



TE TUPU NGĀTAHI
SUPPORTING GROWTH

Pukekohe

Appendix F: Urban Design Assessment

Memorandum

To:	Pukekohe Project Team
From:	[REDACTED]
Date:	January 2023
Subject	Pukekohe – Design Framework Review
File/Ref No.	Draft

This urban design evaluation has been prepared for the Pukekohe Detailed Business Case based on the guidance and principles established in the program wide document - Te Tupu Ngātahi Design Framework (Design Framework).

The Design Framework takes a systems-based approach as the basis on which urban areas are organised and understood and pulls these apart as a series of layers; environment, social, built form, movement and land use, and cultural and sustainability values underpinning and spanning across these. In this way transport networks are not seen in isolation rather in terms of how they can contribute to the urban system as a whole.

The Design Framework provides measurable guidance for outcomes-based decisions throughout each phase of the programme delivery including:

- Option development
- Option evaluation
- Detailed business case preparation, and
- The corridor protection and consenting process.

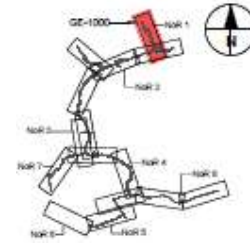
There are 20 design principles that have been established within these layers to provide high level guidance on the attributes of responsive, resilient, sustainable and high-quality urban environments. Each preferred option has been evaluated against these 20 programme wide design principles based on the current design detail (Rev A drawings). The record notes where an option is supportive of each of the design principles and where the option was assessed as being neutral or as an opportunity for development, this has been noted below as urban design recommendations that should be considered and developed in future design stages.

The intention of this evaluation is to provide a high-level urban design overview that considers the road and active mode alignments. The urban design commentary will also identify design opportunities and refinements that should be considered at subsequent stages of the design and help to form the basis of future urban design specific consent conditions.



1.1 Drury West Arterial

The proposed corridor is supportive of the following Design Framework principles:



Environment

- Support water conservation and enhance water quality in a watershed

Social

- Identity and place
- Adaptive corridors
- Social cohesion

Built Form

- Align corridors with density

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Prioritise active modes and public transport
- Support inter-regional connections and strategic infrastructure.
- Support legible function

Land Use

- Public transport directed and integrated into centres

Those principles that scored neutral in their support include:

Environment –

- **Support and enhance ecological bio corridors and biodiversity** – There are no SEAs near this corridor, and the design bridges over streams and riparian margins. Habitat has been identified by ecologist. Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Minimise land disturbance, conserve resources and materials**
Earthworks are required to accommodate the corridor through the FUZ. Larger areas of earthworks are required to provide for the Runciman Road Intersection. These should be minimised where possible and provide for the ability for future development to respond to, and interface with, the corridor. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – The corridor provides for active modes, and public transport where required. Space has been allocated for amenity measures and planting. Detailed design will need to provide for street

trees and planting. Need to provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements to demonstrate consideration of urban heat island effects in this future urbanized area.

- **Support water conservation and enhance water quality in a watershed –**
Future development and definition of the proposed stormwater retention pond at a future design stage is recommended to provide an appropriate interface with the surrounding land uses. There are also opportunities to explore an integrated urban storm water strategy and stormwater treatment for the corridor to deliver an integrated water quality treatment system.

Social

- **Respect culturally significant sites and landscapes –** There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe Corridors -**
The indicative cross section of the corridor has clear and legible zones for different modes. Detailed design will need to address CPTED and establish a positive interface with adjacent land use. Safe mid-block crossings that prioritise movements for pedestrians and cyclists will need to be identified and included as part of future detailed design.

Built Form

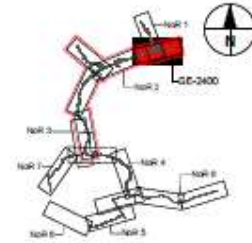
- **Corridor scaled to the surrounding context and urban structure –** The corridor width changes in response to anticipated demand. The corridor has space to provide for corridor amenity and integrate with future land use. An urban integration strategy should be developed to address interface issues with future land use as the area develops.
- **Facilitate an appropriate interface between place and movement –**
An urban integration strategy should be developed to coordinate with landowners in future stages to address interface issues and areas of localized fill and cut batters. This will enable an appropriate interface with adjacent land uses that will provide for active edge permeability and enable local access and connectivity to be achieved, particularly any areas of higher density housing.

