This Landscape Assessment Report of the Tuakau Study Area has been prepared for Waikato District Council (WDC), by Mansergh Graham Landscape Architects Ltd.

Tuakau Study Area | Assessment of Landscape, Visual and Amenity Effects

Report Version: R0
May 2014

This Landscape Assessment Report of the Tuakau Study Area has been prepared for Waikato District Council (WDC), by Mansergh Graham Landscape Architects.

Report prepared by:

Lisa Burge
BLA (Hons)

Report checked by:

Dave Mansergh
Dip. P&R (Dist), BLA (Hons), MLA
Registered NZILA Landscape Architect
Director

Registered Member
of the
New Zealand Institute of Landscape Architects.

Report Version: 260514/R0

Date: May 2014

mansergh graham
LANDSCAPE ARCHITECTS

CONTENTS

BACKGROUND

Tuakau Structure Plan

The Waikato District Council is currently developing a Structure Plan for Tuakau. The primary driver for this structure plan is the Franklin District Growth Strategy document. Population figures within this document indicate potential for rapid growth in Tuakau, requiring the creation of a Structure Plan to manage the growth within the Tuakau Study Area.

In order for the Tuakau Structure Plan Strategy to remain flexible while facilitating growth and development, the following areas have been identified and considered:

Town Boundaries: The identification of landscape opportunities and constraints to identify areas within which Tuakau township might be urbanised without compromising Outstanding Natural Features and Landscapes (ONFLs), landscape character and associated landscape amenity values;

Scale: The scale and intensity of development that can be accommodated without compromising landscape amenity values;

Function: The identification of how the Tuakau township functions both internally, and within the context of the wider landscape. This includes an allowance for legibility and integration into the surrounding rural/market gardening and horticultural environment;

Methods : The methods required to maintain and enhance the character, scale and atmosphere of the township and its surrounds.

STUDY APPROACH

Tuakau Study Area

In 2013, Mansergh Graham Landscape Architects Ltd (MGLA), were engaged by Waikato District Council (WDC) to undertake a Landscape Assessment of the Tuakau Study Area in order to inform the Tuakau Structure Plan (being prepared by WDC).

The overall purpose of the landscape assessment was to carry out an Outstanding Natural Features Landscapes assessment (ONFL) and identify landscape opportunities and constraints to the future growth of the Tuakau Study Area. Affirming the boundaries/ extent of the township and indicating the controls required to maintain and enhance the rural character and amenity values have also been undertaken. The outcomes of this assessment will be used to inform the preparation of a Structure Plan for Tuakau.

This report addresses:

- Whether there are any ONFL's within the Tuakau Study Area;
- The directions in which the township should expand (from a landscape perspective);

This work has been guided by the set of principles outlined below, in addition to the requirements of the Resource Management Act 1991, the Waikato Regional Policy Statement, The Waikato District Plan and the Waikato District Growth Strategy.

The approach and stages involved in the Tuakau Landscape Assessment Study are set out below:

Stage One: Project Establishment

- Meet with the Tuakau project team to discuss the project brief;
- Site visit to the Tuakau study area.

Stage Two: Rationalisation and Integration of Existing Information

- Review existing information relevant to the project including the Open Space, Recreation and Public Facilities Technical Paper, Settlement Patterns, Spatial Structure and Development Character Technical Paper and the Franklin Rural Plan Change Landscape Assessment Preliminary Findings;
- Liaise with urban design, heritage and archaeological consultants and discuss constraint

mapping;
- Identify wider landscape character units;
- Analysis of the character of Tuakau to identify and map key landscape features and attributes;
- Identification of landscape opportunities and constraints;
- Identification of infrastructural opportunities and constraints;
- Review existing development strategies and proposals;
- Review Community outcomes of community workshop/ open-days and resultant development strategies/ concept plans;
- Presentation of preliminary findings and maps to Project Team for comment and feedback.

Stage Three: Analysis of landscape opportunities and constraints
- Identification of township growth boundaries guided by a rationalisation of the visual amenity and landscape character assessment and the constraint analysis;
- Review the potential growth area maps and determine whether any special protection or development areas are required to retain particular character and amenity and Resource Management Act tested District Plan provisions for protection of wider landscape character;
- Undertake analysis, combining landscape character and landscape constraint mapping to inform areas suitable for urbanisation
- Identification of urban amenity determined by the infrastructural opportunities and constraints (distance analysis);
- Meet with the project team to discuss and compare analysis and receive comments and feedback on potential areas of Tuakau suitable for urbanisation;
- Review and amend as required;
- Presentation of preliminary analysis map findings to the Waikato District Council representatives for comment and feedback;
- Produce an outcome analysis map indicating suggested growth areas and suggested development intensities within theses growth areas;
- Compare the outcome analysis map with the community driven concept plan and identify common areas for urban expansion.

Stage Four: Reporting
- Presentation of Tuakau Landscape Assessment (including written report and GIS data) to the Waikato District Council

The Tuakau Study Area

The extent of the Tuakau Study Area, identified by the Waikato District Council, is defined by both natural and cultural boundaries, including the Waikato River, remnant patches of vegetation, gully systems, roads, and cadastral boundaries. The adjacent plan indicates the extent of the Tuakau Study Area.

While this report limits its findings to within the study area, parts of the adjoining landscape that influences the study area has been taken into account.


Pukekohe East
Bombay
Collision Crossroads
Pukekohe
Buckland
Pukekohe Hill
Tutaenui Stream
Harrisville
Whakapipi Stream
Tuakau
Nga Tau E Rua Marae
Whangarata
Waikato River
Te Weranga Okapu Island
Namuheiriro Island
Tuakau Bridge
Opuawhanga Island
PUKEKOHE EAST ROAD
MILL ROAD
GREAT SOUTH ROAD
TURROTT ROAD
GOLDMINE ROAD
YOUNGS GROVE
CARLTON ROAD
BIRCH ROAD
HARRIS STREET
STATION ROAD
MANUKAU ROAD
NELSON STREET
JOHN STREET
QUEEN STREET
COOPER STREET
WELLINGTON STREET
KITCHENER ROAD
LOGAN ROAD
YATES ROAD
JERICHO ROAD
BEAVER ROAD BEAVER ROAD EAST
NIKAU ROAD
SMEED ROAD
RUEBE ROAD
BUCKVILLE ROAD
JAMIESON ROAD
HARRISVILLE ROAD
POOK ROAD
RAY WRIGHT ROAD
NANDINA LANE
WOODLANDS ROAD
TUAKAU ROAD
ANZAC ROAD
UPPER QUEEN STREET
ALEXANDRA STREET
WRIGHT ROAD
GERAGHTY MABER ROAD
PARKER LANE
BARNABY ROAD
BUCKLAND ROAD
HUIA ROAD
MCCREADY ROAD
RIDGE ROAD
DOMINION ROAD
WEST STREET
CARR STREET
GEORGE STREET
CHURCH STREET
THORN ROAD
COLES ROAD
GERAGHTYS ROAD
BOLLARD ROAD
WHANGARATA ROAD
POKENO ROAD
EWING ROAD
POTTER ROAD
TRIG ROAD
SMEED ROAD
ALEXANDRA REDOUBT ROAD
BROWN ROAD
RIVER ROAD
TYSON LANE
LAPWOOD ROAD
ROBERTS ROAD
TUAKAU BRIDGE-PORT WAIKATO ROAD
ALDER ROAD
HIGHWAY 22
MURRAY ROAD
SMEEDS QUARRY ROAD
HOGAN STREET
FRANKLIN ROAD
PROSPECT TERRACE
VALLEY ROAD
BELGIUM ROAD
EAST STREET
SEDDON STREET
EDINBURGH STREET
STRATHMORE DRIVE
MONTGOMERY AVENUE
KAVEL ROAD
N
Kilometers
0
0.5
1
1.5
2
2.5
Study Area

METHODOLOGY

Tuakau Structure Plan Study Area

An interactive assessment approach has been used, which assesses the study area to:

a) identify any ONFL's within the study area (s6b landscapes) and;
b) Indicate those factors and attributes that contribute to existing landscape and urban amenity.

The approach used is summarised in the following flow charts.

This has been achieved by capturing and analysing the landscape character, associated amenity values and landscape constraints, while considering the aspirations of the Tuakau community. It is considered that this will allow Tuakau Township to develop in a controlled and sustainable manner, without detrimental affects to surrounding rural amenity values. This is illustrated in the adjacent flow chart.

During the initial stages of analysis (ONFL analysis), findings of the relevant technical papers provided by WDC were reviewed, followed by site investigation to determine whether there were any ONFL within the Tuakau Study Area. Existing landscape and town character; as well as key transition zones; were identified on a macro level for the landscape surrounding Tuakau Township. Potential areas for urbanisation were then identified through a combination of landscape constraint and opportunity identification and analysis, landscape character analysis and landscape design; and planning principles. The resultant map was then compared and tested against the outcomes of the public consultation (Concept Plan) process.

The Tuakau landscape has been assessed through the following process:

- Review of relevant technical papers, background information and reports;
- Identification of Outstanding Natural Features and Landscapes, through field analysis;
- Identification and analysis of existing landscape character through field investigation and GIS landuse classification mapping;
- Identification of township growth boundaries guided by a rationalisation of the natural features and edges, identified during site visits;
- Identification of Community preferences;

- GIS identification and analysis of landscape constraints and opportunities;
- Application of landscape and urban design principles to determine opportunities and constraints;
- Identification of potential areas of growth for Tuakau based on the principles of landscape design (considered through landscape constraint and opportunity mapping).
- Identify national, regional and district planning provisions to inform landscape opportunities and constraints for growth within the study area.
- Review of existing Tuakau development concepts (based on community preference) and compare with the areas for potential urbanisation map;
- Identification of the potential effect development would have on the landscape character attributes identified;
- Recommendations of appropriate areas for development at an intensity that is appropriate to the character, scale and atmosphere of Tuakau;

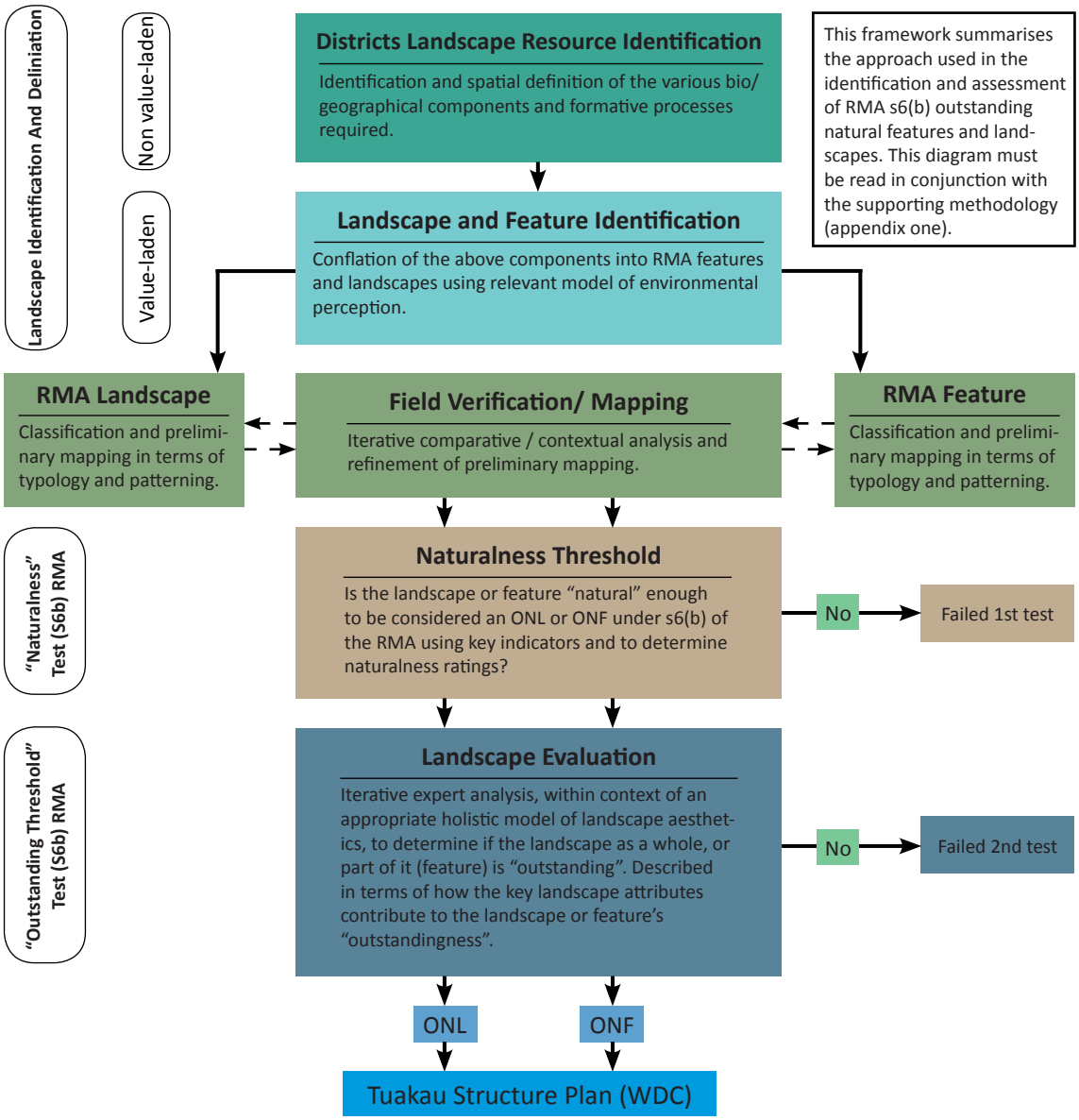
The following landscape analysis, management and design principles have been taken into consideration.

Principles for the Tuakau Landscape Assessment:

- Planned growth that takes into account the unique character, geophysical and infrastructure constraints;
- Protection of landscape values and character, in particular the rural/market gardening character of the township and the Tuakau environs;
- Protection of visual amenity values associated with the surrounding rural landscape character;
- Environmental sustainability of any expansion of the township - including the capabilities for utility and social infrastructure provision;
- Effects on water quality;
- Ensuring that any development maintains and enhances the individual character, community identity, cultural heritage and environmental integrity of the township;
- Ensuring that any development avoids the fragmentation of existing rural economic, social and cultural networks;
- The sequencing of all new growth should be co-ordinated with the provision or upgrading of new infrastructure.

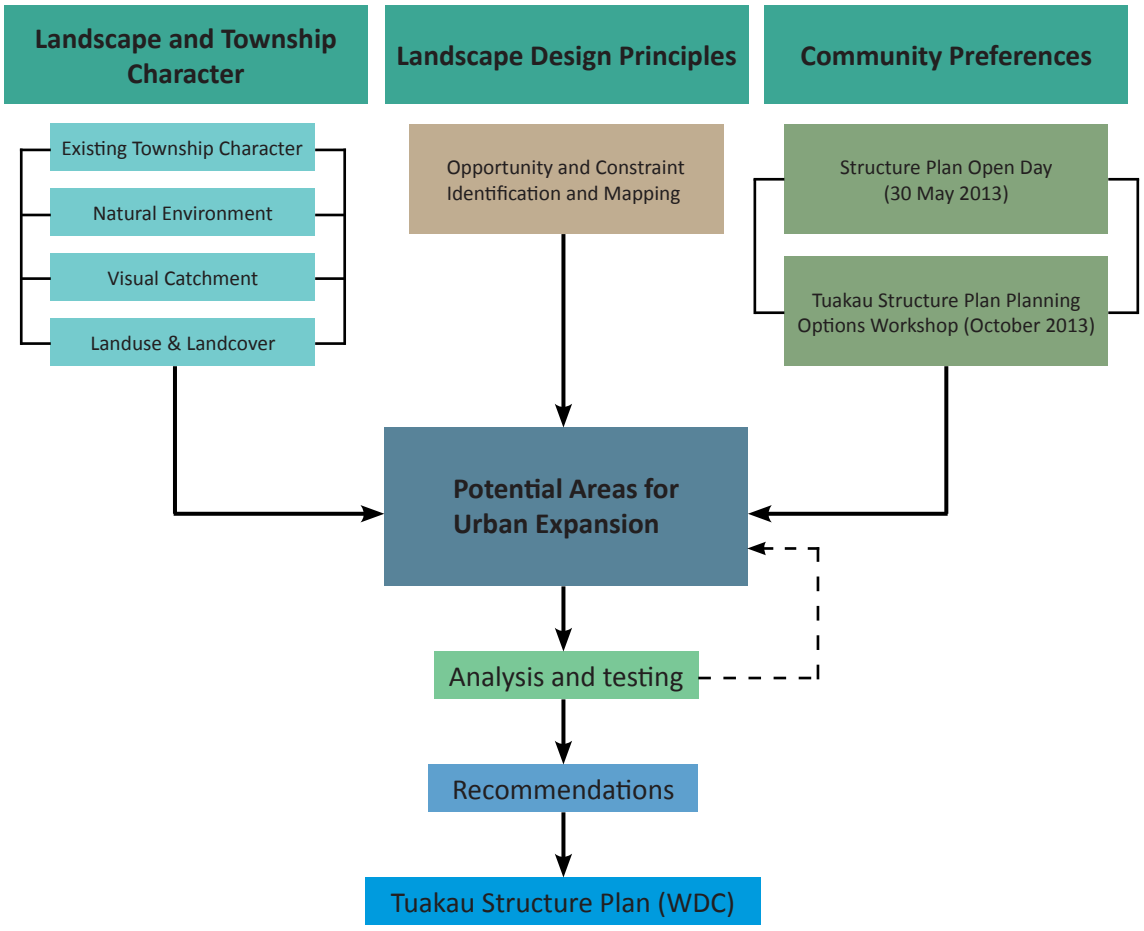
METHODOLOGY

ONFL Flow Chart



METHODOLOGY

Amenity Landscape Flow Chart



REVIEW OF TECHNICAL PAPERS

Landscape Assessment

An initial review of relevant technical papers has helped to inform landscape character and broader landscape patterns of Tuakau. Relevant reports included:

- Franklin District Growth Strategy Settlement Patterns, Spatial Structure and Development Character Report[1], as well as Open Space, Recreation and Public Facilities Report[2];
- Franklin Rural Plan Change Landscape Assessment Preliminary Findings[3];
- Community consultation[4].

The *Settlement Patterns, Spatial Structure and Development Character*; and *Open Space, Recreation and Public Facilities* reports identify that the soils of the central part of the District, from Bombay across to Waiuku and from Tuakau to Karaka, are the main source of Franklin's prosperity. However, the reports indicated that there are issues with the current mix and proximity of landuses to one another, which is affecting connectivity and economic viability. This includes inactive retail frontages and limited connections between recreational facilities and parks/ reserves.

In terms of landscape character, pockets of native bush within Tuakau were found to provide natural character values and comment was made that these areas had the potential to become significant features.

The Franklin Rural Plan Change Preliminary Landscape Assessment identifies Tuakau east and south as having high development potential, either due to low value ratings and moderate-high ability to accommodate development or due to higher sensitivities (yet an ability to integrate development within the existing landscape structure and integrating with landscape elements and patterns).

1 Chow Hill; (2006). *Franklin District Growth Strategy Settlement Patterns, Spatial Structure and Development Character Technical Paper.*
2 Chow Hill; (2006). *Open Space, Recreation and Public Facilities Paper.*
3 Brown. S; (2001). *Franklin Rural Plan Change Landscape Assessment Preliminary Findings.*
4 WDC; (2013). *Tuakau Structure Plan Planning Options Workshop.*

COMMUNITY PREFERENCES

Tuakau Structure Plan Study Area

In May 2013 feedback on the Preliminary Tuakau Structure Plan was received from the local community during an open day. A Tuakau Structure Plan Planning Option's Workshop was also carried out in October 2013. Community aspirations for the expansion of Tuakau Township have been summarised on the following pages.

The key community issues identified during this community consultation which relate to landscape include:

- A desire to highlight and protect natural features;
- A desire to extend town west, at the northern end of Geraghtys Road and Dromgools Road, north towards the Harrisville area and south towards the Waikato River;
- A desire to protect the highly productive soils of Tuakau and the surrounding area.

The community also want to highlight natural features surrounding the township. They perceived inappropriate development within these natural areas as a threat to existing landscape character. The Waikato River was indicated as highly valued landscape component and seen as an opportunity for tourism and/ or as a transport route.

Some members of the community are looking for a greater diversity of living areas, such as residential development adjacent to the Waikato River, however, other members cautioned against pushing residential development to the river as it is too far out from the existing commercial township location.

The community are interested in concentrating residential development north towards Harrisville and Dominion Road and developing residential buildings on flatter land. They are keen to see industrial development extended towards Whangarata Road, but are against having commercial development on both sides of the railway lines. The community have acknowledged that topography governs development zone densities and see a need for a mix of lot sizes with large lots in the north and north east which could also act as a buffer to the industrial development in the east.

Rural buffers were seen as essential to maintain the unique character of Tuakau Township and need to be firmly established between Tuakau and the surrounding townships of Pukekohe and Pokeno. The community wish to avoid residential growth near Alexander Redoubt reserve.

