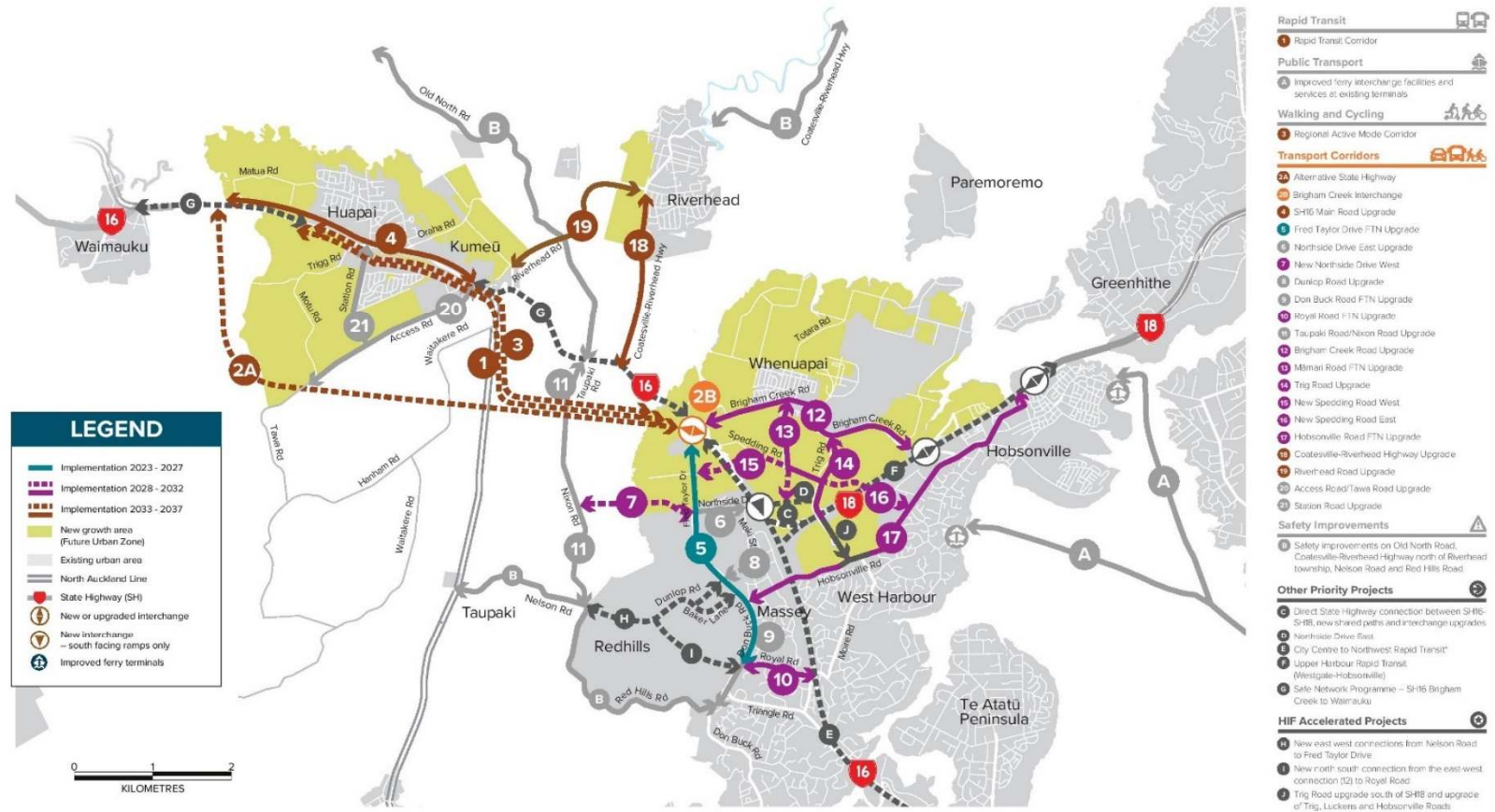
Transport Project	FULSS Staging	NW DBC Modelling Staging
16. New Spedding Road East Māmari Road to SH18	2018-22 Aligns planned growth in Whenuapai Stage 1 (1 st Half, Decade 1)	2028-32 Align with assumed SH18 RTN and SH16/SH18 Connections
17. Hobsonville Road FTN Upgrade	2018-22 Aligns planned growth in Whenuapai Stage 1 (1 st Half, Decade 1)	2028-32 Align with assumed NWRTC Full Implementation and SH16/SH18 Connections
Riverhead – Local Projects		
18. Coatesville-Riverhead Highway Upgrade SH16 to Riverhead Road	2028-32 Aligns planned growth in Riverhead (1 st Half, Decade 2)	2033-37 Align with ASH – assumes delayed growth in Riverhead
19. Riverhead Road Upgrade	2028-32 Aligns planned growth in Riverhead (1 st Half, Decade 2)	2033-37 Align with ASH – assumes delayed growth in Riverhead
Kumeū / Huapai – Local Projects		
20. Access Road/Tawa Road Upgrade	2028-32 Aligns planned growth in Kumeū -Huapai (1 st Half, Decade 2)	2033-37 Align with ASH and RTC – assumes delayed growth in Kumeū -Huapai
21. Station Road Upgrade	2028-32 Aligns planned growth in Kumeū -Huapai (1 st Half, Decade 2)	2033-37 Align with ASH and RTC – assumes delayed growth in Kumeū -Huapai

From the above table, it can be seen that:

- The NW Strategic projects have been assumed to occur in a later time horizon than may be anticipated under the FULSS staging. With all three Strategic projects within the same five-year period, following the assumed timing of the NWRTN and SH16 / SH18 Connection projects.
- The Māmari Road and Royal Road FTN corridors occurring on a later timeframe to also align with the assumed timing of the NWRTN and new stations at Royal Road and Westgate.
- Later timing of the Hobsonville Road, Brigham Creek Road and Don Buck Road upgrades to four-laning assuming a more gradual build-out of the surrounding Redhills and Whenuapai areas than anticipated in the FULSS in terms of the need for the full four-laning of these corridors.
- Later timing of the Local projects in Kumeū -Huapai and Riverhead associated aligning with the delivery of the Strategic projects, which would support growth in these areas.

The NW projects timing, based on the modelling assumptions, are also illustrated in **Figure 2-2** below.

Figure 2-2: Assumed Staging of North West DBC Projects



2.2 Land Use Forecasts

The transport modelling for the NW DBC has been informed by the I11 version 5 land use forecasts agreed with Auckland Council. These have informed the transport modelling using the regional transport model (the Macro Strategic Model (MSM), as well as the Strategic Active Modes Model (SAMM) used for the assessment of the active modes demands. The outputs from the MSM have then provided inputs to the SATURN based traffic models, which have more specifically considered the traffic effects.

