

# Additional Waitemata Harbour Crossing Network Plan



Network Plan prepared for New Zealand Transport Agency

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## *Executive Summary*

### *Strategic Context to the AWHC Network Plan*

The New Zealand Transport Agency (NZTA) has investigated the contribution of an Additional Waitemata Harbour Crossing (AWHC) to improving the accessibility and resilience of Auckland's transport network in a manner that will maximise the opportunities for future economic prosperity and growth in the Auckland Region. This Network Plan (the Plan) discusses how integrated land use and transport planning, and the objectives of the Government Policy Statement on Land Transport Funding (GPS), the NZTA's Statement of Intent, RLTS objectives and Integrated Planning Strategy, are best supported by an AWHC.

The NZTA recognises that it is critical to the national economy that Auckland continues to grow as a thriving and successful 'world class city'. An AWHC will provide a more efficient transport network and maximise the benefits of investment in existing infrastructure. A more effective transport network will boost economic growth and productivity.

Current trends and future predictions show an increasing demand for the movement of goods and people across the Waitemata Harbour. An optimised AWHC will allow resources to flow more efficiently within the city and inter-regionally, making Auckland's economy more flexible and able to react to external economic changes.

The NZTA has an active management regime in place for the Auckland Harbour Bridge (AHB) which is focused on managing the main structure and extension bridges (commonly known as the 'clip-ons') so that they will continue to provide the connectivity needed to cater for all vehicles crossing the harbour. As a result of the current strengthening work on the extension bridges (which will be completed in 2010) combined with active management, the NZTA expects to maintain the extension bridges indefinitely but with loading limitations. This will involve increasing levels of management of freight access which, as cross-harbour freight demands increase, will lead to an increasing impact on the region's economy.

The provision of additional capacity for freight movements would support the economic development of Auckland, and thereby New Zealand. It is also recognised that a key factor in Auckland's future attractiveness and prosperity will be the maintenance of its unique environmental character and social culture, which the form of any AWHC should also seek to support.

The current phase of AWHC investigations builds upon the outcomes of previous studies, which have examined a crossing in a corridor between Esmonde Road to the north, the AHB to the west and the Wynyard Quarter to the south.

In terms of future network resilience, an AWHC would allow the loading on the AHB to be reduced by providing six additional lanes (on either a bridge or in tunnels) to service traffic travelling north-south past the Auckland Central Business District (CBD). This would increase the number of lanes across the harbour from eight to fourteen, allowing an increase in capacity for both inter-regional trips and intra-regional journeys to the CBD. The AHB would remain for the purpose of access to the CBD and some of the existing general vehicle lanes would be available for dedicated bus lanes or walking/cycling facilities.

## *Key Findings of the Network Plan*

### **Auckland Plan**

In order to optimise the benefits of an AWHC, and to ensure it is considered in the context of wider regional planning, it needs to be considered as a part of a strategic land use and transport (infrastructure and service) planning package. The NZTA will contribute to the upcoming Auckland spatial planning exercise, and regional and inter-regional transport network planning, including identifying further improvements required on the surrounding state highway network, the Northern Busway and local roads.

The NZTA will work closely with Auckland Council and key stakeholders to seek that the Auckland Plan objectives for the Auckland CBD and North Shore are fully compatible and integrated with the timing of, and available future funding for, the future transport network to support it (including the timing of an AWHC).

A preliminary business case is being prepared to inform discussions with the Minister of Transport and key stakeholders on the form and general alignment of an AWHC. This preliminary business case will not contain all of the evidence that would be required to demonstrate the need for an AWHC in economic terms, and further work will need to be done to support a funding application in the future. However, this preliminary assessment can be used as an evidence base for informing the Auckland Plan in order to maximise the benefits for integrated land use and transport outcomes in the Auckland Region.

The preliminary business case will also be used to inform the new Auckland Council's future Long Term Community Consultation Plan (LTCCP) processes about the projects the NZTA is likely to invest in and the timing of that investment, relative to the availability of national and regional government funding and the affordability of transport projects. This analysis is also expected to identify the timing or trigger points for the various steps in advancing an AWHC, including protecting the route and commencing relevant design or construction phases.

## Passenger Transport

The Plan has found that passenger transport demands from current and known future aspirations for North Shore land use development (contained in the Auckland Regional Growth Strategy) can be adequately served by the Northern Busway for at least 30 years. Maximising the capacity and benefits of the significant investment already made in this existing infrastructure (through measures such as bus lanes on the AHB or land use intensification at busway stations) is supported by the current regional and national policy context.

Developing rail infrastructure on the North Shore would require significant investment. Rail would also require considerable further residential and employment intensification around potential rail station locations before such a rail network would be likely to be economically sustainable. Such changes to regional land use patterns would need to be identified through the future development of the Auckland Council's new Auckland Plan and Unitary Plan. Given that the Northern Busway is already operating successfully and can fulfil the passenger transport needs on and to the North Shore for the foreseeable future, any investigation into rail would need to demonstrate how replacing an existing rapid transit network with another would create sufficient additional benefits to be justified. The provision for rail could be developed at any later stage via the tunnels provided for in the current cross-harbour rail designation.

The Plan also identifies the need for passenger transport improvements within the Auckland CBD, independent of the development of an AWHC. The continued growth of the Northern Busway services is projected by 2020 to cause Fanshawe Street and other CBD streets to become congested by buses, which will conflict with efforts to improve the CBD's urban amenity and continue its growth. To maximise the current investment in the Northern Busway, the NZTA will work closely with Auckland Council to identify appropriate entry points for buses into the CBD, ways to manage the effects of circulating buses within the CBD and the provision of high quality bus terminals.

## Walking and Cycling

An AWHC provides a significant opportunity to link the North Shore and Auckland CBD by walking and cycling modes, through either allocation of space on the AHB or provision on a new bridge structure. Such a link will benefit commuters, training cyclists and recreational users, and also provide the opportunity for the promotion of a 'world class city' tourist attraction akin to facilities seen on the Sydney Harbour Bridge or the Golden Gate Bridge in San Francisco.

In conjunction with improved priority for passenger transport (through lane re-allocation for bus lanes on the AHB), the provision for these additional facilities will provide the opportunity for integration and balance between all transport modes and support modal shift away from single occupant vehicles. Such modal shifts are important for Auckland to accommodate future growth, enable intensification in the CBD and improve the liveability of the city.

## Local Roads

The Plan identifies the need to integrate the development of an AWHC with the local roading network. A key issue is the potential for a new crossing to allow more traffic to enter the CBD. This would be in conflict with various strategies that encourage the provision of passenger transport for trips to/from the CBD, rather than additional capacity for single occupant vehicles. However, the eventual lane configuration on the AHB (following an AWHC) will only be determined over time. There are a range of options available to ensure the allocation of capacity reflects transport and land use strategies.

## Conclusions

The key conclusions of this Plan are therefore:

- It is critical to the national and regional economy that Auckland continues to grow as a thriving and successful ‘world class city’, and that infrastructure investment should be focused on improving Auckland’s economic growth and productivity, whilst maintaining it’s unique environmental character and social culture;
- There is a need to provide for increasing demand for the movement of goods and people across the Waitemata Harbour, for local, regional and inter-regional travel; increasingly active freight management on the existing AHB will adversely affect this increased demand
- Current and known future proposals for land use development on the North Shore can be sufficiently served by the existing Rapid Transit Network (the Northern Busway) for at least 30 years; further intensification to support the Busway could occur;
- Employment-supporting land use patterns on the North Shore would need to be significantly intensified around potential station locations before a rail network on the north side of the harbour would be likely to become economically viable; future changes to land use patterns may be identified through development of the Auckland Plan;
- The NZTA will work together with Auckland Council and key stakeholders to seek that the Auckland Plan identifies land use objectives for the Auckland CBD and North Shore which are fully compatible and integrated with the existing and future transport network, including the AWHC;
- Further economic analysis is required to confirm the timing of an AWHC, including determination of a preferred form and location either as a bridge or a tunnel, and associated funding within the NLTP and RLTP or alternative funding mechanisms;

- To maximise the benefits of any AWHC, further improvements would be required on the surrounding state highway network and local roads (especially those within the CBD);
- Providing for walking and cycling across the harbour should be a key component of any AWHC, in supporting modal shift away from single occupant vehicles and creating a 'world class city' tourism opportunity.

Figure 1.1 : Locality Map



DRAFT 1

Location Map

## 1.0 Introduction

The NZTA has investigated the contribution of an Additional Waitemata Harbour Crossing (AWHC) to improving the accessibility and resilience of Auckland's transport network in a manner that will maximise the opportunities for future economic prosperity and growth in the Auckland Region. The purpose of the Network Plan (the Plan) is to:

- Provide a high level contextual analysis of the key issues, opportunities, constraints and challenges to ensure integrated planning in relation to an AWHC;
- Maximise integration into a wider transport system, including the social, land use, environmental and cultural context, by identifying all non-State Highway activities required to support land use and AWHC development; and
- Clarify the likely steps by NZTA and stakeholders to determine where and how to most effectively invest in transport in Auckland over the next 20-30 years, in line with the upcoming Auckland Plan.

The Plan describes how an AWHC is consistent with and supports integrated land use and transport planning best practice, and the objectives of the Government Policy Statement for Transport (GPS), the NZTA's Statement of Intent, RLTS and Integrated Planning Strategy. The Plan also aligns with the strategic priorities in NZTA's Statement of Intent, including affordability, resilience, and other outcome goals, as well as the strategic directives outlined in NZTA's Integrated Planning Strategy. The Plan also provides information on connectivity requirements of the adjoining networks, to support any additional crossing.

Network Plans are being prepared for all of the Roads of National Significance (RONS) identified in the GPS. Although the AWHC has high regional significance it is not a RONS project, this Plan has been prepared consistent with the approach taken on those projects and sets out the wider transport system, land use, and economic context. The Plan is a 'living document' that will evolve as more of the AWHC risks, opportunities and impacts are known. Ongoing work on the Plan will also be required as the new Auckland Council develops its position on future land use and transport issues, in particular through the creation of the Auckland Plan.

A preliminary business case is being prepared to inform discussions with the Minister of Transport and key stakeholders on the form and general alignment of an AWHC. This preliminary assessment can be used as an evidence base for informing the Auckland Plan in order to maximise the benefits for integrated land use and transport outcomes in the Auckland Region. This analysis is also expected to identify the timing or trigger points for the various steps in advancing an AWHC, including protecting the route and commencing relevant design or construction phases. This Plan plays a key part in co-ordinating that work.



## 2.0 AWHC Strategic Context

The NZTA recognises that it is critical to the national economy that Auckland continues to grow as a thriving and successful ‘world class city’. Auckland provides a substantial market for New Zealand producers and manufacturers and it produces a wide range of products and services for regional, national and international markets. It is the key entry point for tourists visiting New Zealand and its Waitemata sea port handles the greatest amount of imports to the country by value. It is the country’s financial hub and requires a resilient transport network. An AWHC may assist in making Auckland more economically efficient, by providing more effective transport infrastructure and maximising the benefits of investment in existing infrastructure, to boost economic growth and productivity.