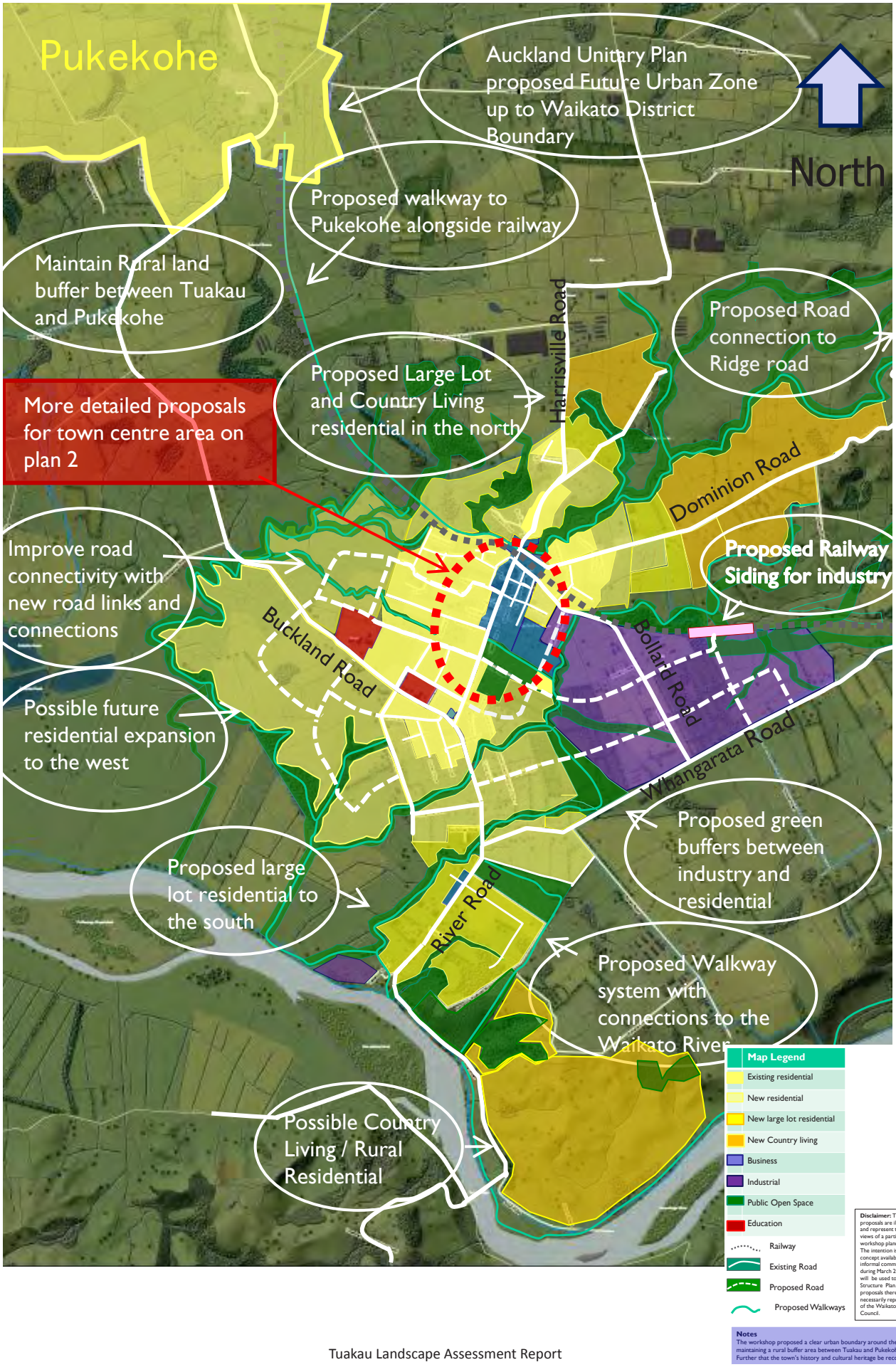
The adjacent map produced in March 2014 by WDC form part of the Tuakau Structure Plan and illustrates a Concept Plan for Wider Tuakau, based on community preferences, as a result of the community consultation undertaken. It proposes:

- A proposed walkway from Tuakau to Pukekohe alongside the railway;
- Maintaining a rural buffer between Tuakau and Pukekohe;
- Large lot and country living residential to the north of Tuakau;
- A road connection to Ridge Road;
- Green buffers between industrial and residential zones;
- A walkway system with connections to the Waikato River;
- Possible Country Living/ Rural Residential to the southeast of Tuakau main township, adjacent to the Waikato River;
- Large lot residential development to the south of Tuakau township;
- Future residential expansion to the west of the township.

The concept aims to improve road connectivity with new road links and connections.

These community preferences were compared with landscape design and planning principles section (page 38 of this report) and were found to be generally consistent with those principles. The community preferences were therefore taken into consideration during landscape sensitivity and landscape constraint mapping.

A comparison between the community preference concept plan and the recommendations of this report included on page 71.


Pukekohe
Auckland Unitary Plan proposed Future Urban Zone up to Waikato District Boundary
North
Proposed walkway to Pukekohe alongside railway
Maintain Rural land buffer between Tuakau and Pukekohe
Proposed Road connection to Ridge road
Harrisville Road
Proposed Large Lot and Country Living residential in the north
More detailed proposals for town centre area on plan 2
Dominion Road
Improve road connectivity with new road links and connections
Proposed Railway Siding for industry
Buckland Road
Bollard Road
Possible future residential expansion to the west
Whangarata Road
Proposed green buffers between industry and residential
Proposed large lot residential to the south
River Road
Proposed Walkway system with connections to the Waikato River
Possible Country Living / Rural Residential
Map Legend
Existing residential
New residential
New large lot residential
New Country living
Business
Industrial
Public Open Space
Education
Railway
Existing Road
Proposed Road
Proposed Walkways
Disclaimer: These concept proposals are illustrative only and represent the collective views of a participative workshop planning process. The intention is to make the concept available for wide informal community input during March 2014. Feedback will be used to inform a draft Structure Plan. These current proposals therefore do not necessarily represent the views of the Waikato District Council.
Notes
The workshop proposed a clear urban boundary around the town and maintaining a rural buffer area between Tuakau and Pukekohe
Further that the town's history and cultural heritage be recognised

TUAKAU ONFL ASSESSMENT

Outstanding Natural Landscapes and Features (ONFL)

A methodological approach consistent with the recent findings of the environment court[5] was utilised to ascertain whether the landscape contained any Outstanding Natural Features or Landscapes (refer to appendix one of this report for full ONFL methodological approach). This included an initial identification and spatial definition of the bio/geographical components and formative processes, classification and mapping in terms of typology and patterning, iterative comparative and contextual analysis, through site investigation and desktop analysis.

The first test: the "naturalness threshold" test was then applied to the landscape, using key indicators to determine naturalness ratings. The second test being the "landscape evaluation" test was then applied through iterative analysis, within the context of a holistic model of landscape aesthetics to determine of the landscape as a whole, or part of it (feature) was "outstanding".

The outcome of this analysis was that the majority of the landscape surrounding Tuakau township did not pass the first "naturalness threshold" test, as the predominantly pastoral, market garden or horticultural landscape was found to be too highly modified by human processes. Although no ONFL were identified within the Tuakau Study Area through this process, the identification, mapping and evaluation of the landscape within the Tuakau Study Area did identify subtle differences in landscape character across character thresholds and features and landscapes more sensitive to change. These subtle differences and their potential affects on landscape amenity values are discussed in the following Landscape Character section of this report.

Alexandra Redoubt Bush has been identified as an outstanding natural feature (schedule 5 of the Waikato District Plan). However, upon site investigation, although the area of bush passed the first "naturalness threshold" test, it failed the second "landscape evaluation" test. This was generally because the vegetated bluff was found to be less than outstanding when key perceptual criteria were considered. There is a lack of expression of formative processes. Although the bluff sits prominently above

5 High Country Rosehip Orchards v MacKenzie District Council (Decision No [2011 NZEnvC 387)

the Waikato River and surrounding flat river terraces, it is still reasonably small in magnitude, lacking an overwhelming presence. The vegetated bluff is only clearly visible from the river flats and the Onewhero hill country on the opposite side of the river, and although it forms a local historic landmark (due to associations with the Waikato Land Wars), the physical attributes associated with the bush-covered bluff don't make it stand out in its own right as a widely known landscape feature or landmark. Underlying geological processes are not clearly legible. The spatial arrangement and relationship is very simple, with indigenous vegetation covering the steep-sided bluff. Although there is a dominance of natural processes, the indigenous bush appears to be modified and regenerating after stock damage and contains walking tracks. The combination of these landscape perception factors create a natural feature, but not an outstanding natural feature.

Although the Waikato River is located outside of the Tuakau Study Area, development inside the study area could affect amenity values derived from the natural character of the river. With regard to the Operative Wakato District Plan (OWDP), the Waikato River has been identified as ONFL, protected by the provisions of the Wetland Conservation Zone. The Waikato Regional Policy Statement (WRPS) is currently under appeal. The entire length of the river was previously identified and mapped as an Outstanding Natural Feature in the draft version of the WRPS; but was later removed and does not appear in the Decisions version of the WRPS.

If the Waikato River was assessed on a section by section basis it is considered that the likelihood of it being outstanding is low. However, in its entirety; the river could possibly be identified as an outstanding natural feature (ONF), due to its impressive length and connection through a wide range of landscapes from Taupo to Port Waikato. Determining whether the entire Waikato River is an ONF is outside the scope of this study.

For the basis of this landscape assessment; the Waikato River and its margins have been assessed as a "Sensitive Landscape Area", which is unsuitable for development.

LANDSCAPE CHARACTER

Wider Tuakau Landscape Character

Landscape character is a function of the landscape's visual expression. This includes elements that contribute to its appearance and the cultural modifications which have occurred upon it.

The landscape and visual quality of the site is a function of a series of factors including intactness of visual and physical elements such as topography and vegetation cover, the degree of modification that has occurred and surrounding landscape elements and attributes. Further contributing factors include juxtaposition and coherence between landscape elements within the subject site and those of the surrounding area, as well as human attributes or values assigned to an area.

The relationship between the major geophysical features contained within the broader landscape and the human modifications that have occurred upon them are important factors to consider when assessing how the proposed development will influence surrounding landscape character and the amenity derived from that character.

Tuakau township is located within close proximity to the northern end of the Waikato River, as it approaches Port Waikato. It is also located close to State Highway One (within 10km) and is dissected by the northern extent of the North Island Main Trunk Railway. Tuakau sits approximately 60km southwest of Auckland, 10km southeast of Pukekohe and 9km west of Pokeno.

Tuakau township is located within the wider Auckland volcanic field[6]. The underlying geology is comprised of gently rolling basaltic fields, volcanic cones and explosion craters. Tuakau lies within a local depression enclosed by a tuff-ring to the east, north, far west, and far south (opposite side of the Waikato River). This steep tuff-ring hill country encloses the study area in a distincitve circular formation.

The Waikato River defines the edge of Tuakau Township to the south. A steep bluff (on top of which is the Alexandra Redoubt) and steep hill country clad in indigenous vegetation, protrudes prominently above the Waikato River. The bluff is exaggerated by the relatively flat-gently rolling terrain to the north, the low-lying river terraces and Waikato River to the south, as well as hill country of a lower elevation; directly to the southeast.

6 Edbrook; S. W; (2005). *Geology of the Waikato Area.*

The relatively flat river terracing adjacent to the Waikato River is influenced by the fluvial deposition associated with the river. While some of the larger old river channels are evident in the wider surrounding landscape, many of the smaller and more subtle landforms and features associated with overland flow patterns have either been channelized or lost to productive land management practices such as agriculture, market gardening and horticulture. Spurs and ridges within Tuakau are clearly legible due to pastoral landcover across much of the study area.

Much of the Wetlands along the banks of the Waikato River have been drained and converted to pastoral farmland (indicated by the presence of granular orthic and gley orthic soils, which a depositional rather than volcanic in origin, deposited through fluvial erosion). However, remnant stands of Kahikatea and other indigenous vegetation are scattered in clusters along the river banks.

Favourable topography and climate means that the land within the Tuakau Study Area is well suited to a wide range of productive uses including pastoral grazing, horticulture, forestry, poultry farming and market gardening. This has influenced the landscape characteristics of the land surrounding the Tuakau Township, which can be described as a high-intensity productive landscape.

Rural land use surrounding the site influences the character and visual amenity of the area. Pastoral grazing market gardening and horticulture are the predominant land uses and impart the wider landscape with a largely open spatial character. A degree of compartmentalisation is provided by Hedgerows, (e.g. Hawthorne) and exotic shelter planting, (e.g. Poplar, and Willow) on property and paddock boundaries, which enclose views to the broader landscape from some locations. It is noted that a number of the shelter trees in the surrounding landscape are deciduous. As such, during the winter months, the landscape within the Tuakau Study Area has a more open character than when the trees are in leaf.

A juxtaposition can be seen within the landscape between the natural form of the of water bodies (Waikato River) and remnant bush patches and the geometric patterns associated with the subdivision and compartmentalisation of the rural landscape and urban environment.

The relationship between the major geographical features contained within this landscape and the human modifications that have occurred upon them are important factors to consider when assessing how the proposed development will influence existing amenity values and the natural character of the adjacent rural environment and surrounding outstanding natural landscape.

The key landscape features that influence perceptions of overall character of the Tuakau Study Area include:

a. The Waikato River and its associated river terraces, islands and wetlands;
b. The tributaries of the Waikato River and associated gully systems which dissect the Tuakau study area;
c. The relatively gentle undulation of the underlying volcanic geology, compartmentalised by rural landuse (agricultural, horticultural, market gardening and poultry farms) and enclosed by the surrounding volcanic tuff hill country.

These features are also influenced by land use, land management and development patterns including:

a. North Island Main Trunk railway Line, which dissects the township;
b. SH1, to the east of Tuakau;
c. Mixed high intensity productive land use including pastoral grazing, horticultural blocks, mixed cropping and market gardening (open and shade housing) with associated rural buildings, processing and packing sheds;
d. Rural based light industrial activities and services including light engineering, manufacturing, processing and stockyards (Tuakau Town centre);
e. Isolated large scale manufacturing and processing including grain processing and timber processing (along Bollard Road);
f. Rural settlements at key nodes along main roads, including Whangarata, Brown, Buckland, Baranaby and Dominion Roads;
g. Scattered dwellings throughout the rural landscape, predominantly adjacent to the roads;
h. Town reserves, including Tuakau Domain and Alexandra Redoubt Reserve;
j. Existing transmission lines;
l. Schools and commercial buildings within the surrounding area.

A http://www.tuakauhotel.co.nz/history
B http://www.nzhistory.net.nz/media/photo/alexandra-redoubt-tuakau
C http://mp.natlib.govt.nz/detail/?id=44968&l=en

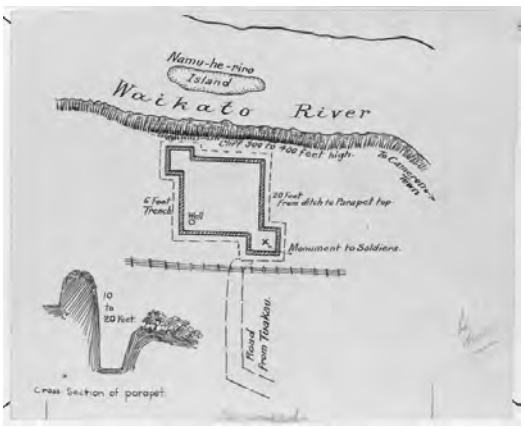
Alexandra Redoubt Road, looking north

Smeed Road, looking west

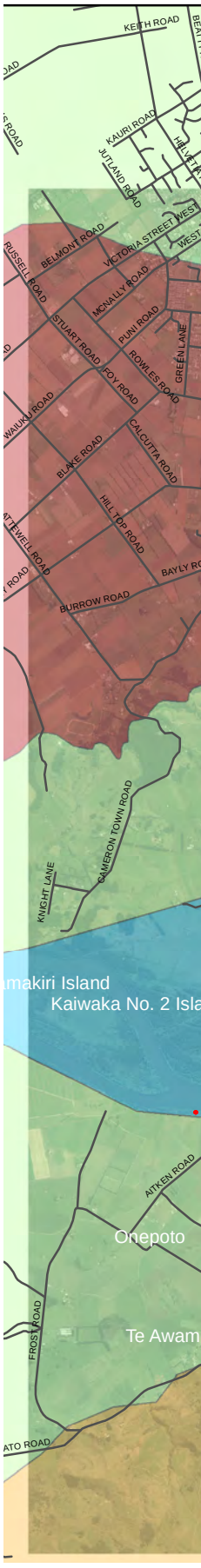
Smeed Road, looking north

Railway and Tuakua Township[A]

Alexandra Redoubt, Tuakua, by Henry James (1898)[B]



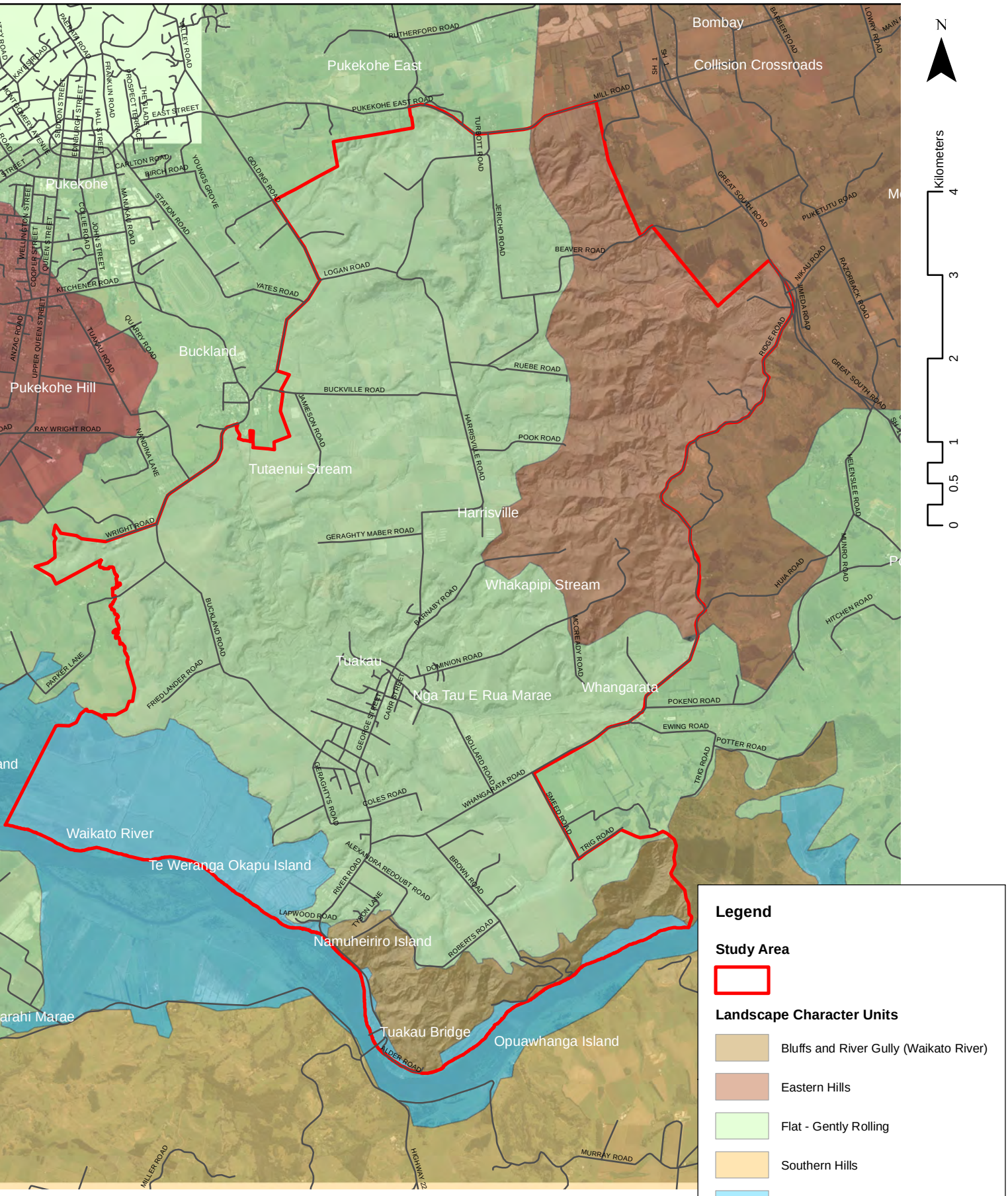
Map of Alexandra Redoubt, Tuakua (1920s)[C]



The landscape has been modified by human influences, creating patterns and altering it's natural character, through different types of land use. Pastoral farming, poultry farming, market gardening, horticulture, forestry and rock quarrying make up the rural character of Tuakau. This rural landscape is interspersed with rural subdivision, urban development and roading networks. The convergence of these differing land uses significantly influences the character of the surrounding area. Although a mix of land uses is relatively common in the peri-urban fringe of townships and cities across the Waikato district, the high intensity and diversity of land uses (especially market gardening and poultry farming) is relatively uncommon in the Waikato District. This reinforces the character of Tuakau as a highly diverse rural town.

Due to productive requirements, subdivision of larger blocks of land surrounding the Tuakau Township has been driven by production economics rather than a demand for urbanization. As a result; residential, commercial/ industrial, market gardening and horticultural activities are found in relatively close proximity to one another. As such, there are noticeable juxtapositions caused by the contrasting characteristics of neighbouring properties; open rural land alongside commercial and residential properties with both rural and commercial outlooks.

