

# Kopu to Thames Structure Plan



Prepared by Beca Carter Hollings & Ferner Ltd



August 2010

# **Thames-Coromandel District Council**

# Approval of

# Kopu to Thames Structure Plan

Thames-Coromandel District Council meeting held on Wednesday 11 August 2010

- Order Paper Item 3.3 Kopu to Thames Structure Plan
- Bruce Baker, Senior Policy Planner presented a report to Council on the proposed Kopu to Thames Structure Plan and to seek final approval for this structure plan.
- Messrs John Duffy and Richard Douch of Beca Carter Hollings & Ferner Ltd attended to answer questions and provide clarification.
- Councillor Peters declared a conflict of interest in this item.

# **Council Resolution**

"That the Thames-Coromandel District Council:

- 1. Receives the report.
- 2. Determines that it believes it has complied with the decision-making provisions of the Local Government Act 2002 to the extent necessary in relation to this decision; and in accordance with the provisions of Section 79 of the Act determines that it does not require further information prior to making a decision on this matter.
- 3. Approves the final Kopu to Thames Structure Plan noting the following specific matters:
  - 'Industrial' land is shown on the structure plan map, with the type of industrial activity to be identified through the District Plan review;
  - 'Residential' land at Totara Palms is consistent with the existing Housing Zone;
  - 'Industrial' land on eastern side of SH 25 and 26 at Kopu includes land between the motel and Rennie property (inclusive).
- 4. Recommends that Council includes the Kopu to Thames Structure Plan in the District Plan review."

Moved by: Councillor Morrissey

Seconded by: Councillor Bartley

# **Table of Contents**

# **Executive Summary**

1	Introduction1		
	1.1	Structure Plan Purpose1	
	1.2	The Structure Plan Area1	
	1.3	Demand for Growth 3	
	1.4	Structure Plan Process4	
	1.5	Format of Report4	
2	Орр	ortunities & Constraints (Phase 1)4	
3	Con	cept Planning (Phase 2)7	
	3.1	Vision	
	3.2	Objectives	
	3.3	Concept Plan Options8	
	3.4	Assessment of Options10	
	3.5	Preferred Concept 11	
4	Кор	u to Thames Structure Plan (Phase 3)14	
	4.1	Land Use Pattern 14	
	4.2	Land Use and Amenity 15	
	4.3	Archaeological / Cultural17	
	4.4	Ecological Environment	
	4.5	Transportation	
	4.6	Geotechnical	
	4.7	Stormwater	
	4.8	Water Supply	
	4.9	Wastewater	
5	Con	sultation28	
	5.1	Initial Consultation	
	5.2	Consultation on Draft Structure Plan	
6	Stag	jing of Development29	
7	Cos	ts and Development Contributions Philosophy	
8	Stru	cture Plan Implementation (Phase 4)32	
	8.1	District Plan	
	8.2	Notices of Requirement and Designations	
	8.3	Ten Year Plan	
	8.4	Asset Management Plans	
	8.5	Bylaws / Fees & Charges	

9	Conclusions and Recommendations		33
	9.1	Process	33
	9.2	Land Use Pattern	33
	9.3	Staging	34
	9.4	Infrastructure	34
	9.5	Implementation	34

# Appendices

Appendix A - Structure Plan Map

Appendix B - Design Guidelines

Appendix C - Archaeology Plan

Appendix D - Ecology Plan

Appendix E - Transportation Plan

Appendix F - Geotechnical Plan

Appendix G - Stormwater Catchment Management Plan

# **Executive Summary**

#### **Background and Structure Plan Purpose**

The Kopu to Thames area is coming under increased pressure for development due to both local demand and the lack of appropriately zoned land in the area. Furthermore, Government investment into the upgrading of the Kopu Bridge is likely to result in development interest in the area as access to the area becomes easier.

An outline of the structure plan area is shown below. The majority of this land is currently in the Rural Zone, with the predominant exception being an area of approximately 90 ha at Kopu which is an Industrial Zone, of which approximately 70 ha has already been developed.



Figure 1: Kopu to Thames Structure Plan Area

Overall this area lacks cohesion in terms of moulding land use activities into a logical sequence. Such ad hoc development not only has an impact on the urban form and amenity but also contributes to the inefficient development of infrastructure.

Existing activities within the structure plan area include;

- Residential development (Totara Valley and Totara Palms);
- Horticultural activities and village industry;
- Industrial activities including Heavy Industry, Service Industry and Light Industry
- Rural residential development;
- Thames Airport & associated development;
- Recreation reserves; and
- Non industrial activities within the industrial area.

Due to the topography of the area, with the Coromandel range to the east and the Waihou River and Firth of Thames to the west, there is a limited area for the Thames Township to expand. The Structure Plan area has been defined as it is the most logical area for large scale expansion.

The purpose of developing a Structure Plan for the Kopu to Thames area has been to consider and identify the desired form of development within this area. By doing so this will:

- Provide a framework for the provision for and management of growth;
- Provide more market certainty as to the type and location of development desired by the community to assist with boosting the local economy; and
- Enable Council to plan for and support the development of infrastructure upgrades required to accommodate increased commercial, industrial and residential activity.

#### **Stages of Structure Plan**

The structure plan has been developed through a number of stages. These stages are:

#### 1. Kopu to Thames - Opportunities and Constraints Study - 2007 (Phase 1)

This project involved the assessment of opportunities and constraints to development of the area. Key conclusions from the research undertaken (and following consultation with interested parties and the public) identified that there was increasing market demand for residential and light industrial activities in the study area. A number of constraints were identified, with these including:

- Stormwater management;
- Protection of ecological corridors;
- Identification and protection of archaeologically significant areas from development;
- Protection of the 'gateway' to the Coromandel from inappropriate development;

Whilst representing constraints, the above also provided opportunities to successfully integrate what makes the area special (i.e. its natural and cultural significance) into any development proposed for the area.

#### Industrial and Commercial Land Study - 2007

In addition to the opportunities and constraints report, an investigation into the industrial and commercial needs of the Thames area was undertaken. This study helped to determine and define the need for commercial and industrial land in the area. This study further emphasised the demand

expressed for such activities through the consultation phase on the opportunities and constraints report and provided a basis for progressing the development of a growth management framework for managing this demand.

It is noted that this study did not recommend commercial expansion within the Kopu to Thames study area, but rather noted that this area provided opportunities for further industrial expansion with limited commercial activities provided for in association with such activities.

#### 2. Kopu to Thames Concept Plan Report - 2008 (Phase 2)

Phase 1 of the project provided an understanding of the opportunities and constraints to development in the area, together with providing an understanding of any associated demand for industrial development. The next step was to identify what that may mean for development on the ground by way of a land use pattern that incorporated the identified opportunities and constraints.

To progress this, a concept planning exercise was held in October 2007, with participants from the Thames Community Board, Environment Waikato, Department of Conservation, Transit New Zealand (now New Zealand Transport Agency) and Council staff and consultants. This workshop identified a vision for the area and a number of objectives to achieve this vision. Once that vision was developed, draft concept plans were prepared. The information received from that workshop enabled a concept plan to be prepared along with the following vision for the area:

"To develop a 'gateway' to the Thames township and the Coromandel Peninsula, through development of industrial and residential areas that are readily accessible, visually attractive and have a character that embodies the landscape, ecological and cultural heritage of the Coromandel".

#### 3. Kopu to Thames Structure Plan (Phase 3)

The current phase of the overall growth management framework has been the preparation of a Structure Plan. This has been developed building on the information gathered and delivered as part of the phases listed above and a number of the technical reports listed below,

- Transportation
- Urban Design
- Landscape and Visual
- Archaeological
- Ecological
- Geotechnical
- Stormwater
- Water and Wastewater Investigations
- Cultural Values

These reports culminated in the preparation of a draft Structure Plan for council approval to consult on.

Consultation was then undertaken during February to May 2010. Feedback provided through that period has been used in the development of this Final Structure Plan.

#### **Growth Demand**

The anticipated demand for both industrial and residential land over the next 20 years is highlighted in Table 1 below.

Demand*	5 years (2015)	10 years (2020)	15 years (2025)	20 years (2030)
Industrial (1.5ha per year)	7.5 ha	15 ha	22.5 ha	30 ha
Residential (25 dwellings per year)	125 dwellings	250 dwellings	375 dwellings	500 dwellings

#### Table 1: Projected demand in the Kopu to Thames area

#### Land Use Pattern

The land use pattern identified within the Structure Plan has been based on that which was developed during the concept planning phase i.e. generally looking for future industrial land provision for the wider Thames area and future residential land provision for the Thames township. Densities of 8 dwellings per hectare in the residential environment and 2 dwellings per hectare in the rural residential environment based on existing market trends have been used as a guide for determining yield.

Furthermore a yield for the ecological corridor overlay has been identified as a means of a trade-off to secure the highly valued tracts of land from an ecological perspective through the development basis. The estimated yields based on this philosophy are shown in Table 2 below (note this is Table 5 in the main body of this report).

Land Use	Area	Yield
Residential	135 ha	1080 dwellings
Industrial	120 ha (including 70ha of existing developed industrial area)	50 hectares
Rural Residential	120 ha	240 dwellings
Rural Residential (with Ecological Corridor Overlay	120 ha	60 dwellings
Rural	240 ha	-
Wetland	4 ha	-
Existing Recreation (Rhodes reserve)	25 ha	-
Cemetery	13 ha	-
Airport Development	75 ha	-
Gateway Area	8 ha	
Total	860 ha	

#### Table 2 – Yield of Structure Plan Area

The total yield from the 860 hectares within the structure plan area is expected to meet demand for residential land for the next 55 years and for industrial land for the next 35 years. Development associated with the airport is provided for through this Structure Plan, with the detail itself likely to be subject to a separate master planning exercise for that site.

#### **Infrastructure Requirements**

Infrastructure will be necessary to support the development of the Structure Plan area. The major infrastructure includes:

- New roads through the study area;
- Intersection connections with the State highway;
- Upgrading / widening the State highway;
- Walking & cycling networks (both on alignment and off alignment);
- Water and wastewater treatment plant upgrades;
- Increased capacity in the existing water reticulation main;
- Development of a new water reservoir for fire fighting storage requirements;
- Stormwater management devices (including wetlands, detention ponds and culvert upgrades); and
- Planting and fencing within the ecological corridors.

#### Staging

Staging of infrastructure will need to be undertaken in the area due to the need for infrastructure upgrades to the roading network and the capacity of the water and wastewater systems over the next 40 years. Stormwater upgrades can be managed for each catchment by requiring that the stormwater infrastructure needed for each catchment be developed and operational prior to development occurring within it.

The intention is to provide flexibility to the proposed staging and therefore the restrictions on the release of land relate primarily to the quantity of development rather than any specific geographical location.

#### Implementation

The Structure Plan provides a framework which will enable future development of this area to occur in a coordinated manner. Its implementation will primarily be through the District Plan and the Ten Year Plan; however it may also provide a basis for asset management plans, code of practice for subdivision and development, bylaws and memorandum of understanding with key interest groups.

#### Where to from here

The Structure Plan process has consisted of a number of key tasks. The tasks undertaken to date and those tasks still to be undertaken are outlined in Table 3 below (note this is Table 8 in the main body of this report).

