



URBAN AND LANDSCAPE DESIGN FRAMEWORK

Technical Report 5

Mackays to Peka Peka Expressway



 Mackays to Peka Peka

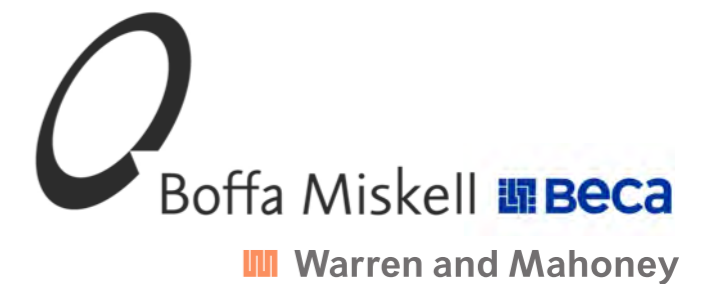
REVISION HISTORY

revision 0	Marc Baily (Boffa Miskell)	draft for peer review	8 August 2011
revision 1	Marc Baily (Boffa Miskell)	revised from comments	31 November 2011
revision 2	Marc Baily (Boffa Miskell)	revised from comments	22 December 2011
revision 3	Marc Baily (Boffa Miskell)	revised from EPA comments	16 February 2012

DOCUMENT ACCEPTANCE

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reviewed by	Jim Ebenhoh (KCDC)	29 August 2011
reviewed by	Chapman Tripp Legal	2 November 2011

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01 | introduction

1.1 project overview

The project (MacKays to Peka Peka or the Expressway) which is the subject of this Urban and Landscape Design Framework (ULDF) is to design and construct a new section of road and associated infrastructure for New Zealand's state highway network. The project will be delivered by the New Zealand government through the NZ Transport Agency (NZTA) as part of its programmed upgrades for Roads of National Significance (RoNS).

The Wellington Northern Corridor RoNs has a total length of about 110km running from north of Levin to Wellington Airport (refer RoNS diagram).

MacKays to Peka Peka is an 16km section of the RoNs extending from MacKays Crossing to Peka Peka Road within the Kāpiti Coast District.

The objectives of the Wellington Northern Corridor RoNS are:

- To enhance inter regional and national economic growth and productivity;
- To improve access to Wellington's CBD, key industrial and employment centres, port, airport and hospital;
- To provide relief from severe congestion on the state highway and local road networks;
- To improve the journey time reliability of travel on the section of the existing SH1 between Levin and the Wellington airport; and
- To improve the safety of travel on State Highways.

1.2 purpose + structure of the ULDF

The Urban and Landscape Design Framework (ULDF) is a Technical Report prepared to demonstrate how the MacKays to Peka Peka project fulfils NZTA's Urban Design policy requirements (refer to section 2).

The ULDF's overall purpose is to ensure that the urban and landscape design concepts of the Project are appropriately defined, developed and implemented.

As the Project has not yet progressed to a detailed design phase, this ULDF will provide direction in relation to its design that will need to be addressed in the future.

The ULDF is not an assessment of the effects of MacKays to Peka Peka to satisfy the requirements of the Resource Management Act (1991) (RMA). Although the ULDF is cognisant of RMA requirements a separate Assessment of Urban Planning and Design Effects (Technical Report 6, Volume 3) has been prepared to address the specific matters relevant to RMA consideration.

A separate Assessment of Landscape and Visual Effects (Technical Report 7, Volume 3) has also been carried out for RMA purposes.

The methodology for the ULDF (refer to section 1.3) notes the interdisciplinary nature of the design process. There are multiple connections between the ULDF and the other disciplines involved in this project.

In particular, although a description of relevant elements of MacKays to Peka Peka has been provided in the ULDF, this is to provide background to the urban and landscape setting for it. However, it is noted that many of these elements will be covered in significantly more detail by other specialists.

It is intended that the ULDF be used in the following way, by:

- the NZTA using it in various fora to demonstrate that its policy has been met.
- consent agencies (EPA and others) to gain an understanding of the urban and landscape issues, evidence base and methodologies used in design decision making.
- the Kāpiti community to get an appreciation of the way aspects of the Project of specific interest locally are going to be delivered.
- designers in the next phases of the Project to reference to the Project design objectives, evidence base and design directions contained within it.