Table 2-2 and Table 2-3 summarise the assumed residential population and employment forecasts for the NW growth areas from I11 v5. This includes a '2048+' forecast year, which represents the 'full' build out of the growth areas sometime beyond 2048, depending on the longer-term rate of growth.

Table 2-2: I11v5 Population Forecasts – NW Growth Areas

Population	2016	2023	2028	2033	2038	2043	2048	SGA48+
Kumeū -Huapai	3,181	4,389	6,007	8,958	13,700	16,210	16,065	24,689
Riverhead	1,720	1,670	1,629	2,041	3,116	3,734	3,693	4,645
Redhills	1,119	3,140	8,205	12,966	17,412	19,729	19,374	36,172
Whenuapai	3,012	8,753	15,764	22,762	29,150	34,917	40,881	50,380
Total	9,032	17,952	31,605	46,727	63,378	74,590	80,013	115,886
Percentage of Total								
Kumeū	13%	18%	24%	36%	55%	66%	66%	100%
Riverhead	37%	36%	35%	44%	67%	80%	80%	100%
Redhills	3%	9%	23%	36%	48%	55%	55%	100%
Whenuapai	6%	17%	31%	45%	58%	69%	81%	100%
Total	8%	15%	27%	40%	55%	64%	69%	100%

Table 2-3: I11v5 Employment Forecasts – NW Growth Areas

Jobs	2016	2023	2028	2033	2038	2043	2048	SGA48+
Kumeū -Huapai	2,107	2,269	2,395	2,722	3,514	4,278	4,655	5,450
Riverhead	532	537	539	540	541	542	545	579
Redhills	608	812	1,322	1,804	2,381	3,100	3,427	4,329
Whenuapai	1,773	3,449	5,567	7,541	9,198	10,800	12,089	16,210
Total	5,020	7,067	9,823	12,607	15,634	18,720	20,716	26,568

Jobs	2016	2023	2028	2033	2038	2043	2048	SGA48+
Percentage of Total								
Kumeū	39%	42%	44%	50%	64%	78%	85%	100%
Riverhead	92%	93%	93%	93%	93%	94%	94%	100%
Redhills	14%	19%	31%	42%	55%	72%	79%	100%
Whenuapai	11%	21%	34%	47%	57%	67%	75%	100%
Total	19%	27%	37%	47%	59%	70%	78%	100%

This generally indicates the following in relation to the timing of the population and jobs within the NW growth areas:

- Around 55% of the total forecast population growth in Kumeū -Huapai is predicted to occur by around 2038, with 19% of the total growth predicted between 2033 and 2038. Within the same timeframe (by 2038) around 64% of the total forecast jobs in Kumeū -Huapai is predicted to occur. By 2048, around 65% (16,065) and 85% (4,655) of the total forecast population and jobs in Kumeū -Huapai respectively is predicted to occur.
- In Riverhead, around 67% of the total forecast population growth is predicted to occur by around 2038, with 23% predicted between 2033 and 2038. Within the same timeframe (by 2038) around 94% of the total forecast jobs is predicted to occur, albeit there is little total change in jobs in Riverhead in the long-term. By 2048, around 80% (3,693) and 94% (545) of the total forecast population and jobs in Riverhead respectively is predicted to occur.
- Around 48% of the total forecast population growth in Redhills is predicted to occur by around 2038, with 25% of the total growth predicted between 2028 and 2038. Within the same timeframe (by 2038) around 55% of the total forecast jobs in Redhills is predicted to occur. By 2048, around 54% (19,374) and 79% (3,427) of the total forecast population and jobs in Redhills respectively is predicted to occur. This indicates that the Redhills North area is likely to develop much later than indicated by the FULSS, albeit the NWRTN could be a catalyst for earlier development in this area.
- In Whenuapai, around 58% of the total forecast population growth is predicted to occur by around 2038, with 27% predicted between 2028 and 2038. Within the same timeframe (by 2038) around 57% of the total forecast jobs is predicted to occur in Whenuapai. By 2048, around 81% (40,881) and 75% (12,089) of the total forecast population and jobs in Whenuapai respectively is predicted to occur.
- Across all NW growth areas, around 55% of the total forecast population growth is predicted to occur by around 2038, with 28% of the total growth predicted between 2033 and 2038. Within the same timeframe (by 2038) around 59% of the total forecast jobs is predicted to occur. By 2048, around 69% (80,013) and 78% (20,716) of the total forecast population and jobs respectively is predicted to occur.

3 Staging Considerations

3.1 Principles

Due to the uncertainty regarding the timing and form of specific land use activities, a principle-based approach is regarded as the best way to manage and deliver the desired transport and land use outcomes consistently. This recognises that staging in many cases will either be determined by regional, inter-regional and local priorities, which heavily rely on the scale and rate of growth.

A set of principles has therefore been developed, which links staging decisions to broader strategic goals regarding travel demand management and modal shift.

Key principles for staging have been developed that seek to assist in delivering the desired transport and land use outcomes. These principles include supporting the following outcomes:

- Immediate shift to more sustainable travel choices.
- Manage adverse impacts of development on the wider system.
- Support the desired urban form, particular high density, quality urban environments.
- Recognise the need to support both place and movement function.
- Provide affordable staging plans that match development staging.
- Protect for longer-term needs.

The suggested principles for staging include:

- Programme public transport and active mode facilities and services from the outset of urban development to support a shift to more sustainable travel.
- Prioritise PT and active mode facilities that support attractive access to the RTC stations.
- Consider staging of elements of a project to match likely development stages and system needs, whilst also considering pathways to achieve the full-build elements.
- Consider the needs to support place-function, not solely movement function.
- Provide safe travel by all modes.
- Staging that can respond to the timing, scale and form of urban development.

3.2 Interdependencies with other projects

There are multiple potential combinations of how the staging of projects could be implemented to respond to the timing, scale and form of urban growth in the NW.

There are inherent uncertainties linked to how projects will be staged (longitudinally and horizontally) in relation to both that land use and their interdependencies between the NW DBC strategic projects, as well as other key strategic projects in the NW, discussed previously.

Table 3-1 provides an overview of the interdependencies and relationships with NW DBC strategic projects and with other key (Waka Kotahi) strategic projects to provide further clarity about short and long term integrated project planning.