The following principles were identified as not relevant to the public transport interchange:

- Strategic corridors as urban edges



1.2 South Drury Arterial (Drury West – Great South Road Connection)



The proposed corridor is supportive of the following Design Framework principles:

Environment

- Support water conservation and enhance water quality in a watershed

Social

- Identity and place
- Adaptive corridors
- Social cohesion

Movement

- Connect nodes – the corridor provides a connection through to the DW station via Drury West Arterial from the rural hinterland to the south.
- Connect modes
- Support access to employment and industry
- Support inter-regional connections and strategic infrastructure.

Land Use

- Strategic corridors as urban edges

Those principles that scored neutral in their support include:

Environment –

- **Support and enhance ecological bio corridors and biodiversity** – There are no SEAs near this corridor, and the design bridges over streams and riparian margins. Habitat has been identified by ecologist. Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Minimise land disturbance, conserve resources and materials** - Earthworks are required to accommodate the corridor over flood plains, with larger area of fill required to bridge over the Ngakoroa Stream stream in this location. Explore opportunities as part of future refinement to reduce the size and scale of these earthworks to reduce land disturbance. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development on the northern side. This part of the corridor will define the urban edge of the FUZ before moving into the rural zone.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – The corridor provides for active modes. Space has been allocated for amenity measures and planting. Detailed design will need to provide for street trees and planting. Need to provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements to demonstrate consideration of urban heat island effects in this future urbanized area.

- **Support water conservation and enhance water quality in a watershed –**
Future development and definition of the proposed stormwater retention pond at a future design stage is recommended to provide an appropriate interface with the surrounding land uses.

Social

- **Respect culturally significant sites and landscapes –** There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe Corridors -** The indicative cross section of the corridor has clear and legible zones for different modes. Given the lack of interface, there will be minimal opportunities to establish positive CPTED outcomes with relation to adjacent land use. The need for midblock crossings can be minimised by moving the active mode facilities to the northern side of the corridor adjacent to the FUZ.

Built Form

- **Corridor scaled to the surrounding context and urban structure –** The corridor width in this segment is two-lanes and scaled for the peri-urban context. The corridor has space to provide for corridor amenity this should be developed as part of detailed design.

Movement

- **Support legible function –** The current cross section works in an urban environment, improved legibility for active modes could be provided by establishing bi-directional facilities on the northern side of the corridor.
- **Prioritise active modes and public transport -**The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.

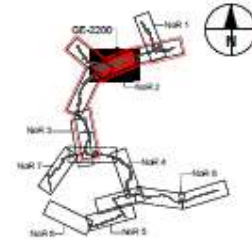
The following principles were identified as not relevant to the South Drury Arterial:

- **Facilitate an appropriate interface between place and movement –**
The corridor will have a low place function as the majority of the corridor will be in the rural zone. The segment in the FUZ is located in a flood plain, therefore minimal interface is expected.
- **Align corridors with density –** The corridor is not aligned with density, with the majority of this segment of the corridor located in the rural zone.
- **Public transport directed and integrated into centres –** there is no public transport function provided on this corridor.



1.3 South Drury Arterial (SH22 Connection - Drury West)

The proposed corridor is supportive of the following Design Framework principles:



Social

- Adaptive corridors
- Social cohesion

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Support inter-regional connections and strategic infrastructure

Land Use

- Public transport directed and integrated into centres
- Strategic corridors as urban edges

Those principles that scored neutral in their support include:

Environment

- **Adapt to a changing climate and respond to the microclimatic factors of each area** – The corridor provides for active modes. Space has been allocated for amenity measures and planting. Detailed design will need to provide for street trees and planting amenity measures and planting. Detailed design will need to provide for street trees and planting and provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements to demonstrate consideration of urban heat island effects in this future urbanized area.

