Landscape assessment and review of the Western Corridor Transportation Study

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LANDSCAPE ARCHITECT

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Executive Summary

General Comment on Available Documentation and Detail Provided

1. Since the Consultation Document was released on 1 October 2005, Transit and GWRC have presented many additional options and variations for consideration. This has hindered the ability for a clear, definitive assessment. For reasons of clarity, this report has focused on the Coastal Expressway as presented in the Consultation Document and outlined in both the *Cost and Programme Review Update* (August 2005) and the *Final Appendices of the Technical Report* (September 2005), both produced for the Western Corridor Transportation Study by Transit and GWRC.

2. As discussed in the Cost and Programme Review Update, the plans presented for consideration are 'primarily conceptual' and there is limited certainty on parts of the central coastal route in relation to the following:

- potential engineering design options
- consideration of pedestrian and cycling provision
- issues such as social severance, coastal processes, impacts on future land use/ urban form and potential noise impacts
- detail of methods of mitigation of adverse effects, which in places is still subject to further design and analysis
- whether options considered are in fact feasible.

3. Within these documents and other more technical reports made available, there is a lack of sufficient detail to enable a clear assessment of effects. This is particularly relevant for an assessment of amenity effects where 'livability' is determined by a combination of factors such as:

- connectivity
- urban design context
- sense of community
- choice of travel mode (by vehicle or other)
- recreational opportunities
- natural character effects

4. No detailed information has been provided to date on the Gray's Road upgrade and the Paekakariki/ Paekakariki Hill Road interchange and there has been no analysis of the effects that might result from the interaction of these components, especially with regard to increased demands on Paekakariki Hill Road. Any upgrade of that road has the potential to have significant visual and landscape effects, especially on the coastal escarpment between Pukerua Bay and Paekakariki.

5. No definitive information has been provided on the location of the interchanges at Paekakariki, Plimmerton and Pauatahanui and subsequent impacts on these village landscapes. The effects on amenity and potential to mitigate these effects can only be assessed when specific detail is provided at a local level. In order to mitigate these effects, a significant urban design programme will be required to 'repair' or reinstate the village character and road hierarchy for these communities. This may also apply in Pukerua Bay.

Review of Transit Landscape Assessment Process

6. Over the last 15 years numerous assessments, reports and reviews have been produced for both routes. Most can now be regarded as obsolete or irrelevant due to changes in the route and the extent of works under review. The only relevant landscape assessment on the TGM route and the proposed Coastal Expressway is contained in the final Planning Balance Sheet Assessment.[1] We generally concur with the overall conclusions of this assessment to the point that we see no significant benefit in reassessing these findings.

7. The Planning Balance Sheet was one of the evaluation tools applied in the assessment of options for the Western Corridor Transportation Study (WCTS). The PBS establishes a framework of objectives and sub-attributes and then scores and weights each item against a range of options. It is considered that the ability to measure the potential impacts on amenity is diminished by the structure of the Planning Balance Sheet. The criteria on the sheet fail to recognise amenity as a holistic concept that comprises several components, only some of which are included in the balance sheet criteria.

8. Indicators within the PBS use expert assessment to create a gross 'landscape score' for each project element. Under the established criteria each route is assessed as one landscape. While Transmission Gully has a relatively homogeneous rural landscape character, the Coastal Expressway is a series of urban and rural landscapes, each with their own characteristics. Because of the complexity of the route, its proximity to existing development and its coastal location, it is considered that the Coastal Expressway should be assessed in greater detail to ascertain more accurately the sum of the effects on the environment.

9. There has been little discussion of the potential environmental benefits for each route should the other proceed. The scope of the PBS landscape assessment included consideration of comparison with the existing coastal route, including the 4 laning north of Plimmerton to the Weigh Station and Mana-Plimmerton clearways. We note that this report contains no assessment of positive effects on the environment for the coastal route should the TGM proceed.

Costings

10. Gross 'Landscaping' costings indicated for each route have been assessed against recent Transit projects in both urban and rural locations. On this basis, it appears that costings are fair and are based on standard rates. However landscape mitigation incorporates the whole design spectrum from route selection, land shaping, urban 'repair' to affected communities, road/pathways layout, choice of materials and quality of hard landscape finishes. There is no detailed information within the costings provided to assess whether this has been allowed for, or whether 'landscaping' is seen to consist primarily of landform shaping and planting.