Task	Date to be completed
Opportunities & Constraints	April 2007
Industrial & Commercial Study	June 2007
Concept Plan	March 2008
Technical Studies	June 2009
Cultural Values Assessment	October 2009

#### Table 3 – Where to from here

Draft Structure Plan	January 2010
Public and Key Stakeholder Consultation	March to May 2010
Final approval of Structure Plan by Council	August 2010
Structure Plan Implementation	Ongoing
District Plan Review / Plan Change	
Regional Consenting – Stormwater Catchment Management	
Asset Management Growth Plans	
Code of Practice	
∎ Ten Year Plan	
Notices of requirement and designations	

# 1 Introduction

#### 1.1 Structure Plan Purpose

The Thames-Coromandel District Council has been experiencing development pressure for a number of years from development proposals in the Kopu to Thames area. In its current state the area lacks cohesion due to the land use pattern that is evolving and a more logical sequence of land use zoning is required. The Thames-Coromandel District Council (Council) has identified the need to prepare a structure plan to provide an holistic framework for guiding, managing and controlling development of this area.

The purpose of developing a Structure Plan therefore has been to consider and identify the desired form of development within this area. By doing so this will:

- Provide a framework for the provision for and management of growth;
- Provide more market certainty as to the type and location of development desired by the community to assist with boosting the local economy; and
- Enable Council to plan for and support the development of infrastructure upgrades required to accommodate increased industrial and residential activity.

The Structure Plan is being developed in order to achieve the following vision:

"To develop a 'gateway' to the Thames township and the Coromandel Peninsula, through development of industrial and residential areas that are readily accessible, visually attractive and have a character that embodies the landscape, ecological and cultural heritage of the Coromandel".

This vision was developed during the Concept Plan phase of the overall Structure Plan process.

The purpose of this report is to provide details of the structure plan and forms part of the supporting documentation which will enable its implementation. The structure plan map is enclosed in Appendix A. To this end this report covers the following:

- Introduction to the report, study area and structure plan process
- Opportunities & Constraints to development;
- Concept Planning
- The Structure Plan
- Consultation process
- Staging of Development
- Structure Plan Implementation
- Summary

#### 1.2 The Structure Plan Area

The site (refer Figure 1) covers approximately 860 hectares of land between Thames and Kopu on the east side of the estuary of the Waihou River, and generally with a westerly orientation towards the Hauraki Gulf. Parts of the site west of SH25 are low-lying and at risk from flooding, while east of the highway the land rises sharply but unevenly, to join the foothills of the Kauaeranga Valley and the Coromandel Ranges.



#### Figure 1 - Kopu to Thames Structure Plan Area

Currently, the majority of the land within the structure plan area is zoned Rural, with the exception being an area of approximately 90 ha at Kopu zoned Industrial, of which approximately 70 ha has already been developed. Existing activities within the study area include;

- Residential development (Totara Valley and Totara Palms);
- Horticultural activities and village industry;

- Industrial activities including Heavy Industry, Service Industry and Light Industry
- Rural residential development;
- Thames Airport & associated development;
- Recreation reserves; and
- Non industrial activities within the industrial area.

Due to the topography of the area, with the Coromandel range to the east and the Waihou River and Firth of Thames to the west, there is a limited area for the Thames Township to expand. The Structure Plan area has been chosen not only because it is the most logical area to expand the Thames 'urban footprint'; but also because it is really the only available option for long term growth planning to be undertaken.

# 1.3 Demand for Growth

In planning for growth it is essential to understand existing land use patterns and trends. Land use trends for the Kopu to Thames area were set out in the Coromandel Peninsula Blueprint report and the Industrial and Commercial Land Study.

The Coromandel Peninsula Blueprint Project brings together communities and authorities to build a 50-year integrated plan for protecting and enhancing the special character of the place now and for the future. The Blueprint Project envisages an additional 40 dwellings per year on average for the Thames area. This has been based on the recent high demand for residential development over the past 5 years (noting that this has slowed recently). Due to changed recent market conditions, it is expected that this average will be lower, whilst with limitations within the existing township it is expected that the majority of these additional dwellings will need to be sited within the Kopu to Thames Structure Plan area. An average figure of 25 dwellings per year has therefore been used to reflect this.

The Industrial and Commercial Land Study prepared for Thames-Coromandel District Council in 2007 anticipates an uptake rate commencing at 4 hectares a year for industrial land. This figure is considered to be high, particularly when compared with a number of recent studies undertaken for industrial land projections within the Waikato looking out to 2060<sup>1</sup>. It is therefore suggested that a lower figure be used (as a yearly average for Thames) and due to a lack of suitable land within the existing environment it is expected that the majority of this will be within the Kopu to Thames area. An average uptake of 1.5 hectares per year for the study area has been used to reflect this.

Given the above, the projected demand for both industrial and residential land over the next 20 years is highlighted in Table 1 below.

These have been applied to the Structure Plan in considering the staging of land release and infrastructure provision.

Demand*	5 years (2015)	10 years (2020)	15 years (2025)	20 years (2030)
Industrial (1.5ha per year)	7.5 ha	15 ha	22.5 ha	30 ha
Residential (25 dwellings per year)	125 dwellings	250 dwellings	375 dwellings	500 dwellings

#### Table 1: Projected demand in the Kopu to Thames area

<sup>&</sup>lt;sup>1</sup> Refer to the FutureProof Subregional Growth Strategy.

#### 1.4 Structure Plan Process

The Structure Plan has been undertaken and will be implemented over four phases as outlined below.

- Phase 1: Kopu to Thames Opportunities and Constraints Study (2007)
- Phase 2: Kopu to Thames: Concept Plan Report (2008)
- Phase 3: Kopu to Thames Structure Plan (2010)
- Phase 4: Implementation plan change (2010 onwards)

#### 1.5 Format of Report

Further details on the phases outlined within section 1.4 above are provided within sections 2, 3, 4 and 8 of this report respectively.



# 2 **Opportunities & Constraints (Phase 1)**

The first phase of the project involved the assessment of opportunities and constraints to development of the area. A Phase 1 report, titled Kopu to Thames – Opportunities & Constraints Study was completed in February 2007. The report provided an overview of the environmental and infrastructure factors that may preclude or influence future residential and business development in the area outlined within Figure 1 of this report.

Key conclusions from the research undertaken and following consultation with interested parties and the public identified that there was increasing market demand for residential and light industrial such as light manufacturing and wholesale distribution activities in the study area. With regard to commercial and retail activities there is potential demand but Councils stated preference is for these activities to take place and develop further in the existing Thames CBD/Township area together with maintaining the CBD as the primary commercial hub (and focal point) for Thames.

A summary of the opportunities and constraints identified within the February 2007 report is provided Table 2 below.



Issue	Opportunities	Constraints
Archaeology	<ul> <li>To protect, enhance and celebrate cultural and heritage sites within the study area.</li> </ul>	<ul> <li>Numerous archaeological sites identified or likely to exist given settlement patterns and uses.</li> </ul>
Landscape/Visual	<ul> <li>Landscape preservation and enhancement;</li> <li>Establishment of 'gateway' treatments (for both the peninsula and the township) using the highway as the primary viewing platform;</li> <li>Landscape mitigation to contribute to ecological enhancement and restoration and community connectivity in the area.</li> </ul>	<ul> <li>Te Kupata and Waipapa Streams, which act as natural barriers for expansion of industrial development.</li> </ul>
Ecology	The ability for development to support and enhance the Kauaeranga floodplain restoration project and the ability to create ecological buffer zones and "corridors", particularly around rivers and streams.	<ul> <li>Threatened species present in the Kauaeranga River floodplain and potential urbanisation leading to stream modification have been identified.</li> </ul>
Geotechnical	No opportunities listed.	Soil type in low-lying areas will only tolerate low loadings without substantial structural support and they are prone to high water tables, flooding and risk of liquefaction in event of an earthquake.
Water Supply & Wastewater	The opportunity exists to strategically review water and wastewater treatment plant capacity and treatment requirements for the Thames urban area, factoring in the additional capacity needed to support growth in the study area. The costs for such increases will then be able to be recouped via a development contributions regime that results.	The existing reticulation pipe work is old, nearing need for replacement and the water treatment plant has insufficient capacity to provide adequate water supply to Totara Valley and the wider Kopu area when fully developed. The Thames wastewater treatment plant is currently going through a resource consent renewal process and the level of treatment improvements and capacity are listed in the infrastructure requirements section below.

#### Table 2 - Summary of Opportunities & Constraints

Stormwater	<ul> <li>Opportunity to design comprehensive stormwater systems for each area to provide development certainty and use parts of the potential stormwater disposal and treatment network for multiple purposes e.g. walkways, ecological restoration etc.</li> </ul>	<ul> <li>The existing drainage systems do not appear robust enough to enable full development in the Kopu Industrial Area.</li> </ul>
Transportation	The future development of the study area will enable long term protection of highway sustainability (including safeguarded land for additional lanes) and provide an opportunity to establish a "gateway" using the highway as the primary viewing platform and tie in transport and landscaping treatment.	<ul> <li>Direct property access to the state highway to facilitate development adjacent to these routes will need to be avoided</li> </ul>

Based on the above, the Phase 1 report recommended that a full structure plan approach be undertaken for the study area. This approach was also supported by the Thames Community Board and approved by Council in June 2007.



# 3 Concept Planning (Phase 2)

In order to provide direction to the development of a concept plan and ultimately a structure plan it is important to clearly identify the objectives of undertaking such exercises. A number of draft objectives were recommended within the Phase 1, Opportunities & Constraints Study report.

In October 2007 a concept planning workshop was held. This workshop was attended by those listed in Table 3 below.

Organisation	Name	Role / Specialty
Thames-Coromandel District	■ Leigh Robcke ■ Mike Martin	<ul> <li>Planning Manager</li> <li>Thames Area Manager</li> </ul>
Council	Adrian Catran	<ul> <li>Deputy Mayor</li> </ul>
Consultants	Amelia Linzey	Workshop Facilitator
	John Duffy	Project Director / Planner
	Richard Douch	Project Manager / Planner
	Richard Jenkins	Civil Engineer
	Suzanne Porter	Ecologist
	Warren Gumbley	Archaeologist
Treve: the New Zeeley of the set New	Melissa Slatter	Planning Manager
Zealand Transport Agency)	Nick Carey	Transportation Planner
Environment Waikato	Urlwyn Trebilco	Policy Manager
	Sheryl Roa	Resource Officer
	Gassan Basheer	Hazards / Flooding
	Mike Butler	Policy Officer
Department of Conservation	∎ John Gaukrodger	DoC Area Manager
Thomas Community Board	Dennis Rodgers	Involved in the Airport
	<ul> <li>Gillian Cockerill (C&amp;M Planning)</li> </ul>	Variation
	<ul> <li>Alasdair Gray (Gray Matter Ltd)</li> </ul>	

#### Table 3 – List of Concept Planning Workshop Participants

Apologies were received from:

- William Peters Ngati Maru
- Graham Levy Stormwater Specialist;
- Brad Coombs Landscape Architect

Inputs were sought from Ngati Maru and specialists in the project team as part of the preparation of the concept plan.

Resulting from this workshop was the development of an overall vision for the area and objectives for the structure plan process. These are outlined as follows:

#### 3.1 Vision

To develop a "gateway" to the Thames township and the Coromandel Peninsula, through development of industrial and residential areas that are readily accessible, visually attractive and have a character that embodies the landscape, ecological and cultural heritage of the Coromandel.

#### 3.2 Objectives

#### 3.2.1 Principal (Higher Level) Objectives

- Protection of the ability to develop a four lane highway between Kopu and Thames which would include three entrance points between Kopu and Totara Valley Road, preserving the highways' function;
- Protection and enhancement of ecological diversity and function, i.e. protect stream and coastal margins through establishment of buffer zones and the multi purpose use of these areas for ecological, cultural, recreational and storm water reasons, including the use of reserve land to minimise the total area taken;
- Identification of heritage and archaeological areas of significance and the establishment of protocols for development areas, including possible mitigation measures for protecting, enhancing or celebrating such areas;
- Maximisation of recreational potential between Thames and Kopu;
- Development of a clear infrastructure plan for the area including water, wastewater, stormwater and roading and an associated development contributions regime that is fair and equitable.

