Appendix H Petone – Grenada Link Road: Preliminary Visual Impact Assessment

Note: This assessment was undertaken at a preliminary level. Further assessments would be undertaken during an investigation stage.

Ngauranga Triangle – Link road Grenada to Petone: Preliminary Visual Assessment

1. Introduction

This preliminary visual assessment considers the proposed link road route (from Grenada to Petone). It identifies a number of locations from where the link road route will be visible as it runs through three visual zones. It assesses the visual impact of the link road from the point of view of people who may live, work, recreate or travel through the area. The visual assessment is a preliminary one, based on available information, covers the potential significance of the impact of views onto the link road, and briefly considers potential visual mitigation.

2. Three Visual Zones

Three visual zones were identified. These are areas through which the link road route runs as viewed from surrounding areas. They are Grenada to Horokiwi, Horokiwi and Horokiwi to Petone (see Map 1 on the following page).

Zone 1 Grenada to Horokiwi: The northern end of this zone is part of the green hillside which flanks the motorway. Vegetation includes native regenerating species as well as some areas of pines. To the east of this area is Grenada North Park, which Wellington City Council's Northern Reserves Management Plan describes as providing a buffer "for the immediate communities with which it is associated and substantially enhance[ing] the significance of the open space corridor of State Highway 1 (SH1).[1]" The management plan proposes to "ensure that the road alignment and road reserve are managed to sustain the existing character of this rural corridor". The southern end of this zone includes the former Northern Landfill and an area of regenerating gully to the east. This gully is identified in the Wellington City Council Lincolnshire Farm Structure Plan as an "area of protection". To the west of this protected area, the land will be developed for housing and commercial use with the implementation of the Lincolnshire Farm Structure Plan, changing the use and appearance of the landscape. The plan proposes to keep the protected area immediately adjacent to the road as open space for reserve.

Zone 2 Horokiwi: This zone has a rural character made up of small landholdings on a flattish rolling peneplain[2] rising to a high ridge, small tree plantations and gullies of native vegetation,

[1] Wellington City Council. Draft Northern Reserves Management Plan – March 2008 p93.

[2] A peneplain is an area of land that is worn down by stream erosion to almost a level plain.

Map 1 Visual Zones and Viewpoints

accessed by a narrow winding road. The area is unusual in that while it is close to the large urban areas of Wellington and Hutt City, it has a feeling of isolation. This is because it has one difficult access point (off SH2) and no through road and is a destination in itself, rather than a place visited or viewed on the route to somewhere else. This isolation, along with its rural character and glimpses of metropolitan Hutt City and Wellington, gives it a unique character.

Zone 3 Horokiwi to Petone: The landscape of this zone is a vegetated escarpment descending into the harbour. It is separated from the water by SH2 and the railway. This escarpment is identified in the Wellington City Council Northern Reserves Management Plan as part of the Harbour Escarpment, an area where native plant species and natural character predominate. The management plan identifies that it is important to sustain this existing character[3] as development is gradually moving down to the escarpment from the hilltops overlooking the harbour.

3. Conclusion

The link road itself and the changes to landform created by its construction with areas of cut and fill and removal of vegetation will have a permanent visual impact. The road will inevitably bring about changes to experience of place. The degree of impact will depend on the extent of landform change, removal of existing vegetation, distance from the viewpoint, the degree of movement and noise, the background against which the road is viewed, changes to the character of the landscape through which it passes, and mitigation.

There will be strong localised impact at all stages along the route. These can be mitigated, but not removed. Mitigation includes contouring of cut and fill areas to match existing landform as much as possible and planting, although only in time will the vegetative cover mature.

The key recommendation to limiting visual impact is to avoid a continuous ribbon of road by designing it so that it follows existing landform and disappears and reappears from view.

3.1. SUMMARY OF THE KEY VISUAL IMPACTS

When viewing onto the three visual zones from surrounding areas, the key visual impacts are as follows:

Grenada to Horokiwi: The road will be hidden in part by contours of the land and existing vegetation. Where it is visible, it will be viewed as part of the wider landscape but will be seen as a built line with the eye drawn to it by vehicle movement and light, especially at night. Currently the

[3] Wellington City Council. Draft Northern Reserves Management Plan – March 2008 p.124.

hills through which the road will pass lie undeveloped and form a still landscape backdrop of rolling hills and vegetation. However, this area is zoned as an area for development as part of the Lincolnshire Farm Structure Plan. Once Lincolnshire Farm has been developed, the link road will integrate within the built landscape, although vehicle movement and light will still attract the eye.