Table 3-1: Key Strategic Project Interdependencies

Project	Relationships and Influences	SH16 Main Rd	Māmari Rd FTN	Hobsonville Rd FTN	Brigham Creek Rd	Trig Rd	Spedding Rd East	Spedding Rd West	Royal Rd FTN	Fred Taylor Dr	Don Buck Rd	Northside Dr West	Taupaki Rd	Access Rd	Station Rd	Coatesville-Riverhead Hwy	Riverhead Rd
NW Strategic Projects																	
Rapid Transit Corridor (RTC) / Regional Active Mode Corridor (RAMC) <i>- Rural section</i>	A separated RTC (mode neutral) with local road grade separation from a future Brigham Creek station (delivered by the NWRTN) to Kumeū at Access Rd	✓								✓			✓				
Rapid Transit Corridor (RTC) <i>- Urban section</i>	A separated RTC (mode neutral) with local road grade separation, is recommended from Access Rd in Kumeū to a terminating Huapai station with Park and Ride with sections parallel to SH16 Main Road	✓															
Alternative State Highway (ASH) <i>(including Brigham Creek Interchange)</i>	A four-lane motorway standard corridor with adjacent shared path is proposed from a new Brigham Creek Interchange terminating on SH16 west of Huapai, reducing through traffic on SH16 Main Road in Kumeū -Huapai	✓			✓			✓		✓				✓			
Other Strategic Projects																	
NW RTN	A full implementation of the RTN corridor (mode to be confirmed) has been identified through the NWRTN IBC from the City Centre to a future Brigham Creek station, including potential stations at Westgate and Royal Road. Interim improvements will provide bus shoulders on SH16 and a new bus station at Westgate		✓		✓			✓	✓	✓							
SH16 / SH18 Connections	A package of improvements has been identified through the previous SH16 / SH18 SSBC, including; Squadron Drive West Facing Ramps, Interim upgrade to the SH16 / Brigham Creek roundabout, SH16 / 18 motorway to motorway ramps, Northside Dr East Interchange incl. south facing ramps, SH18 Brigham Creek Interchange upgrade, and Associated active modes facilities		✓	✓	✓	✓	✓			✓							
SH18 RTN	A RTN corridor on SH18 between Westgate and Constellation, including stations near Spedding Road East and Hobsonville centre		✓	✓		✓	✓										
SH16 Improvements	SH16 safety and efficiency improvements between Brigham Creek Road and Taupaki Road, plus a shared path to Kumeū, as well as SH16 safety improvements between Huapai and Waimauku	✓			✓					✓						✓	

3.3 Alternative Staging Scenario

In addition to the staging scenarios discussed in Section 2, the following alternative staging scenario has therefore been developed for the transport projects identified in the NW DBC. This considers the modelled land use assumptions and the principles and inter-dependencies identified above, as well as the potential affordability of the NW DBC programme.

For each project / component of the NW DBC programme consideration has been given to whether and how changes in the extent or scale of growth (potentially influenced by the National Policy Statement for Urban Development (NPS:UD), may influence the footprint or timing of the projects. This is discussed in the risks and opportunities.

Table 3-2 below provides a comparison between the three staging scenarios identified in this report, which have been considered as part of the NW DBC, including the alternative staging scenario. This also provides a high-level qualitative indication of the potential to contribute to reduced enabled carbon emissions.

The alternative staging scenario and the associated outcomes are then described in Table 3-3 and illustrated on Figure 3-1 below, including the key influences and inter-dependencies and risks.

In developing the alternative staging scenario, particular consideration has been given to the staging of the RTC between a Brigham Creek station (part of the NWR TN project) and Kumeū-Huapai and the associated timing of the ASH. The interim staging options for the RTC are also discussed in the 'NW DBC – Rapid Transit Corridor (RTC)' technical note, which is appended to the NW DBC Transport Outcomes Report.

Aligning with the staging principles to programme public transport from the outset and prioritise public transport, there is the opportunity for earlier delivery (2028-32) of the RTC Rural section (and potentially the RTC stations in Kumeū-Huapai to influence urban form and provide a catalyst for growth) to enable use for a bus-based RTC, terminating near Access Road. This would be as an extension to the NWR TN Short Term (bus) improvements project along SH16. It is recognised that this will likely have a high cost for interim facilities, which would require further investigation of potential patronage and associated tie-in with that project at Westgate or Brigham Creek stations, as part of an implementation business case for the project. As the four-laning of SH16 from Taupaki Road to Kumeū / Huapai (that could facilitate priority for public transport on SH16) does not form part of the longer-term planning for the North West (and would require designation), that would be less supportive of achieving a pathway to achieve the full-build elements of the NW DBC programme.

As discussed in Table 3-3 below, following delivery of a dedicated RTC, the ASH could be delivered (2033-37). Aligning with the staging principles, this would reduce 'through' traffic on SH16 Main Road in Kumeū / Huapai to supporting the planned 'place' function. It would also provide a more viable and resilient alternative to SH16 between Kumeū and Brigham Creek Road for inter-regional and freight trips, reducing adverse safety effects on rural roads, and freight traffic in Kumeū / Huapai. Furthermore, the delivery of the upgraded Brigham Creek Interchange supports the opportunity for improved active mode and public transport connections between the Whenuapai and Redhills urban growth areas.

The ASH would also provide the opportunity to provide a temporary alternative for interim RT bus services during construction of the full implementation of the RTC (including the Urban section in Kumeū / Huapai (2038-42) which would be within the same corridor as the interim RTC rural section.

The assessment demonstrates there are a number of different drivers and influences on how the NW DBC programme could be staged, but this is still subject to some uncertainty. However, the assessment does demonstrate that:

- there are a multitude of ways the urban development of this area could be staged to deliver the overall future network to support the NW growth areas
- that active monitoring and management of implementation decisions will need to be dynamic, pro-active in its response to a range of inputs, including land use planning, land use outcomes and system performance.

Table 3-2: Comparison of Staging Scenarios

Project	Sub-Project	Qualitative Emissions Outcome	FULSS Staging	NWDBC Modelling Staging	Alternative Staging
1. Rapid Transit Corridor (RTC) From Brigham Creek Interchange to Kumeū- Huapai & 3. Regional Active Mode Corridor (RAMC)	RTC (Rural Section)	High	2028-32	2033-37	2028-32 (Interim) 2038-42 (Full, as below)
	Kumeū / Huapai Stations	High	2028-32	2033-37	2028-32 (Interim) 2038-42 (Full, as below)
	RTC (Urban Section)	High	2028-32	2033-37	2038-42
2. Alternative State Highway (ASH) From Brigham Creek Interchange to SH16	ASH (full corridor) including Brigham Creek Interchange	Low	2028-32	2033-37	2033-37
	Brigham Creek Interchange (interim)	Low	2028-32	2033-37	2028-32 (Interim)
	Tawa Rd Interchange (interim)	Low	2028-32	2033-37	2033-37 (Interim)