Social

- **Respect culturally significant sites and landscapes** – There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe Corridors** - The indicative cross section of the corridor has clear and legible zones for different modes. This segment of the corridor spans FUZ and Rural Zones. Within the FUZ, detailed design will need to address CPTED and establish a positive interface with adjacent land use. In the Rural Zone, given the lack of interface, there will be minimal opportunities to establish positive CPTED outcomes with relation to adjacent land use.

Built Form

- **Align corridors with density** – The corridor runs along the boundary of FUZ, which is anticipated to be Mixed Housing Urban Zone as per the Drury-Opāheke Structure Plan, and within the Rural Zone.
- **Corridor scaled to the surrounding context and urban structure** – The corridor width in this segment is two-lanes and scaled for the peri-urban context. The corridor has space to provide for corridor amenity this should be developed as part of detailed design.
- **Facilitate an appropriate interface between place and movement** – The corridor will have a low place function as the majority of the corridor will be in the rural zone. The segment in the FUZ is located in a flood plain, therefore minimal interface is expected.

Movement

- **Prioritise active modes and public transport** -The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.
- **Support legible function** – The current cross section works in an urban environment, improved legibility for active modes could be provided by establishing bi-directional facilities on the northern side of the corridor.

Those principles were identified as Opportunities for development include:

Environment

- **Support and enhance ecological bio corridors and biodiversity** – There are no SEAs near this corridor, however there are large areas of stream and floodplain that are proposed to be filled. Further consideration of the response to these streams and flood plains is required. Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Support water conservation and enhance water quality in a watershed** – There are large areas of fill located across streams and within the flood plain. Water quality treatment areas are shown within flood plains and across streams. Further consideration of these streams and flood plains is required.
- **Minimise land disturbance, conserve resources and materials**
Large areas of earthworks are required to accommodate the corridor over flood plains, working against the topography of the land. Look for opportunities as part of detailed design to refine the approach to better work with the character and topography of the corridor.

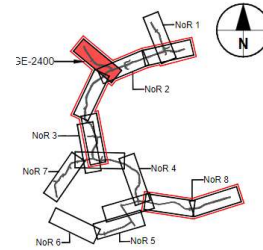
Social

- **Identity and place** – The corridor will fill large areas of flood plain and permanent streams further consideration of how the design could better respond to the natural characteristics of the area is required as part of detailed design.



1.4 SH22 Connection

The proposed corridor is supportive of the following Design Framework principles:



Environment

-

Social

- Adaptive corridors

Movement

- Connect modes
- Support access to employment and industry
- Support legible function

Those principles that scored neutral in their support include:

Environment

- **Support and enhance ecological bio corridors and biodiversity** – There are no SEAs near this corridor, and the design bridges over the Oira Creek and riparian margins. Habitat has been identified by ecologist. Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Minimise land disturbance, conserve resources and materials** - Large areas of earthworks are required to accommodate the eastern portion of the corridor in this location. Further refinement of design presents the opportunity to minimise this.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – The corridor provides for active modes. Space has been allocated for amenity measures and planting. Detailed design will need to provide for street trees and planting and provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements.

Social

- **Respect culturally significant sites and landscapes** – There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Social cohesion** – provides alternate connections between two main transport corridors, SH22 and the new Drury Arterials, through a rural area, with no activity nodes, or areas of density.
- **Safe Corridors** - The indicative cross section of the corridor has clear and legible zones for different modes. This corridor is in the Rural Zone. Given the lack of interface, there will be minimal opportunities to establish positive CPTED outcomes with relation to adjacent land use.

Built Form

- **Corridor scaled to the surrounding context and urban structure** – The rural corridor is two-lanes and requires large amounts of earthworks in the eastern portion. Detailed design should look to minimise the extent of earthworks and include a strategy to integrate the corridor into the context through contouring and landscaping.

Movement

- **Prioritise active modes and public transport** -The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.

Those principles were identified as opportunities for development include:

Environment

- **Support water conservation and enhance water quality in a watershed** – there are large areas of earthworks and an artificial wetland located over a tributary of the Oira Creek. Detailed design should look for opportunities for refine the approach to stormwater management in this area.