[1] Landscape, visual and recreation assessment. Frank Boffa, Boffa Miskell Ltd.: PBS Assessment. September 2005

11. A transport route cutting through existing urban structure and established communities will have a higher level of mitigation costs, particularly if required to restore or recreate existing levels of amenity or 'pleasantness of living' to the community. We have assessed the proposed coastal route at a local level of detail and have identified potential aspects of mitigation of effects over and above standard Transit landscape mitigation provisions. The implication of this is that costs could be significantly under-estimated in those areas where exceptional mitigation measures will be required such as coastal reconstruction works required at Goat Point and Centennial Highway or the urban re-design within Plimmerton village.

Coastal versus Rural route

12. The construction of a four-lane 100km/hour expressway through a network of established communities has inevitable effects on the amenity and perceptions of the people who live, work and recreate there. The landscape along the Coastal Route is varied and made up of several distinct character areas - there are limited opportunities for mitigation in this coastal landscape due to space and environmental constraints.

13. In contrast, a similar road through a less populated rural area with more homogeneous landscape character and minimal urban infrastructure such as Transmission Gully affects fewer people and has less impact on amenity and community values. While the landscape and visual impacts may be significant for the TGM, it has already been established that there is space and time for long-term mitigation especially using planting to reduce visual and environmental effects, to the point that significant planting has already occurred.

14. In order to mitigate the severe effects on amenity and landscape values on the Plimmerton coast and community, an engineered solution that puts the expressway below ground would be considered the best practice. The coastal reclamation has severe impacts on the ecology, natural landscape and amenity of the Plimmerton community while an elevated option would have severe visual and amenity effects for Plimmerton and Camborne residents who overlook the site. Given the proposed range of options, a below-ground route at Goat Point is considered the preferred option to a coastal reclamation and at-grade expressway.

15. Loss of open space values and reduction of local and distant visual effects in Ngatitoa Domain would be best mitigated by the 'cut and cover' tunnel beneath the park as noted in the 95 percentile estimate for the Coastal Expressway.

16. The loss of the natural coastal edge with dunes at Ngatitoa Domain, sandy and rocky foreshore at Paremata, Plimmerton and Centennial Highway will be extremely difficult if not impossible to mitigate and would require complete replacement or enhancement of beaches in the vicinity. The resultant loss of natural character, amenity and recreational opportunity will be irretrievable in these instances. The requirement for additional property purchase is highly unlikely to achieve any such mitigation.

17. The Gray's Road upgrade will have considerable environmental effects due to its location at the edge of Pauatahanui Inlet, which is rated as a landscape of national significance (GWRC Regional Policy Statement). A new bypass around Pauatahanui Village has implications for its historic context as a staging post on the original route north. No detail has been provided to be able to assess roading design but given the sensitivity of the receiving environment there are limited opportunities to mitigate the landscape effects without avoiding them altogether on a more northerly, inland rural route – the impacts of which have not been assessed.

18. The coastal expressway will inevitably change the natural coastal /rural character of Centennial Highway to a more structured/built landscape. While a well-designed structure has the potential to create a dramatic architectural statement and an exciting driver experience, the 'iconic' character of this gateway section of SH1 will be irretrievably lost.

19. Coastal development of this magnitude is contrary to the landscape and natural character provisions of all the regional and local policy statements that were reviewed, including the New Zealand Coastal Policy, GWRC Regional Policy Statement, KCDC District Plan and PCC District Plan. This situation therefore puts the issue of consentability of this option at risk.

1. Introduction

1.1 Study Brief

Porirua City Council (PCC) commissioned Linda Kerkmeester Landscape Architects to assist in a review and assessment of the Western Corridor Coastal Route Upgrade option as outlined in the Consultation Document (1 October 2005) distributed by Transit and Greater Wellington Regional Council for public consultation.

The scope of works included:

1) Reviewing background documents relating to the WCTS proposed Western Corridor Plan and Summary of Technical Report, as well as documents applicable to the Transmission Gully Motorway designation.

2) Identifying as far as practicable rural landscape /urban-scape /coastal landscape issues applicable to:

   (i) The Coastal Route Upgrade corridor selection;

   (ii) The Transmission Gully Motorway, and;

   (iii) The major risks/vulnerabilities associated with such.

3) Identifying best practice techniques in terms of landscape mitigation options and an indication of what this implies in term of cost.

This report is based on the findings of a desktop review and background data search as well as a limited site inspection carried out on 17 October 2005.