This is further emphasized by the compartmentalization of the landscape through the establishment of horticultural shelter belts around production blocks and property boundaries.



Legend

Study Area

Landscape Character Units

- Bluffs and River Gully (Waikato River)
- Eastern Hills
- Flat - Gently Rolling
- Southern Hills
- Waikato River Terrace
- Western Hills

LANDSCAPE CHARACTER

Tuakau Township Landscape Character

Tuakau Township is divided north-south by the North Island Main trunk Railway. Perpendicular to the railway runs George Street to the south and Harrisville Road, to the north. The existing township extends approximately 3km north-south and 1.5km east-west. Higher-density residential development has occurred mainly to the west of George Street, north of Buckland Road as well as adjacent to Harrisville and Dominion Roads as far north as Percy Graham Drive. Further to the south, along George Street, from Coles Road, to the south, lots generally increase in size. Lifestyle blocks are generally located to the southeast towards Whangarata Road. The Memorial Hall and Stockyard demarcate the end of the retail/ commercial zone within Tuakau Township.

The character of Tuakau Township and the surrounding landscape is heavily influenced by historic development patterns.

Tuakau was founded in 1840. It was originally a flax milling centre with a convenient landing place on the nearby Waikato River. The first settlement at Tuakau was on the banks of the Waikato River, about a mile and a half from the railway station. Since the opening of the railway line during the mid 1800s, the business portion of Tuakau gravitated towards it, influencing a railway-town character; rather than a river-side town character.

The main retail and commercial centre of Tuakau is situated just south of the railway along George Street and Liverpool Street. The most prominent of these buildings is the Tuakau Hotel, a two-storied historic villa, occupying the corner of Liverpool and George Streets. The majority of retail buildings along George Street are one-storied with a verandah, with the occasional two-storied retail shop with residence above. The Tuakau Town Hall (War Memorial Hall), built in 1924, located along George Street is a registered heritage building (Item A.45). the salesyards, located along George Street have also helped influence the rural character of the Tuakau Township, with the first regular auction sales held in 1899.

Reserves and sports grounds are mainly clustered along George Street, within close proximity to the railway station. The Tuakau Domain and Alexandra Redoubt Reserve are the exceptions, being located further south, adjacent to River Road and the Waikato River.

During the Waikato War (1863-64), a small fort armed with a heavy gun was built on a bluff overlooking the landing along the Waikato River, the earthworks being called Alexandra Redoubt. The redoubt is a tourist destination which provides recreational opportunities and is an important historic landmark which holds historic heritage status (Item D.2).

The Tuakau Creamery was one of the earliest creameries established, and was erected in 1888 adjacent ot the Waikato River. This historic development has influenced the location of current industrial/ commercial landuse to the west of River Road on a raised terrace above of the Waikato River.

The cultivation of the landscape has a long history in Tuakau, with reports of fertile crops, a flour mill (erected in 1853) and groves of peach trees between 1840 and 1860, when the Tuakau Block of 10,000 acres was maintained by local Maori. It wasn't until 1900 when the bridge was built across the Waikato River at Tuakau that the District as a whole began to flourish. Farmers in Tuakau traditionally had dairy farms and also had part of the farm under cultivation, where crops of wheat and oats were grown and potatoes and onions were produced. This tradition continues today, with strong patterns of market gardening generally located to the southwest and southeast of the centre of Tuakau Township.

Apart from very steep and inaccessible land, by the time of the First World War almost all accessible land in the District was in pasture. Therefore only sparse pockets of indigenous vegetation remain within the Tuakau Study Area. The largest of these exist along the southeastern boundary of the study area, within the Alexandra Redoubt Reserve, within the steep hill country to the northeast of Tuakau Township and the gully systems to the north of Tuakau Township. The extent of indigenous vegetation would have been more wide-spread along the banks of the Waikato River had the settlers of Tuakau not introduced willow, which has grown out of control along the banks of the Waikato River.

Tuakau Central
The main centre of Tuakau is located on relatively flat land and centred around George Street. It is generally bounded by the main trunk railway to the north and the salesyards and public library to the south (where the footpath paving also ends). A small portion of the towns business zone is also located further north of the railway line, to the corner of Oak and Harrisville Roads, west out along Ryders Road and east along the base of Dominion Road; before it begins to ascend into the eastern hill county. A mix of commercial businesses and public facilities line George Street, providing the main service zone for the wider Tuakau area.

This business zone currently extends approximately one block to the west of George Street (to West Street and Henderson Avenue), and three blocks to the east of George Street (to Tuakau Saleyards Road). The wide, paved footpaths, street trees and decorative lamp-posts along the main commercial stretch of Tuakau Township provide visual amenity. The small-scale retail buildings (1-2 storied), with near-continuous verandas along George Street combine to enhance the small village feel.

A range of landuses, surround the main commercial zone of Tuakau Township, including rural-residential development just north of the railway lines (adjacent to commercial and residential zones), residential development to the east, west and southwest with reserve land to the south, abutting horticultural landscape to the southeast.

North
The northern boundary of urban development in Tuakau is located, just north of Percy Graham Drive; along Harrisville Road. The subtle shift in character from rural to rural-residential at this point along Harrisville Road creates a natural threshold which is strengthened by the visual connection with Tuakau Township ceasing further north, beyond this natural threshold. Built development north of the commercial town centre is concentrated along Harrisville Road, where residential lots abut rural and rural-residential landscape to the east and west. The landform rises relatively quickly

George Street, looking north

George Street, looking south

George Street, looking north

Harrisville Road, looking north (transition between rural and urban)

Harrisville Road, looking northwest

along Harrisville Road towards the north. To the north of the urban fringe, the landscape is characterised by a varied mix of landuses which create marked juxtopositions, as residential development abuts market gardens, horticultural landuse sits adjacent to agricultural landuse, commercial-scale glass houses (along Geraghty Maber Road and Harrisville Road), interspersed with screen hedging, patches of indigenous vegetation, lifestyle blocks, equestrian landuse and poultry farms (concentrated around Harrisville Village). Relatively steep sided gully systems dissect the landscape in generally an east-west direction, guiding residential development into clusters on gentler slopes.

Northwest

The landscape to the northwest of Tuakau's main commercial centre is characterised by rural landuse, including a motorcross track (at the end of Geraghty Maber Road), horticulture (completely enclosed by shelterbelt planting), market gardening and agriculture, interspersed with scattered rural farm houses and associated buildings. The land located directly to the northwest of the railway lines consists of industrial landuse adjacent to a cluster of residential development (along Ryders Road) and newly developed residential development along Johnson Street. Extensive gully systems exist to the northwest of this recent residential development. These gully systems act as a natural barriers to urban expansion to the northwest of Tuakau.

East

Landscape to the East of Tuakau Township is characterised by relatively flat topography within close proximity to the township, which rises towards the east. Whangarata and Coles Roads extends from George Street towards the east. These areas are characterised by a mix of residential, large lot residential, extensive market gardening and horticultural landuse. Further out towards the east, beyond Smeed Road the landscape is characterised by pockets of market gardening and horticulture, giving way to predominant agricultural landuse. The first noticeable sharp rise in landform out of Tuakau Township along Whangarata Road occurs at the intersection with Brown Road. This forms an important natural boundary to development, as

Harrisville Road, looking southeast

Geraghty Maber Road, looking north

Geraghty Maber Road, looking southeast

Whangarata Road, looking west

Bollard Road, looking southeast

land beyond this point not only visually disconnects with Tuakau Township, but it also incurs a sudden character change (from residential and lifestyle blocks to market gardening and horticultural landuse).

Bollard Road extends perpendicular to Whangarata Road in a northerly direction. Horticultural and market gardening landuse at the southern end abruptly gives way to industrial landuse at the northern end of Bollard Road. Industrial development includes timber, grain and fiberglass processes plants, to the east and west of the road respectively. Open pastoral landscape sits to the north of the grain and fibreglass processing plants, while the timber yard is bound by the railway line and a large pocket of exotic forest to the north.

Northeast

Dominion Road follows a ridgeline which extends form the railway line within Tuakau Township towards the hill country within the northeast, traversing a range of landuses. This includes residential development close to the railway, giving way to large lot residential, community facilities (christian community centre), equestrian and rural landuse further out from the township. Steep-sided gully systems run parallell both north and south of the Dominion Road ridgeline. Quarries occupy even steeper more elevated terrain; further northeast along Ridge Road (which runs perpendicular to Dominion Road).

Due to the continuous rise into the hill country towards the east; the lower portion of Dominion Road (up to the intersection with McCready Road) visually connects with the existing residential development of Tuakau. Conversely, Barnaby Road drops into a valley as it heads northeast, visually disconnecting it from Tuakau township.

South

Flat landform within Tuakau Township gradually rises to the south (east of River Road), along Alexandra Redoubt Road, towards the Waikato River. Roberts Road straddles the ridgeline of the hill country, containing steep

Bollard Road, looking northwest

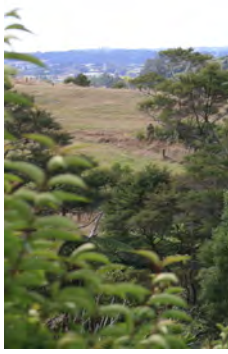
Dominion Road, looking west

Dominion Road, looking northwest

Dominion Road, looking north

Roberts Road, looking south

terrain to the south of the road, sloping sharply downwards towards the Waikato River. The steeper terrain restricts market gardening and horticultural landuses, thus the landscape is characterised by agricultural farmland, lifestyle blocks and bush reserve associated with the Alexandra Redoubt. The Alexandra Redoubt and Tuakau cemetary are positioned at the end of a steep-sided bluff above the Waikato River.



The steep slopes of Alexandra Redoubt provide a natural threshold, with development on these slopes noticeable within the open pastoral character of the surrounding landscape.

The low-lying terraces of the Waikato River are currently utilised as recreation reserve. An aggregate extraction and processing zone exists at the southeastern base of the Alexandra Redoubt Reserve. The Waikato River and river margins have been zoned Wetland Conservation and remnant patches of indigenous vegetation are scattered along the riverbanks.

Southeast
To the southeast of Tuakau Township, the landscape is characterised by a mix of agricultural farmland and associated shelterbelts, market gardening and a cluster of poultry farms. The elevated landform facilitates views across Tuakau Township from locations along Brown and Smeed Roads.

West
Gentler terrain characterises the landscape to the west of Tuakau Township. Residential development is abutted by market gardens along Geraghty's Road, Church Street and Elizabeth Street. The main road heading west out of Tuakau (Buckland Road) encompasses residential, market gardens, Tuakau College and agricultural farmland landuses.

A visual connection exists between Tuakau township and the edge of the

Roberts Road, looking southwest

Onewhero - Tuakau Bridge Road, looking east

Onewhero - Tuakau Bridge Road, looking east

Smeed Road, looking west

market gardens and Tuakau College along Buckland Road. Out beyond this point, Buckland Road dips down into a gully and the gently rolling agricultural landscape becomes visually disconnected from the township. The subtle character change and visual discontinuity at this point along Buckland Road creates a natural urbanisation threshold.

Southwest

The low-lying to gently rolling landscape southwest of Tuakau township, adjacent to Waikato River is characterised by a combination of market gardens, agricultural landscape, oxidation ponds and stopbanks and is dissected by Dromgools stream and gully system, which defines the edge of the existing market gardens.

Friedlander Road, looking southeast

Buckland Road, looking northeast

Geraghtys Road, looking southwest

Geraghtys Road, looking west

LANDSCAPE DESIGN AND PLANNING PRINCIPLES

Informing Tuakau's Growth Options

This section identifies the landscape design and planning principles followed in the identification of potential areas for development in Tuakau. These principles (along with landscape character analysis) were considered when identifying and mapping landscape sensitivity to change and landscape constraints:

- Avoid developing within visually prominent locations;
- Avoid developing within steep/weak terrain which will require excessive earthworks;
- Avoid developing sensitive landscapes and features, such as wetlands and along stream and riverbanks;
- Maximise development on land with higher amenity value (maximise solar gain and most attractive aspect (north facing));
- Avoid loss/change of character;
- Avoid the removal of indigenous vegetation;
- Aim to integrate ecological corridors and stands of vegetation within Tuakau township to improve habitat connectivity and amenity values associated with natural character;
- Provide for 'green belts'/ rural buffers between landuses within Tuakau and between Tuakau and Pukekohe and Tuakau and Pokeno;
- Plan for future infill;
- Allow for connectivity with existing town amenities;
- Avoid rural-sprawl: aim for defined settlements with green buffers;
- Avoid ribbon development along main access routes;
- Avoid urbanisation of high quality productive land where possible;
- Prevent the ad-hoc fragmentation of farmland;
- Avoid development within close proximity to historic landscapes (heritage);
- Avoid development within reserves or other protected land.

The adjacent diagram provides an example of a typical urbanisation transition from rural to urban development with adequate provision of open space and amenity planting. Except for locations where residential development abutts market gardens (characteristic of existing Tuakau development), this type of transition will generally support the retention of existing landscape characteristics[D].

D Rural-city density diagram, from Smartcode. a Comprehensive Form-Based Planning Ordinance. Spring 2005.

GROWTH CONTAINMENT

Informing Tuakau's Growth Options

Any potential urban expansion within Tuakau should seek to maintain the distinctive character of the surrounding landscape and the key attributes that give rise to Tuakau's genius loci and landscape amenity. In order to achieve this, future growth needs to be limited within a specified boundary. Set out below are a number of reasons why future growth within Tuakau needs to be contained.

The first priority when planning for future growth should be to direct growth toward the existing township. This is the area within the rural landscape that has existing infrastructure and public facilities that will most efficiently accommodate new growth.

Directing future growth towards the existing township not only helps to retain a distinct township area that represents the heart of the community, but also prevents rural sprawl, which would take away from the intimate, friendly, village atmosphere which Tuakau, possesses.

Rural sprawl can take two forms. The first is low-density residential development that is scattered outside of towns. The other type of rural sprawl is strip development along arterial routes leading into and out of towns. Both of these forms of rural sprawl would take away from the existing character, scale and small township atmosphere of Tuakau, as well as placing pressure on existing infrastructure. The impacts of rural sprawl must be examined in terms of the cumulative impact over time. Initially, scattered development does not seem to place a large burden on the environment or local services, but over time, such a mosaic of houses can incur infrastructural issues, and the loss of a clearly defined town area, through the lack of visual distinction between the township and surrounding rural areas.

Growth should therefore occur in a way that, amongst other things, protects the landscape, and preserves or improves a community's quality of life.

The critical ideas embedded in this concept are the importance of balancing development with landscape construction in order to manage growth, rather than prevent it. The community desires a growth pattern that moves away from sprawl, towards that that preserves, maintains, and creates a sense of place. This provides a better balance between development and the protection of natural resources and open space.

During the character analysis and mapping process; potential areas for urbanisation were identified. Growth containment principles were applied by identifying “natural thresholds” (as identified in the local landscape character section of this report) within the Tuakau Study Area, which aim to maintain the key factors which make up the existing landscape character of Tuakau. These areas will allow for future growth, while limiting the development to within a defined physical boundary, in order to retain an identifiable centre and destination point for the Tuakau community. By keeping the township contained within a boundary, the unique character of the township can be conserved and enhanced through co-ordinated and well-designed development.

Township boundaries are important in determining the limits of township growth and create a clear definition between township and rural areas. An edge should be established around a township to demarcate areas suitable for development, from areas designated for rural-residential development. These natural thresholds will also help to ensure that development outside the township does not affect the township’s landscape character or amenity. The boundary could promote a distinct and attractive township, which stands out from surrounding low density rural-residential development.

BOUNDARY GROWTH ASSESSMENT

Informing Tuakau's Growth Options

There are a number of different approaches available to use for assessing options for township growth boundaries. The approach taken for the Tuakau Township Growth Strategy was to analyse potential thresholds against the four boundary types listed below, each weighted according to their physical presence within the landscape.

Geo-Physical Boundaries
Geo-physical boundaries are natural boundaries within the landscape. These boundaries can be thought of as edges, with no inherent meaning. The boundaries are created by natural features, visible to everyone in the landscape, and in many instances may physically prevent development beyond them. For example:

- Ridge lines
- Valley floors
- Streams/ Waikato River
- Vegetation patterns

A significant and highly visible natural feature (e.g. a steep cliff river bank) forms a clearly defined physical boundary that is more accepted as a boundary, than a line drawn on paper with no physical manifestation, because it is a logical constraint that people can understand. A natural feature that is visually less defined (e.g. a rolling hill) provides less of an actual physical boundary, but is still a visually obvious boundary that people can identify with.

Geo-physical boundaries are also used to define areas in which additional meaning and value are added. For example:

- Flood Hazard Zones
- Visual Catchment
- Areas of Fertile Soils

Geo-physical boundaries should be given the heaviest weighting in terms of justifying where the Tuakau township future development boundary should be set. This is because these boundaries are manifest to everyone and require no prior knowledge to understand why they have been set where they are.

Socio-Physical Boundaries
Socio-physical boundaries are created by the perception that some man-made physical elements form manifest boundaries or edges. While often perceived to be limiting factors or constraints, this type of boundary is more related to the perception of its use, rather than a natural boundary. Examples of such boundaries are:

- Roads
- Green belts/ rural buffer
- Parks and reserves

Socio-physical boundaries are not as clearly defined as geo-physical boundaries because they are only obvious to varying extents and depend on peoples individual perceptions. These boundaries should not weighted as heavily as geo-physical boundaries in terms of justifying where the Tuakau township future development boundary should be set, as they are not clearly manifest to everyone. However, a socio-physical boundary would be given more weighting than a social construct boundary because of its association with physical and visual element.

Social Construct Boundaries
Social construct boundaries are not visible in the landscape. Most people are unaware of where these boundaries exist, as they are often only represented by lines drawn on paper, and can be difficult to detect.
Social construct boundaries include:

Property boundaries;

- Planning zones boundaries/overlays/policy areas;
- Study area boundaries;
- Political boundaries

Social construct boundaries should be given the lightest weighting in terms of justifying where the Tuakau future development boundary should be set because only those people in-the-know would understand why the boundary has been set. Setting boundaries for development based on social construct boundaries leaves open the possibility that boundaries are set based purely on peoples' perceptions of how big the town should be.

It is recommended that social construct boundaries be aligned with geophysical and/ or sociophysical boundaries.

CONSTRAINT IDENTIFICATION & ANALYSIS

Wider Tuakau landscape character

Following the identification of the character and resources within the Study Area, GIS analysis, site investigation, and desktop review were undertaken to determine how the township could develop, while maintaining its rural/market gardening/small town atmosphere and key attributes.

Opportunity and constraint mapping has been used to help determine potential areas for urbanisation within the Tuakau Study Area.

This includes:

- Landcover and landuse
- Visibility
- Distance from the town centre
- Topographic Position (Ridge/midslope/gully)
- Slope
- Solar gain
- Elevation
- Identified sensitive landscape areas (including the Waikato River and its tributaries)

Landscape constraint mapping has been included in the following section.

Waikato River and Tributaries

Management of the Waikato River and its tributaries anticipates:

- Protection of existing landscape features associated with riparian margins and overland flow paths.
- Provision of future ecological corridors.

Constraint Identification Methodology

A two tiered weighted analysis approach has been used. The first tier examines the effect

of development on wider landscape character by examining the wider susceptibility of key landscape attributes to character change arising from development.

The second tier of analysis examines those factors or attributes that are likely to enhance or decrease general amenity values, and/ or effect landscape character and amenity at the 'neighbourhood' level.

The first tier is weighted more heavily than the second tier because changes to these landscape attributes (through future development) is likely to affect landscape character and associated amenity values to a higher degree than attributes of the second tier.

Weighting
For consistency, each factor has been weighted from 1 (least suitable for development) to 9 (most suitable for development).

Assigning an appropriate weighting to the range of landscape attributes within each factor has been considered and determined through the analysis of technical papers, community preferences, landscape preference studies (refer to appendix three), ONFL and landscape character assessment, relevant planning matters and landscape design (current best practice).

This is reflected in the relevant planning provisions, which include particular protection of:

- Protection of ONFL 6(b) of the RMA
- Landscape character section 6(b) of the RMA
- Amenity section 7(c) of the RMA
- Natural features

The Waikato River and its margins have been identified as an ONF under the Operative Waikato District Plan (OWDP), protected through a Wetland Conservation Zone.

Alexandra Redoubt bush has also been identified as an ONF under the OWDP, under reserve status and on private land protected under council covenant.

Natural features of particular concern for protection under the OWDP include:

- Wetlands
- Indigenous bush
- Significant and prominent landscape features

- Visual qualities, avoid visual compromise of natural features/ natural character (24.6.2)
- Ecological, landscape or landform values, or natural character of margins of lakes and river (28.7);
- Ensure development does not visually compromise major ridgeline or natural character;
- Setback development from streams, rivers, lakes or wetlands and their margins, to preserve natural character.
- Intensity of activity compatible with amenity values and rural character of surrounding area.

Each of these OWDP concerns relating to landscape have been taken into consideration through the opportunity and constraint mapping of suitable development areas within this report. ONFL, Natural features, wetlands, indigenous bush and ridgelines have been considered as unsuitable fro development through landscape character and constraint mapping. The mapping also aims to protect existing landscape character and amenity values.