Social

- **Identity and place** – The corridor includes large area of fill in the eastern portion. Detailed design should look to minimise this and incorporate mitigation measures to integrate the corridor into the rural environment.

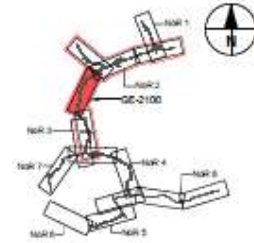
The following principles were identified as not relevant to the South Drury Arterial:

- **Align corridors with density** – the Corridor is located in the Rural Zone.
- **Facilitate an appropriate interface between place and movement** – The corridor will have a low place function as the corridor will be in the rural zone.
- **Connect nodes** – the corridor does not provide a connection between nodes.
- **Support inter-regional connections and strategic infrastructure**
- **Strategic corridors as urban edges**
- **Public transport directed and integrated into centres**



1.5 Drury-Paerata Link

The proposed transport corridor is supportive of the following Design Framework principles:



Social

- **Adaptive corridors**
- **Social Cohesion**

Movement

- **Connect modes**
- **Connect nodes**
- **Support access to employment and industry**
- **Support inter-regional connections and strategic infrastructure**
- **Support legible function**

Those principles that scored neutral in their support include:

Environment

- **Support and enhance ecological corridors and biodiversity**
Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with the two stream crossings in this location.
- **Support and enhance ecological bio corridors and biodiversity** – There are no SEAs near this corridor, and the design bridges over one of two streams and riparian margins. Habitat has been identified by ecologist. Details of the ecological management strategy of the corridor is not fully resolved and should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Support water conservation and enhance water quality in a watershed** – This corridor includes a bridge over the Oira Creek, and a culvert through a tributary of the Creek adjacent to the NIMT, with large areas of fill across the stream and within the flood plain. There is a need to further refine the approach to stormwater management.
- **Minimise land disturbance, conserve resources and materials**
Large areas of earthworks are required to accommodate the northern portion of the corridor in this location, particularly around the proposed wetlands. Further refinement of design presents the opportunity to minimise this. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development where it is located adjacent to the FUZ.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – Provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements to demonstrate consideration of urban heat island effects in this future urbanized area.

Social

- **Identity and place –**
The future design response of the corridor will need to consider the underlying identity drivers of the surrounding context such as the landscape character drivers of the tributaries of the Oira Creek, cultural values and narratives and integrate the corridor into the rural context.
- **Respect culturally significant sites and landscapes –** There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe Corridors -** The indicative cross section of the corridor has clear and legible zones for different modes. This corridor is in the Rural Zone. Given the lack of interface, there will be minimal opportunities to establish positive CPTED outcomes with relation to adjacent land use.

Built Form

- **Corridor scaled to the surrounding context and urban structure –** The rural corridor is two-lanes. Detailed design should look to minimise the extent of earthworks and include a strategy to integrate the corridor into the context through contouring and landscaping.

Movement

- **Prioritise active modes and public transport -**The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.

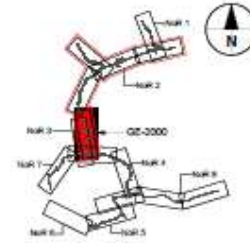
The following principles were identified as not relevant to the South Drury Arterial:

- **Align corridors with density –** The corridor runs along the eastern side of the NIMT, and is outside the FUZ.
- **Facilitate an appropriate interface between place and movement –**
The corridor will have a low place function as the majority of the corridor will be in the rural zone.
- **Strategic corridors as urban edges**
- **Public transport directed and integrated into centres**



1.6 Paerata Arterial

The proposed corridor is supportive of the following Design Framework principles:



Environment

- Support and enhance ecological corridors and biodiversity
- Support water conservation and enhance water quality in a watershed

Social

- Social cohesion

Built Form

- Align Corridors with density- *The corridor is located on the edge of, or within, the FUZ. The Pukekohe – Paerata Structure Plan anticipates that the area near the Paerata Station will be zoned THAB, providing for density, and the area to the south will be developed for Mixed Housing Urban Zoning, providing for medium density.*

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Prioritise active modes and public transport
- Support inter-regional connections and strategic infrastructure
- Support legible function

Land Use

- Public transport directed into centres.
- Strategic corridors as urban edges.