Horokiwi: While the link road may not have any access points from Horokiwi, views onto the road from within Horokiwi, vehicle movement, vehicle noise and road and vehicle lights, cut and fill, and changes in vegetative cover in the short to medium term, will change the experience of the rural character and perception of the comparative isolation of this area. This will especially occur when the road is considered from properties in Horokiwi with views onto the link road, or within audible distance of the road, particularly those close to the road at the south eastern corner of Horokiwi before the road passes Horokiwi Quarry and descends to Petone.

Horokiwi to Petone: The link road will be clearly and permanently visible as it descends the vegetated harbour side escarpment. From Petone Esplanade, the link road will be viewed as part of the wider built landscape with buildings, traffic and streetlights partially obscuring the view of the road route. The road will be more visible at night, with lights moving down the escarpment attracting the eye. Replanted escarpment vegetation would take many years to mature. The link road, however, will be viewed in the context of a busy built area and entranceway to Hutt City and the link road, through good design, has potential to be part of an exciting entrance to the city.

The road at this point will also be viewed from the harbour, Eastbourne and parts of Wellington (e.g. Mt Victoria). From these points the road will be seen as a ribbon descending the harbour escarpment, and will be viewed against a backdrop of the wider built environment including Khandallah, Newlands and Petone, the built harbour edge and the landscape of SH2 and the Petone foreshore. Views of the link road from the eastern harbour road will be hidden at some points by Matiu/Somes Island.

4. Methodology and Limitations

The visual assessment involved a number of steps:

1) Selection of viewpoints.
2) Development of visual assessment tool.
3) Field visit to the viewpoints, assessing visual impact using visual assessment criteria and photographing to record views and use to illustrate potential views of the route.

The findings of this visual assessment must be considered in the context of information available to date on the potential link road route between Granada and Petone. A key limitation of this visual assessment is that while the general location of the road route has been identified, the exact route has not been plotted in detail, nor have changes to the existing landform, disturbance of existing vegetation and road design. The visual assessment is therefore preliminary and based on available information.

4.1. SELECTION OF VIEWPOINTS

Selection of locations from where to view the link road route (viewpoints) in order to make a preliminary assessment of its visual impact are based on Zones of Theoretical Visibility Influence (known as ZTVI)[4], identification of Visually Sensitive Receivers (VSRs)[5] an aerial photograph with 20 metre contours and a field visit. Selection involved the following steps:

- Identifying potential areas from where the link road route would theoretically be visible using the map showing ZTVI. The first area was Glenside, the second Horokiwi and the third the harbour and the eastern hills above Hutt City (the areas coloured yellow to orange on the map in Appendix 1).
- Selecting viewpoints from where to assess potential impacts of the link road route using the aerial photograph with contours was based on VSRs. A key principle was to choose viewpoints in populated areas on public roads. Although the ZTVI identified an area in Glenside and the eastern hills above Hutt City as having high visibility of the link road route (identified as orange or yellow in the map in Appendix 1), alternative areas were selected for viewpoints as these areas have few VSRs and are without roads. A viewpoint in Churton Park and one the wharf on the Petone foreshore were therefore selected.

The field visit established the exact location of six viewpoints. These were selected because they are on public roads, are in populated areas, are relatively close and have a clear view of the link road route. One viewpoint was selected from Churton Park, three from Horokiwi and one from Petone Foreshore (see Map 1 for viewpoint locations).

4 ZTVI is a theoretical tool because it is a computer generated visibility analysis using Geographic Information System (GIS) tools, based on topography and represented as a map using colour to indicate visibility. The map used for this visual assessment was generated by Sinclair Knight and Merz (see Appendix 1 for this map). While ZTVI is a useful tool, it has limitations as it does not account for vegetation, buildings or other elements in the landscape, or on changing light, air and weather conditions that may affect visibility.

5 Visually Sensitive Receivers are people who live, work, recreate or travel through the area. Factors affecting the sensitivity of receivers are the distance from the proposal, degree of visibility, duration and frequency of view, value and quality of existing views and the receivers themselves.