#### 3.2.2 Secondary (Specific) Objectives

- Flood Risk and Stormwater management;
- Establishment of a Kopu to Thames walkway;
- Development of low impact design solutions where practicable for infrastructure requirements, especially for stormwater solutions;
- Incorporating urban design principles to have regard to the landscape and visual amenity of the area;
- Identification of a local transport network which is fully integrated with the regional transport network; and
- Identification of reverse sensitivity effects and protection of existing developments from any sensitive planned developments.

#### 3.3 Concept Plan Options

From the assessment of potential opportunities and constraints to development and the resulting vision and objectives, three separate concept plans were prepared by the attendees at the workshop. The key differences between each of the options related to the location and level of ecological, recreational, industrial and residential areas shown. Each of these options are summarised in Table 3 below along with a description of the areas where there were key differences. The recommended option is discussed in section 3.5.

Option	Ecological and Recreational	Industrial	Residential
<b>Option 1</b> This option recognises existing activities that have the potential to adversely impact on sensitive uses	Ecological and Recreational corridors following existing remnants of bush and low lying/flood prone areas adjacent to the Waihou River.	Industrial growth of approximately 30 hectares to the north of the existing Kopu Industrial area, as well as provision for aeronautical related industry at the airport.	Residential growth of approximately 40 hectares (approximately 320 lots) primarily to the east of the State highway on Totara Valley Road together with a small opportunity for growth around the existing Totara Palms development and approximately 40 hectares (approximately 80 lots) of rural- residential land to the south of the Totara Valley residential area.
<b>Option 2</b> This option retains a large area of land for Rural purposes	Ecological and Recreational corridors at the northern tip of the study area.	Industrial growth of approximately 35 hectares to the north of the existing Kopu Industrial area, recognising the potential for development at the airport and the importance of applying special design principles to the entrance to the area along State highway 2.	Residential growth of approximately 90 hectares (approximately 720 lots) primarily to the east of the State highway on Totara Valley Road heading further into the foothills than option 1 together with a small opportunity for growth around the existing Totara Palms development.
<b>Option 3</b> This option sought to consider the development potential of the overall study area, recognising that development of the Airport is being dealt with through a separate process, whilst retaining open space land to the west of the Waihou River in recognition of it being prone to flooding.	Ecological and Recreational corridors following existing remnants of bush and low lying/flood prone areas adjacent to the Waihou River.	Industrial growth of approximately 30 hectares to the south of the existing Kopu Industrial area on the southern side of State highway 2, with a focal point at the intersection of the two State highways where special design principles should be applied.	Residential growth of approximately 300 hectares (approximately 2,400 lots) primarily to the east of the State highway on Totara Valley Road together with a small opportunity for growth around the existing Totara Palms development and approximately 25 hectares (approximately 50 lots) of rural- residential land to the north of the existing Kopu Industrial area where options 1 & 2 have identified this as being for Industrial purposes.

# Table 4 - Summary of Concept Plan Options

# 3.4 Assessment of Options

#### 3.4.1 Common Elements and Themes

A number of common elements arose from the three options. These included:

- Industrial development focused around the existing Kopu Industrial area;
- Residential development primarily to the east of the State highway, whilst providing for some residential development potential at the existing Totara Palms and Totara Valley locations;
- Ecological corridors adjacent to rivers, streams and waterways;
- An active reserve area to the north of the study area (Rhodes Park);
- No commercial provision other than that potentially associated with the airfield, or which could form part of the special treatment industrial area;
- Access points generally located at:
  - the SH25/26 intersection;
  - the SH25 / Totara Valley Road intersection;
  - a point midway between the 2 intersections above; and
  - a point near the Airport / Sports fields.

Common themes were also identified, though these were not necessarily portrayed in concept options, these being:

- Opportunities for walkways;
- Need for internal access and a parallel road system;
- Connections to showcase the local environment;
- Opportunity to reflect Thames as a destination;
- The need for cohesive development which minimises land use conflict;
- Desire to keep 'big box retail' out of the study area and for any commercial activities within industrial areas to either be ancillary retail or retail required to support an industrial area (i.e. takeaway food bars etc).

#### 3.4.2 Points of Difference

In spite of many similarities between the three options, the key points of difference that were identified included:

- Whether Industrial development should occur to the north or south of the existing Kopu Industrial area;
- The extent of Residential development to the east of the State highway.

#### Industrial Development – North v South

The existing Kopu Industrial Area is located adjacent to the previously defined southern boundary of the study area and therefore industrial growth has naturally been assumed to extend north. Option 3 identified the possibility of extending industry to the south of the existing industrial area on the opposite side of State highway 2. The area identified to the south is similar in area to those areas identified to the north in concept options 1 & 2. For the following reasons, it was considered that industrial development should not be undertaken to the south of the existing industrial area south of the proposed Kopu Bridge alignment:

- Access to the site from the two State highways will be difficult due to the changes in grade between the site and the highways and the proximity to the planned intersection between the highways and NZTA's desire is to discourage the proliferation of access to the highway in the area;
- The southern land area is no less prone to flooding than the areas to the north, and potentially
  more so considering the sites close proximity to the Waihou River, whilst those areas to the north
  have some parts located further afield;
- Development of the area to the south will further result in the urban footprint creeping and will not assist in providing a consolidated urban form.

#### **Extent of Residential Growth**

The extent to which growth is planned for is a balancing act between ensuring there is sufficient supply to meet demand whilst not resulting in an over supply, which raises the issue of developable land being spread too far to the point that costs for infrastructure upgrades required to service a planned area are unable to be recouped in a reasonable timeframe or staged efficiently.

Anecdotal evidence suggested that the demand for residential development is approximately 40 dwellings per year<sup>2</sup>. Based on a 20-25 year planning horizon, land for approximately 900 new lots will be required (assuming there is limited scope for infill development). It was recommended that an area sufficient to meet this expected demand was planned for and that the area be located in the north-eastern part of the study area so that it forms an extension to existing residential area. It is noted however that the area in the north east adjacent to the Kauaeranga River, is very low-lying and has significant drainage problems and flood risk from the river. It was therefore recommended (as outlined in the recommended concept) that development be located away from the river, with a sufficient buffer to the river to separate development from flood water fluctuations.

# 3.5 Preferred Concept

Based on the common elements and general themes that came through from the 3 concept options, the assessment of the principal points of difference and having due consideration to the objectives developed for the exercise, a draft final concept plan was developed to recommend the land use pattern upon which to base future structure planning. This land use pattern has consideration to the need to provide for cohesive development to minimise land use conflict into the future with buffers provided for in the form of ecological corridors, rural and recreational open space and roads between potentially conflicting land uses.

The preferred option (seen in Figure 2 below) provided for:

**Ecological and Recreational** corridors following existing remnants of bush and low lying/flood prone areas adjacent to the Waihou River. These areas will also provide opportunity for shared use in stormwater management and passive cycle / pedestrian networks. At present these are identified in a fairly schematic format and will need to be adjusted based on outcomes from the hydrological analysis and ecological assessments where appropriate.

**Industrial** growth of approximately 55 hectares to the north of the existing Kopu Industrial area, as well as recognising the potential for development at the airport and the importance of applying special design principles at the entrance to the area along the State highway. The recommended concept plan provides for additional industrial land to what either of the concept options (1-3) provided, in recognition that the areas of land shown in those concepts may not be sufficient for the 20-25 year planning horizon. Each of the options identified the expanded industrial area as either suitable for rural or open space reserve in recognition of the likely flooding issues of these low lying areas adjacent to the Waihou River. Whilst identified as a possible flooding area, this area has

<sup>&</sup>lt;sup>2</sup> Recent estimates indicate that residential demand in the Kopu to Thames area will be 25 dwellings per year on average.

been considered for industrial purposes given the potential for 30-35 hectares of industrial land (as identified in the concept options) not providing sufficient supply long term.

**Residential** growth of approximately 150 hectares (approximately 1200 lots) primarily to the east of the State highway on Totara Valley Road together with a small opportunity for growth around the existing Totara Palms development and approximately 120 hectares (approximately 240 lots) of rural-residential land to the south of the Totara Valley residential area.

Access spaced evenly off the highway network and focussing on new accesses to align to industrial and residential development with the opportunity to further consider how access to the airport and the recreation reserve can be achieved;

**Flood Prone Areas** are recognised by either retaining these as rural, recreation or ecological areas (i.e. all open space) or identifying the risk through more detailed flood assessments to consider the opportunity for developing within these areas.





# Figure 2 - Preferred Concept Plan Option

# 4 Kopu to Thames Structure Plan (Phase 3)

### 4.1 Land Use Pattern

The land use pattern identified within the Structure Plan has been developed largely from that which was identified during the concept planning phase and information obtained in the opportunities and constraints study. Densities of 8 dwellings per hectare in the residential environment and 2 dwellings per hectare in the rural residential environment based on existing market trends have been used as the basis for evaluating housing yield. The extent of the ecological corridors is such that there are also opportunities for development within these. Development in these areas is proposed to be provided for as a means of securing ecological and recreational corridors by enabling land to be set aside or preserved during the subdivision and development process. A yield of 1 dwelling per every 2 hectares has been used as a guide for these areas to reflect their sensitivity. No yield for the general rural area is provided for on the basis that the existing 20 hectare rule would make it too restrictive to develop. Table 5 below lists the estimated yields within the Structure Plan Area.

Land Use	Area	Yield
Residential	135 ha	1080 dwellings
Industrial	120 ha (including 70ha of existing developed industrial area)	50 hectares
Rural Residential	120 ha	240 dwellings
Rural Residential (with Ecological Corridor Overlay	120 ha	60 dwellings
Rural	240 ha	-
Wetland	4 ha	-
Existing Recreation (Rhodes reserve)	25 ha	-
Cemetery	13 ha	-
Airport Development	75 ha	-
Gateway Area	8 ha	
Total	860 ha	

#### Table 5 – Yield of Structure Plan Area

The anticipated yield from the supply of land within the structure plan area is expected to meet demand for residential land for the next 55 years and for industrial land for the next 35 years based on the demand projected within section 1.3 of this report.

#### **Airport Development**

No specific yield has been provided for the Airport related development, however the Structure Plan has provided for such development on the Airport land, with the specific development proposals likely to be the subject of a separate master planning exercise. The site does have approval for a number of activities on site already, including:

- Accessory buildings for:
  - the storage of aircraft and associated equipment;
  - the storage of goods / products to be carried and distributed by aircraft;
  - the repairing, maintaining and restoring aircraft;
  - the use of training purposes associated with aviation;

- the use of managing and controlled airfield operations including booking facilities, passenger waiting areas, refreshment and toilet facilities;
- Parking and viewing areas for vehicles and people visiting the airfield;
- Informal children's playground.

Further detail around the development of the Airport land is being prepared in conjunction with this structure planning exercise. Details around likely traffic generation and access requirements for the Airport site have been built into the transportation model prepared for the area.

# 4.2 Land Use and Amenity

The Phase 1 Opportunities and Constraints report did not identify any fatal flaws to the development of the study area for a diverse range of purposes. The following key conclusions were drawn from this report:

- There is increasing market demand for residential and light industrial, such as light manufacturing and wholesale distribution activities in the study area.
- There is potential demand for commercial and retail but there is a need to consider this against capacity and demand for commercial land elsewhere in the existing Thames urban area, as well as maintaining the CBD as the primary commercial hub for Thames.