Project	Sub-Project	Qualitative Emissions Outcome	FULSS Staging	NWDBC Modelling Staging	Alternative Staging
4. SH16 Main Road Upgrade From Old Railway Rd to Foster Rd	Adjacent to RTC / RAMC (Rural) – East of Access Road to Old Railway Rd	Low	2028-32	2033-37	2028-32
	Adjacent to RTC (Urban) – Access Rd to River Crossing	Low	2028-32	2033-37	2038-42
	Separated from RTC (Urban) – West of River Crossing	Low	2028-32	2033-37	2038-42
5. Fred Taylor Drive FTN Upgrade	Southern section (Don Buck Rd to Northside Dr)	Low	2028-32	2023-27	2023-27
	Northern section (Northside Dr to SH16)	Low	2028-32	2023-27	2033-37
7. New Northside Drive West From Fred Taylor Drive to Nixon Road	Full length	Low	2028-32	2028-32	2038-42
9. Don Buck Road FTN Upgrade Fred Taylor Drive to Redhills Road	Full length	Low	2018-22	2023-27	2023-27
10. Royal Road FTN Upgrade	Full length	Medium	2018-22	2028-32	2033-37
11. Taupaki Road / Nixon Road Upgrade	Northern section (SH16 to ASH)	Low	2028-32	2033-37	2033-37

Project	Sub-Project	Qualitative Emissions Outcome	FULSS Staging	NWDBC Modelling Staging	Alternative Staging
	Southern section (ASH to Red Hills Rd)	Low	2028-32	2033-37	Beyond 2042
12. Brigham Creek Road Upgrade	Eastern section (SH18 to Trig Rd)	Low	2028-32	2028-32	2023-27
	Central section (Trig Rd to Mamari Rd FTN)	Low	2028-32	2028-32	2028-32
	Western section (Mamari Rd FTN to SH16)	Low	2028-32	2028-32	2033-37
13. Māmari Road FTN Upgrade	Full length	Medium	2028-32	2028-32	2028-32
14. Trig Road Upgrade SH18 to Brigham Creek Road	Full length	Low	2018-22	2028-32	2028-32
15. New Spedding Road West Māmari Road to SH16	Full length	Low	2028-32	2028-32	2033-37
16. New Spedding Road East Māmari Road to SH18	Full length	Low	2018-22	2028-32	2033-37
17. Hobsonville Road FTN Upgrade	Eastern section (Hobsonville to Brigham Creek Rd)	Low	2018-22	2028-32	2023-27

Project	Sub-Project	Qualitative Emissions Outcome	FULSS Staging	NWDBC Modelling Staging	Alternative Staging
	Central section (Brigham Creek to Luckens Rd)	Low	2018-22	2028-32	2023-27
	Western section (Luckens Rd to SH16)	Low	2018-22	2028-32	2023-27
18. Coatesville-Riverhead Highway Upgrade SH16 to Riverhead Road	Full length	Low	2028-32	2033-37	2033-37
19. Riverhead Road Upgrade	Full length	Low	2028-32	2033-37	2038-42
20. Access Rd/ Tawa Rd Upgrade	Full length	Low	2028-32	2033-37	2033-37
21. Station Road Upgrade	Full length	Low	2028-32	2033-37	2033-37

Table 3-3: Alternative Staging Scenario

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
1. Rapid Transit Corridor (RTC) From Brigham Creek Interchange to Kumeū-Huapai & 3. Regional Active Mode Corridor (RAMC)	RTC (Rural Section)	2028-32 (Interim) 2038-42 (Full, as below)	<ul style="list-style-type: none"> Deliver corridor with potentially interim bus-based RT connection to Short-term NWRTN stations at Westgate or Brigham Creek, terminating near Access Rd and using existing SH16 Main Road Support mode choice / climate change outcomes Supports access to the wider RTN Provides additional corridor choice, improving transport system resilience and better managing adverse traffic impacts on SH16 between Kumeū and Brigham Creek Rd In place to support public transport options for existing growing community and planned overall urban growth (25% to 33% by 2033), growing RTC provision with timing and scale of growth Consistent with longer-term planning for urban growth and enables staged implementation of RTC to spread funding requirements Full implementation of RTC (mode to be confirmed) with implementation of RTC (Urban Section) supporting future Kumeū -Huapai FUZ growth. 	<ul style="list-style-type: none"> NWRTN (Short-term) – In place to support extension of RT services to Kumeū / Huapai SH16 Main Rd – Potential implementation of section east of Access Road to provide for tie-in of interim RTC, i.e. transition from dedicated RTC (Rural Section) onto SH16 Main Road to operate with other vehicles (not separated) Fred Taylor Dr – Requires grade separation from RTC. 	<ul style="list-style-type: none"> Likely high cost for interim facility requiring further investigation of potential patronage and associated tie-in with NWRTN Short Term improvements at Westgate or Brigham Creek stations Medium / long-term land use forecasts for Kumeū / Huapai do not eventuate (or slower than anticipated), so full implementation of RTC either not viable or interim operates for longer period Potential impacts on interim RTC and NWRTN facilities with later construction of full implementation solutions, depending on RT mode Council / Developer pressure brings forward planned urban growth in Kumeū -Huapai requiring earlier implementation of RTC to support mode choice RTC implementation and / or developer pressure results in unplanned growth in rural zones between Redhills and Kumeū. Full implementation of RTC (mode dependant) does not preclude a station to support unplanned growth.
	Kumeū / Huapai Stations	2028-32 (Interim) 2038-42 (Full, as below)	<ul style="list-style-type: none"> Deliver stations (in interim form) to support interim bus-based RT connection to Short-term NWRTN, as above Support mode choice / climate change outcomes Supports access to the wider RTN Potential to influence urban form and catalyst for growth In place to support interim public transport options for existing growing community and planned urban growth (25% to 33% by 2028-2033), growing RTC provision with timing and scale of growth Consistent with longer-term planning for urban growth and enables staged implementation of RTC to spread funding requirements Full implementation of RTC stations (mode to be confirmed) with implementation of RTC (Urban Section) supporting future Kumeū -Huapai FUZ growth. 	<ul style="list-style-type: none"> RTC (Urban Section) – Interim station implementation will need to consider full implementation requirements. SH16 Main Rd – Interim station implementation will need to consider full implementation requirements. 	<ul style="list-style-type: none"> Likely high cost for interim facilities requiring further investigation of potential patronage and associated tie-ins To be supported by progression of Structure Planning by Auckland Council for areas surrounding stations to enable consistency with longer-term land use planning and full RTC implementation potential with NPS:UD Medium / long-term land use forecasts for Kumeū / Huapai do not eventuate (or slower than anticipated), so full implementation of RTC either not viable or interim operates for longer period Potential impacts on interim RTC and NWRTN facilities with later construction of full implementation solutions, depending on RT mode Council / Developer pressure brings forward planned urban growth in Kumeū -Huapai requiring earlier implementation of RTC to support mode choice.
	RTC (Urban Section)	2038-42	<ul style="list-style-type: none"> Deliver full implementation of RTC (requiring implementation of SH16 Main Rd), including both Kumeū town centre and Huapai (Park and Ride) stations. Support mode choice / climate change outcomes Supports access to the wider RTN Potential to influence urban form and catalyst for growth 	<ul style="list-style-type: none"> SH16 Main Rd – Full upgrade will require implement 	<ul style="list-style-type: none"> To be supported by progression of Structure Planning by Auckland Council to enable consistency with longer-term land use planning full RTC implementation in alignment with NPS:UD Medium / long-term land use forecasts for Kumeū / Huapai do not eventuate (or slower than anticipated), so full implementation of RTC could