The ULDF is structured to provide an understanding to the user of the:

- project and background [1:INTRODUCTION]
- national, regional and local policy context relevant to the Project's design [2: POLICY CONTEXT]
- environment and the dynamics within it currently in the context of the Project [3:CONTEXT]
- design principles that have been used [4:PROJECT DESIGN PRINCIPLES]
- design outcomes for each of the four sectors of the route [5: PROJECT URBAN AND LANDSCAPE DESIGN]

Throughout the ULDF images have been used to assist to communicate the design features of the Project. It is noted that these are typically diagrammatic or conceptual when associated with text pages.



RoNS diagram (source NZTA)

1.3 Methodology

The broad methodological approach taken to urban design of the Project has been to:

- Provide an urban and landscape design presence throughout the Project's design development (urban designer and landscape architect at all options reviews, coordination meetings, value improvement meetings, freethinking sessions) to ensure urban and landscape design perspectives have been advocated for and incorporated into decision making processes.
- Gather and map information about the function and form of the existing environment to provide an understanding of use patterns and key attributes to be considered during the design process.
- Establish a set of design objectives for the Project in conjunction with the wider Wellington RoNs team and NZTA as a basis for what is expected to be achieved in urban and landscape design terms across all the Wellington RoNs.
- Communicate project urban and landscape design objectives to the public through the Design Philosophy Statement Report (Technical Report 1, Volume 3), Legacy Statements, Alternative Options Report, Multi-Criteria Analysis, Expo and consultation material to assist community engagement.
- Distill the Project design objectives to the Multi-Criteria Analysis as a basis by which to assist the evaluation and refinement of the many project design options.
- Review of consultation feedback and respond with design refinements in conjunction with other disciplines.
- Recording in the ULDF the urban and landscape design considerations and directing the way in which the design should evolve to address any issues in the next phases of the Project.

The application of this methodological approach is represented throughout the sections of the ULDF. The components of activity that were involved in this approach are described further below.

Existing Environment Investigations

To determine an understanding of the Project's existing environment, the following work was undertaken:

- reviewing existing documents and mapping to identify constraint areas
- application of local knowledge
- liaison with KCDC officers and other specialist groups (eg Kāpiti Cycling, Walking and Bridleway Reference Group) to supplement existing local knowledge
- mapping of constraints by GIS to enable their overlay to define option preferences
- field work to confirm any areas that were unclear
- ground and aerial oblique photography to record environment conditions and features
- production of a working mapping base utilising GIS to enable topography, urban areas, land uses and other aspects of the environment to be visualised
- undertaking of movement surveys and other counts to capture walking and cycling and horseriding movements and route use frequency

The understanding of the environment has been continuously refined throughout the Project.

Establish Project and Urban and Landscape Design Objectives

Project objectives were set by the Project Alliance Board at the outset as were the objectives agreed with KCDC on its joining the Alliance. These are described in the AEE, Part A, Chapter 2, Volume 2. More specific Project objectives for urban design were further developed by the Wellington RoNs team and NZTA. These are:

Environment

1. To design the highway including its horizontal and vertical alignments, cross section, structures and interchanges in response to the environment it traverses whether rural or urban.
2. To design the highway so as to retain key landscape, built, heritage and / or ecology key features along the route.
3. To design the highway with interchanges in locations that enable regional, interregional and local transport movements that can support and encourage economic development from urban and business growth.

4. To optimise the opportunities for future land uses around the highway corridor to either reinstate prior uses or develop in new ways such that the district's urban and business growth can benefit.

5. To design the highway with consideration to the needs and amenity of the local community including maintaining or enhancing the usability and amenity of public open spaces.

6. To design the highway to respond to the local drainage patterns and maximise the opportunities for improving stormwater discharge quality.

7. To design the highway to contribute to ecological sustainability and biodiversity.

8. To design the highway so as to maintain heritage and cultural elements that provide historic significance, to ensure the relevance of heritage elements through access and/or interpretation, and to promote historical and cultural narratives through the detailed design.

9. To be cognisant of resource efficiency and sustainability opportunities and innovations in the design, construction, operation and/or maintenance phases of the highway.