Technical reports covering Landscape / Visual and Urban Design / Land Use were prepared as part of the development of the Structure Plan.

A synopsis of each of these reports and the recommendations made is provided below.

#### 4.2.1 Landscaping and Visual Investigations

A landscape analysis of the site and the surrounding area was carried out by Isthmus Group. A full copy of this report and all other technical studies are provided in Volume 2 of the Kopu to Thames Structure Plan.

This report identified the potential visual and landscape impact of the Structure Plan on the surrounding area and suggested a number of recommendations which would act to mitigate any potentially adverse visual effects in the area to achieve and retain the highest possible landscape value (refer to Appendix B for the Design Guidelines).

The Structure Plan area includes a variety of terrain, elevation, land cover, natural drainage patterns and possess varying sensitivities to changes in the distribution of current land use. As a result, the landform and surrounding context of the site provides many landscape based opportunities and constraints for the development of different land uses within the Structure Plan.

The following findings and recommendations have been made:

- Many positive landscape effects can be achieved through the new Kopu Bridge proposal and the design of the southern entrance of the Structure Plan area.
- Reconsider the extent of the land to be rezoned from Rural to Rural Residential and Residential beyond the immediate view shed of Thames. This will ensure the overall settlement pattern within the south Thames area will be contained within the natural visual envelope of the Kauaeranga River corridor.
- That the ecological corridors be extended east of SH25. This would strengthen the key landscape characteristics and the definition and separation of Thames, Totara as distinct settlements and help the legibility of the residential area of Kopu.
- Extend the natural vegetation pattern around the timber mills to screen these operations from State highway corridor.

- Consider a limit to the northern and western limits of the industrial zone to the ecological corridor of the Te Kupata Stream and old railway line embankment but include land along SH25 and opposite the timber mill.
- Identify the possibilities of a linked footpath and cycle route where all the different landscape types and characteristics could be available.
- Consider that the area of housing between SH25, Maramarahi Road and Te Arapi Road is included in the Structure Plan and a settlement design strategy developed that ties together the distinctiveness of this area.
- Indicate how or where the road corridor of SH25 will be treated or improved.



#### 4.2.2 Urban Design and Land Use

An Urban Design Report was produced by Beca and reviews urban design and land use principles that are relevant to the Kopu to Thames area. The Concept Plan was used as the basis for this review. A full copy of this report is provided in Volume 2 of the Kopu to Thames Structure Plan. From this report it was concluded that the Kopu to Thames Concept Plan provided a good example of urban design due to its integrated community planning.

The Structure Plan itself provides a framework within which Council can provide a plan for industrial land and housing needs for Thames and the surrounding area. It also addresses key issues such as recreational needs, roading, water supply, sewage treatment, drainage, ground stability, cultural concerns and a variety of sustainable planning and environmental management considerations.

A number of recommendations were made which aim to further improve the area. These are listed below:

- To consider extending the study area to include the existing residential area north of the cemetery between the State Highway and the Kauaeranga River.
- To identify the need for primary schools and neighbourhood shops of future communities.
- Consider policy provisions that would preserve ridgelines from development.
- Consider how the Structure Plan provisions can protect areas of distinctive, sensitive areas of natural character from development.
- Further investigations to be undertaken to determine the practicality of allowing a market-led approach to residential subdivision and development. A staged approach was recommended.
- Any development that contained lots larger than 2,000m<sup>2</sup> should be designed so that they are able to be further subdivided and each smaller lot serviced when public utilities became available.
- The use of "transferable development rights" for all new housing in the area should be considered to allow greater mixture of housing densities and help create public reserves without penalising existing land owners for their "good fortune" of owning important areas such as bush remnants or valleys subject to flooding.
- A second north-south route east of the existing State Highway through the residential area should be preserved to allow the eventual establishment of an alternative exit south from Thames.
- Land should be preserved to enable the development of a second bridge across the Kaueranga River.

There should be at least two accesses into residential streets/areas containing more than 50 residential housing units.

# 4.3 Archaeological / Cultural

#### 4.3.1 Archaeological Investigations

CFG Heritage Limited provided an archaeological assessment of land blocks within the study area. A full copy of this report is provided in Volume 2 of the Kopu to Thames Structure Plan. The aim of this work was to identify any areas requiring protection from future developments and define areas which will be subject to the NZHPT application process. Mitigation measures / development protocols were also suggested to be applied to these areas by way of proposed plan changes.

A major constraint to the archaeological assessment was an inability to access some parts of the study area due to a lack of landowner permissions.

The area is rich in history and as such it is important to protect and enhance areas of significance where these areas are known. Specific archaeological investigations have been undertaken to assess the land use pattern initially proposed in the concept plan. These investigations build on a number of previous studies undertaken in the area.

Key outcomes of these observations are outlined below:

- A large amount of land was not able to be surveyed due to the lack of landowner consent.
- Six sensitive areas were identified, labelled as such due to the presence of special interest items such as terraces, kumara pits and middens.
- Areas of high archaeological significance have been identified as 'no-go areas' or perhaps more appropriately called 'extremely sensitive areas'. These areas are generally located within the ecological corridors and are proposed to be preserved with no development provided for in these areas.
- The site investigations that were undertaken identified both extremely sensitive areas and sensitive areas within the study zone. In these identified areas mitigation standards or protocols for future development are recommended. The Archaeological overlay site plan is attached as Appendix C.

#### Recommendations

- That a single mitigation standard can be applied to all of the identified Archaeological Sensitive Areas which would involve an application to the HPT for an authority under Section 18 of the Historic Places Act 1993 to carry out limited survey investigations at each location.
- Dependent on the results of the surveys the following may occur:
  - 1. the area cannot be classified as a site and no further archaeological heritage constraints apply to that area
  - 2. the area is considered archaeological and further archaeological investigation is required.
- A blanket rule requiring an archaeological assessment of all properties not already surveyed within the Kopu to Thames Structure Plan Area is to be included in any future plan change.
- Appropriate heritage covenants to be placed on significant sites.



#### 4.3.2 Cultural

Ngati Maru Rununga have prepared a Maori Cultural Impact Assessment (MCIA) for the Kopu to Thames Structure Plan. This report (which is confidential between Council and Ngati Maru) addresses the following:

- Historical background to Ngati Maru Runanga and how they relate to the land within the Kopu Thames study area;
- The Ngati Maru Runanga lore of views, values, ideals concerning waahi tapu and other places/sites of cultural and spiritual significance to the Ngati Maru Runanga people;
- Identification of sites of cultural and spiritual significance to Ngati Maru Runanga; and
- Explanation of oral traditions and history from a Ngati Maru Runanga perspective.

The MCIA includes a map of sites and areas for future protection. Ngati Maru has allowed these sites to be included on the Structure Plan map and provided an explanation of the significance of these sites. It is important to note that the identified sites should not be interpreted as the only sites of significance in the area as there are records that have not yet been investigated that may provide information on other sites in the area. Furthermore, the delineation of these sites does not represent the exact boundaries of the sites.

#### 4.4 Ecological Environment

An ecological assessment report for the Kopu to Thames Structure Plan area has been prepared by Kessels & Associates. This provided an assessment of ecological effects; highlights significant natural areas of high conservation value and provides recommended mitigation measures. The Ecological Plan is attached as Appendix D, whilst a full copy of this technical report is provided in Volume 2 of the Kopu to Thames Structure Plan.

A network of ecological corridors has been identified throughout the Structure Plan area. These follow the natural line of the bush and include bush areas, riparian margins and the saline wetlands around the coast. Walkway and cycleway connections are proposed to be established within these corridors to provide walking and cycling access for residents and visitors.

The ecological corridors cover approximately 30% of the total study area and as such it would not be economically viable for this land to be held in council ownership (due to both land purchase and management costs). A number of options exist however for these areas of land to be managed in a way which protects and enhances biodiversity. There is the potential to partially develop areas of this land however any development should be integrated into the existing natural features which form part of the character of this area. Options for managing this area included:

 Retaining the rural zone provisions in the District Plan to generally restrict development within these areas;

- Securing strategic parcels of land through esplanade reserves at the time of subdivision / development;
- Developing easements over land to enable access to the ecological areas;
- Provide regional council (Environment Waikato) initiatives to provide subsidies to landowners for riparian planting and fencing;
- Placing covenants on areas of bush / forest;
- Setting additional regulations within the District Plan such as an ecological corridor overlay which includes specific development provisions such as building setbacks from streams and restrictions on vegetation clearance and earthworks.

The following recommendations for the area are noted in the ecological assessment:

- Rural zones to exclude stock from riparian margins, ecological corridors, areas of native vegetation, wetlands and enhancement areas, through the use of ecological corridors or stock proof fencing.
- Ecological corridors to extend between 10-15 m either side of streams.
- All existing areas of bush (as identified in Figure 5 of the ecological report) to be incorporated into ecological corridors as shown in Figure 1 of the Report.
- All currently un-vegetated riparian margins should be replanted to 10-15 m.
- Culverts to be placed as to allow fish access. Retrofitting of existing culverts.
- Ecological corridors and wetlands to be designed and located for use to treat storm water, sediment/contaminant discharge.
- Location of walk and cycle ways in ecological corridors to ensure maximum amenity value.



#### 4.5 Transportation

A transportation assessment report for the Kopu to Thames Structure Plan area has been prepared by Beca. A full copy of this technical report is provided in Volume 2 of the Kopu to Thames Structure Plan.

Transportation infrastructure is essential for the sustainable and economic development of the area. Four phases of roading infrastructure have been identified which will be necessary to service the development of the area out to its full development (40+ years away).

A roading layout has been developed around four key intersections on SH25 and a network of supporting roads which provide connections between and through the industrial and residential areas. The specific location of this roading network is not paramount; however the principles proposed by it in terms of connectivity, accessibility and form (road widths etc), will be essential in determining the final design and their location.

Furthermore the structure plan seeks to promote a modal shift by allowing for alternative forms of transport such as;

- utilising ecological corridors and potentially the rail corridor for walking / cycling and considering a walking / cycling connection to Thames township across an alternative Kauearanga Stream crossing;
- making provision for barging as a means of transporting goods;
- identifying the likely demand for a small passenger transport service based on the full development proposed.

Table 6 below outlines the four phases of roading infrastructure identified as being required to service development within the Structure Plan area. The figures referenced within Table 6 are from the Transport Study that can be found within Volume 2 of the Kopu to Thames Structure Plan.