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
			<ul style="list-style-type: none"> Supporting planned urban form for SH16 Main Road and the future Kumeū town centre (as per Auckland Council's Strategic Framework) in terms of 'place' function In place to support public transport options for existing growing community and planned overall urban growth (55% to 66% by 2038-43), enabling RTC provision with timing and scale of growth. 		<ul style="list-style-type: none"> potentially be delayed or interim operates for longer period Council / Developer pressure brings forward planned urban growth in Kumeū -Huapai requiring earlier implementation of full RTC to support growth and mode choice. Opportunity, in longer term, if NAL is relocated outside Kumeū -Huapai, to reduce designation by making use of NAL corridor (refer to RTC technical note in NW DBC Transport Outcomes report).
2. Alternative State Highway (ASH) From Brigham Creek Interchange to SH16	ASH (full corridor) including Brigham Creek Interchange	2033-37	<ul style="list-style-type: none"> Full delivery of ASH commencing at Brigham Creek Interchange (full implementation) and terminating west of Huapai Partial implementation (i.e. to Tawa Rd) would likely result in adverse safety and 'place' effects for the existing and future urban corridors between Tawa Rd and SH16 west of Huapai, and / or would not provide a sufficiently 'attractive' alternative to SH16. So would exacerbate existing issues for the existing and future Kumeū / Huapai community. Reduce 'through' traffic on SH16 Main Road in Kumeū / Huapai to support planned 'place' function and enable improved safe and high quality active mode and PT access to interim and full implementation of RTC stations with planned overall urban growth (33% to 55% by 2033-2038) Provide a more viable and resilient alternative to SH16 between Kumeū and Brigham Creek Rd for inter-regional and freight trips, reducing adverse safety effects on rural roads Support climate change outcomes by reducing traffic demand / congestion within the Kumeū / Huapai urban area and along SH16 between Kumeū and Brigham Creek Rd Support the opportunity for improved active mode and public transport connections between the Whenuapai and Redhills urban growth areas, including access to a Brigham Creek RT station, as well as access for the Riverhead community. 	<ul style="list-style-type: none"> SH16 Main Rd – Supports the transition of SH16 Main Rd from a state highway corridor to an urban corridor with 'place' function, supporting full RTC implementation Access Rd – Requires upgrade of Access Road to support access to the ASH at Tawa Rd interchange. 	<ul style="list-style-type: none"> Medium / long-term land use forecasts for Kumeū / Huapai do not eventuate (or slower than anticipated), requiring ASH implementation to be adjusted accordingly Later delivery of ASH likely to result in increasing use of less safe rural roads that are not designed to accommodate those predicted traffic demands ASH implementation and / or developer pressure results in unplanned growth in rural zones between Redhills and Kumeū . ASH implementation does not preclude interchange at Taupaki Rd, but not currently supported Subject to further investigation, prior to implementation, opportunity to initially construct the western section (Tawa Rd to SH16) as two lane corridor and later upgrade to four lanes – also refer to Tawa Rd Interchange (interim) Subject to further investigation, prior to implementation, opportunity for ASH (Brigham Creek Rd to Tawa Rd) to provide temporary alternative for interim RT bus services during construction of the full RTC.
	Brigham Creek Interchange (interim)	2028-32 (Interim)	<ul style="list-style-type: none"> Opportunity for potential for interim implementation of new east-facing ramps and realignment (grade separation) of Brigham Creek Rd and Fred Taylor Dr, supporting the objectives for this interchange as part of the SH16 / 18 Connections project Provide offline upgrade to Brigham Creek Rd / Fred Taylor Drive / SH16 roundabout, which can facilitate later implementation of ASH and full RTC 	<ul style="list-style-type: none"> Brigham Creek Rd – Requires realignment and upgrade of western section Fred Taylor Dr – Requires realignment and upgrade of northern section SH16 – Requires realignment and upgrade of SH16, currently subject to separate improvements project 	<ul style="list-style-type: none"> Likely high cost and operational performance for interim upgrade requires further investigation Unconfirmed mode for RTC and NWRN provides uncertainty in relation to form and alignment of corridor in order to understand impacts for interim Brigham Creek Interchange, i.e. such as whether NWRN / RTC at-grade or grade separated Potential to complement and facilitate interim RTC implementation.

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
			<ul style="list-style-type: none"> Consistent with longer-term planning for urban growth and enables staged implementation of ASH to spread funding requirements Support the opportunity for improved active mode and public transport connections between the Whenuapai and Redhills urban growth areas, including access to a Brigham Creek RT station, as well as access for the Riverhead community. 	<ul style="list-style-type: none"> Spedding Rd West – Interim interchange to be consistent with full implementation, so can enable RTC and NWRTN – Interim interchange needs to be consistent with full RT implementation, see identified Risks. 	
	Tawa Rd Interchange (interim)	2033-37 (Interim)	<ul style="list-style-type: none"> Potential for interim implementation of only east-facing ramps at Tawa Rd interchange Support connections for Kumeū -Huapai urban growth to rest of Auckland region, but potentially limits access for broader rural community, refer to Risks. Consistent with longer-term planning for urban growth and enables staged implementation of ASH to spread funding requirements. 	<ul style="list-style-type: none"> Access Rd – Requires upgrade of Access Road to support access to the ASH at Tawa Rd interchange. 	<ul style="list-style-type: none"> Potential that partial ramps does not sufficiently support wider regional access to future employment land along Access Road for communities north and west of Kumeū -Huapai. Subject to further investigation, prior to implementation, to confirm impacts without and with west facing ramps on the urban areas, particularly SH16 Main Road.
4. SH16 Main Road Upgrade From Old Railway Road to Foster Road	Adjacent to RTC / RAMC (Rural) – East of Access Road to Old Railway Rd	2028-32	<ul style="list-style-type: none"> Implement in parallel with interim RTC / RAMC, as above Support safe local active mode access to the RAMC Enable bus access to the interim RTC (Rural) facility in the vicinity of Access Road Improve the 'place' function on the eastern 'gateway' for Kumeū . 	<ul style="list-style-type: none"> RTC / RAMC (Rural section) – Supports safe and efficient access to the interim corridors. 	<ul style="list-style-type: none"> Potential localised adverse impacts on SH16 Main Road, which remains a strategic state highway corridor, which requires further investigation prior to implementation Linked to risks associated with interim RTC / RAMC (Rural), as above.
	Adjacent to RTC (Urban) – Access Road to River Crossing	2038-42	<ul style="list-style-type: none"> Implement in parallel with immediately adjacent full implementation of RTC (Urban) Support mode choice outcomes, by enabling local access to the RTN / Kumeū town centre station Potential to influence urban form and catalyst for growth Supporting planned urban form for SH16 Main Road and the future Kumeū town centre (as per Auckland Council's Strategic Framework) in terms of 'place' function. 	<ul style="list-style-type: none"> ASH – 'Place' function of urban corridor supported by ASH, enabling transition of SH16 Main Rd from a state highway corridor RTC including stations – Enables complementary access to Kumeū town centre station and provides more efficient construction. 	<ul style="list-style-type: none"> If ASH implementation occurs later than RTC (Urban) potential adverse impacts on Kumeū / Huapai urban form and transport outcomes for SH16 Main Road (as RTC being constructed and operated with maximum levels of traffic still in place on SH16) To be supported by progression of Structure Planning by Auckland Council for areas surrounding stations to enable consistency with longer-term land use planning and full RTC implementation potential with NPS:UD Medium / long-term land use forecasts for Kumeū / Huapai do not eventuate (or slower than anticipated), so full implementation of RTC either not viable or interim operates for longer period Potential impacts on interim RTC and NWRTN facilities with later construction of full implementation solutions, depending on RT mode Council / Developer pressure brings forward planned urban growth in Kumeū -Huapai requiring earlier implementation of RTC to support mode choice.
	Separated from RTC (Urban) – West of River Crossing	2038-42	<ul style="list-style-type: none"> Potential to support mode choice outcomes, by enabling local access to RTC station at Huapai Potential to influence urban form and catalyst for growth 	<ul style="list-style-type: none"> ASH – 'Place' function of urban corridor supported by ASH, enabling transition 	<ul style="list-style-type: none"> If ASH implementation occurs later than RTC (Urban) potential adverse impacts on Kumeū /