4.2. DEVELOPMENT OF VISUAL ASSESSMENT TOOL

A visual assessment tool was developed to assess the following criteria[6]:

- Proximity of the proposed route from the viewpoint
- Ambient conditions such as time of day, season, position of the sun, light
- Movement of traffic
- Change to existing landform
- Removal of existing vegetative cover
- Light (sun reflecting off vehicles and night lights from road lighting and vehicle lights).

While not strictly a part of a visual impact assessment, the assessment also considered the impact of vehicle noise, as along with the visual, this impacts on a person's experience of a landscape.

Using the above criteria, the impact of the route was assessed from high, high to medium, medium, medium to low, low or negligible according to whether the route would potentially:

- dominate the visual landscape by immediately drawing the eye to the road and changing the experience drastically (high impact)
- have a major impact and capable of dominating the visual landscape and drawing the eye (high – medium impact)
- be intrusive, clearly visible and drawing the eye while at the same time viewing the road as part of the wider landscape (medium impact)
- be clearly visible with a moderate impact but becoming less distinct (medium – low impact)
- be less distinct while still discernable and becoming part of the wider landscape (low – medium impact)
- have a low impact and although a viewer may still be aware of the road it is viewed as part of the wider landscape and change is less discernable (low impact)
- be noticeable in good light and at night but has negligible impact
- have negligible or no impact.

[6] Based loosely on the Sinclair-Thomas matrix in *Visual Assessment of Windfarms: Best Practice,* University of Newcastle (2002), Heritage Commissioned Report FO1AA303A.

4.3. FIELD VISIT TO VIEWPOINTS, ASSESSMENT, RECORDING THE VIEW

The viewpoints were visited on 28 May 2009 between 12.00pm and 3.00pm on a partly cloudy day. Potential visual impacts were assessed at the viewpoints using the assessment criteria. Views were recorded by photographing using a 50 mm lense digital camera. Given the time of year, the sun was relatively low, and especially when photographing from Petone Foreshore (Viewpoint 6) the sun shone into the camera lense, meaning the view is less distinct in the panoramic view.

5. Findings

The following tables show the panoramic views of the link road from the six viewpoints, potential visual impact, significance and mitigation.

Viewpoint 1 - Corner of Cunliffe St and Anaheim Place, Churton Park	
Visual Zone: Grenada to Horokiwi	**District Plan Zone:** Rural
Proximity: Viewed from a distance of approximately 3.5km.	
Potential Visual Impact: Daytime – low ; Nighttime – low-medium	
Potential Visual Mitigation: Road design that follows existing contours as much as possible would minimise the visual impact of a continuous ribbon of road, vehicle movement and lights at night, as would retaining existing larger trees and small tree plantations. Gully vegetation is indistinct from this distance, but its removal may be visible until mitigation planting establishes and matures.	
 Fuji FinePix S9500 Digital, 50mm, 5 frames.	
Criteria	**Potential Visual Significance**
Impact - extent to which the link road potentially dominates the visual landscape	The road is visible but will be viewed as part of the wider landscape.
Movement	Vehicle movement during the day and at night will immediately draw the eye.

Change to existing contours	The road crosses a rolling landscape of peneplain remnants[7], has potential to largely follow existing contours, avoiding a continuous visual ribbon of road, vehicle movements and lights.
Removal of vegetative cover	Low impact on existing vegetation when viewed from this distance except should visible individual trees or groups of trees be removed. The impact on vegetation in gullies will be less visible from this viewpoint.
Light	Sun to reflect off vehicles during the daytime may draw the eye to the road. Link road lighting and movement of vehicle lights at night will be visible.
Noise	At this distance, vehicle noise should be minimal.
Other Comments: The foreground is busy with subdivision, earthmoving equipment, earthworks and roads with visible car movement. The current background is a still landscape of rolling hills. However this is due to change with the development of Lincolnshire Farm. Once Lincolnshire Farm has been developed, the link road will be viewed against the background of this built environment, most likely lessening its visual impact.	

[7] Part of the Horokiwi-Magee Ridge which is "part of a visually prominent geologically significant series of skyline ridges, remnants of the former Wellington peneplain." Wellington City Council. *Capital Open Spaces*, November 1998, p.42.