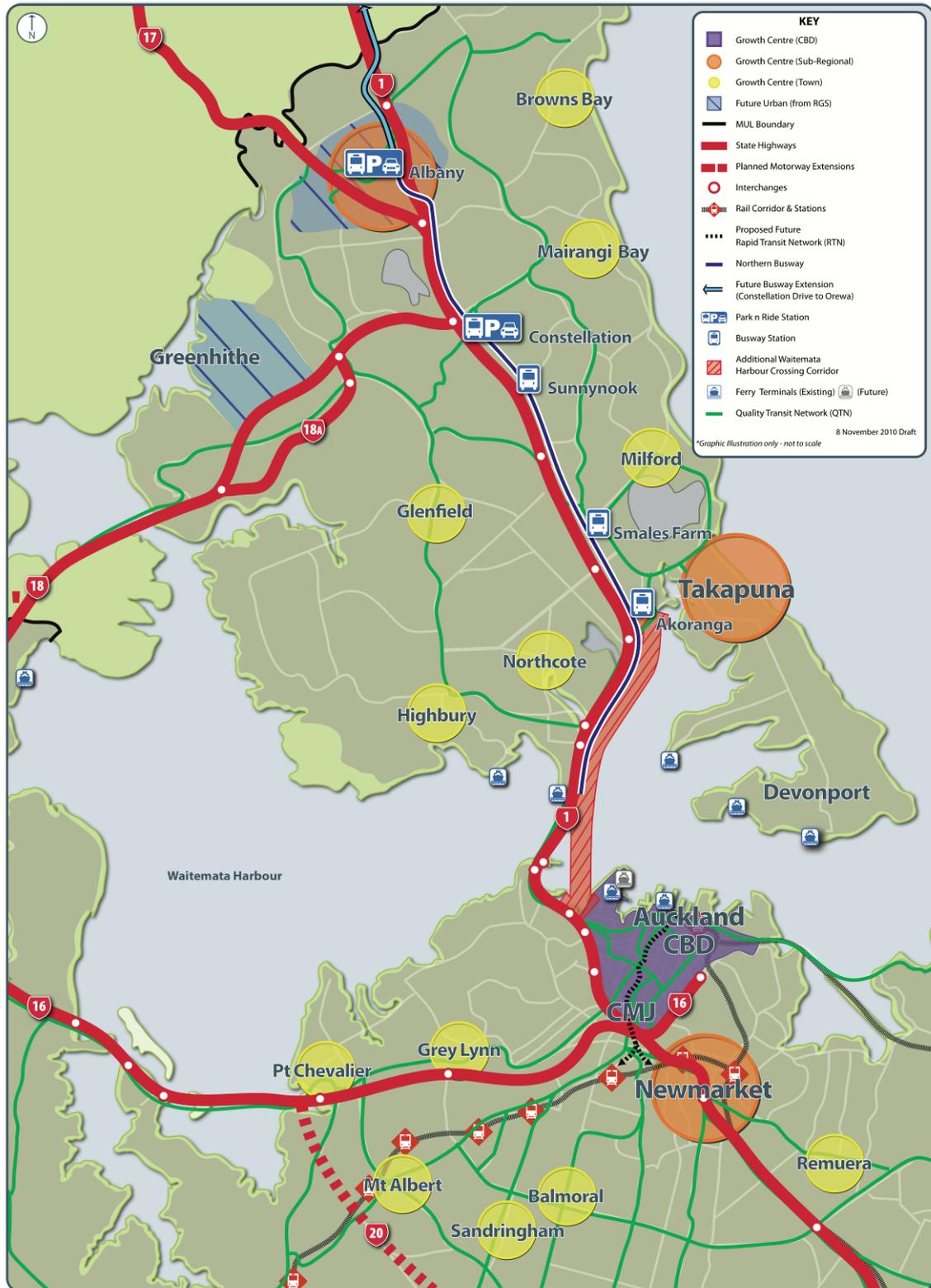
As the most populous and main urban centre, Auckland has a key role in New Zealand’s future economic performance, yet its scale and agglomeration advantages are not reflected in an elevated labour productivity compared to the country at large. Auckland has a rapid rate of annual growth in population by international standards, driven by a high rate of in-migration from other parts of the country, raising concerns about increasing congestion and the ability of the region’s development of infrastructure and housing to keep up with growth.

Current trends and future predictions show an increasing demand for the movement of goods and people across the Waitemata Harbour. An optimised AWHC will allow resources to flow more efficiently within the city and wider region, making Auckland’s economy more flexible and able to react to external economic changes. The provision of additional capacity for commercial and freight movements would therefore support the economic development of Auckland, and thereby New Zealand.

It is also recognised that a key factor in Auckland’s future attractiveness and prosperity will be the maintenance of its unique environmental character and social culture, which the form of any AWHC should also seek to support. Auckland is expected to continue to grow as people and resources gravitate to its financial, technological, service and market mass. The current Auckland Regional Growth Strategy (ARGS) suggests a likely population increase to over 2 million people over the next 30 years and it is expected that most of this growth will be within the boundaries of the Metropolitan Urban Limit (MUL). The ARGs proposes to accommodate a significant proportion of the growth through intensification of existing urban land use at key nodes and along transport corridors.

The merger of the Auckland Regional Council (ARC), Auckland Regional Transport Authority (ARTA) and seven territorial local authorities in November 2010 is an opportunity to approach the development of this Plan from a full regional perspective, in the context of integrated land use and transport network planning. This Plan seeks to provide information on and reinforce the priority for an AWHC (already established through strategy and plans for the region) as part of the development of the Auckland Plan.

Figure 2.1 : Strategic Context



DRAFT 6 NOTE: Map overlaid on - ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy.

Strategic Context

Current infrastructure networks are under increasing pressure and are constraining regional economic development. Given Auckland's economic importance, as well as the expected growth pressures, it is vital that core infrastructure (both existing and future) is coherently planned, protected and prioritised in terms of funding, as well as aligned with Auckland planning. The AWHC project is not currently contained within a funding programme; however the National Infrastructure Plan (NIP) has identified the AWHC project for further investigation and consideration for inclusion in the RTLP and NLTP beyond 2012.

The AWHC project would have a 'High strategic fit' in terms of the National Land Transport Programme's assessment framework, due to its potential to provide network resilience for a nationally significant component of SH1, ease future severe congestion on a key freight route to significant markets, and improve passenger transport capability.

The existing Auckland Harbour Bridge (AHB) currently provides the only direct cross harbour vehicle link between the Auckland CBD and north of the Waitemata Harbour, and therefore plays a critical role in the upper North Island's economy. Strategies for Auckland's transport network have sought ways to improve cross harbour links, including passenger transport links between the North Shore and the Auckland CBD. An important driver for the AWHC project is to improve network resilience and route security by providing an alternative route across the harbour. This is particularly important given the region's current reliance on the AHB to transport goods, people and infrastructure services. It is noted that the AHB carries a range of important utilities and therefore plays a network resilience role for more than just the transport network.

The Northern Busway can adequately serve passenger transport demands from current and known future proposals for land use development on the North Shore for at least 30 years. Provision for rail could be developed at a later stage via the tunnels provided for in the current cross-harbour rail designation, with future route identification and protection to the north. The progression of road-based AWHC elements would not foreclose any decision on rail being developed on the North Shore, and such infrastructure could be built independently of the road elements.

An AWHC provides a significant opportunity to link the North Shore and Auckland CBD by walking and cycling modes, through either allocation of space on the AHB or provision on a new bridge structure. Such a link will benefit commuters, training cyclists and recreational users, and also provide the opportunity for the promotion of a 'world class city' tourist attraction akin to facilities seen on the Sydney Harbour Bridge or the Golden Gate Bridge in San Francisco.

In conjunction with improved priority for passenger transport (through lane re-allocation for bus lanes on the AHB), the provision for these additional facilities will provide the opportunity for integration and balance between all transport modes and support modal shift away from single occupant vehicles. Such modal shifts are important for Auckland to accommodate future growth, enable intensification in the CBD and improve the liveability of the city.

In future years, there is expected to be an increase in the proportion of trips across the Waitemata Harbour via passenger transport (an 80% increase in person trips by 2041 from present day levels, compared to a roughly 50% increase in vehicle flows). This growth occurs in both directions, but more so in the contra-peak direction. This growth in person trips is expected to be greater than growth in vehicle trips across the harbour. The future year assessments summarised in Table 2.1 show that whilst the provision of an AWHC allows an overall increase in vehicle crossings, fewer vehicles would use the AHB and this allows dedicated AHB bus lanes and walking/cycling facilities to be provided (see sections 6.0 and 7.0 for further detail).

**Table 2.1 : Summary Waitemata Harbour crossing vehicle flows**

Year	Crossing	Estimated AADT
2008	AHB existing	168,000
2026	AHB without AWHC	198,000
2026	AHB with AWHC	96,000
2026	AWHC	134,000
2041	AHB without AWHC	205,000
2041	AHB with AWHC	110,000
2041	AWHC	144,000

The AHB has a finite service life as State Highway 1 in its present configuration and cannot indefinitely meet increasing freight service demands. The NZTA has an active management regime in place which focuses on managing the main AHB structure and extension bridges so that they will continue to provide the connectivity needed to cater for all vehicles crossing the harbour. As a result of the current strengthening work on the extension bridges (which will be completed in 2010) combined with active management, the NZTA expects to maintain the extension bridges indefinitely but with loading limitations. This will involve increasing levels of management of freight access which, as cross-harbour freight demands increase, will lead to an increasing impact on the region's economy.

The current phase of AWHC investigations builds upon the outcomes of previous studies, which have examined a crossing in a corridor between Esmonde Road, the AHB to the west and the Wynyard Quarter to the east. In terms of future network resilience, an AWHC would allow the loading on the AHB to be reduced by providing six additional lanes (on either a bridge or in tunnels) to service traffic travelling north-south past the Auckland Central Business District (CBD). This would increase the number of lanes across the harbour from eight to fourteen, allowing an increase in capacity for both inter-regional trips and intra-regional journeys to the CBD. The AHB would remain for the purpose of access to the CBD and some of the existing general vehicle lanes would be available for dedicated bus lanes and/or walking/cycling facilities.



### 3.0 Key Issues for the Network Plan

In order to optimise the benefits of an AWHC, and to ensure it is considered in the context of wider regional planning, it needs to be considered as a part of a strategic land use and transport (infrastructure and service) planning package. This should inform the upcoming Auckland spatial planning exercise, and regional and inter-regional transport network planning, including identifying further improvements required on the surrounding state highway network, and local roads, to maximise the benefits of any AWHC.

The NZTA will work closely with the new Auckland Council and key stakeholders to ensure the Auckland Plan objectives for the Auckland CBD and North Shore are fully compatible and integrated with the timing of, and available future funding for, the future transport network to support it (including the timing of an AWHC).

Investigations into the route and location of the AWHC were previously undertaken to provide certainty around the development planned to take place in the Wynyard Quarter. The functional requirements of the AWHC include provision for all transport modes, including passenger transport. A 2008 study recommended a preferred option for the AWHC, to be operated in conjunction with the existing AHB, consisting of two driven tunnels with three lanes in each direction for road traffic and two separate single track tunnels for rail passenger transport.

Resolution of the preferred long term urban form of the North Shore will be critical to addressing the question about the potential role and function of a rail network extended across the harbour. Given that the Northern Busway is already operating successfully and can fill the passenger transport needs on and to the North Shore for the foreseeable future, the provision for rail on any AWHC is not essential and could be developed at any later stage. The Plan identifies the need to address predicted capacity constraints within the CBD section of the Busway.

A preliminary business case is being prepared to inform discussions with the Minister of Transport and key stakeholders on the form and general alignment of an AWHC. This preliminary business case will not contain all of the evidence that would be required to demonstrate the need for an AWHC in economic terms, and further work will need to be done to support a funding application in the future. However, this preliminary assessment can be used as an evidence base for informing the Auckland Plan in order to maximise the benefits for integrated land use and transport outcomes in the Auckland Region.

The preliminary business case will also be used to inform the new Auckland Council's future Long Term Community Consultation Plan (LTCCP) processes about the projects the NZTA is likely to invest in and the timing of that investment, relative to the availability of national and regional government funding and the affordability of transport projects. This analysis is also expected to identify the timing or trigger points for the various steps in advancing an AWHC, including protecting the route and commencing relevant design or construction phases.