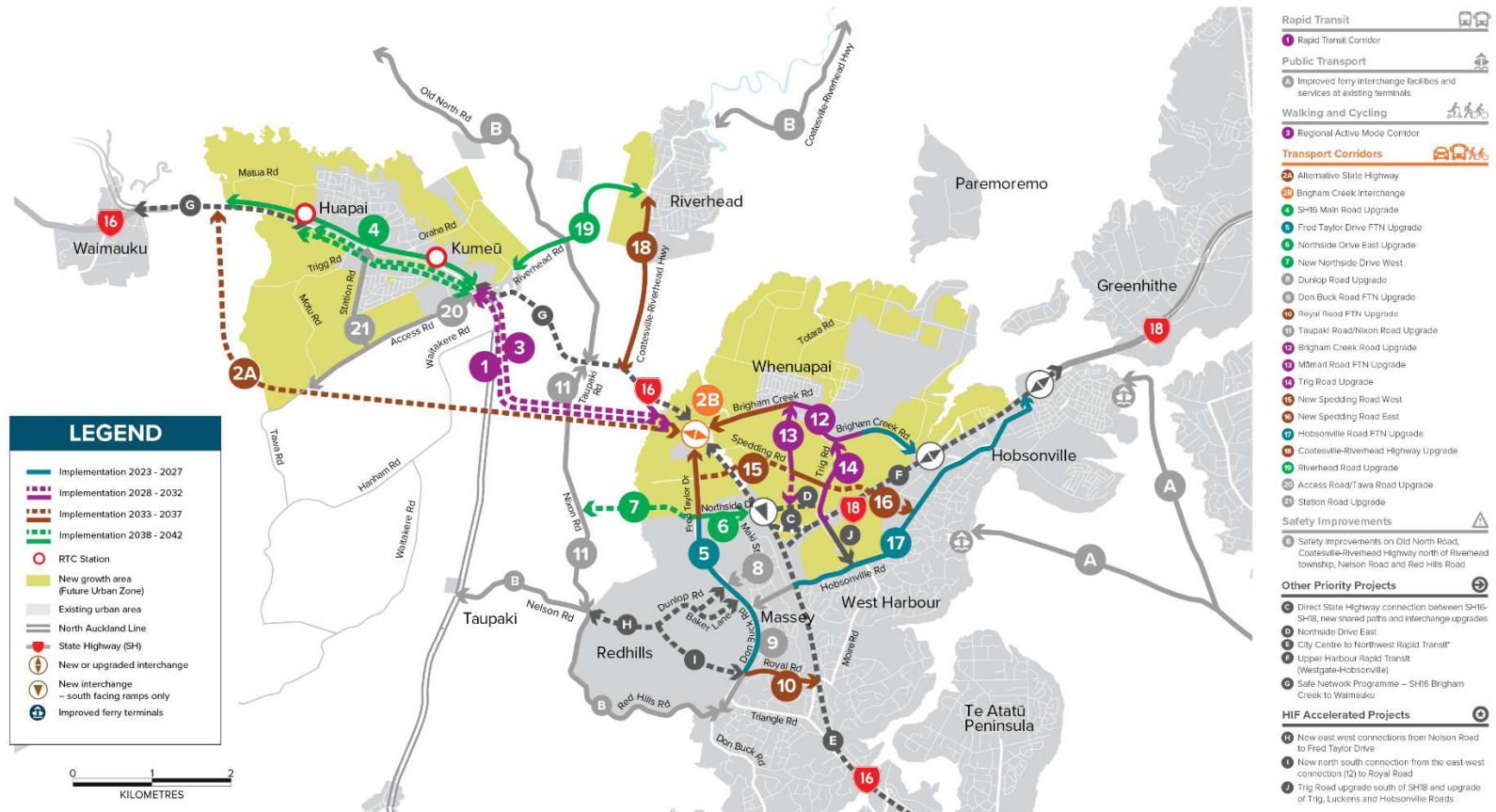
Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
			<ul style="list-style-type: none"> Supporting planned urban form for SH16 Main Road Implement in parallel or as catalyst for growth along, adjacent and in surrounding Kumeū -Huapai urban growth areas. 	<ul style="list-style-type: none"> of SH16 Main Rd from a state highway corridor RTC including stations – Enables complementary access to Kumeū town centre station and provides more efficient construction. 	<ul style="list-style-type: none"> Huapai urban form and transport outcomes for SH16 Main Road. To be supported by progression of Structure Planning by Auckland Council for areas surrounding stations to enable consistency with longer-term land use planning and full RTC implementation potential with NPS:UD.
5. Fred Taylor Drive FTN Upgrade	Southern section (Don Buck Rd to Northside Dr)	2023-27	<ul style="list-style-type: none"> Already completed in some sections Support local safe travel choices, including for active modes and PT, as well as access to Westgate metropolitan centre Support current and imminent urban growth adjacent to the corridor Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of Redhills / Westgate urban growth. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
	Northern section (Northside Dr to SH16)	2028-32	<ul style="list-style-type: none"> Tie-in with Interim Brigham Creek Interchange upgrade Support local safe travel choices, including for active modes and PT, as well as access to NWRTN Brigham Creek station and Westgate metropolitan centre Support imminent and future urban growth adjacent to the corridor in the Redhills North area Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of Redhills / Westgate urban growth, with planned overall urban growth (36% by 2033). 	<ul style="list-style-type: none"> RTC / RAMC (Rural section) – Requires realignment and grade separation to accommodate RTC / RAMC Brigham Creek Interchange interim upgrade – Requires realignment and grade separation to accommodate Brigham Creek Interchange NWRTN (Full implementation) – Form and function supports access to NWRTN Brigham Creek station SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
7. New Northside Drive West From Fred Taylor Drive to Nixon Road	Full length	2038-42	<ul style="list-style-type: none"> Support local safe travel choices for active modes and longer-term system resilience Support future urban growth adjacent to the corridor in the Redhills North area. 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Availability of funding for implementation of 24m cross section Opportunity for third party (developer) funding of corridor upgrades and this occurs within the Redhills north area only.
9. Don Buck Road FTN Upgrade Fred Taylor Drive to Redhills Road	Full length	2023-27	<ul style="list-style-type: none"> Support local safe travel choices, including for active modes and PT, as well as access to Westgate metropolitan centre Support current and imminent urban growth adjacent to the corridor , with planned overall urban growth (36% by 2033) predominantly in Redhills live-zoned area. 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
10. Royal Road FTN Upgrade	Full length	2033-37	<ul style="list-style-type: none"> Support mode choice / climate change outcomes Enables active mode and strategic PT (FTN corridor) , plus access to NWRTN and SH16 Cycleway Potential to influence urban form and catalyst for growth 	<ul style="list-style-type: none"> NWRTN (Full implementation) – Supports active mode and PT (FTN) access to NWRTN Royal Road station and SH16 Cycleway. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
			<ul style="list-style-type: none"> Support future urban growth in Redhills, planned overall urban growth of approx. 36% to 48% by 2033 to 2038, likely to focussed in Redhills live-zoned urban area. 		<ul style="list-style-type: none"> Significant property requirements likely require full implementation of 30m cross section, rather than a staged implementation approach. Opportunity for NWR TN station to be completed earlier, which would support an earlier staging year for the Royal Road upgrade.
11. Taupaki Rd/ Nixon Rd Upgrade	Northern Section (SH16 to ASH)	2033-37	<ul style="list-style-type: none"> Support connections between the RAMC and the communities between Whenuapai and Kumeū / Huapai 	<ul style="list-style-type: none"> RTC / RAMC (Rural section) – Requires realignment and grade separation to accommodate RTC / RAMC SH16 Improvements – Provision of shared path along SH16 between Brigham Creek Rd and Kumeū. 	<ul style="list-style-type: none"> Availability of funding for implementation of cross section to enable efficient bus services and safe active modes facilities.
	Southern Section (ASH to Red Hills Rd)	Beyond 2042	<ul style="list-style-type: none"> Not necessary to support growth Lower risk of development in rural area precluding implementation. 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> RTC implementation and / or developer pressure results in unplanned growth in rural zones between Redhills and Kumeū.
12. Brigham Creek Road Upgrade	Eastern section (SH18 to Trig Rd)	2023-27	<ul style="list-style-type: none"> Support local safe travel choices for active modes, as well as access to Whenuapai centre Support imminent urban growth adjacent to the corridor Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of medium / longer-term growth in Whenuapai. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
	Central section (Trig Rd to Māmari Rd FTN)	2028-32	<ul style="list-style-type: none"> Already completed in some sections Support local safe travel choices for active modes, as well as access to and ‘place’ function of Whenuapai centre Support current and imminent urban growth adjacent to the corridor Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of medium / longer-term growth in Whenuapai. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
	Western section (Māmari Rd FTN to SH16)	2033-37	<ul style="list-style-type: none"> Two-lane upgrades already completed in some sections adjacent to live-zoned / completed development Support local safe travel choices, including for active modes and PT, as well as access to Whenuapai centre Support current and future urban growth adjacent to the corridor Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of medium / longer-term growth in Whenuapai. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections. ASH including Brigham Creek Interchange – Western section (west of Totara Creek) requires realignment to enable Brigham Creek Interchange, so may need to be brought forward, if interim Interchange upgrade progressed. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
13. Māmari Road FTN Upgrade	Full length	2028-32	<ul style="list-style-type: none"> Support mode choice / climate change outcomes Enables active mode and strategic PT (FTN corridor) between Whenuapai and Westgate, including access to Westgate NWR TN station (either Interim or Full Implementation) Potential to influence urban form and catalyst for growth 	<ul style="list-style-type: none"> NWR TN (Short-term / Full implementation) – Supports local PT access to RTC SH16 / SH18 Connections – Requires completion of the Northside Dr connection (Trig Road and Maki Street) over SH16 	<ul style="list-style-type: none"> Benefits would not be realised and effective connection not established without Northside Dr connection (Trig Road and Maki Street) over SH16 Needs to be provided for as part of future Plan Changes for the adjacent Whenuapai urban area.