Viewpoint 2 - Opposite 10 Hillcroft Rd, Horokiwi	
Visual Zone: Grenada to Horokiwi	**District Plan Zone:** Rural
Distance from road: within 1km	
Potential Visual Impact: medium	
Potential Visual Mitigation: Plant trees in the foreground to obscure the view of the link road while still allowing views to the wider landscape beyond.	

Fuji FinePix S9500 Digital, 50mm, single frame.

Criteria	Potential Visual Significance
Impact – extent to which the link road potentially dominates the visual landscape	The view of the link road is brief through gaps in roadside vegetation when driving along Horokiwi Road. The link road would impact on views from properties in the vicinity. As Lincolnshire Farm develops, the link road will be viewed against a built backdrop, lessening its visual impact.

Movement	Vehicle movement will draw the eye.
Change to existing contours	Potential to follow contours, although cut and fill will clearly be visible, particularly on the side of the gully.
Removal of vegetative cover	During construction, removal of vegetative cover will be clearly viewed, especially on the side of the vegetated gully visible from this viewpoint.
Light	Movement from lights of vehicles at night will draw the eye, as will link road lights and sun reflecting off cars during the daytime.
Vehicle noise	Vehicle noise would most likely be audible, depending on wind direction. The predominant wind is northerly, away from this viewpoint. The localised sound of the wind in nearby trees may obscure potential vehicle noise.
Other Comments: The view of the link road is brief through gaps in roadside vegetation when driving along Horokiwi Road and could be mitigated by careful planting that obscures the road but maintains views out onto the wider landscape. The link road will impact on views from properties in the vicinity. As Lincolnshire Farm develops, the link road would be viewed against a built backdrop.	

Viewpoint 3 - Corner of Horokiwi Rd and Woollaston Rd, Horokiwi	
Visual Zone: Grenada to Horokiwi	**District Plan Zone:** Rural
Distance from road: within 2km	
Potential Visual Impact: medium	
Potential Visual Mitigation: Following contours where possible, avoiding excess cut and fill and hydroseeding and replanting.	
 Fuji FinePix S9500 Digital, 50mm, 6 frames.	
Criteria	**Potential Visual Significance**
Impact - extent to which the link road potentially dominates the visual landscape	From this viewpoint the built landscape is in the background and the immediate foreground has a rural outlook. The road would run through the middle foreground. Once Lincolnshire Farm has been developed the road is likely to be less dominant due to the backdrop of a built environment.
Movement	Vehicle movement will draw the eye as the road passes through a static rural landscape. The impact will lessen once the built environment of Lincolnshire Farm is developed.
Change to existing contours	Potential to follow contours, although cut and fill will clearly be visible, particularly should gully side vegetation be removed.
Removal of vegetative cover	During construction removal of vegetative cover

	will be visible, and planting will take some time to mature.
Light	There is potential for sun to reflect off vehicles during the daytime, drawing the eye to the road. Night link road lighting and movement of vehicle lights will be highly visible.
Noise	Vehicle noise would be less audible, especially in a northerly wind or when the sound of wind in nearby trees obscures the sound of vehicles. On still days vehicle movement would be audible in this quiet rural landscape.
Other Comments: From this site movement and the sound of cars will draw attention to the link road. Once Lincolnshire Farm has been developed, the link road will be viewed against the background of this built environment, most likely lessening its visual impact.	

Viewpoint 4 - Near driveway to 430 Horokiwi Rd, Horokiwi	
Visual Zone: Grenada to Horokiwi	**District Plan Zone:** Rural/Open Space B
Distance from road: within 1km	
Potential Visual Impact: medium	
Potential Visual Mitigation: Trees planted along the roadside would block views of the link road, while allowing views out over the wider landscape beyond.	

Fuji FinePix S9500 Digital, 50mm, 4 frames.

Criteria	Potential Visual Significance
Impact – extent to which the link road potentially dominates the visual landscape	Along Horokiwi Road there are potentially views of the link road, however many of these will be obscured by existing vegetation. Once plantation pines are harvested, the link road will be more visible and views of it more extensive. The road will be viewed in the context of the wider landscape beyond.
Movement	Vehicle movement on the road will draw the eye in this largely static rural landscape.
Change to existing contours	Potential to follow contours, although cut and fill will clearly be visible.