Phase	Predicted Future Year	Road Infrastructure Required	Predicted Structure Plan Development
Phase 1	2011 - 2013	<ul> <li>Two Structure Plan access intersections, being;</li> <li>New four-arm roundabout or signalised intersection for residential development</li> <li>Upgraded priority intersection with right turn bay for airport</li> </ul>	Existing development plus; Residential – 51 units Industrial – 3.2ha (12,800sqmGFA) Airport – 87.6ha (20 daily flights)
Phase 2	2013 - 2030	<ul> <li>Three Structure Plan access Intersections, being;</li> <li>New three-arm SH25 Ngati Maru / former Kopu Road roundabout providing access to industrial development</li> <li>New four-arm roundabout or signalised intersection for residential development</li> <li>Upgraded priority intersection with right turn bay for airport</li> <li>New two lane Kopu Bridge and realignment of SH25 Kopu Road with new threearmSH25 roundabout</li> </ul>	Existing development plus; Residential – 499 units Industrial – 31.7ha (126,800sqm GFA) Airport – 87.6ha (20 daily flights)
Phase 3	2031 - 2050	<ul> <li>Four-laning of SH25 Ngati Maru Highway to the south of the Phase 3 Structure Plan residential area.</li> <li>Four Structure Plan access intersections;</li> <li>New four-arm SH25 Ngati Maru / Kopu Road roundabout providing access to industrial area</li> <li>New four-arm realigned Kopu Road / SH25 Ngati Maru Highway roundabout for industrial development</li> <li>New four-arm roundabout or signalised intersection for residential development</li> <li>Upgraded priority intersection with right turn bay for airport</li> </ul>	<ul> <li>Existing development plus;</li> <li>Residential – 947 units</li> <li>Industrial – 60.3ha (241,000sqm GFA)</li> <li>Airport – 87.6ha (20 daily flights)</li> </ul>

#### Table 6 - Roading Infrastructure Phases

Phase	Predicted Future Year	Road Infrastructure Required	Predicted Structure Plan Development
		New two lane Kopu Bridge with realignment of SH25 Kopu Road and new SH25 roundabout (as above)	
Phase 4	2050 – beyond 2070	<ul> <li>Four-laning of SH25 Ngati Maru Highway to Thames including the Kaueranga Stream bridge</li> <li>Structure Plan access intersections, including;</li> <li>New four-arm roundabout or signalised intersection for industrial development</li> <li>New priority intersection with right turn bay on SH25A Kopu Hikuai Road</li> <li>New Kopu-Hikuai Road/SH 26 roundabout</li> <li>New four-arm realigned Kopu Road / SH25 Ngati Maru Highway roundabout for industrial development</li> <li>New four-arm roundabout or signalised intersection for residential development</li> </ul>	Existing development plus; • Residential – 1,746 units • Industrial – 123ha (492,000sqm GFA) • Airport – 87.6ha (20 daily flights)
		<ul> <li>Upgraded priority intersection with right turn bay for airport</li> </ul>	

Constraints to the development of the roading network will mainly be due to topographical, geographical and land use issues. The most appropriate roading layout will be implemented which will not compromise the ability of other aspects of the structure plan.

While the key roading infrastructure has been shown on the Structure Plan, these locations are indicative only and final locations and designs of the transport network will be made at a later stage. The Transportation Plan is attached as Appendix E, which provides further detail on how the structure plan development areas could be serviced.

#### 4.6 Geotechnical

A geotechnical assessment report for the Kopu to Thames Structure Plan area has been prepared by Beca. A full copy of this technical report is provided in Volume 2 of the Kopu to Thames Structure Plan.

The geological conditions contained within the Kopu to Thames Structure Plan area indicate that most of the site is suitable for mixed use development.

However, there are geotechnical hazards over the site and these vary depending on the ground conditions. As a result separate 'zones' have been outlined according to the hazards likely to be encountered. The Geotechnical Plan is attached as Appendix F. Key hazards (constraints) in the area include:

- Recently deposited alluvial soils low strength, low bearing capacity and high compressibility. These soils will only tolerate low loadings and flexible structures without substantial structural support such as deep piles / and or ground improvement.
- Areas underlain by alluvium are at risk of liquefaction in the event of an earthquake.
- Areas with a free face open to the Waihou River channel, stream banks and the Thames sewerage ponds may be at risk of lateral spreading during and following earthquake events.

- High water tables and flooding are likely to be an issue for development in low-lying areas.
- Terraces below RL 40m areas could be susceptible to erosion, liquefaction and slope movements.
- It is noted that the majority of these hazardous areas are located within the ecological corridors (which retain 'Rural' zoning) and therefore the impact on potentially developable areas is minimised.

#### **Proposed Recommendations**

- Site specific investigation of each lot or building platform at the building consent stage will be required.
- Restricted development is recommended adjacent to:
  - Kauaeranga River and Kirikiri Stream banks;
  - Fill embankments around the sewage works, drains, streams and rivers; and
  - Along the Hauraki Fault
  - A 30m setback either side of fault scarps is recommended to avoid both instability and the risk of fault rupture. Further investigation of the activity of faults may reduce this setback distance.
  - Effluent and stormwater disposal reticulation and sub-drainage will be required.
  - Specific design of services and roads crossing Hauraki Fault scarp, areas with identified active instability and areas underlain by soils with high liquefaction risk.
- Develop a Hazard Register to collate all information regarding the occurrence and risk of natural hazards in the District.

#### 4.7 Stormwater

Stormwater modeling and assessment has been undertaken to identify the most practicable and cost effective solutions for managing stormwater run off and treatment in the area as it develops. The Stormwater Management Plan is attached as Appendix G, whilst the full technical report prepared by Beca is provided within Volume 2.

The objectives of the concept Stormwater design for the area were:

- to prevent flooding;
- to capture stormwater contaminants and control stream channel erosion (control peak flows)
- to provide for flood protection and stormwater management measures that match community expectations for the area.

The Stormwater Management Plan (SWMP) prepared proposes a change to the present Kopu to Thames drainage pattern and has been based on seven main catchments. These catchments, defined below are the proposed rather than the existing major tributaries and cells.

#### 4.7.1 Catchment 1 – Existing Industrial Area Catchment

At present, the catchment has two outlets. The first drains northward from the proposed Kopu Bridge access road to the Te Kupata floodgate and the other southward from the Kopu Bridge access road to the Kopu South floodgate. The SWMP proposes to keep these sub catchments draining to the outlets as they currently do.

The key stormwater system upgrades required for this Catchment are:

- Construct two flood attenuation ponds (Pond 1.1 and 1.2) to attenuate the 100 year ARI runoff during MHWS. The ponds will need to be excavated by 0.5m deep to allow for wetland planting for WQV treatment.
- Full WQV treatment must be provided within the wetland. The WQV for Pond 1.1 and 1.2 are 9,490  $m_3$  and 12,345m  $^{3\cdot}$

- Construct a new open drain along the south bank of the Te Kupata Stream from SH25 to the Waihou River to convey runoff collected from the northern subcatchments and subcatchments east of SH25. This open channel connects into the existing Te Kupata Floodgate once the Te Kupata Stream is re-aligned northwards.
- Install new cross culvert (s) under SH25 with an equivalent waterway area of 0.5 m<sub>2</sub> to convey the 100 year ARI peak flow generated from the subcatchment east of SH25 into the new open channel along the south bank of the Te Kupata Stream.
- Enlarge existing open drains located along the Waihou stopbanks.
- Enlarge an existing culvert within the industrial area to have an equivalent waterway area of 0.5m<sup>2</sup>.

#### 4.7.2 Catchment 2 – New Industrial Area Catchment

Runoff generated from the land east of SH25 is conveyed by an open drain running along the eastern embankment of SH25 to the Te Kupata Stream. Stormwater runoff generated by the low lying land in this area is serviced by open drains running westward to join the existing main drain running southwards inside the Waihou River stopbank to the Te Kupata floodgate.

The key stormwater system upgrades required for this Catchment are:

- Construct Pond 2.1 for flood attenuation to attenuate the 100 year ARI runoff during MHWS. Part
  of the pond will need to be excavated by 0.5m deep to allow for wetland planting for WQV
  treatment of 15,000 m<sup>3</sup>.
- Install new cross culvert (s) under SH25 with an equivalent waterway area of 5.7 m<sub>2</sub> to convey the 100 year ARI peak flow generated from the subcatchment east of SH25 into the local drainage system on the western subcatchments.
- Install a new culvert and floodgate under the Waihou River stop bank to convey flows from the pond to the Waihou River. This culvert is not sized at this stage. The new floodgate will only service this catchment. At this stage, the floodgate is proposed as a 1,700mm circular flap gate at an invert level of RL -1.10m. The floodgate would need to be designed at a later stage.
- Divert the flow in the unnamed open channel, that currently flows southwards along SH25, into the new cross culvert (s) under SH25
- Install 25 m<sup>3</sup> rainwater tanks for each new rural residential lot for both runoff attenuation (of small rainfall events) and water re-use purpose.

#### 4.7.3 Catchment 3 – Residential and Airfield Catchment

The proposed future development in this area is the expansion of the Airfield and further development at the existing Totara Palms residential subdivision. Rural land is likely to remain rural in the remainder of the catchment and is identified as being suitable for flood attenuation. At present, a series of open drains connects to the main drain inside the Waihou River stopbank to the Waipapa North floodgate.

The proposed upgrades required for this catchment to ensure that existing and future buildings are not flooded during a 100 year ARI event during MHWS in the Waihou River are as follow:

- Construct two flood attenuation ponds (Pond 3.1 and 3.2) to attenuate the 100 year ARI runoff during MHWS.
- Pond 3.1 will need to be excavated by 0.5m deep to allow for wetland planting for WQV treatment of 11,000 m<sub>3</sub> while bed of Pond 3.2 can be the existing ground level.
- During large storm events, Pond 3.1 water encroaches into the land identified as rural to the east of the pond.

#### 4.7.4 Catchment 4 – Harumarere Stream Catchment

This SWMP proposes to re-route this ditch along the southern berm of SH25 (Ngati Maru Highway) and then along the proposed Kopu Bridge access road to the Kopu South floodgate. This means

that, similar to the existing drainage outlet, the proposed ditch ultimately discharges to the Waihou River via the Kopu South floodgate. The floodgate is located along the true right bank of the Waihou River, approximately 50m south of the Kopu Bridge. The hill catchment gully system has riparian vegetation, mainly grassland and scrub.

The key stormwater system upgrades required for this Catchment are:

- Divert the Harumarere Stream by constructing a new open drain that runs along the berm of SH25 and then down the southern side of the proposed Kopu Bridge access to the Kopu South floodgate.
- Install 25 m<sup>3</sup> rainwater tanks for each new rural residential lot for both runoff attenuation (of small rainfall events) and water re-use purpose.
- Enlarge the existing Harumarere Stream cross culvert under the SH25 to have an equivalent waterway area of 2.0 m<sup>2</sup> to convey the 100 year ARI peak flow generated from the upstream subcatchments.

#### 4.7.5 Catchment 5 – Te Kupata Stream Catchment

The Te Kupata Stream enters a 1200mm diameter culvert under SH25 before flowing into an open channel and finally discharges through the Te Kupata floodgate. Local residents have indicated that the 1200mm diameter culvert under SH25 is undersized and would need to be upgraded to avoid ponding of flood waters along the eastern side of SH25. Runoff from the unnamed stream adjacent to the sawmill is channelled along the eastern berm of SH25 into the Te Kupata Stream before entering the 1200mm culvert. It is proposed that the Te Kupata Stream be isolated from the floodplain catchments by stopbanking the true and right banks.

The key stormwater system upgrades required for this Catchment are:

- Stop bank (return stop bank) the Te Kupata Stream to the 100 year ARI (RL 3.50m) level up to the rural residential boundary to separate the hill country runoff from the developed flats. The recommended stop banks for this stream is similar to the one in place for the Waipapa Stream.
- Widen the Te Kupata Stream from the SH25 to the Waihou River outlet. The approximate stream width including the stopbanks and 30m riparian margin ranges from 65 to 75m (depending on the ground level).
- Re-align the downstream end of the Te Kupata Stream northwards so that the existing Te Kupata floodgate can be used as the outlet to the Waihou River for Catchment 1.
- Enlarge the existing Te Kupata Stream cross culvert under SH25 to have an equivalent waterway
  area of 3.4 m<sup>3</sup> to convey the 100 year ARI peak flow generated from the upstream
  subcatchments.
- Install 25 m<sup>3</sup> rainwater tanks for each new rural residential lot for both runoff attenuation and water re-use purpose.