Refer to appendix two for relevant sections of the RMA, PWRPS and OWDP.

TIER ONE: LANDSCAPE SENSITIVITY

Informing Tuakau's Growth Options

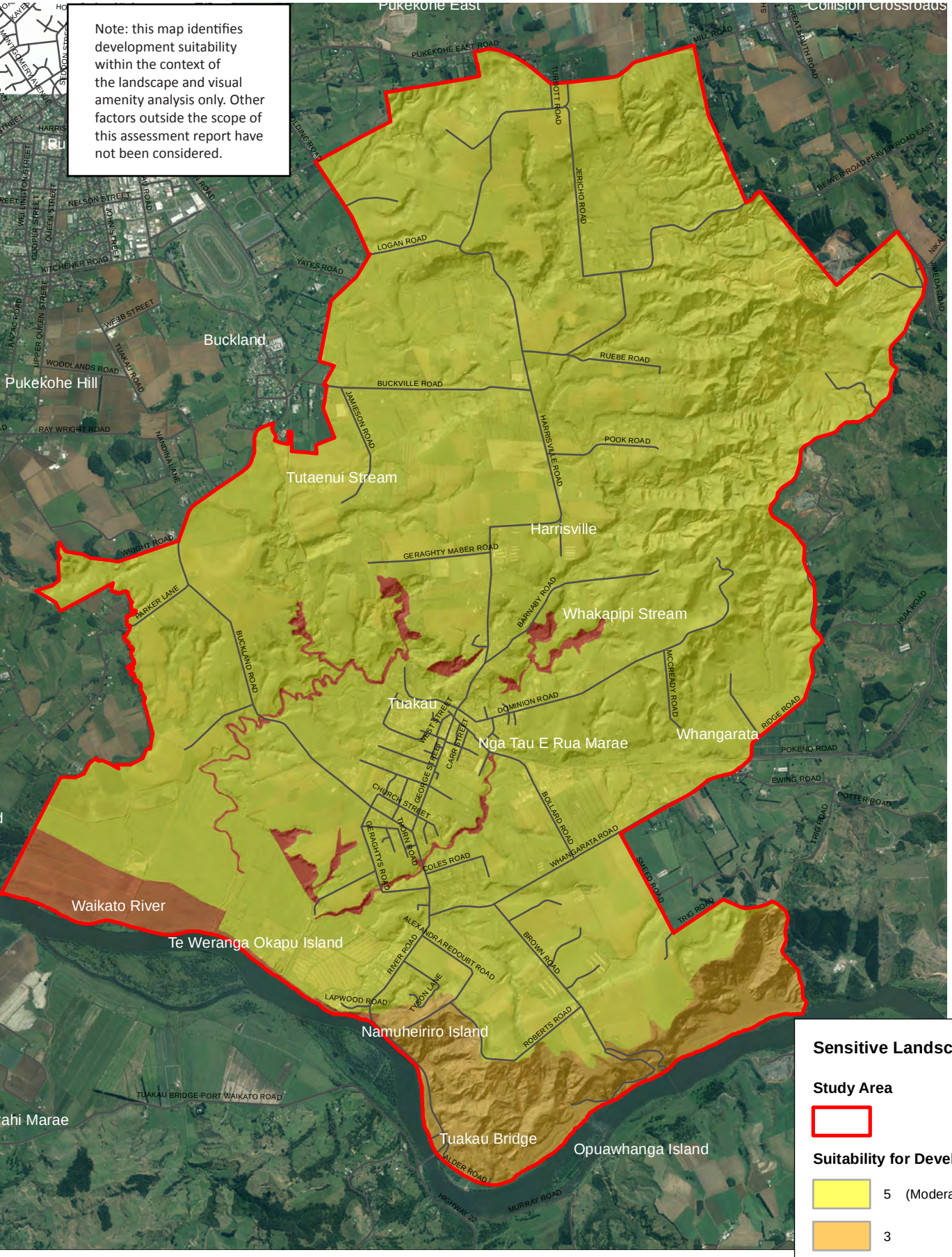
Landscape areas sensitive to change were identified during the landscape character analysis process and sorted into 9 categories (1 being least suitable for development and 9 being most suitable). These included:

Gully systems (sensitive due to rarity within the Tuakau Study Area and development being more likely to alter existing natural character values, due to the small size of these areas). Gully systems were therefore attributed to category 1 (least suitable for development).

The Waikato River and adjacent river terraces, (sensitive due to a minimal presence of existing development along the wetlands and river terraces immediately adjacent to the Tuakau section of the river; and the high natural character associated with the pockets of indigenous wetland vegetation and the river itself). However, the large size of the Waikato River and presence of town development in other locations along its banks in gives it a higher capacity to absorb change than the small gully systems. The Waikato River terraces were therefore attributed a 2 (less suitable for development). The steep hill country (Alexandra Redoubt bluff) was attributed a 3, due to the existing degree of modification in this area (pastoral farmland with farm dwellings and patches of remnant bush).

So as not to skew the analysis, the remainder of the Tuakau study area not found to be sensitive to change has been attributed a neutral rating (5).

It should be noted that these sensitive landscape areas are more susceptible to change, and that a small change within these areas may have a greater effect on landscape character and associated amenity values than the exact same change in another location within the study area not identified as a sensitive landscape area.



TIER ONE: LANDSCAPE SENSITIVITY

Informing Tuakau's Growth Options

TIER ONE: LANDCOVER AND LANDUSE

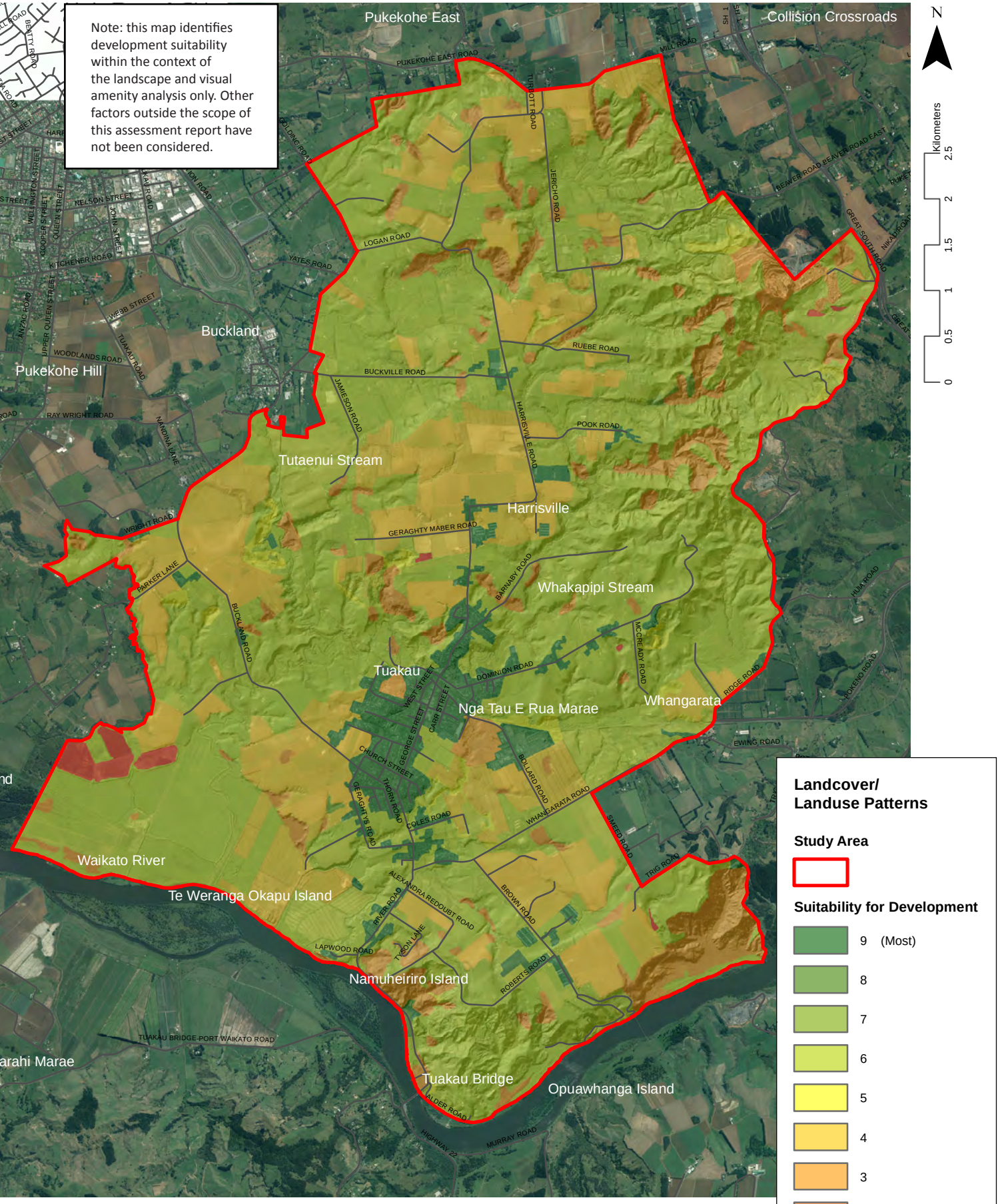
Constraint Identification and Analysis

Landcover data was analysed and sorted into 9 categories (1 being least suitable for development and 9 being most suitable).

It was considered that water bodies, including the Waikato River and surrounding lakes (category 1) as well as areas of high natural value, such as wetlands (2) and indigenous vegetation (3) were least suitable for development. Conversely, land within existing built-up areas, such as Tuakau Township (9) and little natural or productive value: low producing grassland (8) and mixed exotic gorse and broom (7) were considered most suitable for development. High producing grassland (6), exotic grassland (5) and cropland, including vineyards and orchards (4) were considered to sit in between most and least suitable for development.

This analysis indicated that areas most suitable for urbanisation in terms of landcover are located within Tuakau Township itself, as well as directly to the northwest, northeast, southeast and south of the existing built up areas.

Pockets of land further out from Tuakau Township were also found to be appropriate, with the majority of suitable land being located to the north and southwest.



TIER ONE: LANDCOVER AND LANDUSE

Constraint Identification and Analysis

TIER ONE: POTENTIAL VISIBILITY

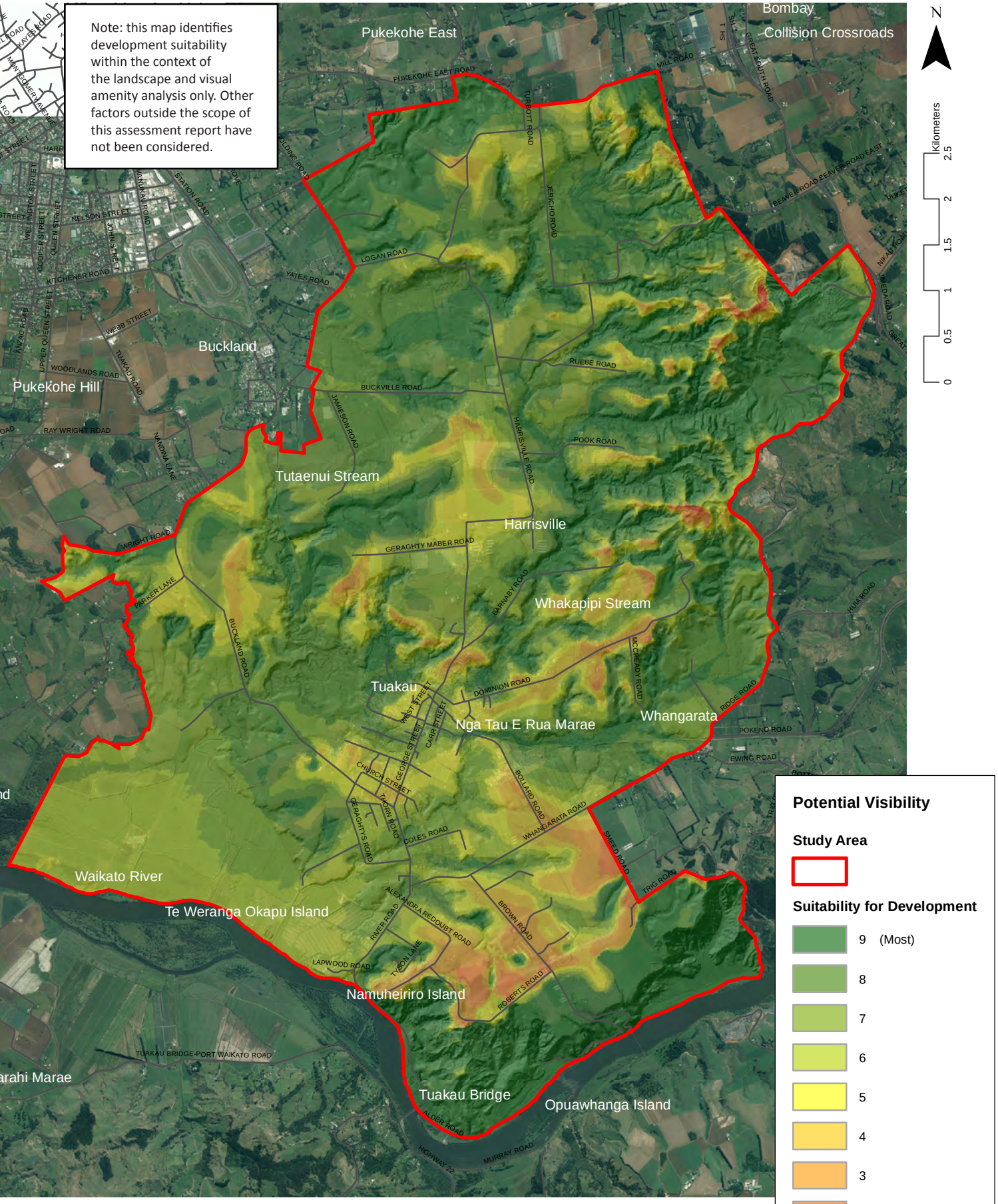
Constraint Identification and Analysis

The potential visibility has been assessed from public view locations along the main roads within the Tuakau Study Area. The visual catchment identifies the extent of surrounding landscape visibility from the main roads, subject to intervening built development and vegetation. This provides an indication of the landscape within the study area that is less visible from publicly accessible locations; and therefore more suitable for urban expansion (less likely to alter landscape character and associated amenity values).

Context, viewing frequency, viewer types, viewer distance, viewing time and framework are all factors requiring consideration when examining the visual catchment. A combination of GIS mapping and site inspection were used to identify the visual catchment of the Study Area.

The visual catchment map indicates that elevated locations such as ridgelines and hill country to the southeast and northeast of Tuakau township is highly visible from publicly accessible roads within the study area. The hill country gently rising towards the bluff of the Alexandra Redoubt, to the southeast of the township is highly visible and urban expansion within this area is therefore likely to affect amenity values associated with existing expansive views across existing rural landscape.

The analysis indicates that the hill country surrounding Tuakau Township, along Buckland, Dominion, Whangarata and Harisville Roads is also highly visible from public roads. Ridgelines and hills/undulations along these roads provide subtle transition zones in which the extent of visibility gradually increases or decreases. These transition zones therefore become important natural thresholds for determining appropriate boundaries within which to contain the future growth of Tuakau.



TIER ONE: POTENTIAL VISIBILITY

Constraint Identification and Analysis

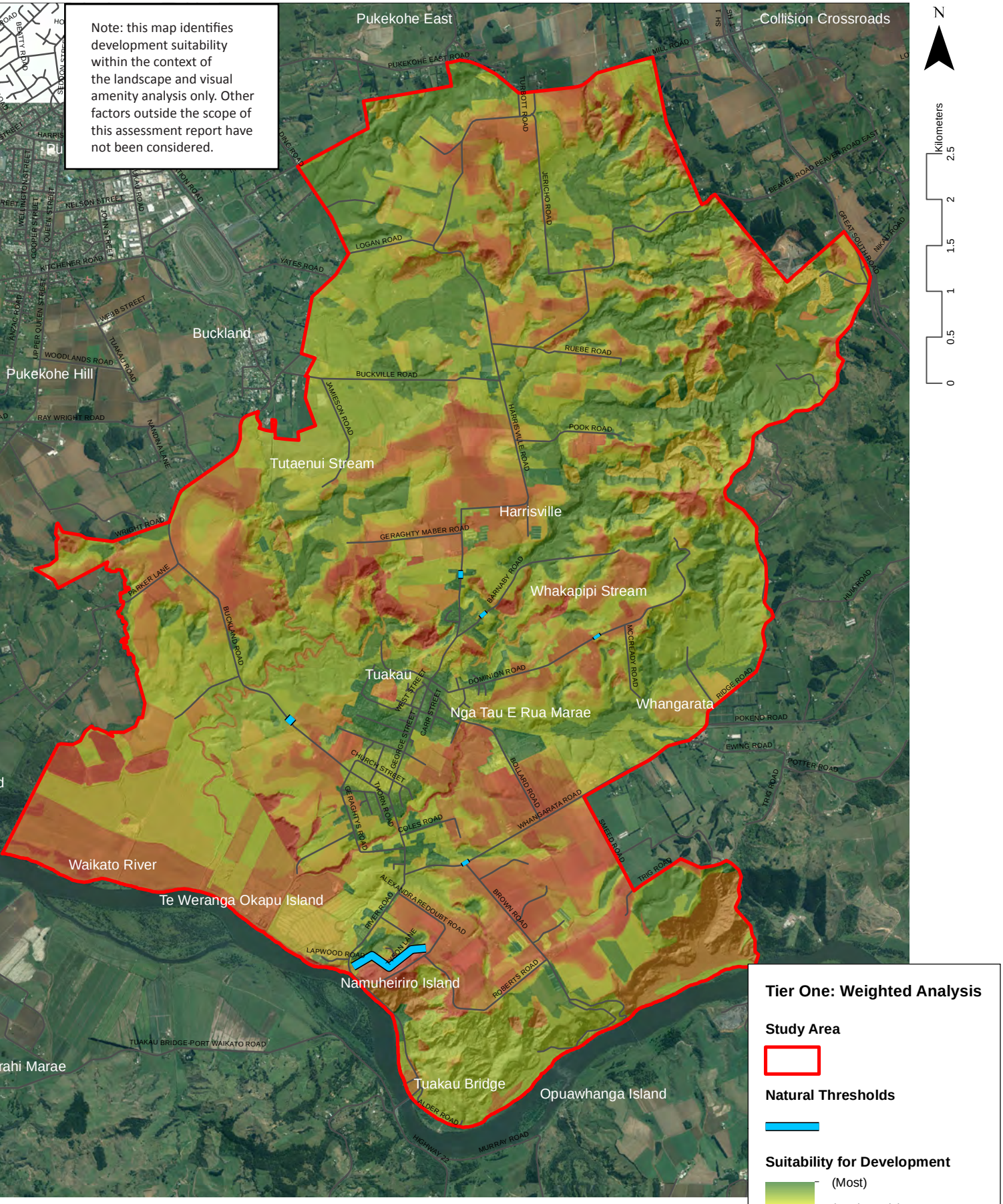
TIER ONE: WIDER LANDSCAPE CHARACTER

Weighted Analysis

The landsacpe sensitivity, landcover and potential visibility maps have been analysed using weighted analysis. Landcover and visibility were each attributed 34% weighting (as landcover analysis and visual catchment analysis are considered to be of equal importance). The landscape sensitivity analysis was attributed 32% of the weighting. The resultant map (adjacent) indicates the landscape character and associated visual amenity constraints of urbanisation within certain locations of the Tuakau Study Area.

This weighted analysis mapping indicates that overall, the areas less suitable for urbanisation within the Tuakau Study Area are located:

- Towards the south and southeast of the township, due to the land being more visible as it slopes upwards towards the Alexandra Redoubt Reserve, the high natural character associated with indigenous vegetation, and landuse including mostly market gardening and council reserve land (considered less suitable for urbanisation);
- Towards the west of the township (along Buckland Road), resulting mainly from the market gardening landuse within this area (considered less suitable for future development);
- To the east of the township, as the elevated positions of Bollard and parts of Whangarata Road make them more widely visible from surrounding public roads as well as the horticultural/ market gardening landuses make these locations less suitable for development from a landscape character perspective;
- Towards the north and northeast of the township, where pockets of high natural character (indigenous vegetation) and increased visibility from surrounding roads make these locations less suitable for development.
- Natural thresholds have also been indicated within the adjacent map along main roads, where subtle changes in landscape character were identified during site investigation (and have been described in the Local Landscape Character section of this report).



TIER ONE: WIDER LANDSCAPE CHARACTER

Weighted Analysis

TIER TWO: DISTANCE

Constraint Identification and Analysis

Distance analysis has been undertaken to determine locations closest to the existing infrastructural services of Tuakau Township; and therefore most suitable for development (from an urban/ landscape design and planning best practice point of view).