Consultation with key stakeholders has to date been undertaken through the Northern Corridor Steering Group. This group consists of councillors from local authorities in the Auckland region, as well as representation from ARTA, ARC and KiwiRail. This forum has been used to disseminate study information as it has developed and obtain feedback at each stage of the study process. It is expected that the membership of the group will be refined and revised once Auckland Council and Auckland Transport settle in to operation.

## 4.0 *Regional Growth Strategy and Land Use*

### 4.1 *Strategic Land Use and Planning Context*

The strategic land use and planning context for an AWHC is primarily framed by the ARGS, the Regional Land Transport Strategy (RLTS) and the Auckland Regional Policy Statement 1999 (ARPS). The ARGS expects a population in the Auckland region of 2 million by 2050<sup>1</sup> and promotes a compact urban form, focussing most urban growth around high density centres and intensive corridors with a high level of passenger transport service. North Shore City Council City Plan aspirations include more intensification along the North Shore central transport spine compared with the current Growth Concept in the ARGS. If further industrial land was to be developed in the north, it would inevitably benefit from improved north south road links across the Waitemata harbour, particularly in relation to the transport of freight.

The ARGS does not specifically include an AWHC in future planning processes, but notes that the need for an AWHC is unlikely until at least 2020 due to the development of the Northern Busway, the introduction of traffic demand management measures and improvements to the motorway system, as well as encouraging job growth on the North Shore. The ARGS also notes that low levels of growth on the North Shore compared to other parts of the region reflect inadequacies in infrastructure, environmental issues and current community concerns about growth. The lack of firm commitment to an AWHC when the ARGS was developed led in part to less growth being allocated to the North Shore in the ARGS. The provision of an AWHC could therefore allow the future growth of Auckland to be allocated in a more balanced manner across the region.

Whilst an AWHC was not specifically provided for, it would not be contrary to the overall principles of the ARGS, provided the new Auckland Council continues with similar policies to maintain a compact urban form with centres and corridor. An initial assessment of the likely land use benefits generated by an AWHC has shown that the southern end of the North Shore and West Auckland gain households and employment. Against these benefits, an AWHC is also predicted to result in fewer households and less employment in the isthmus, CBD and northern end of the North Shore. The overall land-use modelling results highlight that the end result is very 'infrastructure responsive'.

The ability of an AWHC to allow more traffic to enter the CBD is potentially in conflict with regional strategies that encourage the provision of passenger transport for trips to/from the CBD. There may also be potential localised impacts upon planned intensive developments in the CBD (Wynyard and Victoria Quarters) from the construction of an AWHC and the high volumes of buses within the CBD may impact upon urban amenity and plans to make Auckland a 'World Class City'. It will be vital to co-ordinate any AWHC

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<sup>1</sup> The 2007 RGS "evaluation" showed this was more likely to be 2041 or earlier.

development with CBD and isthmus Auckland planning (such as the way road connections from an AWHC are configured) to ensure the strategic aims for land use and the wider transport network are being achieved.

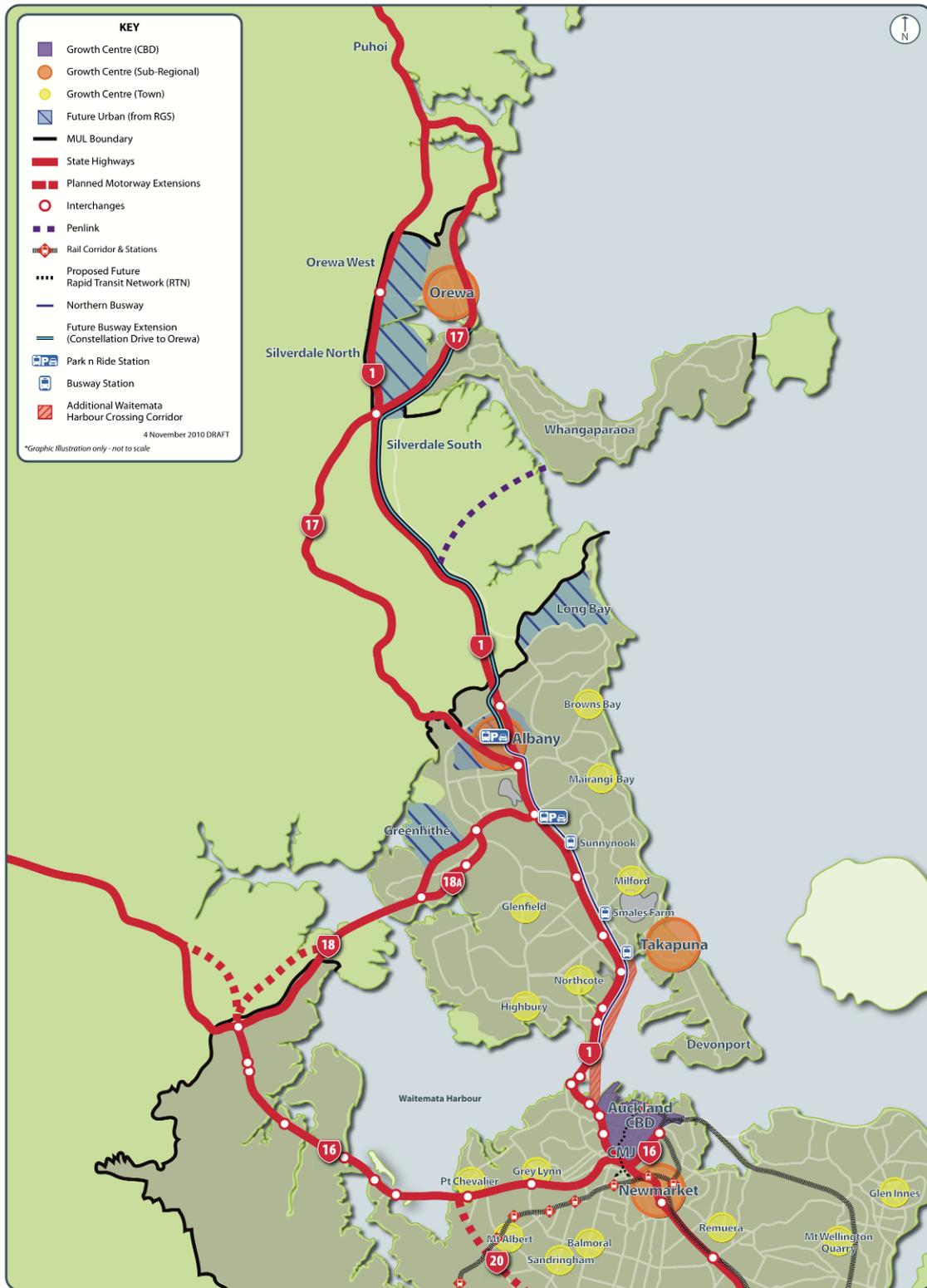
The future Auckland Plan will replace the ARGS and provide high level regional direction for land use planning, economic development and infrastructure investment. The nature or need for an AWHC is currently included in the draft scope of the Auckland Plan. It is not yet clear at this stage what effect the Auckland Plan will have on other statutory strategic planning documents, such as the ARPS and the Auckland Regional Land Transport Strategy. The Auckland Plan will be a key vehicle to articulate Auckland's choices, including where and how to accommodate growth, what infrastructure and planning is needed to support this, and how to prioritise between major projects. Accordingly, the NZTA will advocate for provisions in the Auckland Plan that support the AWHC, along with other supportive changes to the wider network, to ensure efficient use of available investment funds and achieve value for money and ensure that the transport network supports Auckland's growth.

Rail was not assumed to be extended to the North Shore within the period of the ARGS. A rail network would need to serve high density locations to be viable. Takapuna and Albany are the only identified North Shore sub regional growth centres. These centres are at different stages of development, with much of Albany centre yet to be developed, although current zoning is designed to facilitate a compact mixed use centre in the longer term. Between these centres, the possible locations of future rail stations are not in areas identified for high density mixed use development, with the possible exception of Smales Farm. Significant changes in employment and residential densities would be required around these 'unaligned' locations (initially in the Auckland Plan and thereafter through the ARPS or incorporated within the first Unitary Plan), as well as providing a level of amenity that would make these centres attractive. Providing high density employment areas outside of the CBD would compete with the current CBD focus and may need to be delayed until CBD development objectives are met.

The following recommendations will assist NZTA in progressing an AWHC in alignment with land use and growth processes:

- Advocate for the inclusion of an AWHC and key connections in the upcoming Auckland Plan;
- Work with stakeholders on any future-proofing North Shore rail study to determine the most appropriate locations of future rail stations and associated centre development and undertake land use modelling assessments;
- Advocate for a continuation of urban containment policies, with intensification in key centres and corridors and limitations on peripheral urban growth; and
- Advocate for suitable policies and instruments to promote further travel demand management, to support a change in behaviour away from single occupant motor vehicle use to other modes.

Figure 4.1 : Land Use Context



DRAFT

NOTE: Map overlaid on - ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy.

LandUse Context



## 5.0 Regional Road Transport Network

### 5.1 Network Overview

The Waitemata Harbour is currently a major barrier to cross-regional travel. Due to catchment and capacity limitations, the provision of ferry services cannot provide for more than a minor part of the existing or future travel demand, and therefore road-based transport modes will continue to fulfil the vast majority of travel across the harbour.

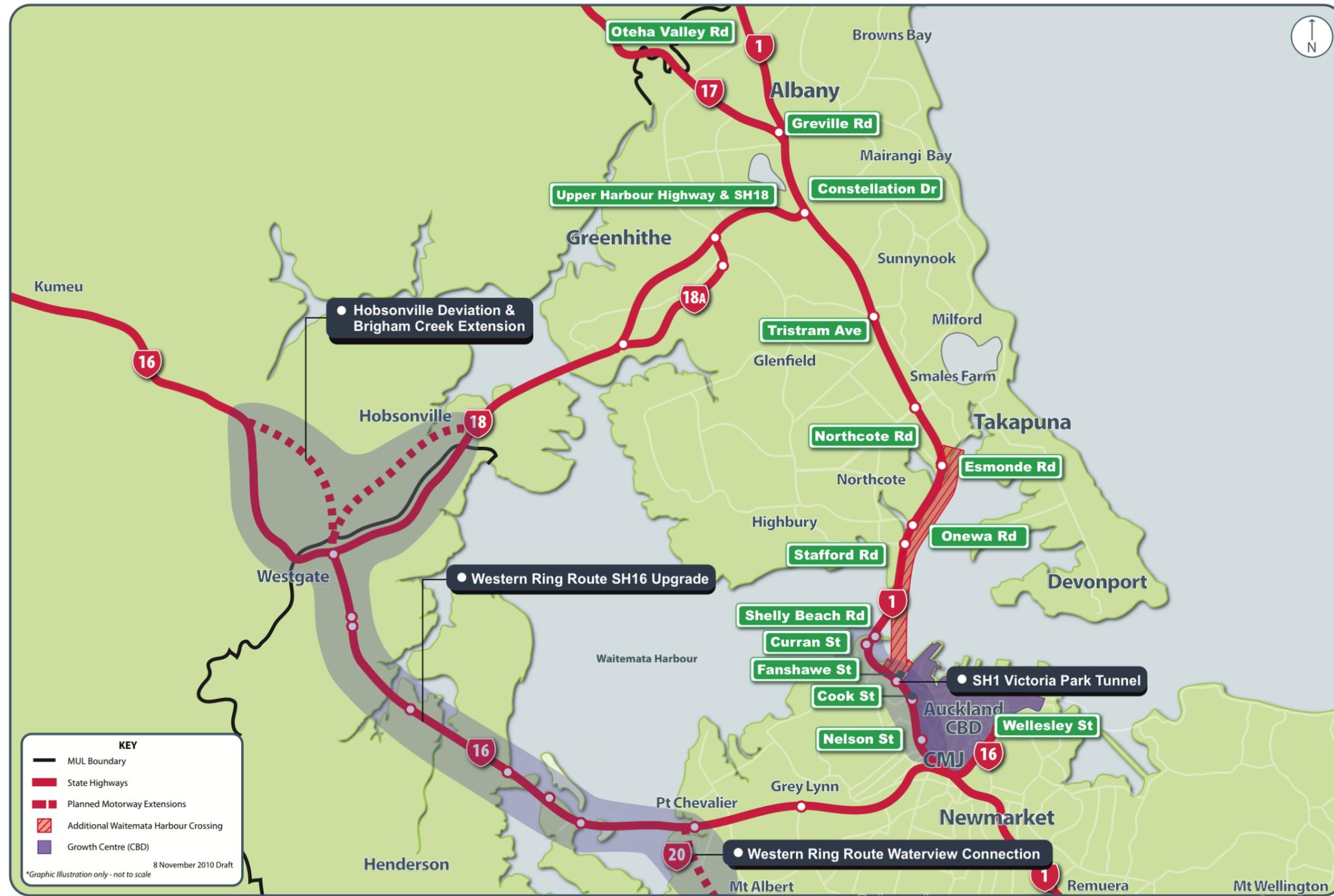
The AHB currently provides the only direct link across the harbour between the North Shore and the CBD for vehicular traffic and is regularly heavily congested, which hinders the regional economy through additional costs from lost travel time and an inability to move goods and people efficiently and quickly. As well as North Shore-CBD travel, the AHB also serves travel demand within greater Auckland and between adjoining regions. Initial traffic modelling shows improving accessibility through an additional crossing for general traffic is likely to release latent demand and result in an increase in private vehicle travel. It is expected that the impact of increased flows on SH1 will be able to be managed through existing network management measures, e.g. ramp signals.