#### 4.7.6 Catchment 6 – Waipapa Stream Catchment

Flows from the Waipapa Stream are constricted by the undersized culvert (1200mm) under SH25 and backs up into the naturally flat area upstream of it. Environment Waikato staff have commented that there are times when the ponding water overtops the highway, and that ponded water can sit for days before discharging into the culvert.

Fish survey's undertaken as part of the initial ecological investigation by Kessels & Associates found a perched culvert on the Waipapa Stream at Sawmill Road restricting fish access. For more details, refer to Section 3.3 of the Management Recommendation and Restoration Guidelines.

The key stormwater system upgrades required for this Catchment are:

 Install 25 m<sup>3</sup> rainwater tanks for each new rural residential lot for both runoff attenuation and water re-use purpose.

- Construct a total of nine ponds (Pond 6.1 to 6.9) to attenuate up to the 10 year ARI storm peak flows generated from the residential lots to the pre-development values.
- Enlarge the existing Waipapa Stream cross culvert under SH25 to have an equivalent waterway area of 2.7 m<sup>3</sup> to convey the 100 year ARI peak flow generated from the upstream subcatchments to ensure all water from the upper catchment is conveyed directly to the Waihou River through the Waipapa Stream without spilling into Catchment 2 and 3.

#### 4.7.7 Catchment 7 – South Maramarahi Road Catchment

The area along Maramarahi Road currently has limited housing and most of the undeveloped land is pasture and / or bush. The majority of the land here is identified as residential on the draft structure plan. The topography feature is old river channels that grade upwards from the Kauaeranga River towards the foothills. The northern side adjacent to the Kauaeranga River is highly flood prone.

The stormwater drainage system upgrades proposed for this catchment are:

 Construct a total of four ponds (Pond 7.1 to 7.4) to attenuate up to the 10 year ARI storm peak flows generated from the residential lots to the pre-development values before it enters the local Kauaeranga floodplain drainage system.

#### 4.8 Water Supply

The potential of the existing Water Treatment Plant to accommodate increased loading from the proposed development area has been assessed. The work was undertaken as a preliminary study into the capacity of the existing treatment facilities to provide guidance for planning purposes. Further detailed work on capacity will be required prior to at the individual subdivision and development phases.

A full list of the infrastructure required to provide for development within the Structure Plan area is outlined in Table 7 of Section 6. A summary of the matters pertaining to Water Supply are outlined below. The full report relating to Water Supply can be found in Volume 2.

#### 4.8.1 Water Source & Reticulation

The primary source of water for the Thames Water Treatment plant is the Mangarehu Stream, with a secondary source available from the Kauaeranga River. Currently, the Mangarehu stream delivers a constant gravity flow of approximately 50.4l/s. The Kauaeranga River source is equipped with two pumps that deliver water at a rate of 70l/s and 45l/s respectively.

It has been identified that the Kauaeranga River inlet chamber often 'silts up' and a solution to this problem needs to be identified. One solution is to relocate the inlet to the opposite bank of the River where the water is deeper and has a higher velocity.

#### 4.8.2 Water Treatment

The existing water plant capacity is approximately 5,350m<sup>3</sup> /day, whilst the current water demand for the Thames and Kopu areas has been estimated at approximately 3,125m<sup>3</sup> /day. The spare capacity of 2,225m<sup>3</sup>/day (42% capacity) should accommodate a growth of 412 households in the residential area and 25.5 hectares in the industrial area. This will provide for approximately 16 years of growth. Growth beyond this will require increased capacity in the Water Treatment infrastructure. This increase in capacity should be provided for up to an additional 2,500m<sup>3</sup> per day (or a total of 7850m<sup>3</sup> per day) to meet the projected demand for the full development of the Kopu toThames area.

#### 4.8.3 Water Storage

To ensure a minimum of 1 day's supply to the community for the proposed water supply system, and to help balance out the daily peak demands and fluctuating water pressures, an additional reservoir will be required.

The current system would not be capable of providing sufficient storage capacity under the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS 4509:2008) to meet the proposed industrial area of the new development, but there is sufficient storage to meet residential fire fighting requirements from a storage perspective but not fire fighting pressure requirements.

A new reservoir of 5,000m<sup>3</sup> would ensure that a minimum of 1 days supply to the community is met at all times as well as providing sufficient storage capacity for a water supply classification of W7 to meet the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice. The 5,000m<sup>3</sup> reservoir described above feeds part of the Thames and Kopu networks through a 150mm diameter pipe. It is considered that the existing pipeline will not provide the necessary fire flow to meet current regulations and therefore an upgrade to a larger 250mm pipe is needed.



#### 4.9 Wastewater

The ability of the existing Wastewater Treatment Plant (WWTP) to accommodate increased loading from the proposed development area has been assessed. The work was undertaken as a preliminary study into the capacity of the existing treatment facilities to provide guidance for planning purposes. Further detailed work will be required at the individual subdivision and development phases.

A full list of the infrastructure required to provide for development within the Structure Plan area is outlined in Table 7 of Section 6. A summary of the matters pertaining to Wastewater are outlined below. The full report relating to Water and Wastewater can be found in Volume 2.

#### 4.9.1 Existing Facilities

The existing WWTP is located between the Ngati Maru Highway (SH25) and the Waihou River, to the south of the Kauaeranga River Bridge. Raw sewerage is pumped to the plant from the Airport pump station approximately 200 metres away through a 375mm diameter rising main.

The existing pond and treatment system operates in series circuit and consists of the following;

- A low lift pump station and automatic wastewater inlet screen, (Primary Treatment);
- An aerated lagoon of 16,000 m<sup>3</sup> volume, (Secondary Treatment);
- An oxidation/maturation pond of about 1.2m depth with a surface water area of 7.3 Ha, and volume of about 84,000 m<sup>3</sup>, (Tertiary Treatment); and
A diffuser in the Waihou River.

The existing consented discharge of treated wastewater to the Waihou River is 13,600 m<sup>3</sup> per day, however the current capacity of the treatment plant is much lower at 4,200 m<sup>3</sup> per day.



#### 4.9.2 Projected Demand

There is insufficient data to accurately model the existing network to establish inflows. The current (2001 based) peak flow of 5,900 m<sup>3</sup>/day (PWWF) disposal figure has been used instead, and it is assumed that the inflow and outflow will be relatively close. The Thames-Coromandel District Council Code of Practice states a peaking factor of 4, therefore the average daily dry weather flow (ADDWF) is assumed to be 1,475 m<sup>3</sup>/day.

The proposed development of the Structure Plan area is expected to result in a Wastewater demand for the Kopu to Thames area of approximately 4,487m<sup>3</sup>/day. The expected total demand (including Thames) of some 6,280 m<sup>3</sup>/day would be within the limits of the existing consent discharge requirements and within the capacity of the abstraction works. As a result the wastewater treatment facilities at Thames are not expected to reach their treatment capacity until approximately 2040 at which stage upgrades would be required. This allows for growth of 778 households for the Residential area and 48.2 ha in the Industrial area.

# 5 Consultation

#### 5.1 Initial Consultation

A concept planning workshop was held in Thames at the District Council offices, on Monday 8 October, 2007. During this initial consultation phase, there was general support for the project with parties involved in the workshop acknowledging that a coordinated approach with direct involvement by key stakeholders being preferential to managing the area as opposed to responding to pressure from private development in an ad-hoc manner.

The recommended concept plan was distributed amongst key stakeholders following the workshop and comments requested. Feedback received was generally positive and supportive of the concept plan recommended.

Ngati Maru are currently involved in considering implications for the Matai Whetu Marae Gateway and iwi interests and have recently completed a cultural values assessment for the study area.

### 5.2 Consultation on Draft Structure Plan

The draft structure plan was consulted on between February and May 2010 and feedback and comments have been considered as part of the development of this final structure plan. The following parties were considered to be key stakeholders and invited to participate as part of the consultation process on the draft structure plan:

- All landowners and occupiers within the Study area (by Public Open Day);
- Tangata Whenua via Ngati Maru Runanga (direct discussions)
- New Zealand Transport Agency (NZTA) (direct discussions)
- Environment Waikato (direct discussions)
- Hauraki District Council (email discussions)
- Department of Conservation (email discussions)
- KiwiRail (email discussions)

As part of the consultation process it was important to seek feedback on the areas of conflict to determine whether the land use mix proposed was the most appropriate. Key matters for discussion through the consultation process included:

- The extent of industry north of Te Kupata Stream and its impact on existing residences west of the State highway;
- The extent of the ecological corridors and the methods for preserving these areas (and the tradeoff to landowners within that area);
- The philosophy behind the stormwater management plan and the measures for implementing it;
- The infrastructure upgrades required on the State highway and the opportunities to share responsibility for these with the NZTA.

Feedback on both these issues and any others were sought during the consultation phase.

In summary, the feedback received was generally very supportive of the draft Structure Plan, however some minor amendments were sought, which have been included where considered appropriate in this final Structure Plan.

# 6 Staging of Development

Table 7 below identifies the proposed staging of infrastructure in the area. The primary triggers for requiring a staged approach relates to the infrastructure upgrades for the roading network and the capacity of the water and wastewater systems.

The intention is to provide flexibility to the proposed staging and therefore the restrictions on the release of land relate primarily to the quantity of development rather than any specific geographical location.

The issue with such flexibility is that there is no certainty as to the staging and sequencing of the infrastructure required to manage stormwater. However, this can be managed for each catchment by requiring that the stormwater infrastructure needed for each catchment, is developed and operational prior to any development occurring within that catchment. There need not be any requirement to provide staging or sequencing between the necessary catchments, unless specifically provided for within the stormwater catchment management plan.

Stage	Quantity	Uptake	Hard Infrastructure Required
1	<ul> <li>Residential 51 units</li> <li>Industrial 3.2ha</li> </ul>	■2011 - 2013	<ul> <li>Transport         <ul> <li>New at-grade 30-50 diameter roundabout with 2 circulating lanes, on SH25 connecting east and west of the district arterials</li> <li>Allowance to upgrade the existing priority intersection with a right turn bay for the airfield</li> <li>Water</li> <li>Water Reservoir for fire fighting storage</li> <li>Mains Reticulation Upgrade (from 150mm to 250mm)</li> </ul> </li> </ul>
2	<ul> <li>Residential 448 units</li> <li>Industrial 28.5 ha</li> </ul>	■ 2013 - 2031	<ul> <li><u>Transport</u></li> <li>New at-grade 60m dia roundabout replacing the existing SH25/Kopu Rd Intersection</li> <li>New at-grade 60m dia roundabout at the intersection of the new alignment and state highways SH25 and SH26.</li> <li><u>Planting and Fencing</u></li> <li>Planting between fencing and stream</li> <li>Stock fencing to Waipapa and Te Kupata Streams, west of SH25</li> </ul>
3	<ul> <li>Residential 448 units</li> <li>Industrial 28.6 ha</li> </ul>	■ 2031 - 2050	<ul> <li><u>Transport</u> <ul> <li>Upgrade existing SH25 from 2 lanes to 4 lanes, approx 2750m from Totara Valley Rd intersection to new SH25/26 roundabout. Include for 1m deep fill to new pavement. 3m wide cycleway/footpath, services relocation.</li> <li>Raise SH25 to RL3.5m at Te Kupata Stream intersection</li> <li><u>Water</u></li> <li>Water Treatment Plant Upgrade</li> <li><u>Wastewater</u></li> <li>Wastewater Treatment Plant Upgrade</li> <li>Upgrade of existing reticulation lines</li> </ul> </li> </ul>
4	<ul> <li>Residential 517 units</li> <li>Industrial 62.7 ha</li> </ul>	■ 2050 – beyond 2070	Transport Upgrade existing SH25 from 2 lanes to 4 lanes, include for 1m deep fill to new pavement, 3m wide cycleway/footpath, services relocation.