Those principles that scored neutral in their support include:

Environment

- **Minimise land disturbance, conserve resources and materials** – Large areas of earthworks are required to accommodate the southern portion of the corridor in this location, particularly around the proposed wetlands. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – Provide further details and definition at future design stages of the proposed amenity planting and water sensitive design elements to demonstrate consideration of urban heat island effects in this future urbanized area.

Social

- **Identity and place** – The future detailed design response of the corridor will need to consider the underlying identity drivers of the surrounding context such as the landscape character drivers of the water courses, cultural values and narratives.
- **Respect culturally significant sites and landscapes** – There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe Corridors** - The indicative cross section of the corridor has clear and legible zones for different modes. There are opportunities to provide positive CPTED outcomes for urban integration within the FUZ area and this should be addressed as part of detailed design. Future design will also need to include the provision of safe crossing for active modes at intersections and mid-block crossing.

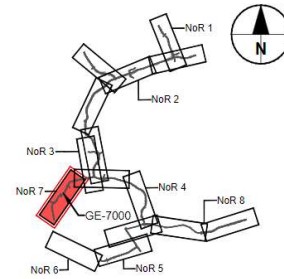
Built Form

- **Scaled to the surrounding context and urban structure** – The corridor is two-lanes. Detailed design should look to minimise the extent of earthworks and include a strategy to integrate the corridor into the context through contouring and landscaping, particularly in the southern portion of the corridor, where large areas of fill are proposed. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development where it interfaces with the FUZ.
- **Facilitate an appropriate interface between place and movement** – An urban integration strategy should be developed to coordinate with landowners in future stages to address interface issues and areas of localized fill and cut batters, particularly in the southern portion where large areas of fill are proposed. This will enable an appropriate interface with adjacent land uses that will provide for active edge permeability and enable local access and connectivity to be achieved.



1.7 Pukekohe North-West Arterial

The proposed corridor is supportive of the following Design Framework principles:



Environment

- Minimise land disturbance and conserve resources

Social

- Adaptive corridors

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Support legible function

Those principles that scored neutral in their support include:

Environment

- **Support water conservation and enhance water quality in a watershed –**
Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains.
- **Support and enhance ecological corridors and biodiversity –** the current alignment avoids identified SEAs. Details of the ecological management strategy of the corridor is not fully resolved and the corridor runs across two streams. The design should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Support water conservation and enhance water quality in a watershed –**
Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains.
- **Adapt to a changing climate and respond to the microclimatic factors of each area –**
Active modes are to be provided along the length of the corridor. Detailed design will need to accommodate amenity measures such as street trees and shading.

Social

- **Identity and place –** The future detailed design response of the corridor will need to consider the underlying identity drivers of the surrounding context such as the landscape character drivers of the tributaries of the XXX Streams, cultural values and narratives.
- **Respect culturally significant sites and landscapes –** There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Social Cohesion –** the proposed corridor will provide connectivity in the north-west of Pukekohe, traversing anticipated future industrial and residential land use pattern as identified

in the Pukekohe- Paerata Structure Plan. There are opportunities for the corridor to include landscaping and buffer treatments to manage the interface and transition between industrial and residential landuse. The inclusion of protected cycling facilities will provide modal choice for users.

- **Safety –**

Detailed design of the corridor will need to consider CPTED and how active interfaces can be established with the road corridor. Detailed design will need to consider design detail for safe active mode crossings and safe pedestrian environments, including mid-block crossings.