An average of around 165,000 vehicles cross the AHB each day, with more than 200,000 vehicle crossings recorded some days. Currently the AHB itself does not operate at full capacity due to traffic bottlenecks occurring both upstream and downstream of the bridge. As nearby improvements (such as the Victoria Park Tunnel) are implemented, this spare capacity will be taken up by latent demand and ultimately the overall capacity of the state highway will be exceeded. As with the rest of the Auckland network, the provision of an additional crossing should be to benefit network resilience and measures will be taken to manage use of the additional capacity through region-wide TDM measures.

An important part of maximising corridor capacity is providing for passenger transport. To the north of the AHB, the Northern Busway forms a key part of Auckland's rapid transit network (RTN). The Busway currently runs alongside SH1 from Constellation Drive to just prior to the AHB and is complemented by bus priority measures along St Marys Bay and Fanshawe St. Busway stations are located at Albany, Constellation, Sunnynook, Smales Farm and Akoranga. An extension to Orewa is currently under investigation.



Figure 5.1 : State Highway Context



DRAFT 4 NOTE: Map overlaid on - ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy. 8 November 2010 Draft \*Graphic Illustration only - not to scale

State Highway Network



## 5.2 State Highway Network and an AWHC

Traffic congestion throughout Auckland's motorway network is recognised as one of the most serious issues in the Auckland region, and whilst significant efforts are underway into developing improved passenger transport links, enhanced vehicular links remain vital.

A key objective of an AWHC is to improve the resilience of Auckland's cross harbour infrastructure by providing an alternative route across the harbour and in doing so reduce the risks inherent in reliance on the AHB. The preferred route for an AWHC is to run between Esmonde Road and Central Motorway Junction, to the east of the current AHB and motorway corridor. The final location and whether the crossing would be a bridge or a tunnel will need to be determined through further investigation.

Regardless of whether in bridge or tunnel form, an AWHC would include similar lane configurations of six full traffic lanes. There would be full connections, to both the existing bridge and an AWHC, at the Onewa Road and Esmonde Road interchanges. An AWHC would serve longer distance traffic between the North Shore and the Central Motorway Junction (ie the Southern Motorway and State Highway 16 (both to/from the Northwestern Motorway and Grafton Gully). The existing AHB would serve traffic travelling between the North Shore and the Auckland CBD, i.e. the existing Shelly Beach Road/Curran Street, Fanshawe Street and Cook Street ramps. The Wellington Street on ramp would be closed and replaced with a new Cook Street on ramp).

Freight accounts for approximately 5% (8,000) of all trips across the AHB and is expected to grow in greater proportion to other vehicle volumes, as growth in freight transport bears a close relationship to regional economic and population growth. As the region continues to grow, heavy vehicle numbers will continue to increase. There is no nearby alternative route to the AHB for freight traffic so the continued access by either AHB or an AWHC or both is vital for the economic operation of the region and nation.

## 5.3 Local Road Network

The creation of an AWHC will increase pressure on the local road network, particularly in the weekday morning peak, and the ability of an AWHC to allow more traffic to enter the CBD is in conflict with regional and district<sup>2</sup> strategies that seek to provide no additional capacity for cars. There are a range of options that could be used to limit the rate of flow able to cross the Harbour, including changes in the lane allocation or ramp signals at on-ramps. In order for the additional capacity to benefit network reliability and resilience, it is important that Auckland Council establishes TDM measures that manage growth in vehicular trips, with the support of the NZTA.

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<sup>2</sup> CBD transport into the Future (Strategy) 2010

The preliminary business case being developed will be used to inform the new Auckland Council's future Long Term Council Community Plan (LTCCP) processes about the projects the NZTA is likely to invest in and the timing of that investment. It is important that key local road projects that can optimise the benefits of an AWHC are identified within the next LTCCP and RLTS. It is expected that those local road projects identified as crucial to complement an AWHC should get a "High" NLTP rating under the assessment criteria for 'strategic fit'.

The main local roads predicted to require improvements as a result of the development of the AWHC, in the Auckland CBD and CBD fringe are:

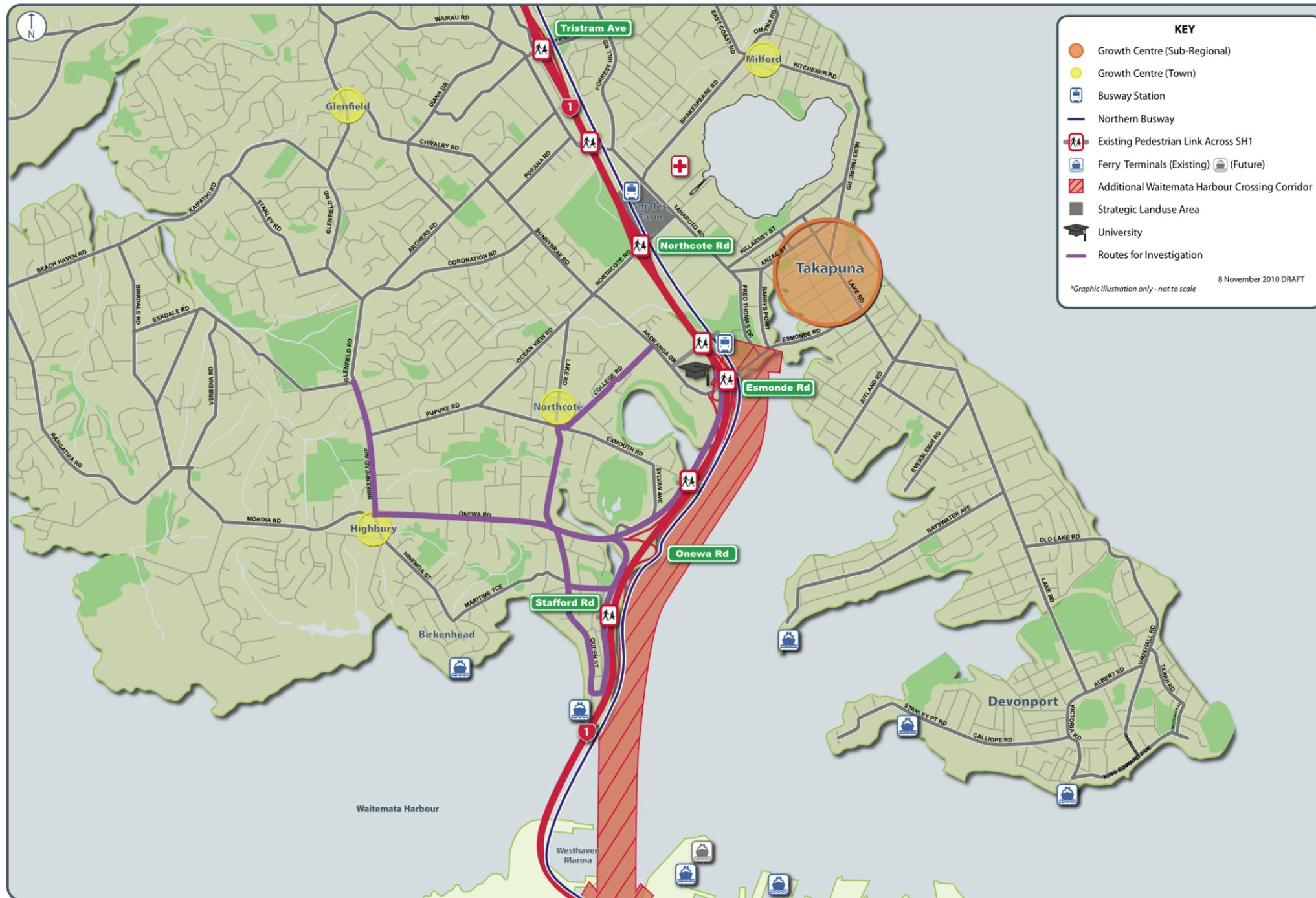
- **Shelly Beach Road and Curran Street:** Consideration should be given to how traffic capacity can be further optimised and/or changes in the configuration/operation in the intersections with Jervois Road, together with on road cycle lanes as recommended elsewhere in this Plan. The satisfactory operation of Shelly Beach Road will be critical to the effective operation of the southbound bus lane on the AHB, with the AWHC, as vehicles heading for the off ramp are assumed to need to share the planned bus lane;
- **Cook Street:** Significant increases in traffic flows are predicted on Cook Street, partly as a result of the assumed closure of the Wellington Street on ramp as part of the AWHC options and the introduction of a Cook Street on ramp, but also due to the attractiveness of the off ramp to Cook Street. Auckland City Council raised concerns relating to additional traffic flows along this route, which means that options that accommodate additional demand on Cook Street are unlikely to be favoured. Therefore other options that encourage diversion of traffic to other routes will need to be explored. It is noted that Cook St comes under pressure even in the absence of an AWHC, due to traffic growth;
- **Wellington Street:** With the closure of the Wellington Street on ramp there is the opportunity to explore options to improve pedestrian and cycle connections into the city;
- **Fanshawe Street:** Consideration should be given to how passenger transport capacity can be further optimised within the existing road reserve, without impinging on the vehicle capacity; and
- **Grafton Gully:** The modelling has assumed that Stage 3 of the previous Grafton Gully upgrade project is in place by 2026, but there has been no progress on identifying a preferred option for this, nor does it feature in any of the Government's or Council's strategies or policies. Therefore further work will be necessary to confirm the nature and timing for this project.