#### Table 7 - Staging of Infrastructure

Stage	Quantity	Uptake	Hard Infrastructure Required
			<ul> <li>Widen the existing Kaueranga Stream Bridge to 4 lanes.</li> </ul>
			New at-grade 30m dia roundabout on SH25 approximately midway between the Totara Valley Road and Kopu roundabouts.
			New at-grade 30m dia roundabout on SH25A
			<ul> <li>3m wide x 2.5m high culvert underpassing SH25 for pedestrian cycle link.</li> </ul>
			Farm fencing
			3m wide concrete pathways
			<ul> <li>Extra value of 10% of pathways being in 2m wide raised timber over wetlands/soft ground.</li> </ul>



## 7 Costs and Development Contributions Philosophy

Development arising as a result of this structure plan will trigger the upgrading and provision of increased capacity of Council infrastructure, development of new transport networks and the protection of landscape and amenity features. The associated costs are recommended to be funded by a mixture of developers, Council and other agencies (i.e. the NZ Transport Agency).

Infrastructure upgrades that are required to support the additional growth in the area should be funded (in whole or part) via development across the study area including:

- Upgrades to the State highway road network (e.g. intersection upgrades with this network from the local road network);
- Walking & cycling networks (both on alignment and off alignment);
- Water and wastewater treatment plant upgrades;
- Development of a new water reservoir for fire fighting storage requirements;
- Increased capacity in the existing water reticulation main;
- Stormwater management devices (including wetlands, detention ponds and culvert upgrades); and
- Planting and fencing within the ecological corridors.

Examples of infrastructure excluded includes the construction of local council roads (which are anticipated to be constructed by developers at the subdivision phase), connection to the water and wastewater networks, and on site facilities for the management of stormwater (i.e. rain tanks).

Where the cost is not 100% funded through development contributions, the percentage of the cost that should be apportioned to development contributions and to other contributors will need to be identified, along with a recommended development contribution for the area on a Household Equivalent Unit basis.



# 8 Structure Plan Implementation (Phase 4)

The Kopu to Thames Structure Plan provides a framework which will enable future development of this area to occur in a coordinated manner. Its implementation will be through a variety of mechanisms, both statutory and non-statutory. Those measures considered to be required to ensure the success of the structure plan are outlined further in the following subsections.

## 8.1 District Plan

The District Plan can be used to:

- Identify the Resource Management Issues that are associated with the Kopu to Thames area
- Provide for the appropriate zoning of land in accordance with the Structure Plan land use pattern
- Provide for appropriate policy to guide development within those areas identified for development including the design guidelines proposed within the Landscape / Visual report prepared by Isthmus Group.
- Identify those areas that are designated for infrastructure required to service development within the Structure Plan area.

### 8.2 Notices of Requirement and Designations

In order to provide certainty it is proposed that the following are designated in the Thames-Coromandel District Plan:

- Stormwater Detention Ponds
- Arterial Roading Networks

### 8.3 Ten Year Plan

The Ten Year Plan is the tool to be used in outlining the infrastructure upgrades or new development required to service the structure plan area; and importantly to identify the cost implications and year required for such upgrades for a budgeting and cashflow perspective.

#### 8.4 Asset Management Plans

The individual Asset Management Plans (particularly relating to Water & Wastewater) are important tools for implementing the specific aspects of the structure plan relating to infrastructure (including stormwater, water and wastewater infrastructure) and for managing the ongoing operation of these assets.

### 8.5 Bylaws / Fees & Charges

Other mechanisms for implementing aspects of the structure plan will be through:

- Bylaws regarding Trade Waste & Water Use
- Connection fees

## 9 Conclusions and Recommendations

### 9.1 Process

The Structure Plan process is made up of a number of key tasks.

The tasks undertaken to date and those tasks still to be undertaken are outlined in the table below.

Task	Date to be completed
Opportunities & Constraints	April 2007
Industrial & Commercial Study	June 2007
Concept Plan	March 2008
Technical Studies	June 2009
Cultural Values Assessment	October 2009
Draft Structure Plan	January 2010
Public and Key Stakeholder Consultation	March to May 2010
Final approval of Structure Plan by Council	August 2010
Structure Plan Implementation	
<ul> <li>District Plan Review / Plan Change</li> <li>Regional Consenting – Stormwater Catchment Management</li> <li>Asset Management Growth Plans</li> <li>Code of Practice</li> <li>Ten Year Plan</li> </ul>	Ongoing
Designations	

#### Table 8 – Where to from here

## 9.2 Land Use Pattern

The land use pattern identified within the Structure Plan assumes densities of 8 dwellings per hectare in the residential environment and 2 dwellings per hectare in the rural residential environment based on existing market trends. The extent of the ecological corridors is such that there are also opportunities for development within these. Such development is provided as a means of securing ecological and recreational corridors by enabling land to be set aside through the subdivision and development process. A yield of 1 dwelling per 2 hectares has been used as a guide for these areas to reflect their sensitivity. No yield for the general rural area is provided on the basis that the existing 20 hectare rule would make it too restrictive to develop.

Based on the estimated demand the anticipated yield from the supply of land within the structure plan area is expected to meet demand for residential land for the next 55 years and for industrial land for the next 35 years. It should be noted that demand is difficult to predict and it is recommended that Council monitors the growth in the area to ensure development is managed proactively.

## 9.3 Staging

Staging will be undertaken in the area due to the need for infrastructure upgrades to the roading network and the capacity of the water and wastewater systems. Stormwater catchments have not been included in the proposed staging outlined in Table 7. Rather, this can be managed for each catchment by requiring that the stormwater infrastructure required for that catchment, as identified in the catchment management plan, is in place before any development is undertaken

The intention is to provide flexibility to the proposed staging and therefore the restrictions on the release of land relate primarily to the quantity of development and the provision of infrastructure rather than any specific geographical location.

It is proposed that residential development will occur from North to South, whilst Industrial will occur from South to North. The strategy of rural-residential development will largely be dictated by access and stormwater management considerations and need not be necessarily linked to the staging of residential and industrial land release which will have greater reliance on reticulated services being in place.

#### 9.4 Infrastructure

The key infrastructure that will be required for the implementation of the Structure Plan includes:

- Transportation
- Water and Wastewater infrastructure
- Stormwater Management infrastructure
- Ecological Protection

### 9.5 Implementation

The Structure Plan provides a framework which will enable future development of this area to occur in a coordinated manner. Its implementation will primarily be through the District Plan and the Ten Year Plan.

In particular it is recommended that the following are short term matters to be implemented:

- A plan change to enable the 1<sup>st</sup> stages of development to occur;
- Assessment / calculation of development contributions to apply to the area;
- Consenting for the stormwater catchment management plans;
- Construction of the Kopu Access Road.

Appendix A

Structure Plan Map



Appendix B

Design Guidelines





## KOPU STRUCTURE PLAN – DESIGN GUIDELINES

The following section outlines design guidelines for the future Kopu structure plan. While the Thames area is known for its coastal and pastoral setting on the Coromandel Peninsula, it is also recognised that there is a need to provide a framework for the growth happening in this area. The overall vision of the proposed structure plan for Kopu is to recognise that the area forms one of the main "gateways" to the Coromandel peninsula and to maintain a high quality landscape. This can be achieved by integrating development with natural features of the area, such as coastal & river flood plains, foothills, river corridors and the Coromandel Ranges. This in turn will set the desired context for development and anticipated measures in order to avoid, remedy or mitigate any potential adverse visual and landscape effects that may result from the proposed Structure Plan. With this overall intention in mind generic design guidelines have been developed for each of the main zone types in the Structure Plan area as follows:

#### 0.1 Rural Residential / Rural Zone Guidelines

The key principle for the Rural Residential / Rural Zone under the operative TCDC District Plan is "how the village or residential atmosphere and amenity values of the locality in which the subject land is situated will be enhanced through retaining open space and providing other measures to ensure the character and form of development is not of an urban nature". The development of these zones should not compromise the natural character or landscape processes. This will aid any development to nestle into the Thames area as well as the wider Coromandel Peninsula.

Under the District Plan rural lot requirements is a minimum net lot area of 2 Ha for front and rear areas and rural residential minimum lots areas should consist of 400m2 front and 500m2 rear areas.



**Guideline 1** Buildings and roofs should be low profile. Buildings should be designed so they follow the dominant landscape contour to assist visual integration with the receiving environment. If possible buildings should be sited in the landscape to be less prominent and intrusive.



Figure 1 – Side elevation of a house integrated into the landscape with minimal earthworks, and landscaping help to anchor the building into the site.

**Guideline 2** Colours should be dark and recessive. External building components should have a maximum reflectivity of 40% and be from British Standard (BS) 5252 Range, groups A and B. Large areas of glass glinting in the sun will cause houses to visually prominent.

Reduce reflectivity and prominence by overhanging eaves and vegetated pergolas to shade glass.

**Guideline 3** Shading devices such as roof overhangs, pergolas and louvers reduce glare from windows and modulate a façade to help buildings blend in to the landscape.





Figure 2 – Side elevation of a house with a large roof over hang to provide shade and reduces glass glare.

**Guideline 4** Break the length of a façade with steps in, to avoid reflections from extensive glazed areas. Overhangs, verandas and pergolas also help break and visually soften facades.

**Guideline 5** Buildings with prominent basements or foundations are not recommended as they create visual inconsistency. Keep foundations minimal taking the building material down to the ground rather than horizontal bonding different materials.



Figure 3 - Example of multi textured building from front view



Figure 4 – Example of low profile building, with garage to side or rear.

**Guideline 6** Vegetation and natural materials should be used to create privacy within a property. Solid masonry fences and retaining walls are **not** recommended as they appear as an extension of the building



rather than the landscape, increasing the prominence of the development. Natural vegetative screening and existing vegetation retention will help integrate the development into the landscape is recommended as the overall approach.



Figure 5 – Batter slope with vegetation to integrate development



Figure 6 – Masonry fences increase prominence of development

**Guideline 7** Use existing and planted vegetation to frame views, to provide shelter and provide seclusion to portions of the property. Plant the front edge and back slope of the building platform to soften the cut and integrate the structures into the landform. Specific to this site, any cut/fill slopes around house sites should be planted to reduce the prominence of earthworks.

**Guideline 8** Attach structures such as wood sheds, garages and workshops to the main building to avoid proliferation of structures within the site.

#### 0.2 Residential Zone Guidelines

The residential areas in the Totara area are separated from Thames by the Kauaeranga River corridor and disjointed and segregated from each other, not only by the highway but by their unrelated urban morphology. However they also contain key cultural, historical and landscape features in their midst, such as the cemetery, several archaeological sites, the old shoreline bluff, indigeous vegetation and key views over the wider floodplain. In order to give this area some chance of cohesion, it is recommended that the



area of housing between SH25, Maramarahi Road and Te Arapi Road is included in the Concept Plan and settlement design strategy developed that ties together the distinctiveness of this interestingly diverse area. It will then also form the node from which the proposed newer residential areas south of Maramarahi Road can be connected within their landscape setting.

**Guideline 1** Avoid more than 3 detached houses in a row, the repetitious shapes and materials lead to a mundane streetscape. Buildings should be a variety of shapes, designs and materials which will result in a more attractive and interesting streetscape.