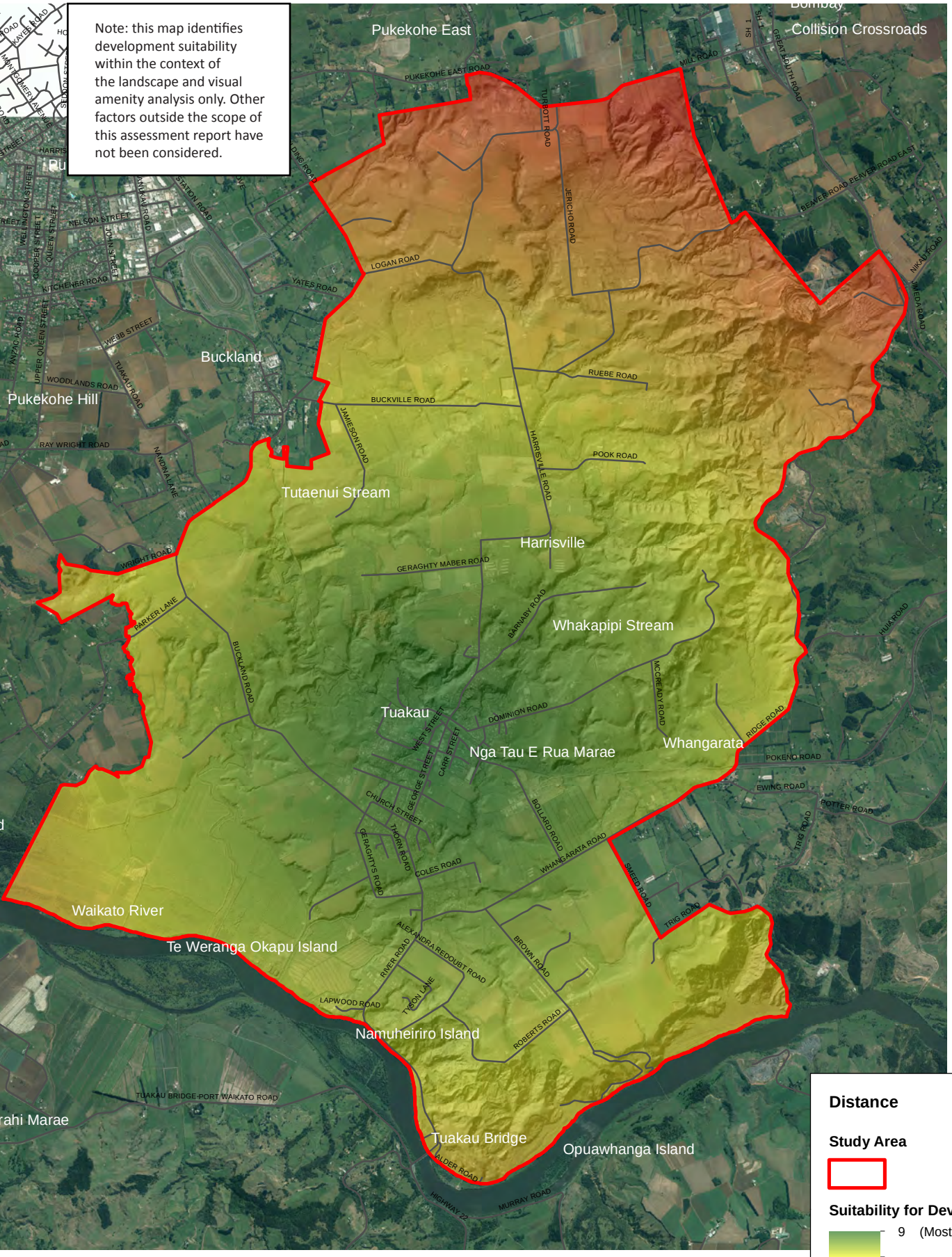
The commercial centre of Tuakau township provided the centre point for the distance analysis.

The outcome of the distance analysis suggests that land beyond the existing northern urban fringe of Tuakau Township (along Harrisville Road) is less suitable for development due to the distance out from existing infrastructure and services provided for by Tuakau Township.

To the east of Tuakau Township urbanisation would be most suitable out to the industrial zone along Bollard Road in terms of distance to existing services and infrastructure.

The analysis indicated that areas most suitable for urbanisation to the south of the township would be approximately bound by the intersection of Whangarata Road and River Road, in terms of convenience to town centre services and other landscape design and planning principles.

In terms of the distance analysis, urbanistation could occur as far west as midway between the Buckland gully system and Tuakau College (approximately).



TIER TWO: DISTANCE

Constraint Identification and Analysis

TIER TWO: TOPOGRAPHIC POSITION INDEX (TPI)

Constraint Identification and Analysis

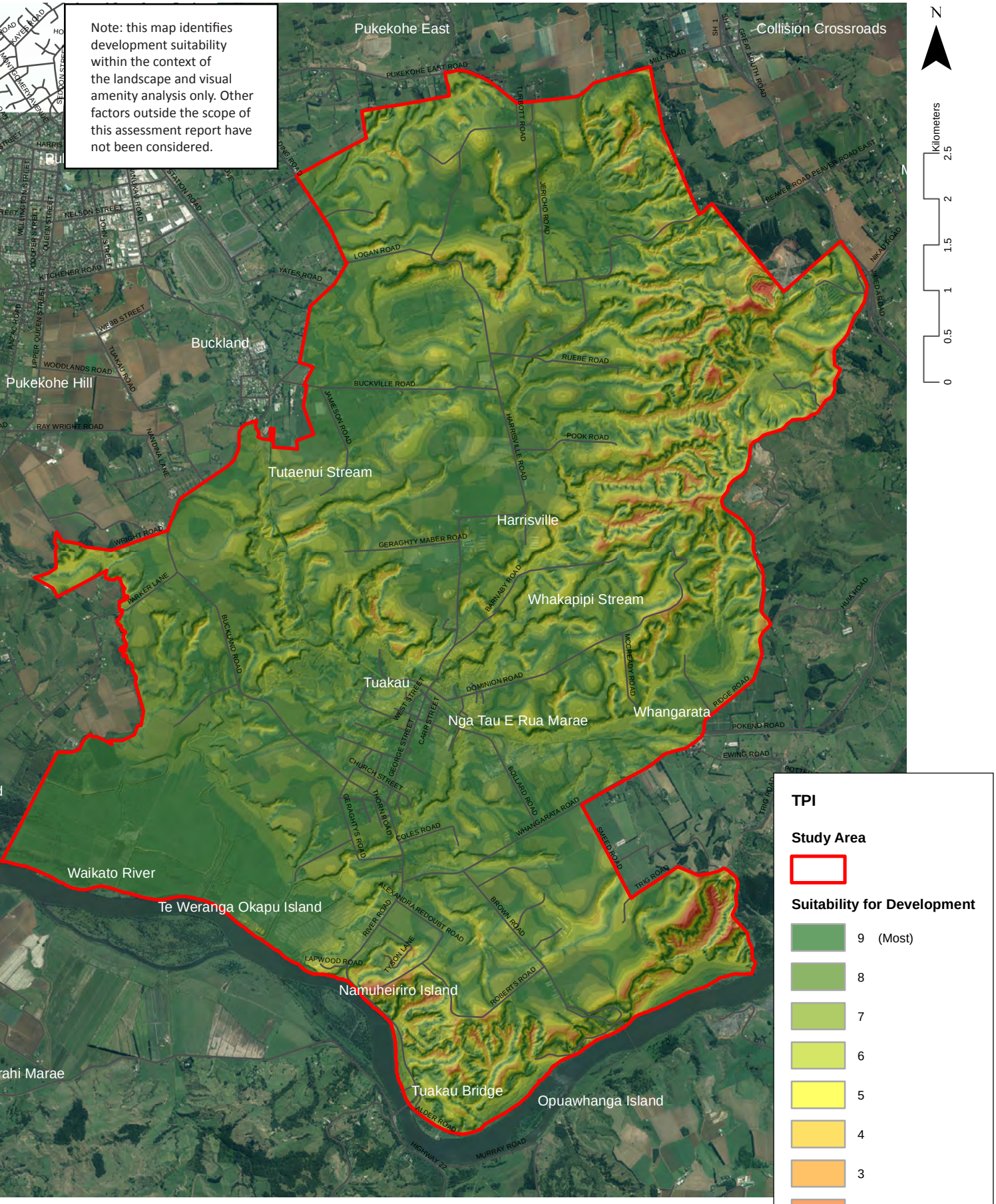
The adjacent TPI analysis map has been based on 0.5m Digital Elevation Model data provided by Waikato District Council. The TPI data has been assigned a number from 1-9 (where 1 indicates areas least suitable for urbanisation and 9 indicates areas most suitable for urbanisation).

Mid-slopes were classified as most suitable for urbanisation (9), while ridgelines and gully slopes/ river trenches were classified as least suitable (1). Ridgeline development is less suitable because skylines should be protected from development (landscape design ideal), to avoid affects on visual amenity. Development within gully slopes and river trenches is less suitable due to potential disturbance of natural processes of streams.

The adjacent TPI analysis map indicates that upper hill country and ridgelines; are generally found to the east and southeast of Tuakau Township. These areas would be unsuitable for development due to potential skylining, which would effect the natural character associated with these landscapes.

Lower gully slopes were identified through the TPI analysis to the south, west and north of the township, indicating further constraints for urbanisation due to the high natural landscape value of the gully systems, streams and rivers.

Areas most suitable for urbanisation according to the TPI analysis include small pockets of land directly to the south, southeast and southwest of Tuakau Township, to the north of Barnaby Road and a larger area of land further to the southwest (adjacent to the Waikato River).



TIER TWO: TOPOGRAPHIC POSITION INDEX (TPI)

Constraint Identification and Analysis

TIER TWO: SLOPE ANALYSIS

Constraint Identification and Analysis

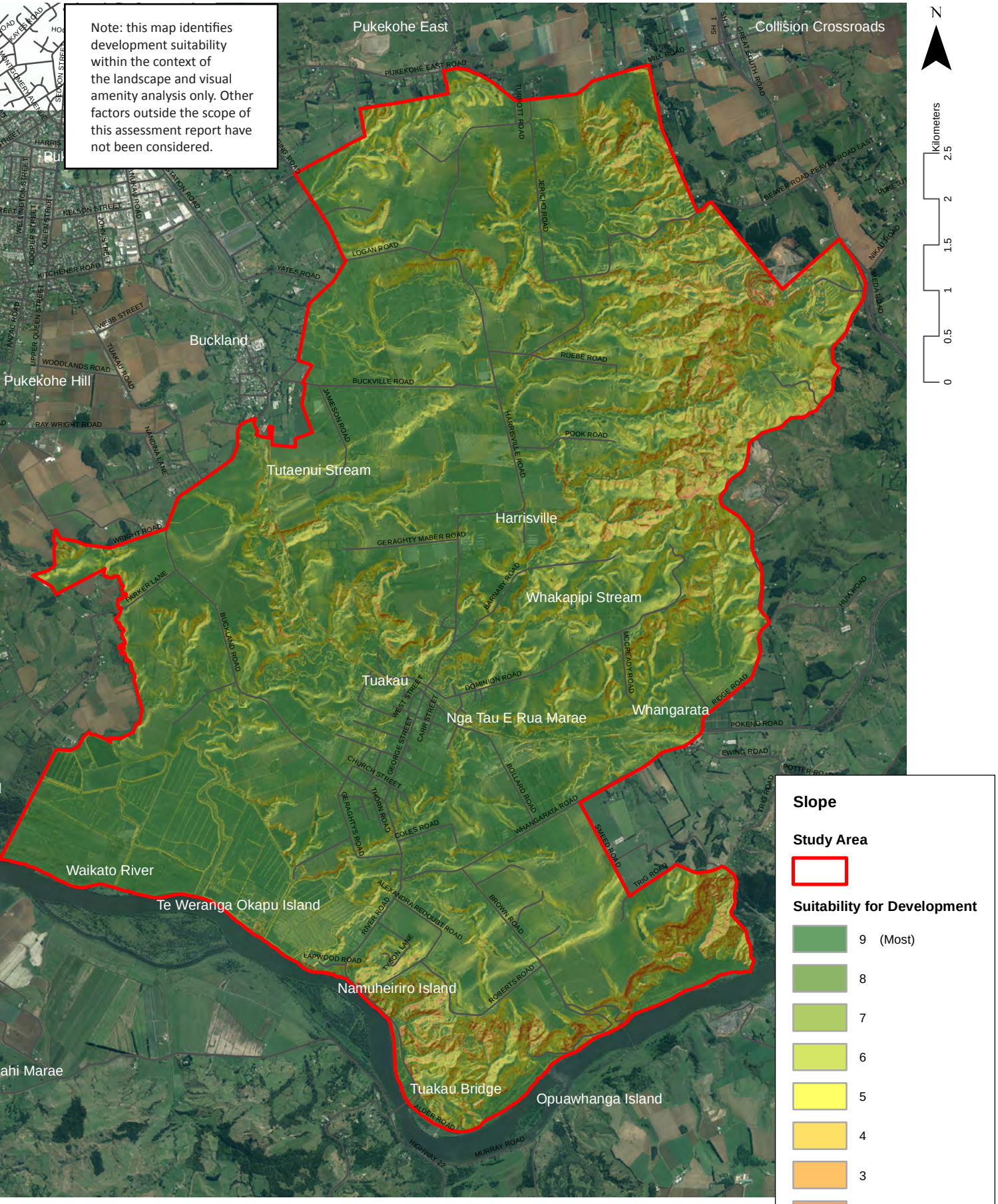
The adjacent slope analysis map has been based on 0.5m DEM data provided by Waikato District Council.

The slope analysis data was assigned a number from 1-9, where category 1 represented the steepest slopes, less suitable for urbanisation and category 9 represented the gentlest slopes, most suitable for urbanisation.

Development on steep slopes is more likely to result in the requirement for retaining and road cuttings, which could subsequently affect landform character and associated amenity values.

The outcome of this slope analysis indicates that with the exception of the hill country to the northeast of the town centre, steep-sided gully systems mainly to the northwest of the township, the Alexandra Redoubt Bluff and land immediately to the southeast of the bluff, most land within the Study Area is relatively flat in terms of slope.

This indicates that most localities within the Study Area are suitable for future urbanisation in terms of slope analysis.



TIER TWO: SLOPE ANALYSIS

Constraint Identification and Analysis

TIER TWO: SOLAR GAIN

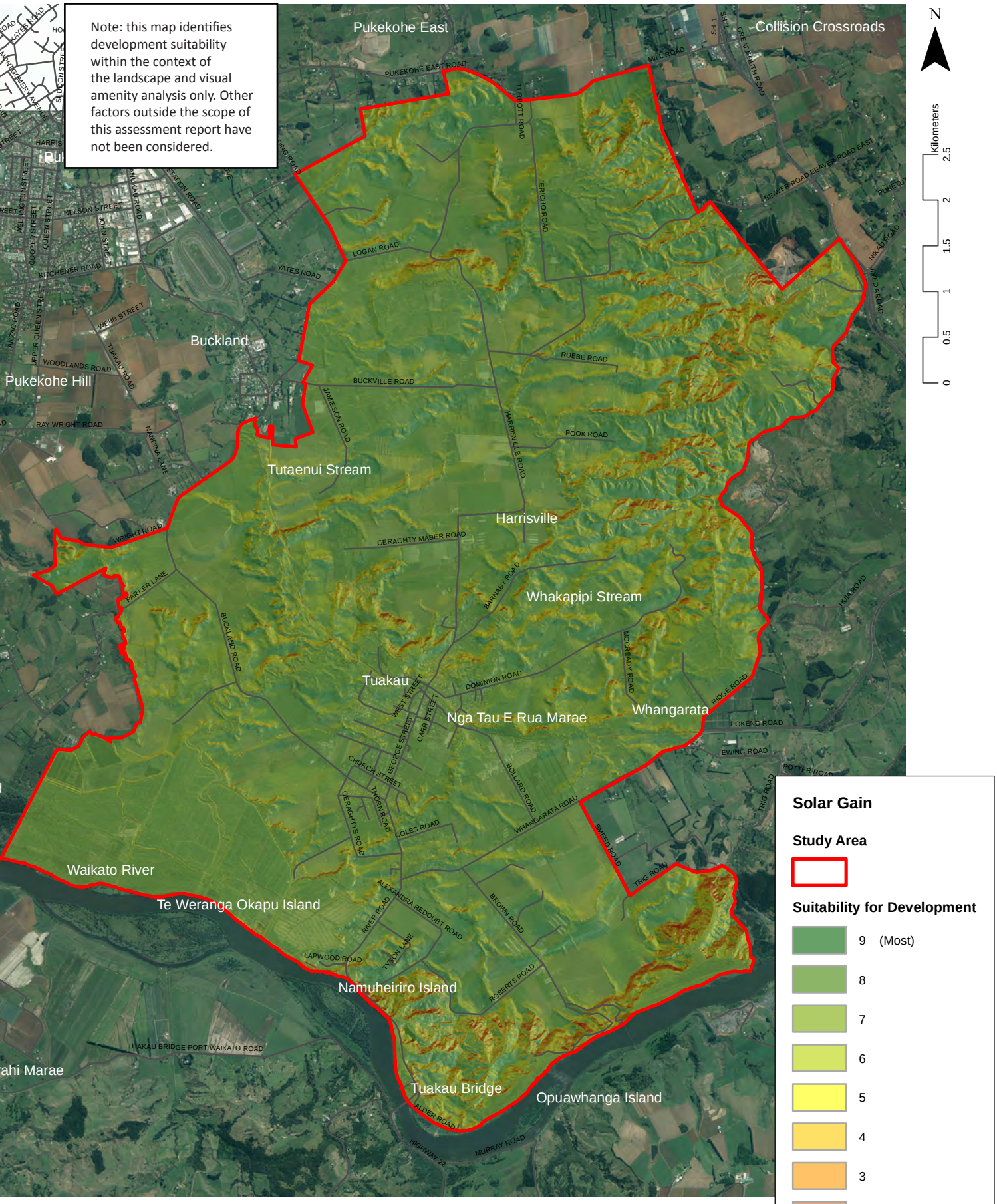
Constraint Identification and Analysis

The adjacent solar radiation analysis map has been based on 0.5m DEM data provided by Waikato District Council.

The solar radiation analysis calculated the sunshine hours of the entire study area in 2-hour increments, over a year. The solar radiation data was then assigned a number from 1-9, with areas receiving the highest sunshine hours categorised as 9 and areas receiving the least sunshine hours over a year categorised as 1.

Overall, solar gain was found to be good across the majority of the study area, with the exception of the land directly to the north of the existing township (around the motorcross track south of Geraghty Maber Road) to the northeast southeast of the township (west of Ridge Road) and adjacent to the Waikato River (to the southeast of the Alexandra Redoubt).

Areas with lower solar gain (1-5) would typically be less desirable land; as associated dwellings would generally be colder and damper than those developed on land with higher solar gain.



TIER TWO: SOLAR GAIN

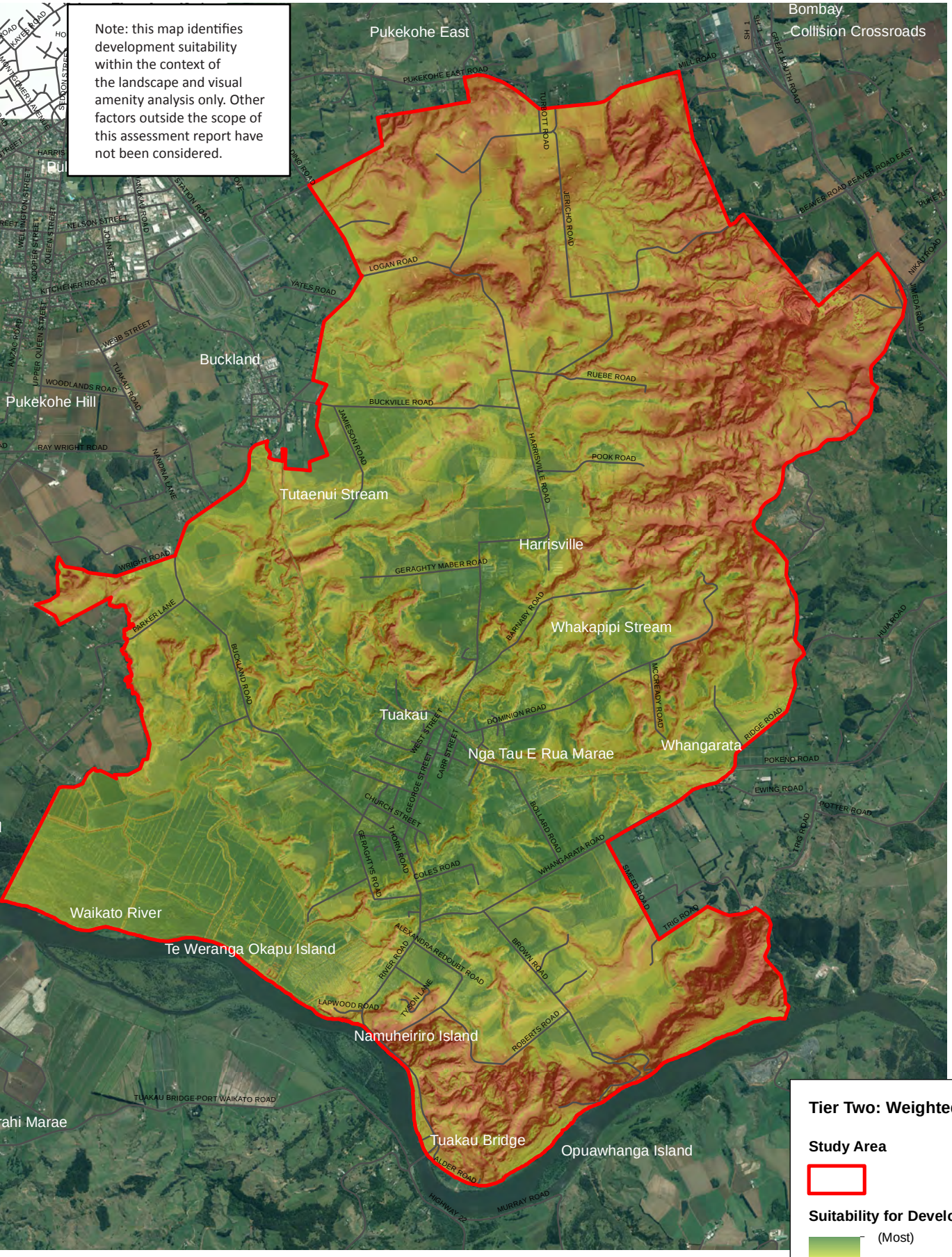
Constraint Identification and Analysis

TIER TWO: AMENITY CONSTRAINTS

Weighted Analysis

Weighted analysis was utilised to provide an indication of the combined amenity constraints within the Tuakau Study Area. 30% of the weighting was attributed to Distance Analysis, 20% to TPI analysis, 20% to Slope Analysis, 20% to Solar Analysis and 15% to Elevation Analysis.