The main local roads predicted to require improvements as a result of the development of the AWHC, on the North Shore are:

- **Esmonde Road:** the main constraint on the local road network on the North Shore resulting from an AWHC will be the reconfigured intersection of Esmonde Road and Akoranga Drive with the motorway on and off ramps. Additional bus priorities and/or transit lanes along Esmonde Road could be pursued, with consideration to be given to how traffic capacity can be further optimised. However, these measures would appear to be required by 2026 even without an AWHC; and
- **Onewa Road:** The assessment assumes that a second westbound lane from Lake Road to Birkenhead Avenue is to be provided along Onewa Road by 2026, with the additional lane to operate as a transit lane in the weekday evening peak. Further intersection upgrades should be investigated along Onewa Road, including the intersections with Queen Street and Lake Road.



Figure 5.2 : Local Road Associated Improvements (Northern Sector)



**KEY**

- Growth Centre (Sub-Regional)
- Growth Centre (Town)
- Busway Station
- Northern Busway
- Existing Pedestrian Link Across SH1
- Ferry Terminals (Existing) (Future)
- Additional Waitemata Harbour Crossing Corridor
- Strategic Landuse Area
- University
- Routes for Investigation

\*Graphic Illustration only - not to scale

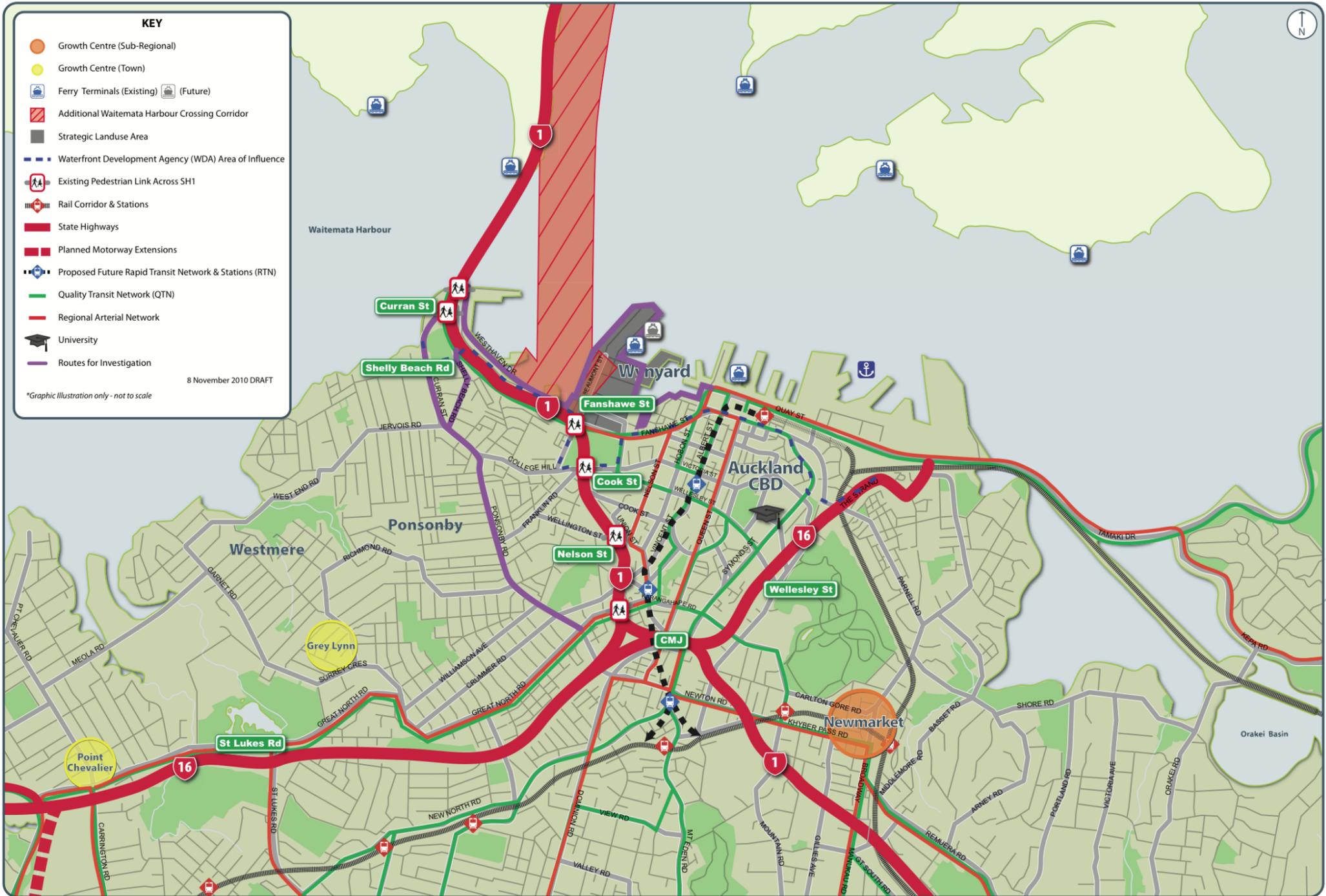
8 November 2010 DRAFT

**DRAFT 1** NOTE: Map overlaid on -  
ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy.

**AWHC Northern Sector Improvements**



Figure 5.3 : Local Road Associated Improvements (Southern Sector)



DRAFT 1

NOTE: Map overlaid on -  
ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy  
ARC "Regional Land Transport Strategy (RLTS) 2010-2040 - Map 3 RTN & QTN Network"

AWHC Southern Sector Improvements



## 6.0 Passenger Transport Network

### 6.1 Description

Any future AWHC will have a significant role in supporting the region's passenger transport network, by providing additional infrastructure and/or freeing up existing capacity on the existing AHB. Previous crossing studies have determined that the first priority for future improvements between the North Shore and the Auckland CBD be predominantly for passenger transport, with the next priority being additional traffic capacity to meet future inter-regional connectivity needs.

The Auckland Regional Transport Plan sets out a hierarchy for the passenger transport network, comprising of the Rapid Transit Network (RTN), the Quality Transit Network (QTN), and local connector network (LCN). Within the area south and west of the Auckland Harbour the RTN is the suburban rail network; to the North Shore the RTN comprises the Northern Busway, which runs across the Auckland Harbour Bridge into the CBD. Ferry services to and from Birkenhead, Bayswater, Stanley Point, Devonport (on the North Shore) and the downtown ferry terminal (located next to Britomart) provide cyclist and pedestrian access across the Waitemata Harbour.

There is a need for passenger transport improvements within the Auckland CBD, independent of the development of an AWHC. The continued growth of the Northern Busway services is projected by 2020 to cause Fanshawe Street and other CBD streets to become congested by buses, which will conflict with efforts to improve the CBD's urban amenity and continue its growth. To maximise the current investment in the Northern Busway, the NZTA will work closely with Auckland Council to identify appropriate entry points for buses into the CBD, ways to manage the effects of circulating buses and the provision of high quality bus terminals<sup>3</sup>.

The Northern Busway is already operating successfully and can fulfil the passenger transport needs on and to the North Shore for the foreseeable future, as described in Section 6.2 below. An investigation into rail would need to demonstrate how replacing an existing rapid transit network with another would create sufficient additional benefits to be justified.

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<sup>3</sup> As shown in the CBD into the Future (Strategy) 2010

The provision of rail to the North Shore must be considered within the context of wider regional rail network development, including issues other than just corridor capacity, including:

- The potential for rail to connect with the rest of the Auckland rail network and provide significant improvements in cross regional travel opportunities;
- Rail's role in shaping land use patterns within the region; and
- The impact of surface street bus movements in the CBD.

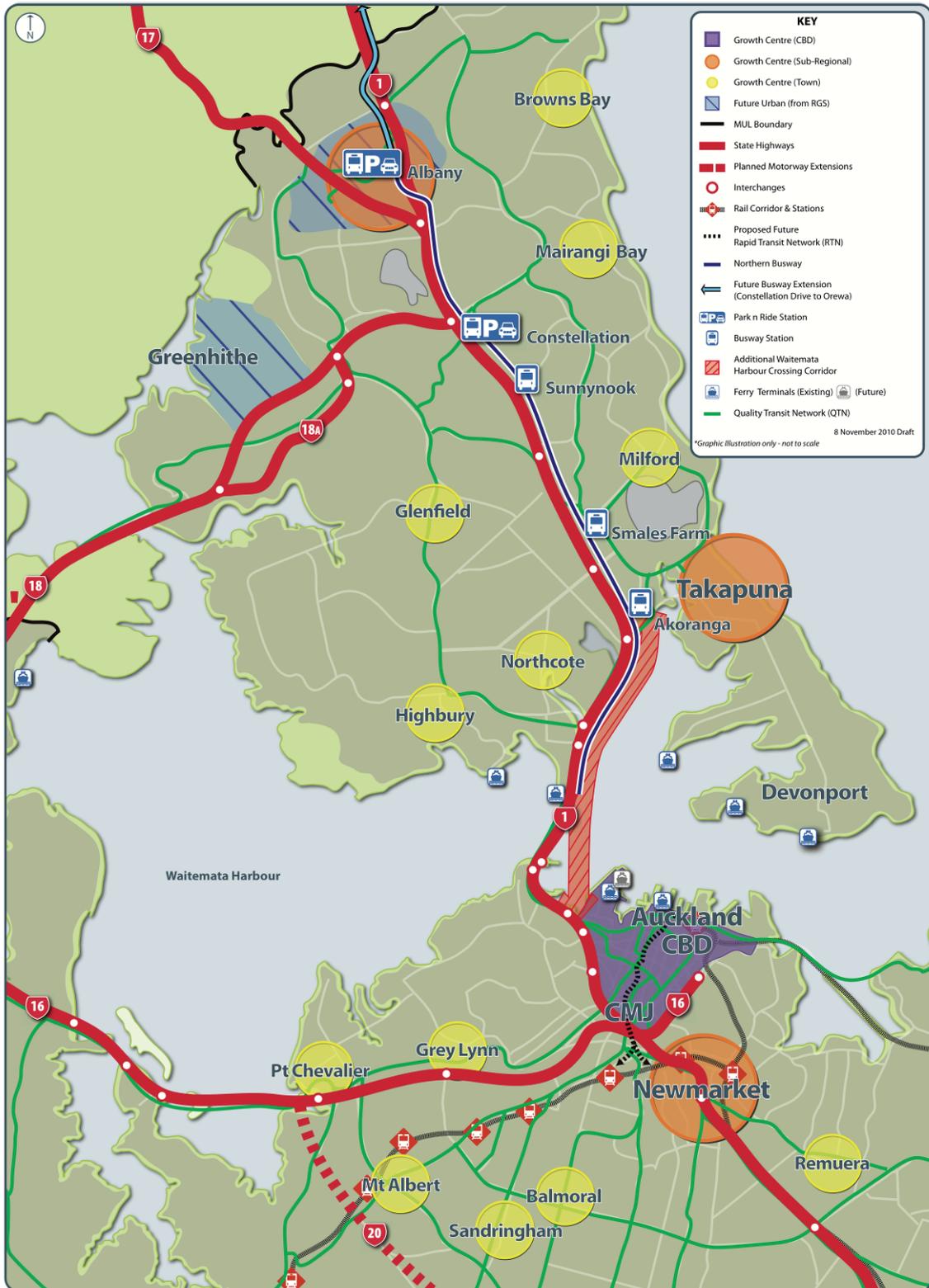
There are three main stages to the development of the Auckland regional rail network. The first stage involves the current network upgrade programme of major improvements in service frequency and reliability across the Western, Eastern and Southern lines. The second stage involves completion of the CBD Rail Link which will unlock capacity constraints at Britomart and support strong planned employment growth in the CBD. The third and final stage of rail network development is beyond the timeframe of the current RLTS and involves expansion of the rail network to support among other things regional employment growth in centres outside the CBD.

A North Shore rail line would be part of such an expansion (if directed by a future Auckland Plan) to provide stronger connections between the key centres of Albany and Takapuna and the rest of the Auckland region, however providing additional high density employment areas outside of the CBD could compete with the current CBD focus and so may need to be managed or delayed until the CBD development objectives are met.