1.2 Authors

This report has been prepared by Linda Kerkmeester in conjunction with Julia Williams of Drakeford Williams Ltd. Linda Kerkmeester is a Landscape Architect with 20 years experience in both private practice and local authority work. Linda has been involved in several roading projects throughout the Wellington region, at all stages from route planning to design, contract documentation, cost estimates and supervision of construction works. Projects in which she has been directly involved include the Wellington Inner City Bypass, Newlands Interchange, SH2 Kaitoke to Te Marua upgrade and the Kapiti Western Link Road.

Linda has presented evidence at Council hearings and the Environment Court on some of these projects. She is a registered member of the New Zealand Institute of Landscape Architects.

Julia Williams is a registered landscape architect with Drakeford Williams Landscape Architects. She has over 20 years experience as a landscape architect in all areas of the profession and has recently acted as a commissioner for Wellington City Council on Plan Change 32 (Renewable Energy) & 33 (Ridgelines & Hilltops & Rural Area). She has completed the 'Making Good Decisions' training programme and has a good knowledge of the RMA.

2. Documentation Review

2.1 The following Transit/Greater Wellington Regional Council reports were reviewed. All reports have been prepared for Greater Wellington Regional Council and Transit New Zealand by Maunsells Limited unless stated otherwise. Collectively these reports make up the Western Corridor Transportation Study (WCTS):

- *Draft technical report – Stage 1* -15 April 2005, (main text and appendices)
- *Technical Report – Final Appendices*, September 2005
- *Cost and programme review update*, August 2005
- *Consultation Document*, October 2005
- *Planning balance sheet assessment – Final*, September 2005
- *Environmental & Social Impact Assessment: A Review of the Transmission Gully Motorway Project & its Roading Alternatives*, prepared by Michelle Rush Consulting, May 2004
- *SH1 Upgrade Environmental Assessment of Mana Clearways and Bypass Options Volume 1 and Volume 2 (Plans*), prepared by Beca Carter Hollings & Ferner, August 1999.

Additional background reports were referred to and are included in the reference list at Appendix 6.

For the purposes of this study it is assumed that the route and information provided in the Consultation Document describe the preferred option.

The remaining reports, particularly the Final Technical Appendices, the Cost and Review Update and the PBS Assessment have been used to supplement the description and provide additional background and clarification on various aspects of the proposal. Within these reports, Options HC4 Coastal Upgrade Expressway plus HE3 Grays Road upgrade is seen as the closest equivalent to the final central section of the proposed corridor plan and translates roughly to the IP3 Improved reliability scenario.

In the *Environmental Assessment of Mana Clearways and Bypass Options*, (August 1999) also reviewed, the Option A1 Mana Bypass evaluation with a four lane 2-way bypass is the closest equivalent. Option HT1 Transmission Gully: full-length 4 lanes contains information on the key infrastructure elements through Transmission Gully, and the equivalent scenario is the IP2 Major Roading Scenario.

2.2 Planning Balance Sheet Assessment - Final

(Maunsell Limited, 7 September 2005)

One of the evaluation tools applied in the assessment of options for the Western Corridor Transportation Study (WCTS) was a Planning Balance Sheet (PBS). The PBS established a framework of objectives and sub-attributes and then scored and weighted each item for each option.

Specific PBS indicators were identified. In addition scoring systems were devised at an early stage for each sub-objective to ensure that a consistent approach was taken to scoring across the PBS. These PBS and Landscape Scoring indicators are shown in the full table set out in Appendix 3. The scoring system is designed to be able to recognise both benefits and disbenefits.

A number of items within the PBS were subject to expert assessment by specialists within the project team in accordance with the PBS methodology. The scope of the assessment of each element included consideration of existing environmental values in the vicinity of the element, assessment of positive effects on the environment, assessment of negative effects on the environment, comparison with the base case, risks and opportunities, and potential aspects of mitigation of effects.

The PBS for *Landscape and visual including recreational values* used a scale where major permanent change to a high value landscape with limited mitigation potential is 0, and major landscape restoration to a significant outstanding natural landscape is 10. The mid point for scoring was the "base case". This has been defined as the existing transportation infrastructure and associated environment. See Appendix 4 for Landscape Assessment.

Summary

- Scores revealed a significant margin between the TGM (8) and the Coastal Expressway (4) and Gray's Road (4).

- It is considered that the ability to measure the potential impacts on amenity is diminished by the structure of the Planning Balance Sheet. The criteria on the sheet fail to recognise amenity as a holistic concept that comprises several components, only some of which are included in the balance sheet criteria.