Figure 7 – Residential housing using repetitive shapes and materials



Figure 8 – A residential streetscape with a variety of designs and materials

**Guideline 2** Housing should be expressed as individual entities to reduce the bulk of the building. Building designs should use recessive and projecting elements to break up long surfaces to create identity. Secondary elements such as different colours and materials, to articulate entries, awnings, etc.







Figure 9 – Residential housing which looks bulky due to blocky components

Figure 10 – A residential house which uses a combination of materials and different elements to break up mass of the building

**Guideline 3** The residential zone should follow an overall landscape concept, which provides the development with an overriding theme. This can help to break up the mass of residential buildings completely dominating the landscape.

**Guideline 4** Residential buildings should face the street to provide passive surveillance and an active frontage. This can be hindered with large block walls. Low or no fencing with landscaping provides a more attractive frontage, while providing a friendlier pedestrian and cycling interface for the streetscape.

**Guideline 5** Front yard tend to be the public area of the house, while the backyard is seen as a usable private outdoor space. The detached house should not take up the majority of the site so there is little side yard or rear yard, this type of situation can be a result of market forces. (Refer to diagram)



Figure 11 & 12 – Demonstrate housing with inadequate yard size due to large housing built on small sites.

**Guideline 6** Higher density housing often fills the most awkward sites left over after subdivision – commonly land locked sites in deep blocks with limited access. High density housing should be located around special places of amenity including parks, neighbourhood centres and public transport routes. This gives people with small yards a pleasant amenity to compensate and close proximity to an open space.

**Guideline 7** The standard rule under the district plan with regards to day lighting is 2.5-3m + 45° at the boundary. Larger houses on smaller sites will require the stepped or "pop-top" technique, to build within the allowable envelope.

**Guideline 8** Corner sites are the most important for setting up the character of the area and entrance into the street. Corner sites should be slightly larger than its adjacent neighbouring properties; this will allow for private open space and good design.





Figure 13 - Corner house site setting the character for the street, also displaying the stepped design to conform to the daylight building envelope

**Guideline 9** Housing types should vary to encourage a mixture within the community, for example, older people, single people and families can form a vibrant community.

**Guideline 10** Front doors should be in full view of the street to provide security to visitors or residents. A front path should have gardens to the side for semi privacy. Recessed entries, projecting porches and entrance canopies provide shelter from the elements.

**Guideline 11** Garages that project in front of the house can dominate the streetscape and create unfriendly places. Mixed car and pedestrian use is to be encouraged, garage doors should not exceed 35% of the building front elevation. A technique to compensate for this is to have garage with a rear or side access, thus removing the garage door from the street elevation.



Figure 14 – Double garage door taking up a large part of the building frontage.

#### 0.3 Industrial Zone Guidelines

The key principles for the industrial zones under the TCDC district plan is to maintain and enhance the industrial resource (including land, buildings and services) for future generations. Industrial activities carried out in a manner that the amenities of the environment are maintained and/or enhanced, as well as, efficient and safe movement of vehicles to and from the zone.

Where the industrial zone abuts zones other than industrial, industrial A or Rural, buildings are to be setback 25m, (including a landscape buffer) as provided for in the District Plan. Yards where a site abuts the Rural Zone the permitted setback is to be 7.5m (including a landscape buffer). The maximum daylighting where a site abuts other zoned land is 3m at a 45 degree angle. A 15m maximum height restriction is recommended under the district plan. Streetscape planting is also recommended for the Industrial Zoned land which fronts State Highway 25. These industry buildings will be most prominent where they are adjacent to the major arterial road into Kopu and Thames. To give increased definition that is recommended along the road boundary the future industrial zone area the landscape buffer should include avenue planting of specimen deciduous trees along State Highway 25, with a five metre minimum amenity planting strip adjacent to the road reserve boundary with feature post and rail fence design.



Figure 15 – Industrial Zone cross section under TCDC district plan

**Guideline 1** Wide berms and landscape buffer planting should be used in the future industrial properties to tie in with the surrounding rural landscape, and screen unattractive activities from the street and adjacent rural zones and public spaces. Landscape buffer planting in these areas should include earth mounding varying in height from 0.5m to 1.5m, except where they would impede with overland drainage swales and the boundary abutting the road reserve should have feature timber post and rail fencing.

**Guideline 2** Landscape buffer planting for public access and recreation should cater for an attractive recreational experience with high amenity value, for instance varying the width of planting either side of the drainage reserve. Planting should particularly include species that enhance ecological connections. The following species are recommended:



Botanical Name

Common Name

Titoki

Puriri

Karaka

Pohutukawa

Size After 10 Years

#### (mature height in brackets)

Alectryon excelsus Corynocarpus laevigatus Metrosideros exelsa Vitex lucens

Cordyline australis Meryta sinclarii Pittosporum spp. Pseudopanax spp

Cortaderia toetoe Corokia spp Griselinia littoralis Hebe speciosa Phormium tenax Cabbage Tree Puka Pittosporum Lancewood / Five finger

Toe Toe Korokio Kapuka Showy Hebe Flax 10x5m (15m) Medium Trees 6x2m (10m) 5x2m (8m) 5x3m (8m)

**Tall Species** 

7x4m (10m)

6x4m (12m)

8x4m (40m)

3x3m (5m) Shrubs

> 2x2m 1.5x1m 3x2m 1.5x1m 2x2m

**Guideline 3** Public road boundaries should have streetscape treatment that consists of avenue planting down the road side on the industrial property side, or where trees will not interfere with overhead and underground services, and vehicle site lines. Trees should be planted a minimum 30m apart and should use large growing species.

**Guideline 4** Special streetscape treatment areas should be defined with a cluster of specimen trees that provide an entry feature to the site and assists in providing a high amenity transition between proposed industrial properties. Species considered suitable include Pohutukawa (*Metrosideros excelsa*), Puriri (*Vitex lucens*), Titoki (Alectryon excelsus), and Karaka (*Corynocarpus laevigatus*).



Figure 17 – Axonometric view of a typical street profile of an Industrial Zone.

**Guideline 5** Locate buildings and industrial activities that are consistent with typical rural practices on the external parts of the site, and activities that are more business, commercial or heavy industrial within the internal parts of the site so as to retain a sense of the rural character on the perimeter of the site.

**Guideline 6** Office areas should include "upgraded" design elements including raised parapets, added score lines or reveal lines, with accent paint treatment, or glass. Windows and glass facias should incorporate over hanging eaves to reduce incidences of sun strike and reduce overall building reflectivity.







Figure 18 – Industrial building with minimal definition makes for a plain frontage

Figure 19 – Building with different materials and recessive and projecting elements make for an interesting frontage

**Guideline 7** Overall design of industrial buildings, where visible to public roads, should be sensitive to proper treatment of large areas of the building walls and fences. Large expanses should be broken up by the use of accent painting, different materials and score lines or reveal lines and additional planting.

**Guideline 8** Building colours should be limited to a neutral colour palette in order to minimise dominance in the landscape and reduce effects on surrounding rural zones and public spaces. The colour palette recommended for the Kopu Industrial area is the Resene British Standard 5252 range, groups A and B. Colours should also be low reflectivity to reduce high levels of visibility in the landscape, with a maximum reflectance level of 70%.

**Guideline 9** Chain link fencing should be avoided along any public roads. Security fencing should be setback from the road boundary behind the 5m planting buffer strip.







Figure 20 – Industrial building with no landscaping creates a mundane façade

Figure 21 – Landscaping mitigates and creates a median between the road and the buildings

**Guideline 10** Truck court lighting and automobile parking lot lighting should be achieved with lights mounted on the building walls where possible in order to minimise the need for light poles around the perimeter of the property. Wall mounted lights in the truck courts should be angled away from the building in order to efficiently light the truck courts and truck manoeuvring areas. Where light poles are required they shall not exceed 12m in height.

**Guideline 11** In addition to the District Plan rules for signs, all signage should be high quality and low maintenance with direct lighting. Sign colours should be similar colour to those used in buildings, with allowance for no more than 50% of the sign coverage to include corporate colours and logos. Free standing tenant signs may be placed at locations near entry driveways, and should incorporate large timber post rounds to match in with the feature post and rail fences. Building mounted signs should be limited to a maximum one per tenant, and should be placed at the building entry below the eaves or parapet of buildings.

#### 0.4 Gateway Guidelines

The importance of a town's entrance is to create a positive first impression for visitors, and portray the town character. The entrance gateway should reflect local context (reference from historic and natural surroundings), and enhance the entrance to Kopu and Thames, avoiding visual clutter. The gateway should not compromise its surrounding environment.

It is recommended that a highway improvement strategy be developed as part of the structure plan that recognises and builds on the different characters of three distinct sections and nodes. These are roughly defined as,

- The Kopu commercial corridor
- The Totara residential area
- Final approach and introduction gateway to the town of Thames.

These three different sections should also display common elements of landscape enhancement that relate to the overall landscape context of the road corridor, such as the meeting of key landscape types and features, such as the old shoreline running parallel to the road, the long distance views to the floodplain, estuary, sea and coastal hills with a planting strategy that recognises the diversity and distinctiveness of this setting. The three different sections should also contain cultural and heritage elements which relate to the region. The elements should be combined in a way which is aesthetically pleasing and reference significant features or events of Kopu/Thames history. This will promote character and help retain the distinctive identity for Kopu/Thames.



Figure 22 - Entrance into Thames should provide cultural and landscape elements to provide a strong gateway.

#### 0.5 Ecological Corridor Guidelines

The natural character and of the landscape, catchment and drainage patterns within the site will be protected and improved by the establishment of ecological corridors as defined in the Concept Plan. This will involve retirement from grazing, indigenous planting and management of the banks of parts of the stream network and waterways which will result in positive direct and indirect, landscape and visual effects. The pattern of natural vegetation and watercourses will be enhanced through the establishment of these corridors but it is recommended that these could be further enhanced by extension in a limited central part

of the Concept Plan area, east of SH25. This would ensure that key landscape characteristics are strengthened and help the clear definition and separation of Thames, Totara and Kopu as distinct settlements.



Figure 23 - A typical cross section of a stream/ river with native planting.

River margins should be enhanced with a 20m wide amenity buffer of native wetland vegetation. The enhancement of river margins could be further complimented with paths and recreational areas. The foothills east of State Highway 25 contain bush fragments of kanuka and kanuka-tanekaha. These fragmented areas of bush should be connected up with native planting to promote ecological corridors. Planting should particularly include species that enhance ecological connections. The following species are recommended:

Botanical Name	Common Name	Size After 10 Years
		Trees and Shrubs
Carpodetus serratus	putaputaweta	5x3m
Coprosma grandifolia	kanono	2x2m
Coprosma robusta	karamu	2x1m
Cordyline australis	Cabbage Tree	6x2m
Corokia spp	Korokio	1.5x1m
Cortaderia toetoe	Toe Toe	2x2m
Griselinia littoralis	Kapuka	3x2m
Fuchsia excorticate	kotukutuku	6x6m
Hebe speciosa	Showy Hebe	1.5x1m
Laurelia novae-zelandiae	Pukatea	6x4m
Leptospermum scoparium	manuka	3x1.5m
Melicytus ramiflorus	mahoe	5x3m
Phormium tenax	Flax	2x2m
Plagianthus divaricatus	makaka	
Podocarpus totara	Totara	6x4m
Pseudowintera colorata	horopito	1.5x1.5m
Rhopalostylis sapida	nikau	8x3m
Schefflera digitata	pate	3x3m
Syzygium maire	maire	10x5m

Appendix C

Archaeology Plan



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Appendix D

Ecology Plan



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Appendix E

Transportation Plan



Appendix F

**Geotechnical Plan**


Appendix G

Stormwater Catchment Management Plan



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