Accessibility

10. To design the highway so as to maintain or enhance the connectivity, usability and amenity of pedestrian, cycle and vehicles links which adjoin or cross the road corridor.

11. To design the highway with retention of all existing local roads and provide where practicable opportunities for increased accessibility through additional local connections and/or improved accessibility to public transport, cycle and walking networks.

12. Where appropriate, to design the new highway with consideration of the role of the old highway corridor in contributing to local accessibility for public transport, cycle and walking networks.

13. To design the highway to minimise social severance, community disruption and loss of amenity.

14. To design the highway to maintain or enhance access to waterways, the coast, open spaces and recreational activities.

15. To design the highway to avoid the creation of isolated pockets of land and not preclude use or development of sites in the future.

Legibility

16. To design the highway to create legible entry and exit points to and from urban areas with consideration of driver experience across the whole Wellington RoNS corridor.

17. To design the highway to provide road users with a coherent, interesting and pleasant experience.

18. To design the highway to assist safe driver behaviour with designed-in speed management and safety measures.

19. To design the highway to preserve distinctive local and distant views to aid orientation and enhance sense of place.

The application of these objectives to the ULDF is set out in section 5 and 6.

Multi-Criteria Analysis Technique

The multi-criteria analysis (MCA) tool was the Project's main vehicle for design option decision making. For the elements of direct relevance to urban and landscape subjects, these came under the headings of Built Environment and Natural Environment. These were distilled from the Project urban and landscape design objectives. For urban and landscape design the primary headings are outlined below.

Other subject headings covered other aspects of the urban and landscape design objectives including under Movement, Cultural/Heritage, Social and Economic elements - the crossover between all these factors is recognised.

BUILT ENVIRONMENT

The project provides for the integration of infrastructure in the urban environment. The design does not significantly detract from the urban form and the adverse effects on the urban form and features are no more than minor.

Visual Impact

Visual relationship to the local environment. The extent of the visual impact of structures and earthworks, landscape in relation to context including urban villages, residential areas, Waikanae River corridor and other public amenity locations.

Built Form

Relationship and integration with urban form and town centres, including responding to the individual urban identities of Raumati Beach, Raumati, Paraparaumu, Paraparaumu Beach and Waikanae. Includes the potential for built form improvements.

Public Areas/Parks/Recreational Areas

Significance of impact on public open space areas

NATURAL ENVIRONMENT

The project integrates well with the environment and any adverse environmental effects on natural resources and systems such as land, air and water are no more than minor.

Land and Vegetation

Extent of environmental impact on land and vegetation

Natural Landscape and Features

Extent of environmental impact on natural landscapes and features identified as requiring protection by the local and regional plans.

The MCA process utilised a scoring system (-3 to +3) as indicators to the relative merits of the options. The significance of this process was not the score itself, but the relative performance among the options. The various criteria (of which built and natural environment were only two) were also able to be sensitivity tested to establish the extent to which an emphasis on one criteria or another would affect the outcome of a combined assessment.

Typically the MCA process was conducted in workshop settings to enable all the specialists to present their findings and for these to be tested by the group. Records of the scores and the notes were taken and the results circulated to the assessment team as a record of decisions made.

Refine options

Throughout the design process the MCA tool has been used to consider options with respect to the following aspects of the Expressway:

- Interchange locations
- Alignment within the route
- Over or under local roads

This has included the use of constraints mapping and visual simulations to understand the way they impact on the environment. This was combined with the use of Google Earth and other inputs such as traffic modelling to understand the performance of the options and impacts on constraints and features (refer sections 5.2 to 5.4).

A series of workshops occurred at which urban and landscape design inputs were made and options either discarded or refined. Further modelling and design work was then undertaken on preferred options and then further workshops

conducted to evaluate the refinements. This design process has seen significant decisions made about the way in which the Expressway responds to the urban and landscape design objectives.

Consultation

The expo consultations were attended by the urban designers and landscape designers and the submissions considered and responded to in design refinement. The key design issues were extracted from the consultation responses (refer to section 4). Two design workshops (Waikanae and Walking, Cycling and Bridleway workshops) were conducted and one-on-one meetings with specific interested parties were also attended.