Built Form

- **Align corridors with density –** The location of the corridor is zoned FUZ, and is indicated to be, as per the Pukekohe Structure Plan, a mix of industrial and mixed housing suburban zone in the future, which provides for low – medium density development. The corridor is part of a circulatory route around Pukekohe, providing access to industrial employment areas.
- **Scaled to the surrounding context and urban structure –** The two-laned corridor is located in the FUZ and future development will be able to respond to the corridor and its scale. Nevertheless, the topography of the area will result in earthworks batters in some locations and these should be minimised as much as possible during more detailed design, with a strategy to integrate and interface with adjacent land use as the area develops.
- **Facilitate an appropriate interface between place and movement –**
The scale of the earthworks required in some areas of the corridor required will likely create difficulties in facilitating an appropriate interface between public and private. Future detailed design should take the opportunity to maximise interface outcomes along the corridor. Providing for future connectivity to adjacent land development and future movement network will be important to provide permeability and connectivity in the area.

Movement

- **Prioritise active modes and public transport -**The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.

Landuse

- **Public transport directed and integrated into centres –**
The corridor doesn't specifically direct public transport into 'centres', however it does provide access from the north-east to the Milldale Centre. Further understanding of the future public transport network is required.

The following principles were identified as not relevant to the North-West Corridor.

- Public transport directed and integrated into centres
- Support inter-regional connections and strategic infrastructure
- Strategic corridors as urban edges



1.8 Pukekohe North-East Arterial

The proposed corridor is supportive of the following Design Framework principles:

Social

- Adaptive corridors
- Social cohesion

Movement

- Connect modes
- Support access to employment and industry
- Support legible function

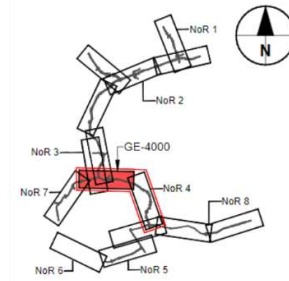
Those principles that scored neutral in their support include:

Environment

- **Support and enhance ecological corridors and biodiversity** – the current alignment is adjacent to an identified SEA, and the edge of indigenous vegetation identified as part of the wider ecological assessment. There are opportunities to minimise effects on these areas, as part of design refinement and these should be considered when developing the construction methodology.
- **Support water conservation and enhance water quality in a watershed** – Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains.
- **Minimise land disturbance, conserve resources and materials** – The corridor includes large areas of earthworks in the southern portion due to the steep topography in this area. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – Active modes are to be provided along the length of the corridor, and part of the corridor provides for public transport lanes. Detailed design will need to accommodate amenity measures such as street trees and shading.

Social

- **Identity and place** – The future detailed design response of the corridor will need to consider the underlying identity drivers of the surrounding context such as the landscape character drivers of the tributaries of the XXX Streams, cultural values and narratives.
- **Respect culturally significant sites and landscapes** – There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safe corridors** – Detailed design of the corridor will need to consider CPTED and how active interfaces can be established with the road corridor. Detailed design will need to consider design detail for safe active mode crossings and safe pedestrian environments.



Movement

- **Connect nodes** – The North-East Corridor does not directly connect nodes, providing a route around Pukekohe. It does provide a more direct route from the north to wider connections such as Bombay.
- **Prioritise active modes and public transport** – The corridor provides for separated cycling facilities; however design detail needs to resolve access through intersections to provide for priority to active modes.

The following principles were identified as Opportunity for development for the North-East Corridor

Built Form

- **Scaled to the surrounding context and urban structure** – The two-laned corridor is located in the FUZ, with a portion in the Mixed Rural Zone. Future development in the FUZ will be able to respond to the corridor and its scale in some locations, however, the topography of the area will result in large earthworks batters in some locations and these should be minimised as much as possible during more detailed design, with a strategy to integrate and interface with adjacent land use as the area develops.
- **Facilitate an appropriate interface between place and movement** – The scale of the earthworks required in some areas of the corridor required will likely create difficulties in facilitating an appropriate interface between public and private. Future detailed design should take the opportunity to maximise interface outcomes along the corridor. Providing for future connectivity to adjacent land development and future movement network will be important to provide permeability and connectivity in the area; this will be difficult due to the topography, particularly in portion of the corridor that runs north/south.
- **Align corridors with density** – The corridor traverses a range of densities with FUZ (anticipated to be Mixed Housing Urban) in the north east, before moving through the Mixed Rural Zone back to FUZ (anticipated to be Single House Zone) in the south. With the exception of the small portion in the north, the corridor does not support density.