The resultant map (adjacent) indicates that the majority of landscape constraints are associated with the elevated topography, steeper slopes, areas of little solar gain and a greater distance out from the centre of Tuakau Township, generally to the southeast and northeast of Tuakau Township.



TIER TWO: AMENITY CONSTRAINTS

Weighted Analysis

COMBINED WEIGHTED ANALYSIS

Landscape Suitability for Urbanisation

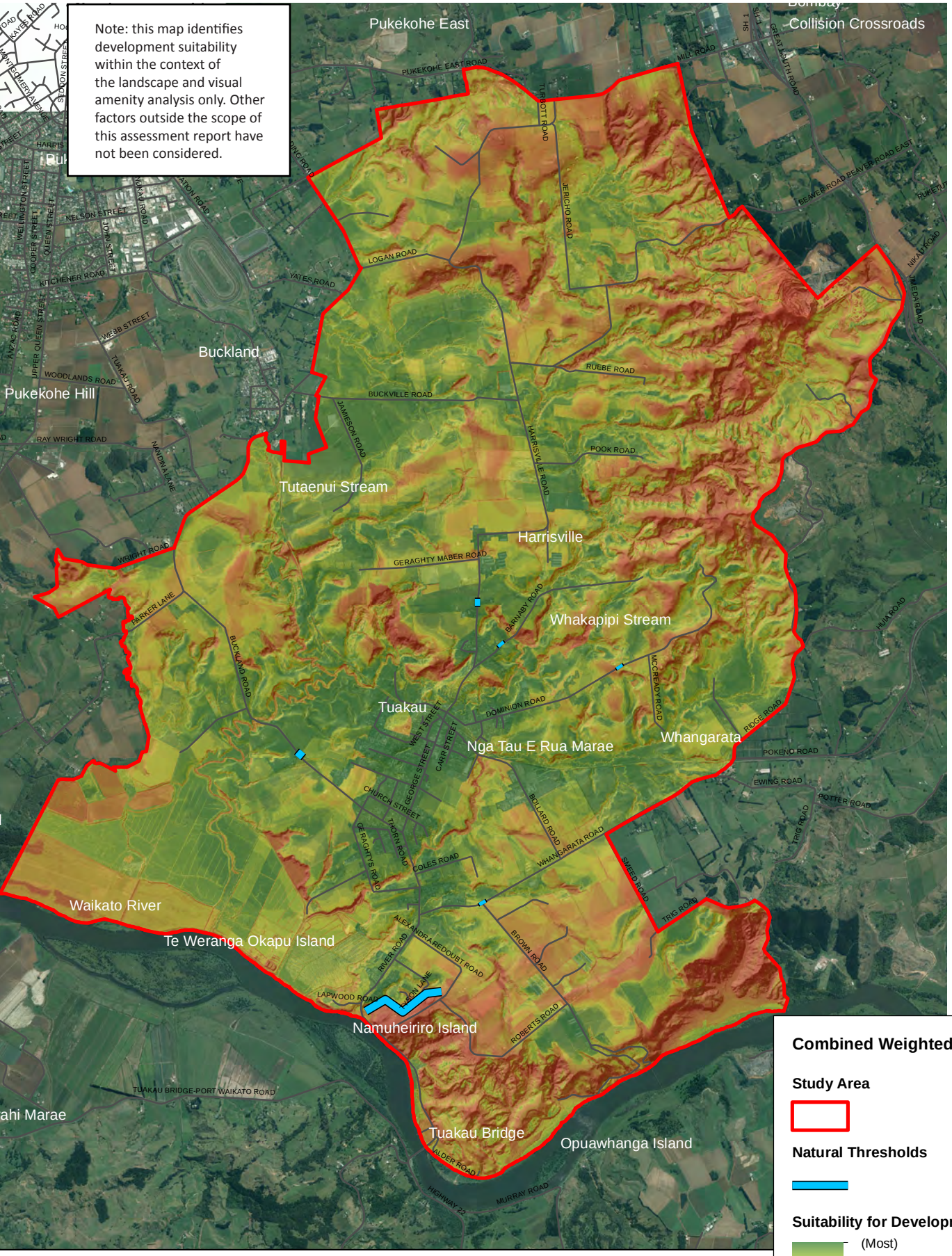
In combining amenity constraint mapping (distance, slope, TPI and solar radiation) with character constraint analysis (landcover and visual catchment), analysis was used to inform areas most and least suitable for development overall.

- 17% of the weighting was attributed to each landcover and potential visibility;
- 16% of the weighting was put on sensitive landscape areas;
- 15% of the weighting was put on each distance analysis, slope and TPI;
- 5% was given to solar radiation.

Landcover and visual catchment analysis was attributed to the highest weighting because it directly effects landscape character and associated amenity values.

The outcome of this analysis suggests that from a landscape character and amenity perspective, areas most suitable for development are located within the existing Tuakau Township, as well as directly to the northwest, northeast, southeast and pockets further east (along Bollard Road) and further north (along Harrisville Road).

However, overall there are no major restrictions in terms of which direction to develop in; only subtle changes in landscape character, which if changed gradually over time in a staged manner would not have a huge impact on existing landscape character and associated amenity values.



COMBINED WEIGHTED ANALYSIS

Landscape Suitability for Urbanisation

LANDSCAPE CHARACTER & AMENITY VALUES

Findings

The key attributes and landscape features in the adjacent table that contribute to landscape character and amenity of the Tuakau Study Area area were identified during site investigations and landscape character and landscape constraint mapping analysis.

Future development within the areas indicated in the combined weighted analysis map as suitable for development is likely to have a low effect on the key attributes of the surrounding landscape which influence wider landscape character and associated amenity values. This is because the mapping analysis indicated no major landscape constraints within the study area (with the exception of the Waikato River, Alaexandra Redoubt bluff and bush reserve and stream gully systems).

Expansion beyond the existing urban fringe of Tuakau Township is likely to slightly alter amenity values associated with the existing rural landscape character. However, the affect on landscape character and amenity values is likely to have less than if development were to occur within the areas shown as less suitable for development. The outstanding natural landscape values associated with the Waikato River and natural character values of the streams, gullies and their margins have been protected through the mapping analysis. As have ridgelines, gullies, steep slopes, indigenous vegetation, productive market gardening landscape, solar gain, distance from the centre of Tuakau Township and areas highly visible from surrounding public roads.

Natural thresholds indicate subtle changes in landscape character and aim to protect the unique character of the Tuakau Township. Expanding beyond the visual natural thresholds identified would create a more noticeable change in landscape character (although not significant), as development within areas out beyond these natural thresholds would be more difficult to integrate with the surrounding predominantly rural landscape character, as in most cases visual connection with the existing township is lost beyond these thresholds.

Overall, with the exception of the Waikato River and Alexandra Redoubt bluff and bush reserve, no major landscape constraints were found to exist within the Tuakau study area, only subtle differences, which make some areas slightly more or less suitable for development. Landscape is therefore not likely to be the deciding factor in determining the extent/ exact locations for future development within the Tuakau Study Area. Analysis of parallel studies indicating

opportunities and constraints in terms of infrastructure, urban design, heritage and culture should therefore be carefully considered.

The following table of key attributes and landscape features found to contribute to landscape character and amenity in the surrounding area (refer to the landscape character section of this report).

	Feature	**Scale**	**Key Attributes**	**Potential Effect**
1	Waikato River	Medium	• Formative processes overtly obvious. • Meandering river channel. • Broad river channel. • Vegetated embankments and riparian areas. • Recreational opportunities. • Transient values (wildlife).	A negligible effect on the Waikato River; as the areas indicated as suitable for development (as shown on the combined weighted analysis map) are at a sufficient distance from the rivers to ensure adverse effects on landscape character and amenity values are avoided.
2	Streams and gully systems within the Tuakau Study Area	Small	• Meandering streams • Vegetated embankments and riparian areas. • Recreational opportunities. • Transient values (wildlife).	*Low* effects, as streams and gully systems are indicated as less suitable for development within the combined weighted analysis map and therefore should be protected from future development.
3	Rural landscape	Large	• The subdivision of the rural pastoral landscape into a mosaic of paddocks and crops. • Established shelter rows and planting. • Mix of rural-industrial development within pastoral/ horticultural landscape. • Cultural influences (formative processes) obvious.	Low effects, as the suitable future development areas, indicated in the combined weighted analysis map are more likely to ensure that existing landscape character of the surrounding rural landscape is maintained.

CONCLUSIONS & RECOMMENDATIONS

Tuakau Study Area

Weighted analysis of the various landscape and amenity factors identified in this report has found that:

- No ONFLs exist within the study area;
- Subtle differences in landscape character and amenity values exist across the study area (as discussed in the landscape character section of this report);
- Natural thresholds rationalise natural features contributing to character and amenity shifts (identified on the combined weighted analysis map) provide guidance for township and village growth boundaries;
- Technical papers and community preferences indicate the importance of retaining the existing identity of the Tuakau Township by directing growth towards the township and allowing for rural buffers;
- Landscape character and amenity assessment in combination with Landscape and urban design principles and relevant planning provisions helped determine GIS opportunities and constraints. These included:
    - The protection of sensitive landscape areas (to retain existing natural character and associated amenity values within the study area) through weighted analysis mapping. These were found to include the Waikato River and adjacent hill country and terraces, as well as stream systems and associated gullies;
    - The protection of indigenous vegetation and water-bodies as opposed to existing built up areas, low producing grassland and exotic vegetation;
    - The avoidance of areas of high visibility from surrounding public roads within the study area;
    - The concentration of future development in and around the main service center of Ngaruawahia Township;
    - The avoidance of steep slopes, prominent ridgelines/ deep gully systems and areas of low solar gain;
- The outcome of the combined weighted analysis indicated that areas most suitable for development are generally located:
    - Within the existing Tuakau Township;

- To the northwest, northeast, southeast and pockets further east (along Bollard Road) and further north (along Harrisville Road).

These findings suggest that only subtle differences exist in the suitability of different parts of the Ngaruawahia landscape to absorb the levels of development that will likely occur without affecting wider landscape character and the amenity derived from it.

It is therefore recommended that, from a landscape and amenity perspective, development should occur in a manner that has the least effect on wider landscape values over time. This suggests a staged approach which sees any growth being prioritised within areas identified as 'most' suitable on the combined weighted analysis map.

COMMUNITY PREFERENCES COMPARISON

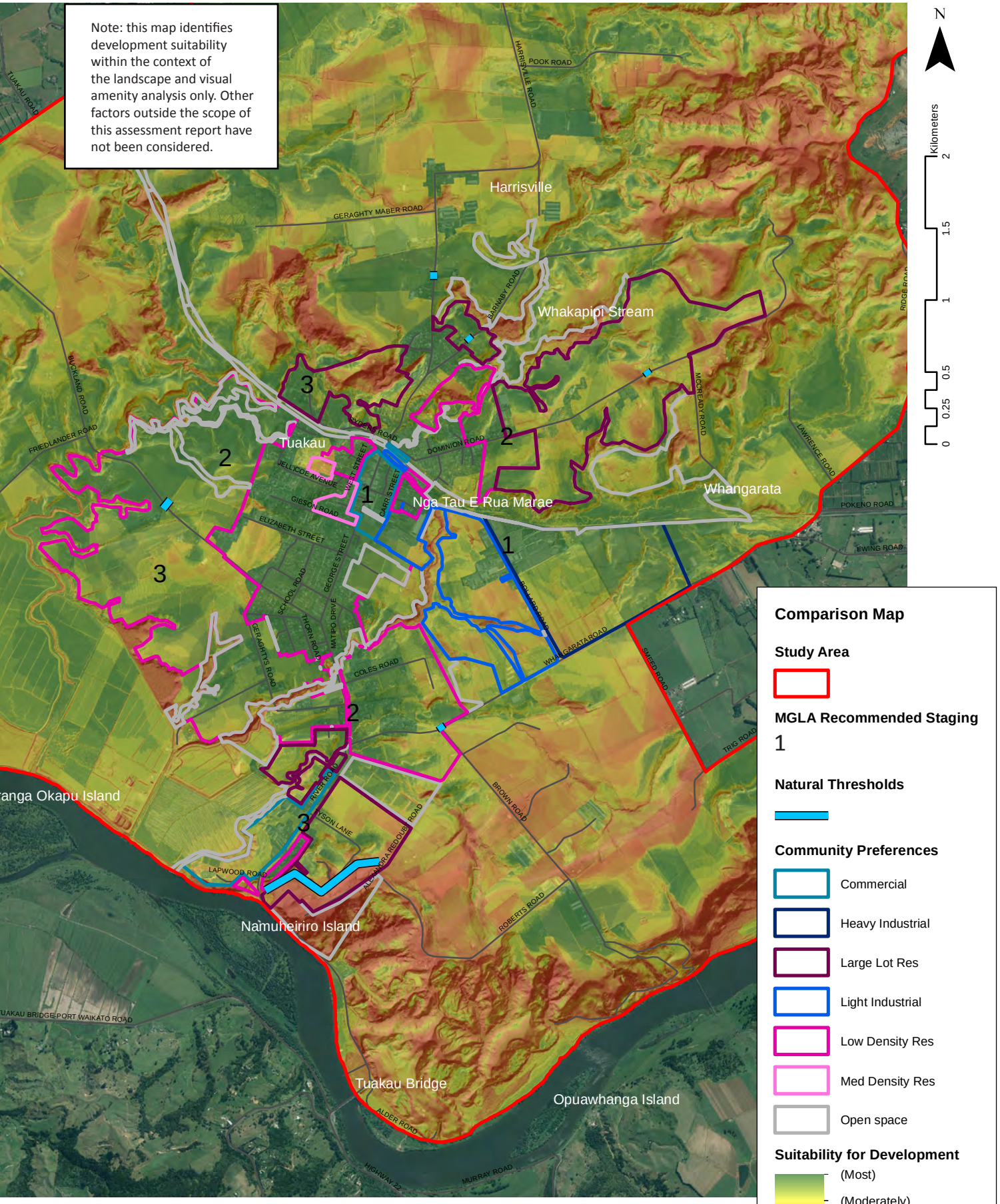
Weighted Analysis

The community consultation map has been overlaid on top of the combined weighted analysis map to indicate areas most suitable for development from a landscape and community preference point of view.

The majority of areas mapped through the community consultation process align with areas found to be most suitable for development through the weighted analysis within this report. Some discrepancies have occurred however, these include:

- Land along the base of the Alexandra Redoubt being identified for large lot development, where weighted analysis has found this landscape to be less suitable for development (due to the elevated position of this landscape, where future development would clearly be visible and alter existing open pastoral landscape character);
- Similarly, large lot development has been suggested to the northwest of Tuakau Township, within steep, bush clad terrain (identified as less suitable for development through the weighted analysis within this report)

The numbers on the adjacent map indicate appropriate staging from a landscape perspective, for the future growth areas (areas provided by WDC) (from a landscape perspective). Urban development in the areas identified as stage 1 are less likely to alter landscape character and amenity values of the surrounding landscape and will aid in integrating the stage 2 and 3 development as further urban expansion is required into the future. Stage 1 indicates areas more suitable for immediate development (largest areas of green) and stage 3 indicates areas less suitable for immediate development (mix of yellow and green areas, above the moderate rating threshold) in order to help preserve wider development, should be developed last.



WEIGHTED ANALYSIS - OUTCOME

Comparison with Community Preferences

As indicated in the community preferences comparison map, the existing town centre and existing industrial zone to the west of the township has been considered most appropriate for stage one of future development.

It is recommended that the second stage of any future development occurs directly to the south of Tuakau Township, to Whangarata Road, directly to the west of the township and directly to the northeast (along Dominion Road).

It is recommended that the third stage of any future development occurs further out from the township, to the south and southwest. Although a large portion of these areas were found to be only moderately suitable for development, the proposed staging of development within the study area will ensure a gradual subtle change in landscape character and aid in integrating future development with the surrounding landscape.

Since there are no major constraints in terms of the landscape surrounding Tuakau Township (with the exception of steep hill country, gully systems and land adjacent to the Alexandra Redoubt and Waikato River), the above recommendations and proposed staging order indicates the most suitable areas for development in terms of landscape character and amenity, but not the only suitable areas or staging. It is therefore important that the outcomes of other analysis, parallel to this study is considered before final recommendations for urban expansion are made.

The outcome of this comparative analysis between the combined weighted outcome map and the urban design potential growth areas has assumed that the potential growth areas will reflect the existing development type of adjacent existing zoning under the WDP and will not propose inappropriate zone mixes, (such as heavy industrial abutting existing residential).

APPENDIX ONE

ONFL Methodological Approach

1. PREFACE

Outlined within this document is an identification of the legal prerequisite tests to be applied, a direction to be applied resulting from the Waikato Regional Policy Statement and a methodological approach that will be used in the identification and analysis of the District's outstanding natural features and landscapes.

This document forms the basis of the agreed methodological approach, following caucusing.

The methodology does not include an approach for the assessment of the amenity landscapes within the district as this is outside the scope of engagement.

2. THE LEGAL PREREQUISITE TEST

In the *Rosehip*[1] decision where the Court wrote:

> *A fundamental question for these proceedings is whether there is one or more outstanding natural landscapes within the meaning of section 6(b) of the RMA in the Mackenzie Basin. To answer this we need first a definition of "landscape" and then to answer three factual questions:*
> *(1) is there one landscape or more in the Mackenzie Basin?*
> *(2) if so, is any identified landscape natural?*
> *(3) if yes to (1) and (2) for any landscape, then is the natural landscape also outstanding?*

This reasoning sequence forms the basis of the s6(b) analysis process and is fundamental to a number of decisions that are subsequently made during the detailed assessment.

Through the application of the following approach, the above test is satisfied.

3. REGIONAL POLICY STATEMENT

The Proposed Waikato Regional Policy Statement – Decisions Version (PWRPS) indentifies a requirement for the identification of the district's ONFLs:

> ***12.1.1 Protect values of outstanding natural features and landscapes***
> *Regional and district plans shall identify and provide for the protection of the values and characteristics of outstanding natural features and landscapes, including those of regional significance identified in section 12A (Table 12-1).*
>
> ***12.1.2 Identify local outstanding natural features and landscapes***
> *Waikato Regional Council will encourage territorial authorities to undertake a district-wide assessment of outstanding natural features and landscapes of local significance, the criteria in section 12B (Table 12-2) should be used as the basis of any new assessment.*

[1] High Country Rosehip Orchards v MacKenzie District Council (Decision No [2011 NZEnvC 387)

The Regional Council identifies that:

> *All data are mapped at 1:50,000 based on a variety of data sources so the accuracy of those sources applies (see Data Sets Used in section 4 below). However, which datasets were used to define the edges/boundaries of which parts of the polygons is not clear.*
>
> *The group who undertook the landscape assessment were instructed not to go onto private land and to assess the landscape from public places. Given the difficulty in defining the "edge" of a landscape and/or feature the boundaries of the ONFL are to be considered indicative only and may vary by up to +/- one kilometre from that actually mapped.*

4. METHODOLOGICAL APPROACH

A number of recent Environment Court decisions have highlighted the need for the assessment of the outstanding natural features and landscapes under Section 6(b) of the RMA to be undertaken in a rigorous and defensible manner.

Analysis of recent decisions suggests that various divisions of the Environment Court have based their decisions on ONLs after considering the spectrum of scientific and evaluative evidence put before them.

The Relevant Model of Environmental Perception

Aesthetic appreciation, in the sense that it describes the level of satisfaction (positive or negative) derived from our perceptions, experiences and interactions with the environment, is fundamental to the way we define landscapes and ascribe values and meanings to them. Various models of aesthetic appreciation have been developed to explain environmental and landscape preference. These can be used to explain both landscape preference and attractiveness.