There appears to be limited opportunity to develop a rail alignment within the existing motorway / Busway corridor due to constrained widths and incompatible vertical alignment around Constellation Drive. The operational difficulties of converting the Busway corridor to rail during construction would also be significant.

The southern portion of the current rail NOR ends at a possible Gaunt Street station location, which would serve the Wynyard Quarter area, and further investigations would be required to determine and protect the onward route, most likely to connect with a future Aotea station (part of the CBD rail link project).

Figure 6.1 : Passenger Transport Context



DRAFT 6 NOTE: Map overlaid on - ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy.

Strategic Context

## 6.2 Northern Busway Capacity

NZTA has investigated the current and potential use of the Busway and AHB by buses, and modelled the capacity to determine if and when the overall demand will exceed the Busway capacity. The Busway has experienced strong growth in demand since opening, with approximately 185 buses operating along Fanshawe St citybound in the 7:00 to 9:00 period (peak flow of 105 buses/hour).

While the current peak hour bus flows are placing considerable pressure on sections of the Busway near the CBD, they are well below the recommended target capacity of 250 buses per hour. This level is similar to that achieved on other major Busway systems in Australasia, including Brisbane's South East Busway and Sydney's Harbour Bridge bus lane.

A range of measures have been identified that could enable the Busway to reach the target capacity over time, including:

- Introducing express services that skip some stops – e.g. Fanshawe Street;
- Introduction of higher capacity, articulated buses;
- Improving dwell times through the introduction of improved ticketing systems;
- Provision of additional bus stops on Fanshawe Street and the extension of bus lanes east of Nelson Street after opening of Victoria Park Tunnel;
- Introduction of direct services from the North Shore to non-CBD destinations, such as Newmarket, Remuera and Ellerslie; and
- Development of additional bus infrastructure capacity between the AHB and CBD destinations.

There is a need for passenger transport improvements within the Auckland CBD, independent of the development of an AWHC, to support the expected growth of Busway services. Auckland City Council's Passenger Transport Integration Study has identified preferred routes for North Shore buses within the CBD and the routing of buses from the AHB to destinations within the CBD should be as direct as possible to these identified bus corridors. An AWHC allows for specific bus provision on the existing AHB and the potential to provide additional direct CBD bus access either alongside current access arrangements at Fanshawe Street or a new point further south (e.g. Cook Street).

By 2020, Fanshawe Street will need capacity for 180 buses per hour in the peak flow direction, which is in excess of its current capacity. Other CBD streets are expected to become congested by buses, which will conflict with efforts to improve the CBD's urban amenity and continue its growth. There is limited ability to increase bus volumes on narrow city streets and there will be an increase in pedestrian activity, with a resulting need to improve pedestrian priority at signals and widen footpaths. The impacts of bus movements on urban amenity will become a more critical issue, and one for inclusion in both the Auckland Plan and more detailed transport network and operation planning.

To maximise the current investment in the Northern Busway, the NZTA will work closely with Auckland Council to identify appropriate entry points for buses into the CBD, ways to manage the effects of circulating buses and the provision of high quality bus terminals.

Completion of the proposed CBD Rail Link will provide the impetus for improving urban amenity through a moderation in the growth of buses that would otherwise have occurred. However, it is likely that there will always be a strong emphasis placed on improving pedestrian amenity in the CBD and removing traffic from surface streets to support this. Integrated planning is therefore required for an improved urban environment which still supports high levels of passenger transport.

The Busway was originally designed to accommodate up to 350 High Occupancy Vehicles (HOVs) per hour southbound in the AM peak, in the section between Constellation and Akoranga stations (with a higher number anticipated between Akoranga station and the AHB). Current Busway use is significantly higher than initially modelled and investigations have been undertaken into the treatment of HOVs on the Busway.

An assessment of the peak hour impacts of introducing HOVs to the Busway revealed an unacceptably low level of service for vehicles joining the Busway, including buses in the traffic stream. To control this effect, it is likely that ramp metering would be required at Constellation Station, Esmonde Rd and Onewa Rd, and this has the potential to restrict buses if they are in the same traffic stream. For this reason it is recommended that HOVs not be introduced until the Onewa Road merge issue is resolved, and the provision of an AWHC could also be a catalyst for a review.



Figure 6.2 : Passenger Transport Context (Central Sector)



DRAFT 4

NOTE: Map overlaid on -  
ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy  
ARC "Regional Land Transport Strategy (RLTS) 2010-2040 - Map 3 RTN & QTN Network"  
ACC "Planning Map 1 Precincts & Quarters"

AWHC Central Sector



## Walking and Cycling

An AWHC provides a significant opportunity to link the North Shore and Auckland CBD by walking and cycling modes, through either allocation of space on the AHB or provision on a new bridge structure. Such a link will benefit commuters, training cyclists and recreational users, and also provide the opportunity for the promotion of a 'world class city' tourist attraction akin to facilities seen on the Sydney Harbour Bridge or the Golden Gate Bridge in San Francisco.

In conjunction with improved priority for passenger transport (through lane re-allocation for bus lanes on the AHB), the provision for these additional facilities will provide the opportunity for integration and balance between all transport modes and support modal shift away from single occupant vehicles. Such changes are important for Auckland to improve the liveability of the city.

There are difficulties in retrofitting the existing AHB and (depending on future lane allocation on the AHB) the facility may not meet desired guidelines for width. Connection issues on the North Shore arise with the walking and cycling facilities being located on the AWHC. Whilst not insurmountable, there could be benefit in the facility being on a new bridge (if it is a bridge) because it can be purpose built to a standard which overcomes the width issues.

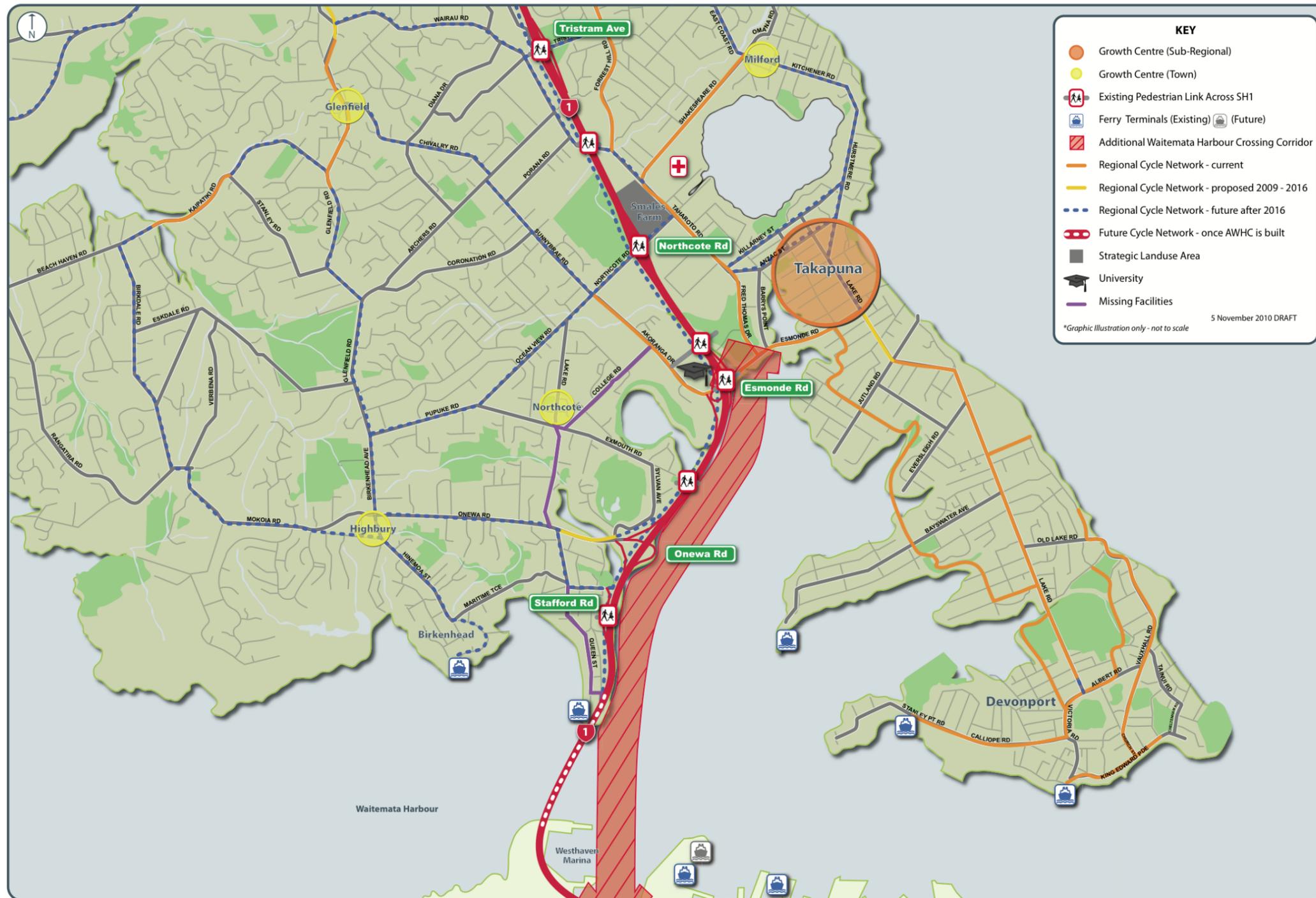
To ensure optimisation of the proposed facility on the AHB or an AWHC bridge, investigation works into improved pedestrian and cycling facilities along a number of routes are recommended, including:

- Westhaven Drive – improved/wider footpath/boardwalk;
- Waterfront footpath/cycleway connecting Beaumont Street with Quay Street;
- Off road shared pedestrian/cycle facility between Onewa Road and Esmonde Road alongside the motorway; and
- Off road shared pedestrian/cycle facility between Esmonde Road and Northcote Road alongside the motorway.

In addition, connections from the harbour crossing to the local road network will be required. The requirements will depend on which side of the bridge that any pedestrian and cycle facilities are located. Assuming an AHB facility, these connections need to be located as follows:

- Connections to the southern side of the AHB at Curran Street/Westhaven Drive/Shelly Beach Road; and
- Connections to the northern side of the AHB at Queen Street (Northcote Point), Onewa Road, Esmonde Road, Northcote Road, Heath Reserve and Sulphur Beach Road/Stafford Road.