The following principles were identified as not relevant to the Pine Valley Road Upgrade.

- Support inter-regional connections and strategic infrastructure.
- **Public transport directed and integrated into centres** – The corridor doesn't specifically direct public transport into 'centres', creating a link around the north east of Pukekohe.
- Strategic corridors as urban edges.



1.9 Pukekohe South-East Arterial

The proposed corridor is supportive of the following Design Framework principles:

Social

- Adaptive corridors
- Social cohesion

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Support legible function

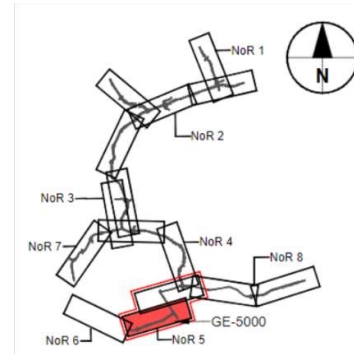
Those principles that scored neutral in their support include:

Environment

- **Support and enhance ecological corridors and biodiversity** – the current alignment avoids identified SEAs. Details of the ecological management strategy of the corridor is not fully resolved and the corridor runs across three streams, two on an existing road corridor (Golding Road) and one near the NIMT crossing point. The design should be reviewed for landscape integration opportunities with stream networks as part of detailed design and designation conditions.
- **Support water conservation and enhance water quality in a watershed** – Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains.
- **Adapt to a changing climate and respond to the microclimatic factors of each area** – Active modes are to be provided along the length of the corridor. Detailed design will need to accommodate amenity measures such as street trees and shading.

Social

- **Identity and place** – The future detailed design response of the corridor will need to consider the underlying identity drivers of the surrounding context such as the landscape character drivers of the tributaries of the Oira Creek, cultural values and narratives.
- **Respect culturally significant sites and landscapes** – There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safety** – Detailed design of the corridor will need to consider CPTED and how active interfaces can be established with the road corridor. Detailed design will need to consider design detail for safe active mode crossings and safe pedestrian environments, including mid-block crossings.



Built Form

- **Align corridors with density** – The location of the corridor is zoned FUZ, and is indicated to be, as per the Pukekohe Structure Plan, a mix of industrial and mixed housing urban and suburban zone in the future, which provides for low – medium density development. The corridor is part of a circulatory route around Pukekohe, providing access to industrial employment areas.
- **Scaled to the surrounding context and urban structure** – The two-laned corridor is located in the FUZ and makes use of existing corridors for a portion of the corridor. Future development in the area will be able to respond to the corridor and its scale. Nevertheless, the topography of the area will result in earthworks batters in some locations and these should be minimised as much as possible during more detailed design, with a strategy to integrate and interface with adjacent land use as the area develops.

Movement

- **Prioritise active modes and public transport** -The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections.

The following principles were identified as Opportunity for development for the South-East Corridor.

- **Minimise land disturbance and conserve resources** - The upgraded corridor uses the existing Golding Road corridor and establishes a new corridor between Svendsen Road and Golding Road. The new section requires large areas of earthworks to construct. Detailed design should look to refine this and include mitigation strategies to integrate the corridor within the landform and with future development.
- **Facilitate an appropriate interface between place and movement** – The scale of the earthworks required in some areas of the corridor required will likely create difficulties in facilitating an appropriate interface between public and private. Future detailed design should take the opportunity to maximise interface outcomes along the corridor. Providing for future connectivity to adjacent land development and future movement network will be important to provide permeability and connectivity in the area.

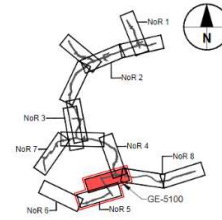
The following principles were identified as not relevant to the South-East Corridor.