Removal of vegetative cover	During construction removal of vegetative cover will be clearly viewed.
Light	Movement from vehicle lights will draw the eye, as will link road lights and the sun reflecting on vehicles during the daytime.
Noise	Vehicle noise would most likely be audible, given the proximity of the road in this quiet rural landscape. The predominant wind is northerly, away from this viewpoint. This, along with the localised sound of the wind in nearby trees may obscure vehicle noise.
Other Comments: While the view of the link road from this viewpoint takes in only a small proportion of the road, the orientation of the road, the movement, the lights at night and the link road's proximity against a rural backdrop would draw the eye and change a viewer's experience of the rural character. Once tree plantations in the foreground are harvested, the link road will be more clearly visible and its visual impact greater.	

Viewpoint 5 - Near driveway to 279 Horokiwi Rd, Horokiwi	
Visual Zone: Horokiwi to Petone	**District Plan Zone:** Rural
Distance from road: within 0.5km	
Potential Visual Impact: high	
Potential Visual Mitigation: The link road will be viewed within a rural landscape, and will have a permanent visual impact on this end of Horokiwi and change experience of place. In time, hydroseeding and road planting may lessen the impacts of road construction, but vehicle movement and the impact of lights and vehicle noise will remain.	

Fuji FinePix S9500 Digital, 50mm, 8 frames.

Criteria	Potential Visual Significance
Impact – extent to which the link road potentially dominates the visual landscape	The view from a vehicle on Horokiwi Road will be relatively brief, but it will change the experience of this end of Horokiwi.
Movement	Highly visible, vehicle movement on the link road in this rural landscape will immediately draw the eye.
Change to existing contours	Potential to follow existing contours but as the road climbs it will be visually prominent.
Removal of vegetative cover	Potential for the link road to move between existing groups of trees, lessening its impact. Hydroseeding and road planting will take time to mature.
Light	Link road lights and vehicles lights will draw the

	eye.
Noise	Vehicle noise will be audible and change the quiet rural character of the existing environment.
Other Comments: The link road will change the experience of the rural character of this end of Horokiwi near the entrance to the area. The link road will have permanent visual and audible presence, and will impact on a number of properties, including the one in the panorama which is close to the proposed link road route.	

Viewpoint 6 - Petone Wharf	
Visual Zone: Horokiwi to Petone	**District Plan Zone:** Rural
Distance from road: within 2km	
Potential Visual Impact: medium	
Potential Visual Mitigation: The visual impact of the link road from this viewpoint depends on road design. Tunneling would mean the visual impact would be low or negligible. Otherwise, the link road would be clearly and permanently visible as it descends the vegetated harbour side escarpment. Replanted escarpment vegetation would take many years to mature. It is, however, viewed in the context of a busy built area and entranceway to Hutt City and the link road, through good design, has potential to be part of an exciting entrance to the city.	

Fuji FinePix S9500 Digital, 50mm, 4 frames.

Criteria	Potential Visual Significance
Impact – extent to which the link road potentially dominates the visual landscape	The link road will be clearly visible from this point, as it travels down the harbour escarpment before joining the existing Hutt Road.
Movement	Highly visible, the link road will draw the eye, but it will be viewed in the context of busy Petone Esplanade.
Change to existing contours	The link road will require extensive cut and fill and require bridging to cross the gully near the base of

	the escarpment and when it reaches Petone. Tunnelling would help to reduce the dominant visual impact of the road.
Removal of vegetative cover	Cut and fill will result in loss of vegetation and change the natural character of the harbour escarpment. Any replanting would take some time to reestablish and mature.
Light	Potential for sun reflection, lights and movement at night to be highly visible from the Petone Esplanade.
Other Comments: This area is identified in the Wellington City Council *Northern Reserves Management Plan* as part of the Harbour Escarpment. The plan aims to protect this escarpment area which is subject to "threats to the character and integrity" of the area by and "intensification of development along ridges and spurs with ongoing encroachment down onto the steeper faces of the escarpment [which] could see the loss of natural character and a shift towards a preponderance of structure."	

APPENDIX 1: ZONES OF THEORETICAL VISIBILITY INFLUENCE (ZTVI)