Figure 6.3 : Walking and Cycling Associated Improvements (Northern Sector)



**KEY**

- Growth Centre (Sub-Regional)
- Growth Centre (Town)
- Existing Pedestrian Link Across SH1
- Ferry Terminals (Existing) (Future)
- Additional Waitemata Harbour Crossing Corridor
- Regional Cycle Network - current
- Regional Cycle Network - proposed 2009 - 2016
- - - Regional Cycle Network - future after 2016
- - - Future Cycle Network - once AWHC is built
- Strategic Landuse Area
- University
- Missing Facilities

\*Graphic Illustration only - not to scale

5 November 2010 DRAFT

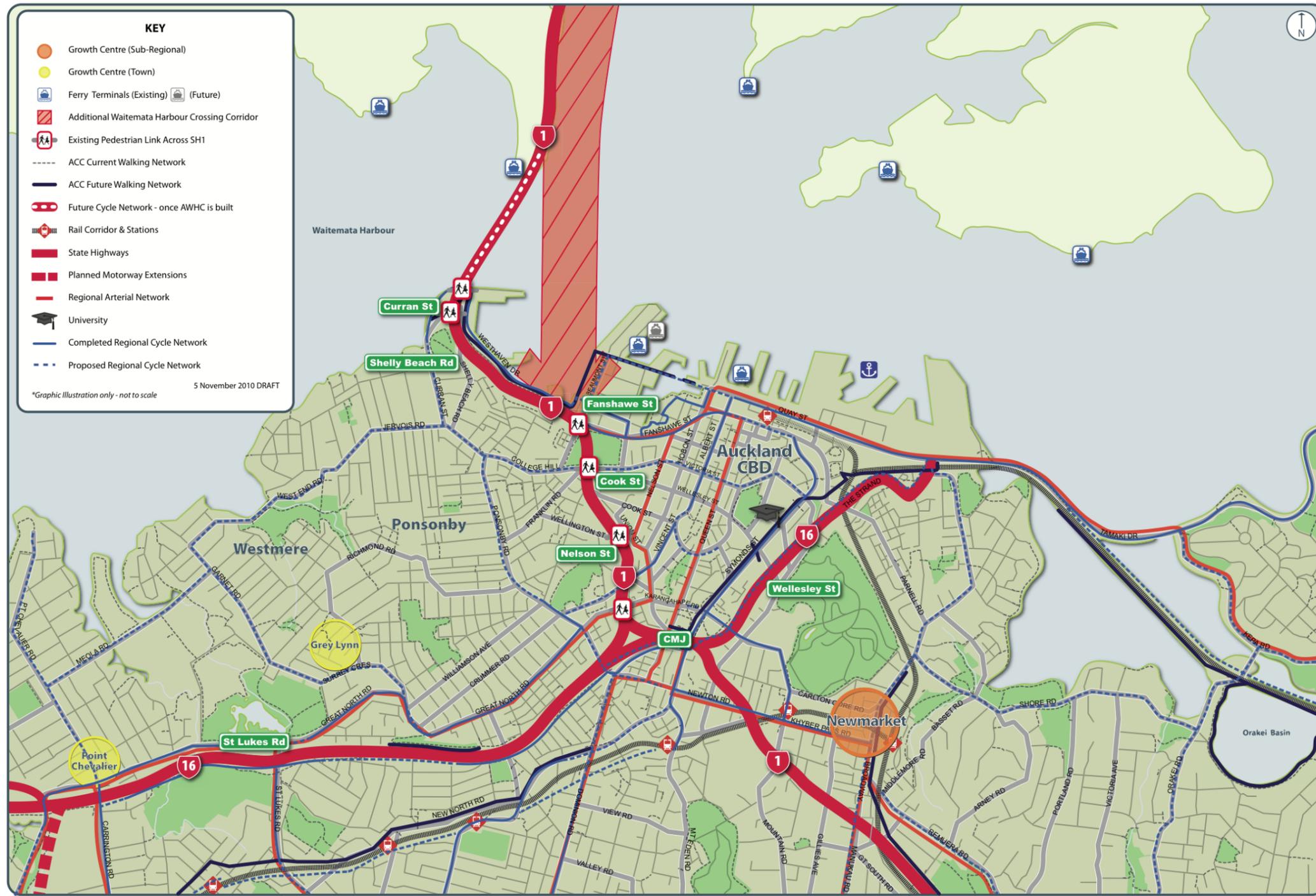
DRAFT 8

NOTE: Map overlaid on -  
 ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy.  
 "Auckland Regional Cycle Network" February 2010 (2.0).

**AWHC Northern Sector (Flow - Walking & Cycling)**



Figure 6.4 : Walking and Cycling Associated Improvements (Southern Sector)



**KEY**

- Growth Centre (Sub-Regional)
- Growth Centre (Town)
- Ferry Terminals (Existing) (Future)
- Additional Waitemata Harbour Crossing Corridor
- Existing Pedestrian Link Across SH1
- ACC Current Walking Network
- ACC Future Walking Network
- Future Cycle Network - once AWHC is built
- Rail Corridor & Stations
- State Highways
- Planned Motorway Extensions
- Regional Arterial Network
- University
- Completed Regional Cycle Network
- Proposed Regional Cycle Network

5 November 2010 DRAFT  
\*Graphic Illustration only - not to scale

**DRAFT 7**  
 NOTE: Map overlaid on -  
 ARC "Future Landuse & Transport Planning Project" April 2010 - Map 2 Scenario 4.1 Current Policy  
 ARC "Regional Land Transport Strategy (RLTS) 2010-2040 - Map 3 RTN & QTN Network"  
 ACC "Walking Action Plan 2007-2012 - Figure 1 Existing & planned walking network"  
 ARC "Auckland's Regional Cycle Network - February 2010"

**AWHC Southern Sector (Flow - Walking & Cycling)**



## 7.0 *Network Optimisation*

### 7.1 *Optimising AWHC Associated Activities*

A key function of this Plan is identifying issues and opportunities relating to an AWHC and determining a way forward which optimises the benefits of that activity to an AWHC. Optimisation requires appropriate analysis of viable alternatives and options, in order to maximise the contribution, for the funds used, towards achieving the GPS impacts and the wider purpose of the LTMA and relevant NZTS objectives.

The key optimisation activities are summarised in the following table and include a range of integrated activities, including, passenger transport facilities, walking/cycling initiatives and travel demand management measures which need to be progressed in an integrated manner as part of an AWHC. Many items require extensive investigation before costs and benefits can be assessed in sufficient detail to allow them to proceed.



Table 7.1 : Optimisation Issues/Opportunities

Issue/ Opportunity	Discussion/Context	Optimisation activity	Development and delivery process	Lead agency/ stakeholders
<b>Opportunity to provide evidence base for the Auckland Plan to integrate transport investment priorities with land use proposals</b>	Auckland Plan can act as a tool for setting out and determining transport investment priorities and resulting land use implications (and vice versa). NZTA supports the Auckland Plan concept as a useful vehicle to enhance the integration of transport and land use planning and investment. NZTA should take an intergration role influencing both the Auckland Plan and Government's long term transport objectives for Auckland.	Through Auckland Plan processes, ensure that land use in the CBD and North Shore maximises previous transport investment, given the need to optimise the limited amount of transport funding available.	As part of Auckland Plan development process, to inform AWHC designs.	Auckland Council
<b>Regional growth and land use strategy continues to align with AWHC expectations (and vice versa)</b>	Planning and justification for AWHC based on predicted growth and land use activities. Significant changes to regional growth or land use strategy may affect AWHC predictions and require rework.	Advocate for a continuation of urban containment policies, with intensification in key centres and corridors, and limitations on peripheral urban growth, other than where additional land extensive employment land is required to achieve economic growth objectives, or where sub-regional imbalances in employment and population are identified where peripheral expansion may reduce inter-regional commuting	As part of Auckland Plan development process, to inform AWHC designs.	Auckland Council
<b>Opportunity to improve north-south traffic operation</b>	In conjunction with AHB, the AWHC provides opportunity for improved cross-harbour accessibility and reliability for all modes, including commercial and general road traffic.	Undertake analysis of different traffic lane configurations and assess against regional planning and network operation objectives. Identify necessary local road improvements and allocate local funding within appropriate timeframe.	During detailed design for chosen form	NZTA, with Auckland Transport
<b>Opportunity to apply TDM measures as part of AWHC</b>	Regional strategy supports Travel Demand Management playing increasing role in the overall transport network. Major travel pattern changes as part of AWHC create opportunity to apply TDM measures. Opportunity to increase PT and cycling/walking modes	Determine type of TDM measures appropriate to implement as part of transition to AWHC completion. Advocate for suitable policies and instruments to promote travel demand management, to support a change in behaviour away from single occupant private motor vehicle use to other modes	Following confirmation of AWHC delivery timeframe, make appropriate allocation within local funding programme	Auckland Transport, with NZTA
<b>Co-ordination with Wynyard Quarter plans</b>	Construction of AWHC may also cause disruption in the Wynyard Quarter area. Increase in Fanshawe St bus capacity for Busway volumes may affect access to Wynyard Quarter.	Determine scope of potential impacts on Wynyard Quarter and engage stakeholders with design process. Seek maximum agreement on issues ahead of consenting processes to limit risk of delays.	During detailed design for chosen form	NZTA, Auckland Council and CCOs.
<b>Co-ordination with Victoria Quarter plans</b>	Construction required for future AWHC tie-in to CMJ may require temporary use of part of Victoria Quarter site. Need to ensure intensive development in that area is programmed for after the completion of AWHC and that other Victoria Quarter development does not preclude AWHC-related works. Construction of AWHC may also cause long periods of disruption to Victoria Quarter access.	Determine scope of potential impacts on Victoria Quarter and engage stakeholders with design process. Seek maximum agreement on issues ahead of consenting processes to limit risk of delays.	During detailed design for chosen form	NZTA, with Auckland Council
<b>Compatibility with Victoria Park Tunnel project, CMJ tie-in and other CBD corridors</b>	AWHC requires integration with Victoria Park Tunnel project, regardless whether bridge or tunnel chosen, as well as appropriate tie-ins to CMJ and other CBD corridors, such as Cook St	Undertake detailed investigations to ensure chosen form maximises benefits of VPT project and CMJ or other CBD corridor designs. This should include consideration of the management of Cook St traffic volumes, given possible proposals in that area.	During detailed design for chosen form	NZTA, with Auckland Council



Issue/ Opportunity	Discussion/Context	Optimisation activity	Development and delivery process	Lead agency/ stakeholders
<b>Retention of AHB connectivity to ramps</b>	Presence of Curran St, Shelly Beach Rd, Stafford Rd, and (to a lesser extent) Onewa Rd ramps present constraints to AHB options in future. Could restrict ability to provide preferred bus or walking/cycling facilities.	Undertake analysis of various ramp configurations and assess against project and network operation objectives. Progress agreed ramp configuration as core part of AWHC design.	During detailed design for chosen form	NZTA, with Auckland Transport
<b>Align North Shore and CBD land use plans with the Northern Busway and overall AWHC project</b>	Need to determine impacts upon CBD of the growth in patronage of the Northern Busway (e.g. greater bus capacity or connection to underground rail network) and consequential land use changes.	Provide development capacity in District Plans and future Unitary Plan at key locations around Busway stations.	As part of Auckland Plan development process.	Auckland Council, with Auckland Transport
<b>Opportunity for bus lanes on AHB following AWHC completion</b>	Traffic reductions on AHB following AWHC completion allow opportunity to provide dedicated bus lanes and ensure reliable bus travel times to/from CBD. Northbound link to two-way section of busway particularly desirable. Design relies on AHB on/off ramp configurations to serve CBD (and access on/off ramps). Opportunity to provide bus lane to Cook St off ramp (if required as additional bus access to CBD).	Undertake analysis of different traffic lane configurations and assess against regional planning and network operation objectives. Progress agreed lane allocation as core part of AWHC design.	During detailed design for chosen form	NZTA, with Auckland Transport
<b>External constraints restricting future growth of Northern Busway</b>	There are known constraints to Busway efficiency from external factors (i.e. non-infrastructure factors)	Co-ordinate with integrated ticketing project. Develop supportive demand management policies (e.g. maximum parking requirements for CBD developments and increased use of travel plans)	As part of wider regional programme to improve passenger transport network.	Auckland Transport, with NZTA
<b>CBD constraints restricting future growth of Northern Busway</b>	There are known constraints on capacity of CBD roads to accommodate future busway volumes. Auckland City Council has developed Passenger Transport Integration Study to better manage buses within CBD and serve planned growth areas. Additional CBD bus access required beyond 2020. Two dedicated off-street bus layover areas (within CBD) required to accommodate waiting buses.	Undertake detailed investigation into preferred additional CBD bus access point and improved bus capacity on Fanshawe St, including linking to simplified bus network and new major transport node. Coordinate study on increased bus capacity in CBD including development of new stations, whilst serving planned growth in various 'quarters'.	As part of Auckland Plan development process, to inform AWHC designs.	Auckland Council and Auckland Transport, with NZTA
<b>Need to confirm the preferred form of future North Shore Rapid Transit Network post 2040.</b>	Future network could be in form of rail or busway. Determination needed on likely route/station requirements. Where practical, station locations should be designed to gain leverage from existing or planned for high density development and supporting land use	Work with stakeholders if they undertake investigations into possible North Shore rail network. Consider opportunity to improve capacity and reach of Northern Busway, including better serving growth centres, as an alternative. Determine implications for AWHC design processes.	As part of wider regional RTN network plan, in time to inform the Auckland Council's Auckland Plan and NZTA's AWHC planning processes	Auckland Transport and KiwiRail, with NZTA and Auckland Council
<b>Align future North Shore RTN (post 2040) with CBD Rail Link project</b>	If decision made to not proceed with CBD Rail Link, the influence of this on future North Shore RTN options needs to be assessed. May require investment in additional CBD bus infrastructure to serve future Busway volumes.	As part of future North Shore RTN investigation, investigate requirements and issues of providing passenger transport connections to CBD without CBD Rail Link in place.	As part of wider regional RTN network plan, in time to inform the Auckland Council's Auckland Plan and NZTA's AWHC planning processes	Auckland Transport and KiwiRail, with NZTA and Auckland Council
<b>Lane allocation on AHB following AWHC completion</b>	Constraints on AHB width creates issues for balancing provision for walking/cycling, passenger transport and appropriate number of traffic lanes to serve CBD (and access on/off ramps). Oversupply of traffic lanes risks attracting excessive traffic volumes to CBD, counter to regional planning objectives.	Undertake analysis of different traffic lane configurations and assess against regional planning and network operation objectives. Progress agreed lane allocation as core part of AWHC design.	During detailed design for chosen form	NZTA, with Auckland Transport