- Public transport directed and integrated into centres
- Support inter-regional connections and strategic infrastructure
- Strategic corridors as urban edges



1.10 Pukekohe East Road Upgrade

The proposed corridor is supportive of the following Design Framework principles:



Environment

- Support and enhance ecological corridors and biodiversity
- Minimise land disturbance, conserve resources and materials

Social

- Identity and place
- Adaptive corridors
- Social cohesion

Built form

- Scaled to the surrounding context and urban structure

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Support interregional connections and strategic infrastructure
- Support legible function

Those principles that scored neutral in their support include:

Environment

- **Support water conservation and enhance water quality in a watershed –** Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains.
- **Adapt to a changing climate and respond to the microclimatic factors of each area –** Active modes are to be provided along the length of the corridor. Detailed design will need to accommodate amenity measures such as street trees and shading.

Social

- **Respect culturally significant sites and landscapes –** There are no known sites of cultural significance, but this should be confirmed with Mana Whenua in future design stages.
- **Safety –** Detailed design of the corridor will need to consider CPTED and how active interfaces can be established with the road corridor. Detailed design will need to consider design detail for safe active mode crossings and safe pedestrian environments, including mid-block crossings.

Built Form

- **Align corridors with density** – The location of the existing corridor is on the interface between existing development and FUZ, which is indicated to be, as per the Pukekohe Structure Plan, mixed housing suburban zone in the future, which provides for low – medium density development. The corridor is part of a circulatory route around Pukekohe, providing access to industrial employment areas.
- **Facilitate an appropriate interface between place and movement** – Providing for future connectivity to adjacent land development and future movement network will be important to provide permeability and connectivity in the area.

Movement

- **Prioritise active modes and public transport** -The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections and through mid-block crossings.

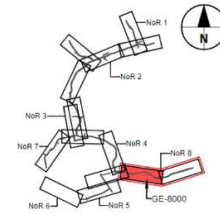
The following principles were identified as not relevant to the South-East Corridor.

- Public transport directed and integrated into centres
- Strategic corridors as urban edges



1.11 Mill Road (Bombay) Upgrade

The proposed corridor is supportive of the following Design Framework principles:



Environment

- Support and enhance ecological corridors and biodiversity
- Minimise land disturbance, conserve resources and materials

Social

- Adaptive corridors
- Social cohesion

Built form

- Scaled to the surrounding context and urban structure
- Facilitate an appropriate interface between place and movement

Movement

- Connect nodes
- Connect modes
- Support access to employment and industry
- Support interregional connections and strategic infrastructure
- Support legible function

Those principles that scored neutral in their support include:

Environment

- **Support water conservation and enhance water quality in a watershed –** Future development and definition of the proposed stormwater management at a future design stage is recommended to provide an appropriate interface with the surrounding land uses and management of impacts on floodplains and streams.
- **Adapt to a changing climate and respond to the microclimatic factors of each area –** Active modes are to be provided along the length of the corridor. Detailed design will need to accommodate amenity measures such as street trees and shading.

Social

- **Identity and place –** The widening of the Mill Road corridor in this location includes areas within the Tuff Crater ONF. Detailed design will need to respond to the identity and character of the place.
- **Respect culturally significant sites and landscapes -** The corridor widens near the tuff crater, detailed design needs to minimise impacts on this significant landscape and Outstanding Natural Feature.
- **Safety –** Detailed design of the corridor will need to consider CPTED and how active interfaces can be established with the road corridor where it is adjacent to developable land.

As the majority of the corridor is within the rural area, there will be limited opportunities for active interfaces. Detailed design will need to consider design detail for safe active mode crossings and safe pedestrian environments, including mid-block crossings where adjacent to developable land.

Built Form

- **Align corridors with density** – The majority of the existing corridor is within the rural zone, with a small area adjacent to the FUZ at the western end. This is indicated to be, as per the Pukekohe Structure Plan, mixed housing suburban zone in the future, which provides for low – medium density development.

Movement

- **Prioritise active modes and public transport** -The corridor provides for active modes. Detailed design will need to provide for prioritisation for active modes at intersections and through mid-block crossings.

The following principles were identified as not relevant to the Mill Road (Bombay) Corridor.

- Public transport directed and integrated into centres
- Strategic corridors as urban edges