It is considered that, within the context of the requirements of section 6(b) of the RMA, an appropriate theoretical framework for the identification and evaluation of the District's outstanding natural features and landscapes is a *holistic model of landscape aesthetics* within which consideration is given to interaction between people and the landscape, and for which the various key models of aesthetic appreciation can be used to explain why some landscapes and/or features come together in a such a manner that they are perceived as being "outstanding" while others do not (even though on cursory examination they appear to contain similar components/spatial relationships).

Under such an approach, scientific explanation of the biophysical and geophysical elements that enhance an understanding of the landscape (or feature) are evaluated within the context of a range of associative and perceptual factors that ascribe value and meaning to that landscape (or feature). These may then be described and evaluated using the language of aesthetics.

Approach Overview

A holistic methodological approach will be followed, starting with the identification of topographical and land use patterns of the district in a hierarchical manner. *Expert evaluation*, drawing upon relevant aspects of the physical and perceptual landscape, will be used to draw together the various components[2] of the landscape, starting with a spatial framework and using associative and perceptual data to enrich an understanding of its intrinsic and contextual values.

The following iterative approach will be applied in the identification and analysis of the District's ONFLs:

Stage One: Identification of the District's Landscape Resource

Stage one will involve the identification of the District's landscape resource through GIS analysis and field survey. This will identify, and spatially define, the various geophysical and biophysical components and formative processes relevant to the identification and understanding of "RMA features and landscapes";

Stage Two: Identification of the District's Landscapes and Features (Unevaluated)

Stage two will involve the conflation of the (above) components into *features*[3] and *landscapes*[4] based on key perceptual and associative factors considered within the context a relevant model of environmental perception (in other words, the collective identification and analysis of the components of the landscape that have identifiable associations and/or spatial relationships that, when considered as a whole, affect the way they are collectively perceived and valued). Landscape and features will be classified in terms of:

i. *Landscape/feature typology*: A systematic classification of landscape and feature types based on the attributes that describe properties of interest (e.g. bio/geophysical, socio-cultural, perceptual). Landscapes are defined by the unique relationships between natural components (geology, soils, etc) and human components (land-use, buildings etc); and
ii. *Landscape/feature patterns*: The spatial patterns formed by different landscape/feature typologies that form unique spatial arrangements with distinctive identities.

Stage Three: Application of the "Natural" Prerequisite Test

The "natural" pre-requisite test will be applied to the District's identified landscapes and features in order to identify which landscapes are sufficiently natural to be considered as candidates for further assessment and ONFL evaluation. Candidate ONFLs will be subject to further analysis in the following stage. The pre-requisite test will identify:

i. Natural landscapes and features: Those landscapes and features that pass the "natural" prerequisite test.

---

[2] For the purposes of this study, a landscape *component* is considered to be part of a landscape or feature that (for all intents and purposes and within the scale of analysis being undertaken), is consistent in its geophysical and biophysical makeup and appearance. *Components* represent the smallest unit of analysis that will be considered during the assessment process.
[3] Meaning a *feature* under RMA s6(b). Where used in this sense, a *feature* is usually comprised of a single or relatively small number of *components*, and is generally smaller than a (RMA s6(b)) *landscape*.
[4] Meaning a *landscape* under RMA s6(b). A *landscape* can be considered to be an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. Where used in this sense, a *landscape* is usually comprised of many *components* and/or *features*, and is generally much larger than a (RMA s6(b)) *feature*.

ii. Other landscapes or features: Those landscapes that do not pass the "natural" prerequisite test.

Landscapes and features that do not pass the "natural" threshold test will not be evaluated further or mapped.

Stage Four: Identification of Outstanding Natural Features and Landscapes (Evaluated)

A preliminary sieving exercise will occur (based on expert analysis and a review of the ONFL's identified in similar landscapes in the surrounding Districts) to identify the District's candidate ONFLs (and discount from further analysis, natural landscapes that are not likely to achieve ONFL status).

An iterative process will be followed in order to identify the District's candidate ONFLs and its other natural landscapes (for which no further analysis will occur):

i. ONFL candidate landscapes and features: Those landscapes and features that having already passed the "natural" prerequisite test, may; or are likely contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

ii. Other natural landscapes or features: Those landscapes that pass the "natural" prerequisite test, but are unlikely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

Each candidate ONFL will undergo further (iterative) expert evaluation and analysis, within the context of a relevant holistic model of environmental aesthetics that informs an understanding of the landscape (or feature), its perception and why it can be considered to be "outstanding" when compared to similar (or dissimilar) surrounding RMA landscapes or features.

Identified ONFLs will be mapped and the key attributes of each described.

Stage One: Identification of the District's Landscape Resource.

The districts geographical and landscape features will be identified through a combination of desktop analysis using existing geospatial data, non-geospatial data (descriptive data) and field investigation and verification. This will identify, and spatially define, the various geophysical and biophysical components and formative processes relevant to the identification and understanding of "RMA features and landscapes"

Geospatial Data

The following base geospatial data will be used to identify relevant geophysical and biophysical features and their associated (non value laden) attributes that contribute to an understanding of the landscape within which they are contained:

a. Geological (geology and soils)
   i. GNS (QMap) Geological Data (1:250000)
   ii. LRI Soil Data

b. Topographical Data
   i. Contour Data

ii. Digital Elevation Models
iii. Topographic Position Indexing
iv. Slope
v. Visual catchment
vi. Watershed
vii. Catchment
viii. Rivers/streams
ix. Lakes

c. Land cover
   i. Vegetation (LCDBv3)
   ii. Land use
   iii. Development
   iv. Urban areas
   v. Development density
   vi. Development patterns

d. Aerial photography;
   i. Google
   ii. ESRI
   iii. District Council Aerial Photography

This exercise will be used to identify the District's landscape resource as a series of spatially associated landscape (or geographical) features, that when considered within the context of each other, form the basis from which the District's landscapes (including candidate ONFL's) are identified.

<u>Other Data</u>

When considering additional values associated with the district's landscapes, the following types of (potentially non-geospatial) data will be reviewed and considered:

e. Cultural Associations
   i. Iwi
   ii. European

f. Heritage and Historic Associations
   i. Iwi
   ii. European

g. Planning
   i. Existing protection mechanisms and requirements (RPS/CPS/NZCPA/RMA etc)
   ii. Tenure (Private/DoC/Council/etc)

Stage Two: Identification of the District's Landscapes and Features (Unevaluated)

In the sense used in s6(b) of the RMA, a landscape is an amalgam of bio/geophysical components and cultural land use patterns that has an identifiable spatial association or relationship which gives rise to cultural and perceptual values. Communities of interest attribute value to landscapes, and the density and strength of value attributed may be regarded as indicative of the relative significance of different landscapes. It can be described in terms of its spatial extent, geophysical and biophysical components and processes as well as in terms of its values and associations based on how people perceive and interact with it.

Support for this approach can be derived from the aesthetic paradigm explained within the theoretical framework of environmental perception.

This is consistent with the findings of a number of recent decisions including *WESI*[5], *Long Bay*, *Lammermoor*[6] and *Rosehip*, where a wide range of bio/geophysical, associative and perceptual factors were assessed in detail (by various landscape architectural and non-landscape architectural witnesses from an expert or scientific perspective) and considered by the Court in the definition of various s6(b) landscapes and features.

Expert evaluation, within a theoretical framework of environmental perception and landscape aesthetics, will be used to identify and describe the relationships between the various environmental and/or geographic/landscape features present, and how they contribute to an understanding of/perceptions of a landscape.

To achieve this, the various factors identified in the following table (consistent with those identified in the WESI and Lammermoor cases) will be analysed in order to identify the district's landscape resource. By conflating the various empirical factors (non value laden) within the context of various perceptual and associative factors (value laden), the district's landscapes and features can be identified and described. In doing so, hierarchical emphasis will be placed on the consideration of what are termed primary factors and secondary factors.

Primary factors, are those factors considered to be a constant (such as the presence and spatial extent of a particular forest type) or unaffected by a secondary factor (such as it is perceived as the largest patch of forest in the district). Secondary factors are those that are considered to influence perceptions of the primary factors, but are not consistently present, or influence the primary factor (or perceptions of them) in different ways (such as value to Iwi).

[5] Wakatipu Environmental Society Incorporated v Queenstown Lakes District Council (C180/99)
[6] Maniototo Environmental Society Incorporated v Meridian Energy (Case C103/2009)

Stage Three: Application of the "Natural" Prerequisite Test

Following the identification of the District's landscape resource, the "natural" prerequisite test will be applied in order to determine if they are sufficiently natural to be able to be considered as candidate ONLs.

The test will be applied at both the "landscape" and "landscape feature" level. Landscapes that are considered to be "natural enough" will be further evaluated to determine if they are also outstanding (refer next stage). Where a landscape is found to be "not natural enough", the features within it will be evaluated in order to determine if they are "natural enough" to be considered as outstanding natural features.

This is supported in the Rosehip and the Denniston[7] decisions, where the Court appears to have accepted the following seven point scale and ONFL threshold. The following scale[8] indicates the continuum between landscapes and features that are natural enough to be considered for ONFL status and those that are not, that were considered by the Court.

Natural enough		Not natural enough				
Very High	High	Moderate – High	Moderate	Moderate – Low	Low	Very Low

The following modified version of the above scale will be used to assess if a landscape or feature is considered to be "natural enough" to be considered as a candidate for ONFL status (in other words, if it passes the "natural" part of the prerequisite test). The scale indicates the existence of a continuum between natural and unnatural and identifies key indicators that will be used to determine its state of naturalness (Very High – Very Low along the continuum).

[7] West Coast Environmental Network Inc. Et al v Buller Coal Ltd. [2013] NZEnvC 047 – Para 47-48.
[8] Presented in the expert evidence of ML Steven and reproduced within the *Rosehip* decision

NATURAL ENOUGH		NOT NATURAL ENOUGH				
Very High	**High**	Moderate – High	Moderate	Moderate – Low	Low	Very Low
NATURAL			(continuum)			UNNATURAL
All of the key indicators remain unmodified or untouched by human activity / the consequence of human activity (to the extent possible). All natural formative processes and association remain evident. No; or rare discernable sign of human activity.	Most of the key indicators remain unmodified with only one or two key indicators modified to a small extent by human activity / the consequence of human activity. All natural formative processes and association remain evident. Some signs of human activity.	Most key indicators modified to a small extent with only one or two key indicators modified to a moderate extent by human activity / the consequence of human activity. Most natural formative processes and associations remain evident in places. Human activity overt in places. Landscape modification readily discernable in places.	Most key indicators modified to a moderate extent by human activity / the consequence of human activity. Most natural formative processes and association remain discernable. Regular signs of human activity and landscape modification.	Most key indicators modified to a moderate extent with one or two key indicators modified to a high extent by human activity / the consequence of human activity. Some natural formative processes and association remain evident. Signs of human activity and landscape modification common.	Most key indicators modified to a high extent with one or two key indicators completely modified or destroyed by human activity / the consequence of human activity. Few natural formative processes and associations remain evident. Human activity and landscape modification dominant.	All key indicators are either completely modified or have been destroyed by human activity / the consequence of human activity. No natural formative processes or associations remain discernable. Human activity and landscape modification predominant.
Examples: • National parks (wilderness area). • Scenic reserves. • Undeveloped private land. • Undeveloped coastal environment. Coastal foreshore and hinterland landform intact. No buildings or roads evident.	Examples: • National parks or reserves (with occasional track and/or hut). • Indigenous vegetation cover dominant over farm development and rural land cover. • Coastal environment containing an occasional building nestled in amongst predominantly native vegetation. Low levels of road access restricted to coastal hinterland. Foreshore intact.	Examples: • Recreation reserves (developed). • Farmland just dominant over indigenous and/or exotic vegetation cover. • Cut over (regenerating) native bush. • Coastal environment containing dispersed or small clusters of buildings with moderate tracts of indigenous and exotic vegetation. Road access restricted to coastal hinterland. Some developed access to the foreshore (low key).	Examples: • Rural land with some indigenous and/or exotic vegetation cover. • Bush covered peri-urban areas. • Coastal environment containing low levels of urban development and a mix of remnant indigenous and exotic vegetation. Coastal hinterland modified by roads and lot development. Developed (regular) access to the foreshore.	Examples: • Rural land with little or no indigenous and/or exotic vegetation. • Urban parks (parks and gardens). • Production forestry. • Bush covered urban areas. • Coastal environment containing medium levels of urban development and a mix of remnant indigenous and exotic vegetation.	Examples: • Rural-residential areas. • Urban parks and recreation reserves (sports grounds etc). • Cut over production forestry. • Coastal environment containing high levels of urban development and a mix of remnant indigenous and exotic vegetation	Example: • City Centre / CBD. • Industrial areas. • Canals • Coastal environment dominated by very high levels of urban development with the coastal edge artificially retained or modified. Little or no vegetation.
KEY INDICATORS						
Natural processes. Natural landforms and geological features. Endemic vegetation patterns and associations. Ecological associations. Water courses and bodies.						
Note: Naturalness ratings will take into consideration the size of the landscape/feature being assessed in relation to the extent of any modification that has occurred within it or influences perceptions of it.						

Stage Four: Identification of Outstanding Natural Features and Landscapes (Evaluated)

This stage of the assessment process will draw upon the unifying theoretical model of *holistic aesthetic appreciation* to help explain why some landscapes/features come together in a manner that they can be perceived as being "outstanding" while other do not (even though on cursory examination they appear to contain similar components/spatial relationships.

An iterative assessment and analysis approach will be adopted to ensure that identification of the District's ONFLs is robust and defensible.

Identification of Candidate Outstanding Natural Features and Landscapes

Following the application of the "natural" prerequisite test, an iterative analysis will be undertaken (using expert analysis techniques and a review of the ONFL's identified in similar landscapes in the surrounding Districts) to identify the District's candidate ONFLs and its other natural landscapes (for which no further analysis will occur):

i. ONFL candidate landscapes and features: Those landscapes and features (having already passed the "natural" prerequisite test) that may or are likely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

ii. Other natural landscapes or features: Those landscapes and features that are unlikely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

In the application of the iterative analytical approach, the key geophysical/biophysical, associative and perceptual factors to be considered in the identification of the district's landscapes will be divided into two factor groups. These are primary factors and secondary factors.

Primary factors are considered to be the more constant (or enduring) factors that inform an understanding of landscape values and meaning. These will be used in the analysis and identification of whether a natural landscape (or feature) is outstanding.

Secondary factors are considered to be those that are either highly dynamic or variable and/or those that are associative, meaning that they are either:

i. Not always present or do not always have a consistent effect on how a landscape or feature is perceived, its meaning or values (for example the effect of seasonal of atmospheric variation); or

ii. Do not affect perceptions relating to its degree of naturalness, but enrich the understanding of the landscape or a feature through identifying values associated with past, present and future occurrences (for example historical or associative) and may affect perceptions of whether a landscape or features is outstanding or not.

The reason for this separation is that for a landscape or feature to be considered sufficiently outstanding to be included in the District Plan, it must consistently display those attributes that make it so under all conditions, meaning that factors that make it appear outstanding at some times and not others, should not be used as a determining factor in ONFL analysis and evaluation.

This approach is consistent with the findings of the Holcim case[9], in which the Court considered the contribution of heritage values (and tangata whenua values) to the identification of section 6(b) landscapes. In paragraph 175 of the decision, the Court wrote:

> *...in terms of section 6(b) the question is not whether these* [historic] *items exist, or are important, but whether they are such that in combination they give a particular character to the landscape such that together with tangata whenua cultural associations they make the wider landscape outstanding as a natural landscape.*

In paragraph 182, when considering Tangata whenua values, the Court went on to say:

> *As we have said, under section 6(e) we are required to recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water sites, waahi tapu and other taonga. Their presence contributes to an understanding of landscape, but while it may, it does not necessarily, result in the landscape being regarded as outstanding. But we bear their presence in mind as we consider whether the landscape of the Waiareka valley should be so classified. We reiterate, that inasmuch as a landscape does derive its significance from these items of significance to Maori, recognition and provision for them in a way that would satisfy the requirements of section 6(e) is likely also to satisfy the requirements of section 6(b).*

This suggests that, under the RMA, the proper approach to the identification of ONFLs (s6(b) landscapes) it is to place primacy on those factors that contribute to the naturalness of the landscape first, and its outstanding nature second (as indentified in the legal prerequisite tests). This suggests that, a landscape or feature may contain outstanding heritage of tangata whenua values, but be insufficiently natural to be considered as an ONFL under s6(b). This of course does not preclude its identification as a landscape of cultural value or a heritage landscape under s6(e) or s6(f) of the RMA.

Therefore, where secondary factors are considered to add significant value to an area that is also an ONFL candidate, these will be identified and considered. Where such factors and features are considered to add meaning or value to a landscape or feature in their own right but are not contained within an area that is considered to be outstanding (within the context of the primary factors), then these will not be identified by the work undertaken in response to the appeals to the landscape provisions of the district plan.

Thus, each candidate ONFL will undergo further (iterative) expert evaluation and analysis, within the context of a relevant holistic model of environmental aesthetics that informs an understanding of the landscape (or feature), its perception and why it can be considered to be "outstanding" when compared to similar (or dissimilar) surrounding RMA landscapes or features.

[9] Waireka Valley Preservation Society et al v Waitaki District Council and Otago Regional Council (C058/2009)

The following factors will be considered, within the appropriate holistic aesthetic framework, in the evaluation of the districts' landscape resource:

KEY BIO/GEOPHYSICAL FACTORS	NON VALUE/VALUE LADEN	FUNCTION
Key Geophysical, Biophysical and Cultural (Physical) Factors that influence landscape perception: a. Geological • Type (volcanic/sedimentary/igneous etc - surface geology) • Spatial extent (large – small) • Spatial relationship (simple-complex) • Temporal relationship (age) b. Geomorphology • Formative processes (tectonic/volcanic/alluvial/coastal etc) • Typology (mountainous, rolling, plains, etc) • Pedology (Soils) • Type • Spatial extent • Spatial relationship (proximity/TPI10) • Temporal relationship (recent – ancient) c. Ecological • Vegetation (type) • Spatial extent (large – small) • Spatial relationship (simple-complex) • Temporal relationship (primary – climatic) • Habitat (type) d. Cultural (physical) • Type (building/road/etc) • Spatial extent (large - small) • Spatial relationship (simple-complex)	Non value laden identification of the components of the physical environment that contribute to an understanding of the landscape or features within it.	Primary factors used in the identification of the districts landscape resource.
Key Environmental Variables: e. Dynamic • Type (climatic/seasonal/etc) • Rate of change (fast/slow) • Extent (large/small) f. Temporal • (past/present/future)	Non value laden identification of the transient or highly dynamic elements/events within the physical environment that have the potential to alter perceptions of the landscape and landscape values.	Secondary factors (environmental) that may affect the values associated with the districts landscapes and/or ONFLs in either a positive or negative way, but are not constantly present.

KEY PRECEPTUAL FACTORS	NON VALUE/VALUE LADEN	FUNCTION
Key Perceptual Factors that influence how landscapes are identified and perceived: g. Legibility (does it make sense / is it readable) • Internal Cohesion (between elements with a landscape) • External Cohesion (between different landscapes) • Patterning h. Magnitude • Size (spatial extent) • Scale (overwhelming / intimate) i. Spatial arrangement (of elements) • Ordered/chaotic • Juxtaposition	Value laden analysis of the (above) geophysical, biophysical, physical and environmental factors to determine whether, and to what degree, under which conditions they are valued by the (wider) community or communities of interest.	Primary factors (associative and perceptual) that can be used to identify and define the districts landscapes and the values associated with them. Used (in conjunction with the above geophysical, biophysical & physical factors) in the identification and evaluation of the

[10] Topographic Position Index (relationship relative to topography – i.e. valley floor soils / upper slope soils etc)

KEY PRECEPTUAL FACTORS	NON VALUE/VALUE LADEN	FUNCTION
j. Spatial relationship (of elements) • Association (dispersed / clustered) • Pattern k. Naturalness • Dominance of natural/cultural processes l. Other aesthetic descriptors		districts candidate ONFLs.

KEY ASSOCIATIVE FACTORS	NON VALUE/VALUE LADEN	FUNCTION
Key Associative Factors that influence how landscapes are identified and perceived: m. Heritage/Historic • Past events and occurrences (history) • Memories & associations n. Cultural • Tangata whenua values • Other cultural values • Views of key informants (individuals) o. Resource Management • Existing use (productive/conservation) • Future use/potential (economic potential)	Value laden analysis of the associative and perceptual factors.	Secondary factors (associative and perceptual) that enhance the values associated with the districts ONFLs but do not contribute to their existing natural or landscape attributes.

Any other relevant factors, identified during the iterative analysis process, will also be considered

The "Outstanding" Threshold

During the above analysis process, consideration will be given to the meanings and thresholds applied by various divisions of the Environment Court to the term "outstanding", as it is used in the sense of s6(b) of the RMA.

The term "Outstanding" is synonymous with the notion that an entity or act is so obviously different or out of the ordinary when compared to its physical surroundings or baseline level of activity that it stands apart as being extraordinary, stupendous, exceptional, dazzling or a superior example . It is therefore critical that the threshold, above which a feature or landscape becomes "outstanding", is identified correctly.