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
			<ul style="list-style-type: none"> Implementation supports timing and scale of urban development of Whenuapai residential and employment areas, planned overall urban growth of approx. 45% to 55% by 2033 Reduces demand and development pressures on the Brigham Creek / SH16 connection, providing an alternative connection to the Westgate metropolitan centre. 	<ul style="list-style-type: none"> SH18 RTN – Provides opportunity for later direct dedicated 'bus only' connection from southern end of Māmari Rd FTN and Westgate. 	
14. Trig Road SH18 to Brigham Creek Rd	Full length	2028-32	<ul style="list-style-type: none"> Support local safe travel choices for active modes, as well as access to SH18 shared path Support future urban growth adjacent to the corridor. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections SH18 RTN – Form and function relies on medium / long-term delivery of SH18 RTN. 	<ul style="list-style-type: none"> Availability of funding for implementation of 24m cross section to enable safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
15. New Spedding Road West Māmari Road to SH16	Full length	2033-37	<ul style="list-style-type: none"> Support local safe travel choices, including for active modes and PT, plus access to NWRTN and SH16 Cycleway Support future urban growth adjacent to the corridor Opportunity for initial implementation of 24m cross section cross section with adjacent urban development. 	<ul style="list-style-type: none"> NWRTN (Full implementation) - Supports east-west access to NWRTN Brigham Creek station. ASH including Brigham Creek Interchange – To provide for full implementation of Brigham Creek Interchange. 	<ul style="list-style-type: none"> Availability of funding for implementation of 24m cross section and SH16 bridge to enable safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs. Opportunity for the project to be earlier if tied to the NWRTN.
16. New Spedding Road East Māmari Road to SH18	Full length	2033-37	<ul style="list-style-type: none"> Support local safe travel choices, including for active modes and PT, plus access to SH18 RTN and SH18 shared path Support future urban growth adjacent to the corridor Opportunity for initial implementation of 24m cross section cross section with adjacent urban development. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Opportunity to construct SH18 bridge with delivery of SH16 / SH18 Connections SH18 RTN – Supports east-west access to SH18 RTN station. 	<ul style="list-style-type: none"> Availability of funding for implementation of 24m cross section and SH18 bridge to enable safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
17. Hobsonville Road FTN Upgrade	Eastern section (Hobsonville to Brigham Creek Rd)	2023-27	<ul style="list-style-type: none"> Already completed in some sections Support local safe travel choices, including for active modes and PT, and medium / long-term access to SH18 RTN stations Support current and imminent urban growth adjacent to the corridor. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Completion of Squadron Dr west facing ramps by 2031 in RLTP, so short-term improvements necessary SH18 RTN – Form and function relies on medium / long-term delivery of SH18 RTN. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
	Central section (Brigham Creek to Luckens Rd)	2023-27	<ul style="list-style-type: none"> Already completed in some sections Support local safe travel choices for active modes, and medium / long-term access to SH18 RTN stations Support current and imminent urban growth adjacent to the corridor. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections SH18 RTN – Form and function relies on medium / long-term delivery of SH18 RTN. 	<ul style="list-style-type: none"> Availability of funding for implementation of 24m cross section to enable safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.
	Western section (Luckens Rd to SH16)	2023-27	<ul style="list-style-type: none"> Support local safe travel choices, including for active modes and PT, and medium / long-term access to SH18 RTN stations, as well as access to the Westgate metropolitan centre Support imminent urban growth adjacent to the corridor. 	<ul style="list-style-type: none"> SH16 / SH18 Connections – Form and function relies on medium / long-term delivery of SH16 / SH18 Connections SH18 RTN – Form and function relies on medium / long-term delivery of SH18 RTN. 	<ul style="list-style-type: none"> Availability of funding for implementation of 30m cross section to enable efficient bus services and safe active modes facilities Opportunity for third party (developer) funding of corridor upgrades and this occurs.