Issue/ Opportunity	Discussion/Context	Optimisation activity	Development and delivery process	Lead agency/ stakeholders
<b>Opportunity to provide walking and cycling across harbour</b>	Significant opportunity to link the North Shore and Auckland CBD by walking and cycling. Could create a 'world class city' tourist attraction similar to Sydney Harbour Bridge. Could be path on either a new bridge or part of AHB (cannot be in tunnel). AHB has width constraints, so greater options with purpose-built facility on new bridge, provided it can achieve recommended North Shore connections.	After AWHC form chosen, identify appropriate fit-for-purpose facility (new path on new bridge, or space provided on AHB). Identify necessary local connections to connect to walking and cycling facility on AWHC. Allocate local funding within appropriate timeframe. Protect the routes to ensure their implementation is not precluded by other development.	During detailed design for chosen form. Following confirmation of AWHC delivery timeframe, make appropriate allocation within local funding programme	NZTA, with Auckland Transport
<b>Refinement of design, cost estimates and programming options of AWHC and associated projects</b>	Confirmation of funding requires level of certainty of cost for AWHC (for NZTA) and associated projects (for relevant funders). Procurement process can influence programming and timing. Need to identify the key packages of short, medium and long term goals for optimising the performance of the network, in relation to the AWHC and associated activities.	Confirm chosen form to allow cost estimate refinement. Undertake programming planning with stakeholders for associated projects to be built in time for AWHC. Identify the key short, medium and long term packages to support the AWHC and associated activities.	Following selection of chosen form, to initiate detailed design	NZTA, with Auckland Council and Auckland Transport
<b>Opportunity to select from wide range of funding mechanisms</b>	Any AWHC involves major capital cost, which needs to be provided for in relevant national and regional funding programmes. There are a wide range of options for funding mechanism, some with the benefit of accelerated project delivery.	Complete stage 2 business case including determination of preferred funding mechanism through engagement with the Minister and Auckland Council.	Following selection of chosen form, to initiate detailed design	Treasury/NZTA/ MoT, with Auckland Council
<b>Opportunity to create iconic bridge (if chosen form is a bridge)</b>	New bridge will create major visual feature for Auckland landscape, with potential to become iconic structure. Likely to be significant public/stakeholder interest in style of structure and interaction with existing views of AHB and harbour. Potential for unresolved visual issues to delay approval/consenting processes.	Determine scope of bridge design and visual assessment, and obtain stakeholder agreement on style/design process. Ensure style and visual issues addressed within consenting strategy to limit risk of delays.	During detailed design for chosen form	NZTA, with Auckland Council, Sea & City, and others
<b>Consenting risk</b>	Regardless of which form is chosen, the scale and complexity of the planned infrastructure will require significant investment into approval/consenting processes. Potential for these processes to cause major uncertainty to AWHC programme. Potential for lodged NORs to require amendment or replacement.	Develop consenting strategy to utilise existing NOR work streams and determine scope of major consenting risks. Use consenting strategy to address key issues and limit risk of delays. Areas for focus include geology, reclamation, coastal, heritage, visual, hydrology, ecology, etc.	During detailed design for chosen form	NZTA, with Auckland Council, Sea & City, and others
<b>Continuing stakeholder support and engagement</b>	Major changes in local governance have potential to disrupt engagement and representation of stakeholders. Need to ensure appropriate engagement and endorsement of AWHC to allow progress.	Develop forum for engagement with key stakeholders.	On-going	NZTA, with Auckland Transport
<b>Management of AWHC project processes</b>	Need to identify the performance indicators, methodologies and frequency of reporting that will be tracked before, during and after construction in line with the enhanced post implementation review and monitoring framework.	Establish appropriate performance indicators, methodologies and reporting programmes.	On-going	NZTA, with Treasury, Auckland Council, Auckland Transport and others



## 8.0 *Challenges and Opportunities*

### 8.1 *AWHC Project Progression*

As noted throughout the Plan, there are a complex range of challenges and opportunities related to the development of an AWHC. The recent merger of the Auckland Regional Council (ARC), Auckland Regional Transport Authority (ARTA), Auckland Regional Holdings (ARH) and seven territorial local authorities will clearly impact upon the delivery of future land use developments and transport activities. The governance change is an opportunity to approach the development of the Plan from a regional perspective, and it reinforces the priority already set through land use and transport strategies for the region.

In terms of the progression of the AWHC project, there are three main phases to be considered. The first relates to confirming future land uses via the Auckland Plan, and understanding the implications and interactions of this on the transport network. This process will not be led by NZTA, which will be just one party engaged in a transformational stage in Auckland's development.

The second phase is a full determination of the economic viability and strategic justification of an AWHC, which relies upon knowledge of land use decisions. The preliminary business case will assess a range of complex economic indicators to determine project value.

Once the justification is agreed, the third phase is to determine the preferred form of an AWHC and accompanying timing or staging decisions. A decision on form is, in itself, a significant step requiring the comprehensive engagement of a range of stakeholders and, given the significant legacy issues, one that will need consensus at a regional and national level.

### 8.2 *Engagement Processes*

To date, engagement on AWHC issues has been limited to key stakeholders. Given the significant regional impact of the final form of any AWHC, regional engagement will be undertaken on the Plan and accompanying business case prior to the NZTA Board making a decision on the AWHC project. Key stakeholders include:

- Auckland Council;
- Auckland Transport;
- Ministry of Transport/Treasury;
- Waterfront Development Agency/ and
- KiwiRail.

It is also proposed to undertake wider public consultation, given regional expectations around the project, once consultation with Auckland Council and Auckland Transport has been completed.

### 8.3 *Conclusions and Next Steps*

Based on the investigations made into the potential impacts of an AWHC, the key conclusions of this Plan are therefore:

- It is critical to the national and regional economy that Auckland continues to grow as a thriving and successful 'world class city', and that infrastructure investment should be focused on improving Auckland's economic growth and productivity, whilst maintaining its unique environmental character and social culture;
- There is a need to provide for increasing demand for the movement of goods and people across the Waitemata Harbour, for local, regional and inter-regional travel; increasingly active freight management on the existing AHB will adversely affect this increased demand;
- Current and known future proposals for land use development on the North Shore can be sufficiently served by the existing Rapid Transit Network (the Northern Busway) for at least 30 years; further intensification to support the Busway could occur;
- Employment-supporting land use patterns on the North Shore would need to be significantly intensified around potential station locations before a rail network on the north side of the harbour would be likely to become economically viable; future changes to land use patterns may be identified through development of the Auckland Plan;
- The NZTA will work together with Auckland Council and key stakeholders to seek that the Auckland Plan identifies land use objectives for the Auckland CBD and North Shore which are fully compatible and integrated with the existing and future transport network, including the AWHC;

- Further economic analysis is required to confirm the timing of an AWHC, including determination of a preferred form and location either as a bridge or a tunnel, and associated funding within the NLTP and RLTP or alternative funding mechanisms;
- To maximise the benefits of any AWHC, further improvements would be required on the surrounding state highway network and local roads (especially those within the CBD); and
- Providing for walking and cycling across the harbour should be a key component of any AWHC, in supporting modal shift away from single occupant vehicles and creating a 'world class city' tourism opportunity.

The next steps in implementing the Plan are set out below:

### AWHC Project steps

- In order to achieve GPS objectives, as part of the implementation of the AWHC:
  - Advocate for the inclusion of an AWHC and key connections in the upcoming Auckland Plan;
  - Identify the key short, medium and long term network improvement packages to support the AWHC and associated activities;
  - Complete further business case analysis, including determination of preferred funding mechanism and reflect associated costs within the NLTP and RLTP;
  - Identify cost and programme within next National Infrastructure Plan, to enable funding of next AWHC processes (including potential for elements of self-funding through tolls);
  - Confirm chosen form to allow cost estimate refinement. Undertake programming planning with stakeholders for associated projects to be built in time for AWHC; and
  - Develop consenting strategy to utilise existing NOR workstreams and determine scope of major consenting risks. Use consenting strategy to address key issues and limit risk of delays.

### Land Use steps

- In time to inform the Auckland Plan:

- Advocate for a continuation of urban containment policies, with intensification in key centres and corridors, and limitations on peripheral urban growth, other than where additional land extensive employment land is required to achieve economic growth objectives, or where sub-regional imbalances in employment and population are identified where peripheral expansion may reduce inter-regional commuting;
- Advocate for suitable policies and instruments to promote TDM, to support a change in behaviour away from private motor vehicle use to other modes;
- Ensure that land use in the CBD and North Shore supports an optimal level of transport investment, matched to the amount of transport funding available;
- Determine scope of potential impacts on Wynyard and Victoria Quarters and engage stakeholders with design process, and seek maximum agreement on issues ahead of consenting processes to limit risk of delays; and
- Develop supportive demand management policies (e.g. further maximum parking requirements for CBD developments and increased use of travel plans).

### Passenger Transport steps

- In time to inform the Auckland Plan and as part of the development of the AWHC design:
  - To assess rail as the North Shore RTN, investigate required development opportunities and capacity in the Regional Policy Statement, District Plans and future Unitary Plan at key locations around stations in accordance with the guideline densities contained in ARPS Appendix H;
  - Undertake analysis of different traffic lane configurations and assess against regional planning and network operation objectives, and progress agreed lane allocation as core part of AWHC design;
  - Consider opportunity to improve capacity and reach of Northern Busway, including better serving growth centres, as an alternative; and
  - Undertake detailed investigation into preferred additional CBD bus access point and improved bus capacity on Fanshawe St, including linking to simplified bus network and new major transport node.

### Network steps

- As part of the development of the AWHC design:
  - Ensure that all local road connections that require changes are identified as part of the AWHC project. This should include changes that increase connectivity and reliability of the network to key centres;
  - Identify appropriate fit-for-purpose walking and cycling facility (new path on new bridge, or space provided on AHB); and
  - Identify necessary local connections to connect to walking and cycling facility on AWHC and allocate local funding within appropriate timeframe.