In the *WESI* decision the Court, using the Concise Oxford Dictionary, defines the word "outstanding" to mean:

> *"conspicuous, eminent, especially because of excellence."*
> *"remarkable in"*

It is noted that a landscape can be considered to be notable or of special significance without attaining ONL status. In the *WESI* case, the Court observed that:

> *A landscape may be magnificent without being outstanding (Munro v Waitaki District Council). New Zealand is full of beautiful or picturesque landscapes that are not necessarily outstanding natural landscapes.*

An outstanding landscape must stand apart from its surroundings as being so extraordinary, stupendous, exceptional, dazzling or superior that it is recognisable by nearly all that encounter it.

This appears to be supported in paragraph 99 of the *WESI* decision where the Court stated:

> *....ascertaining an area of outstanding natural landscape should not (normally) require experts[92]. Usually an outstanding natural landscape should be so obvious (in general terms) that there is no need for expert analysis.*

By necessity, this requires cognisance and comparative analysis of the range of landscapes available within the District (as identified in previous stages).

Outstanding Natural Features and Landscapes

Analysis of those landscapes identified in the earlier stage the process, which have passed the "natural" threshold test will go beyond merely describing the landscape or feature in terms of its biophysical, associative or perceptual factors. In other words, to be considered outstanding, it is not sufficient that a landscape or feature just contain the set of elements (such as water, trees, cliffs etc) or is able to be described using the WESI factors. The analysis and descriptions must be meaningful, clearly identifying the key attributes that make the landscape stand apart from other landscapes with common elements and how they are associated with each other.

Thus the test for "outstanding" will not be a quasi numerical analysis of the individual scores attained from the analysis of WESI or Lammermoor[11] type assessment factors, rather these factors will be assessed to identify and articulate the relative contribution that different parts of the landscape make to its overall "outstanding" status in support of an overall comparative analysis using an iterative process and broad judgement approach.

Expert evaluation within the context a holistic aesthetic model will be used to identify which landscapes and features are outstanding in terms of s6(b) of the RMA before a reductionist process (splitting the landscape into its component parts) is used to clearly identify and describe the relationship between the landscape's various component features. This will ensure that the "whole" of a landscape or feature is evaluated, rather than the "sum of its component parts".

The following analytical suppositions will be applied during evaluation:

a. A *natural landscape* can be composed of those components and/or features that are either outstanding in their own right or are less than outstanding (including ordinary components and/or features or components and/or features with high amenity values) that when considered in combination result in the landscape being considered as *outstanding* as a whole. These will be identified and mapped as ONLs for district planning purposes.

b. A *natural landscape* can be composed of components and/or features that are either outstanding in their own right and/or are less than outstanding (including ordinary features or features with high amenity values) that when considered in combination results in the landscape being considered as having high amenity value but not being *outstanding* as a whole. These will not be identified or mapped.

c. A *natural landscape* can be composed of components and/or features that are either in their own right and/or are less than outstanding (including ordinary components/ features or components/features with high amenity values) that when considered in combination results in the landscape being considered as *ordinary*. These will not be identified or mapped.

d. *Natural landscapes* that, when considered as a whole, are not *outstanding* may contain features that are *outstanding* in their own right. These will be identified and mapped as ONFs for district planning purposes.

Expert evaluation, within the context of a holistic aesthetic model, will be applied using the following premises:

[11] Maniototo Environmental Society Incorporated v Meridian Energy (Case C103/2009)

a. In order for a "landscape" to be considered to be an "outstanding natural landscape, its components must come together is in such a way that the overall landscape is considered (aesthetically) extraordinary, stupendous, exceptional, dazzling or a superior example;

b. In order for a landscape "feature" to be considered to be an "outstanding natural feature", it must sit above the identified threshold for "natural" end of the "natural – modified" continuum and is (aesthetically) extraordinary, stupendous, exceptional, dazzling or a superior example in its entirety.

Expert analysis and evaluation with reference to an appropriate holistic aesthetic model will be undertaken in order to identify the key attributes of each ONF or ONL with sufficient accuracy and detail to allow Council to determine the likelihood of a proposed activity affecting those key attributes, without need for a high level of additional detailed analysis.

5. MAPPING

The following approach will be applied during mapping.

Scale of Analysis

Analysis and mapping will be undertaken at a resolution that sensibly informs the district plan and allows its users to clearly identify the spatial delineation of any ONFL's that may affect them.

In order to achieve this:

a. GIS analysis will be undertaken at the accuracy and resolution of the available base data. Where data is aggregated, analysis will be undertaken at the "coarsest" data resolution.

b. GIS mapping for analysis purposes will be undertaken at as scale of 1:25000 for intended use at a printed scale of 1:50000 (commensurate with the scale of the District Planning Maps).

Boundary Definition

A hierarchical approach to the decision making around the type of feature used for landscapes/features delineation will be used. The following table indicates the boundary mapping preference continuum that will be applied.

Boundary Types		
Geophysical	Socio-physical	Socio-cultural
Most Preferred	*(continuum)*	*Least Preferred*

Geophysical/biophysical boundaries are naturally occurring boundaries within the landscape. Such boundaries are an interpretive response to certain natural features or elements that are evident (to different extents) within the landscape. They have no inherent meaning associated with them but are often perceived as the point where (at least one) key attribute of a particular landscape feature changes (such as along a ridge where the topography ceases to ascend and starts to descend); a severance in a continuous landform pattern (such as a river or a gorge); a change in landform type (such as a edge of a plain or the coastal edge). Geophysical boundaries may include geographical features like ridge lines, valley floors, streams, the coastal edge, or biophysical features such as vegetation patterns.

Geophysical/biophysical boundaries will be given the heaviest weighting when defining the spatial extent of the districts ONFLs. This is because these boundaries are generally manifest

to everyone although they may require little or no prior knowledge to understand why they have been established where they are.

Preference will be given to clearly perceivable and (where possible) permanent natural features (such as distinct landforms or distinct changes in vegetation patterns) that form a clearly defined or sharp transition or "edge" between different parts of the landscape. Natural features with edges that are not as overt (such as rolling ridgelines) will not be preferred.

Where no geo physical boundaries are obvious, socio-physical boundaries will be used to delineate the ONFL boundaries. These types of boundaries are created by the perception that some manmade physical elements form manifest boundaries or edges. While often perceived to be limiting factors or constraints, this type of boundary is more related to the perception of its use, rather than a point of physical change (e.g. a road may be perceived as a boundary between two landscapes even though the landscape may be essentially the same on both sides of it, making the road an arbitrary boundary). These types of boundaries can include features such as the edge of town, roads, green belts, parks and reserves.

Socio-physical boundaries are not as clearly defined as geo-physical boundaries because they are only obvious to varying extents and depend on peoples individual perceptions. These boundaries will not be used in preference to an obvious geo-physical boundary as they are not clearly manifest to everyone. However, a socio-physical boundary would be given more weighting than a social construct boundary because of its association with physical and visual element.

Socio-cultural boundaries are not detectible in the landscape and their use will be avoided where possible (or a best used as a last resort). Most people are unaware of where these boundaries exist, as they are often only represented by lines drawn on paper, and can be difficult to detect. This type of boundary will only be used in the circumstance where it is logical to conflate a geophysical/biophysical or socio-physical boundary outward or inward to an existing legal or planning boundary. Socio-cultural boundaries include property boundaries, planning zones/overlays/policy areas, study area boundaries and political boundaries.

6. REPORTING

A findings report will be prepared in support of all identified ONFLs.

7. QUALITY PLANNING GUIDANCE NOTE

The above methodology is consistent with key aspects of the 2013 RMA Quality Planning Resource Document – Plan Topics Landscape.

Amongst other things, the *Quality Planning* guidance document emphasis the need for a transparent methodology together with an integrated approach to managing the landscape.

The guidance document support the analysis of landscape in terms of its:

1. *Biophysical elements, patterns and processes;*
2. *Associative meanings and values including spiritual, cultural or social associations; and*
3. *Sensory or perceptual qualities.*

APPENDIX TWO

Relevant Planning Matters

The following statutory documents, issues, objectives, policies and rules are considered relevant in the assessment of visual, landscape and amenity effects.

RESOURCE MANAGEMENT ACT (1991) AND SUBSEQUENT AMENDMENTS

The development must meet the requirements of this Act in terms of integration into the landscape. The relevant provisions are as follows:

Part 2 Purpose and principles

5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and
- the protection of them from inappropriate subdivision, use, and development:
- the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development:
- the protection of areas of significant indigenous vegetation and significant habitats

of indigenous fauna:

- the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers: [Emphasis Added]

7 Other matters

In achieving the purpose of the Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to:

(c) the maintenance and enhancement of amenity values:

(f) maintenance and enhancement of the quality of the environment:

Proposed Waikato Regional Policy Statement (PWRPS)

The Proposed Waikato Regional Policy Statement (PWRPS) contains a suite of objectives and policies pertaining to the protection of outstanding natural features and landscapes (Objective 3.19), amenity (Objective 3.20) and the natural character (Objective 3.21). Policy 12.1 requires the identification and protection of outstanding landscapes of local and regional significance.

The objectives and policies of the PWRPS appear to have been addressed by the existing provisions of the Operative Waikato District Plan (OWDP).

Specific regard to the protection of the Waikato River has been considered under the PWRPS: 2.1 Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010. The Vision and Strategy for the Waikato River sits statutorily above the Regional Policy Statement and must be taken into account.

2.4 Vision and Strategy for the Waikato River

2.4.1 A healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.

In order to realise the vision, the following objectives will be pursued:

a. The restoration and protection of the health and wellbeing of the Waikato River.

f. The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular, those effects that threaten serious or irreversible damage to the Waikato River.

g. The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within the catchment on the health and wellbeing of the Waikato River.

h. The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.
i. The protection and enhancement of significant sites, fisheries, flora and fauna.

2.4.3 Strategies for the Waikato River
To achieve the vision, the following strategies will be followed:
g. Recognise and protect appropriate sites associated with the Waikato River that are of significance to the Waikato regional community.

Waikato District Plan

Chapter 1: Waikato District Resources and Pressures

The River Settlement Acts reflect a required comprehensive "whole of river" approach by all territorial authorities, covered in 1.3A. On 17 December 2009 Waikato-Tainui and the Crown signed the Deed of Settlement in relation to the Waikato River. The overarching purpose of the settlement (as stated in [s3]) is to restore and protect the health and wellbeing of the Waikato River for future generations.

Chapter 3: Natural Features and Landscapes

3.1.1 Vision and Strategy for the Waikato River

Operative Waikato District Plan (OWDC) – Franklin Section

PART 5 CONSERVATION OF NATURAL FEATURES

SCHEDULE 5A: CONSERVATION OF OUTSTANDING NATURAL FEATURES
5. Waikato River and Wetlands
This area is protected by a District Plan conservation zoning (Wetland Conservation Zone).

5.2 OBJECTIVES POLICIES AND METHODS

5.2.3 OBJECTIVE - SUSTAINABLY MANAGING NATURAL HERITAGE RESOURCES

Matters relating to sustainably managing the natural heritage resources of the district include:

1. Protecting the following items from inappropriate subdivision, use, and development:

a) Outstanding natural features and landscapes;

b) Areas of significant indigenous vegetation.

2. Ensuring that representative samples of natural features, areas of indigenous vegetation, and habitats of indigenous fauna that are of value at a regional and district level are protected.

Policies relating to sustainably managing thenatural heritage resources include:
1. Adverse effects of land use activities that have the potential to damage or destroy the values of those items listed in Schedules 5A, 5B and 5C shall be avoided.

2. Significant natural features, areas of indigenous vegetation and habitats of indigenous fauna not listed in Schedule 5A which contribute to the rural or natural character of the area should be retained. In the assessment of the significance of such heritage resources the following criteria will be taken into account:

Whether the native bush:
a) Is of sufficient size and shape to maintain its intrinsic qualities;
b) Consists of a coherent well-developed canopy of native species;
c) Consists of a range of native species appropriate to that forest type;
d) Contains a significant percentage (at least 25 per cent) of mature native trees;
e) Represents a significant or prominent landscape feature;
f) May contain native species threatened in;
g) The area has wildlife habitat values, or provides or contributes to a habitat corridor facilitating the movement of wildlife species in the local area.

Whether natural features and habitats of indigenous fauna are:
a) Of sufficient size and shape to maintain its intrinsic qualities;
b) The habitat of threatened species (as defined by IUCN criteria);
c) An area of recognised wildlife or earth science significance;
d) Freshwater wetland;
e) An uncommon indigenous vegetation community;
f) Contribute to the national, regional or district geological heritage.

The Waikato River has been identified as an Outstanding Natural Feature, protected through the Wetland Conservation Zone. Natural features and areas of indigenous vegetation were categorised as least suitable for development during the landscape character and landscape

constraint mapping process. The outcome of the mapping therefore excludes these areas as suggested areas for urbanistation within the Tuakau Township.

Part 24, Rule 24: Wetland Conservation Zone
The general objectives of the wetland Conservation Zone require that all buildings and structures, adjacent to lakes and rivers (including wastewater disposal fields), shall be erected at least 30 metres from the edge of a stream, river or lake.

24.6.2 ECOSYSTEMS

The following matters relevant to ecosystems, including indigenous vegetation and natural features are required to be addressed under the OWDP:

- the damage or removal of indigenous vegetation, other than for the purposes of improving habitats of indigenous animals,
- the functioning of ecosystems or the hydrological functioning of wetlands; or
- the visual compromise of natural features or the natural character of the coastal environment/ otherwise detract from the visual qualities of the surrounding area.

Part 28 - Rule 28 Rural Residential Zone

28.7 Assessment of Discretionary Activities

The discretionary activity objectives of the rural-residential zone (28.7.1) requires that development be assessed in terms of its affects on the ecological, landscape or landform values of the area, or the natural character of the coast or of the margins of lakes and rivers.

Part 23A - Rural Zone

The rural zone (23A.3.1) places importance on the landscape design and general site layout of proposed development to ensure buildings and structures will not visually compromise major ridgelines or the natural character of the coastal environment.

The additional information requirements for resource consent section of the rural zone provisions requires:

9. DEVELOPMENT SETBACKS have the following purpose:
The preservation of the natural character of streams, rivers, lakes or WETLANDS and their

margins as required by section 6(a) of the Act.

Maintaining and enhancing the natural functioning of the adjacent streams, rivers, lakes or WETLANDS.

23A.4.2.8 CAFÉ/RESTAURANT on the same site and associated with FARMING, ACTIVE RECREATION, EQUESTRIAN CENTRE, PRODUCE STALL or ON SITE PRIMARY PRODUCE MANUFACTURING

Intensity of the activity are compatible with the amenity values and rural character of the surrounding area.

Part 34 Recreation Zone

Performance Standards

It should be noted that this assessment was undertaken before the planning maps from Plan Change 14 came into effect. Therefore the provisions around the identified Waikato River Management Area have not been taken into account. The majority of areas identified as Significant Natural Features were identified and mapped through site ana;ysis and GIS mapping and have been included in the Sensitive Landscape Areas Map. The schedule 5 (ONFs) overlay identifies the Waikato River, which is protected under the Wetland Conservation Zone of the OWDP - Franklin District planning text. Alexandra Redoubt Bush is also identified through the schedule 5 overlay, on reserve status private land and protected by a council covenant.

APPENDIX THREE

Landscape Preference Studies

BIBLIOGRAPHY

Antrop, M., V. V. Eetvelde, M. Sevenant, C. Tagliafierro, F. Witlox. 2013. *Setting a Framework for Valuing the Multifunctional Landscape and its Multiple Perceptions.* The Economic Value of Landscape. Routledge Studies in Ecological Economics, pp. 34, 36, 39. Routledge.

Anthrop, M. *From Holistic Landscape Synthesis to Transdisciplinary Landscape Management.* http://library.wur.nl/ojs/index.php/frontis/issue/view/210

Augustin, D., B. Belke, H. Leder, and Oeberst, A. 2004. *A Model of Aesthetic Appreciation and Aesthetic Judgements*. British journal of Psychology, 95, pp. 489-508.

Brady, E. 1998. *Imagination and the Aesthetic Appreciation of Nature*. The Journal of Aesthetics and Art Criticism, 56:2, pp. 139-147. Blackwell Publishing.

Brady, E. 2006. *Aesthetics in Practice: Valuing the Natural World.* Environmental Values 15 (2006): 277-91. White Horse Press.

Brook, I. 2013. *Aesthetic Appreciation of Landscape.* The Routeledge Companion to Landscape Studies. Routeledge. London.

Carlson, A. 2009. *Contemporary Environmental Aesthetics and the Requirement of Environmentalism.* Journal of the Faculty Letters, University of Tokyo. Vol 34 (2009).

Gobster, P. H. 1995. *Aldo Leopold's Ecological Esthetic: Integrating Esthetic and Biodiversity Values*. Journal of Forestry, 93, pp. 6-10.

Hays, J. K. 2011. *Aesthetic Appreciation of the Natural Environment: Scientific Knowledge & the Extention from Aesthetics to Ethics.* Thesis. MA(Phil), University of Montana.

Heijman, W. J. M., and C. Martijn van der Heide. 2013. *Landscape and Economics: Perceptions and Perspectives.* The Economic Value of Landscape. Routledge Studies in Ecological Economics, pp. 5. Routledge.

Hettinger, N. 2012. *Evaluating Positive Aesthetics*. (unpublished)

Kalivoda, O., and Z. Skrivanova. 2010. *Perception and Assessment of Landscape Aesthetic Values in the Czech Republic – a Literature Review*. Journal of Landscape Studies, 3, pp. 211-220.

Leder, H., Belke, B., Oeberst, A., Augusin, D. 2004. *A Model of Aesthetic Appreciation and Aesthetic Judgements.* British Journal of Psychology (2004), 95, 489-508.

Leon, M.J.A. 2010. *Positive Aesthetics: Claims and Problems.* Enrahonar 45, 2010: 15-25.

Lothian, A. 1999. *Landscape and the Philosophy of Aesthetics: is Landscape Quality Inherent in the Landscape or in the Eye of the Beholder?* Landscape and Urban Planning, 44, pp. 177-198.

Martinez, M. 2012. *On Brady's Imagination and the Aesthetic Experience of Nature.* Proceedings of the European Socienty for Aesthetics, Vol 4, 2012.

New Zealand Coastal Policy Statement 2010.

SA Ode , Mari S. Tveit & Gary Fry (2008) *Capturing Landscape Visual Character Using Indicators: Touching Base with Landscape Aesthetic Theory*, Landscape Research, 33:1, 89-117,

Parsons, G. 2008. *Nature, Aesthetic Values, and Urban Design: Building the Natural City*. P. E. Vermaas et al. (eds), Philosophy and Design, pp. 341-354.

Parsons, G. 2002. *Nature Appreciation, Science and Positive Aesthetics*. British Journal of Aesthetics, 42 (3), pp. 279-295.

Parsons, G. 2004. *Natural Functions and the Aesthetic Appreciation of Inorganic Nature*. British Journal of Aesthetics, 44 (1), pp. 44-56.

Parsons, G. 2007. *The Aesthetics of Nature*. Philosophy Compass 2. Journal Compilation. Blackwell Publishing Ltd.

Parsons, R and Daniel, T.C. (2002). *Good Looking: In Defence of Scenic Landscape Aesthetics.* Landscape and Urban Planning 60 (2002): 43-56.

Porteous, J. D. 1996. *Environmental Aethetics – Ideas, Politics and Planning.* Routeledge, London.

Price, C. 2013. *Subjectivity and Objectivity in Landscape Evaluation: an Old Topic Revised*. The Economic Value of Landscape. Routledge Studies in Ecological Economics, pp. 55, 58, 66, 68, 71. Routledge.

Rolston, H. (1995) *Does Aesthetic Appreciation of Landscapes need to be Science Based?* British Journal of Aesthetics Vol 35, No. 4, October 1995. Oxford University Press.

RMA Quality Planning Resource – Plan Topics Landscape.
http://www.qualityplanning.org.nz/images/documents/plan_topics/Land/Landscape/Landscape_-_Plan_Topics.pdf

Swanwick, C. 2002. *Landscape Character Assessment Guidance for England and Scotland.* University of Sheffield & Land Use Consultants.

Specker, R. 2012. *Epistemic Norms, Moral Norms and Nature Appreciation*. Environmental Ethics, 34 (3), pp. 247-264.

Van den Berg, A. E. 1999. *Individual Differences in the Aesthetic Evaluation of Natural Landscapes.* PHD Thesis. ISBN 90 367 1050 2.

Zube, E. H. 1987. *Perceived Land Use Patterns and Landscape Values*. Landscape Ecology, 1, pp. 37-45. SPB Academic Publishing, the Hague.

Environment Court Decisions

Wakatipu Environmental Society Inc vs. The Queenstown-Lakes District Council. C180/99. (WESI)

Long Bay-Okura Great Park Society Incorporated vs. North Sure City Council. A078/2008.

Waiareka Valley Preservation Society Incorporated vs. Waitaki District Council. C058/2009.

Maniototo Environmental Society Incorporated vs. Central Otago District Council. C103/2009.

Upper Clutha Tracks Trust vs. Queenstown Lakes District Council. [2010]NZEnvC432.

High Country Rosehip Orchards Limited and Mackenzie lifestyle Limited vs. Mackenzie District Council. [2011]NZEnvC387.

Sanford Limited vs. Marlborough District Council. [2012]NZEnvC72.

West Coast Environmental Network Inc vs. West Coast Regional Council. [2013]NZEnvC047.