Project	Sub-Project	Alternative Staging	Rationale	Transport Infrastructure Inter-dependencies	Other Risks / Opportunities
18. Coatesville-Riverhead Highway Upgrade SH16 to Riverhead Road	Full length	2033-37	<ul style="list-style-type: none"> • Already completed in some sections • Support local safe travel choices for active modes • Support current and future urban growth adjacent to the corridor, planned overall urban growth of approx. 44% to 67% by 2033 to 2038. 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Availability of funding for implementation of cross section to enable safe active modes facilities and green infrastructure provision • Opportunity for third party (developer) funding of corridor upgrades and this occurs in urban sections • Opportunity for alternative technical solutions to identified swales to reduce cross section.
19. Riverhead Road Upgrade	Full length	2038-42	<ul style="list-style-type: none"> • Support local safe travel choices for active modes • Support current and future urban growth adjacent to the corridor, planned overall urban growth of approx. 44% to 67% by 2033 to 2038. 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Availability of funding for implementation of cross section to enable safe active modes facilities and green infrastructure provision • Opportunity for third party (developer) funding of corridor upgrades and this occurs in urban sections • Opportunity for alternative technical solutions to identified swales to reduce cross section.
20. Access Road/Tawa Road Upgrade	Full length	2033-37	<ul style="list-style-type: none"> • Support local safe travel choices for active modes, as well as access to ASH, including ASH shared path • Support future urban growth adjacent to the corridor, planned overall urban growth of approx. 36% to 55% by 2033 to 2038 • Opportunity for initial implementation of interim 24m cross section and later 30m cross section to respond to timing and scale of Kumeū -Huapai urban growth. 	<ul style="list-style-type: none"> • ASH – Southern section requires implementation of 30m cross section to support implementation of Tawa Road Interchange on ASH. 	<ul style="list-style-type: none"> • Availability of funding for implementation of cross section to enable safe active modes facilities and green infrastructure provision • Opportunity for third party (developer) funding of corridor upgrades and this occurs • Opportunity for alternative technical solutions to identified swales to reduce cross section • Delayed delivery of ASH potentially necessitates earlier and more extensive implementation of 30m cross section on central and northern section of Access Rd.
21. Station Road Upgrade	Full length	2033-37	<ul style="list-style-type: none"> • Already completed in some sections • Support local safe travel choices for active modes • Support current and future urban growth adjacent to the corridor, planned overall urban growth of approx. 36% to 55% by 2033 to 2038. 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Availability of funding for implementation of 24m cross section • Opportunity for third party (developer) funding of corridor upgrades and this occurs.

Figure 3-1: Alternative Staging of North West DBC Projects



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4 Summary

In summary, there are a range of different drivers, parallel workstreams and triggers that will influence how network staging will be delivered over the next three decades.

Due to the uncertainty regarding the timing and form of specific land use activities, it is not feasible to develop a detailed stage-by-stage implementation plan. Further, this is not required for this Business Case, given its focus on identifying preferred long-term corridors, which will be subject to separate implementation decisions and project specific implementation business cases.

Therefore, a principle-based approach is regarded as the best way to manage and deliver the desired transport and land use outcomes consistently. There are multiple potential combinations of how the staging of projects could be implemented to respond to the timing, scale and form of urban development, so this assessment can only be considered as illustrative of the kind of staging that could be considered. Importantly, the tables summarise the key interdependencies of projects, so individual project decisions can be easily cross referenced and future decisions are not made in isolation.

The key changes between the modelled staging assumptions and the alternative staging are:

- Local corridors in Whenuapai and Redhills are prioritised early
- RTC is staged in two parts with the rural part being constructed in 2028-2032 along with interim RTC stations to form the basis for interim RTC facilities
- ASH is implemented as the next strategic project in 2033-2037 with the view this could be used as an alternative route for interim RTC while the long term RTC facility is constructed in 2038-2042.

Although this report provides a summary of potential staging considerations, it simply reflects the limited current knowledge of land use activities. Therefore, the inherent nuances linked to interdependencies with other projects, longitudinal staging and land use activities should frequently be evaluated (with every Structure Plan, Plan Change) to ensure that optimum transport and land use integration is achieved in the short, medium and long term.

In summary, the assessment demonstrates there are a number of different drivers and influences on how the NW DBC programme could be staged, but this is still subject to some uncertainty. However, the assessment does demonstrate that:

- there are a multitude of ways the urban development of this area could be staged to deliver the overall future network to support the NW growth areas
- there are a number of key corridors (such as Hobsonville Road, Don Buck Road, as well as parts of Fred Taylor Drive and Brigham Creek Road) that are considered to be required earlier due to current live-zoned and imminent land use in Redhills and Whenuapai
- there are opportunities to align with the staging principles by further investigating the opportunity for earlier implementation of an interim RTC to Kumeū -Huapai, which would provide public transport from the outset and prioritise public transport, as well as influence urban form and provide a catalyst for growth
- that active monitoring and management of implementation decisions will need to be dynamic, proactive in its response to a range of inputs, including land use planning, land use outcomes and system performance.