- Indicators within the PBS use expert assessment to create a gross 'landscape score' for each project element. Under the established criteria each route is assessed as one landscape. While Transmission Gully has a relatively homogeneous rural landscape character, the Coastal Expressway can be broken down to a series of urban and rural landscapes, each with their own unique characteristics and communities. Because of the complexity of the route, its proximity to existing development and its coastal location, it is considered that the Coastal Expressway should be assessed in greater detail to ascertain more accurately the sum of the effects on the environment. This method of dividing the area into smaller units, based on landscape character has been used in an earlier assessment[2] which preferred Transmission Gully over the Coastal Route in terms of reduced environmental effects.

[2] *Western Corridor Technical Report No. 6,* prepared for Wellington Regional Council by Boffa Miskell Partners Ltd, September 1989

2.3 Environmental & Social Impact Assessment: A Review of the Transmission Gully Motorway Project & its Roading Alternatives

(Michelle Rush Consulting, May 2004)

This social and environmental impact assessment report considered three broad options for roading improvements to Wellington's northern corridor:

- The Do Minimum option
- A full Coastal Upgrade (CU)
- Construction of the Transmission Gully Motorway (TGM).

The brief required that the social and environmental impact assessment identify and summarise all of the social and environmental impacts of the CU and TGM, as reported in past documents. Where possible, it should quantify the impacts, or otherwise indicate the severity of impact on a broad scale and identify gaps in information and consultation requirements for each option.

2.3.1 Documentation Review process.

The report is based on work that is 3-15 years old.

"This assessment is largely limited to a review of the work already completed on the social and environmental impacts of the TGM and its alternatives. Some of this work is relatively recent, but much of the impact assessment work is now more than 15 years old. This report reviews the previous work in the context of trends since the work was completed, and the requirements of the new legislation."

2.3.2 Route assessment:

The coastal route has changed radically in the final option presented in the Consultation Document, notably the change from a Coastal Upgrade to Coastal Expressway. Areas that have not been factored into the assessment include the Grays Road upgrade, impacts on Ngatitoa Domain, South Plimmerton Beach, grade separated interchanges at Paremata, Mana, Plimmerton, Airlie Road and Paekakariki and extensive reclamation along Centennial Highway.

The TGM route was assessed on plans that have now been superseded. These included extensive cut and fill areas south of the Wainui Saddle. Current plans indicate that the road sits lower on the hillside with smaller cuts and several large gully systems now proposed to be traversed by viaduct. With this in mind, the overall TGM assessment is still largely relevant.

2.3.3 Comparison of TGM and Coastal Route

The report concluded *"On the basis of the impact assessment information gathered to date, it is difficult to accurately judge the relative merits of the TGM and the CU against "doing the minimum."*

The reasons for this are:

- *"Shortcomings in the data reviewed relative to the requirements of the new legislation, include out-of-date information, incomplete or unclear information*
- *The CU and TGM options are each assessed in isolation, without reference to complementary measures in other affected areas (e.g. possible changes that could be made to the coastal route should the TGM proceed). Including such measures in the assessment could significantly change the estimated magnitude of some effects.*

- *Inclusion of other measures in the different options could significantly change the impact scores. Inclusion of traffic calming and a heavy vehicle ban on the coastal route should TGM be built, for instance, could create net benefits for pedestrians, cyclists, noise and land values. Without such measures, however, the relief of congestion might induce more local traffic, and could even mean continued use by heavy trucks wanting to avoid the hills on the TGM route, resulting in only a slight improvement for coastal communities, or worse still, none at all."*

It is noted that the above statements are still valid for the purpose of this current review.

2.3.4 Report Conclusions

Landscape Assessment

- Visual impacts for the TGM would be significant and include a high degree of disturbance and intrusion, loss of visual coherence and irreversible changes to the character of the area. The motorway would have adverse visual impacts for those looking into the corridor but a scenic route will be created for those travelling on the TGM. Planting has the potential to provide visual mitigation and overall visual impacts would be moderate
- Localised adverse impacts are expected during construction at Pukerua Bay. However the bypass generally fits well into the topography and doesn't intrude into the landscape as viewed by most of the community.

Recreation Assessment

- The TGM route has significant adverse impacts on recreation opportunities, most notably Battle Hill and Belmont Regional Parks.
- The bypass would cause disruption to walking and running opportunities in Pukerua Bay.

2.3.5 Summary

- The 2005 coastal route differs markedly in scale and character from that reviewed in this document. For this reason the assessment of the CR and subsequent comparison between the two routes is irrelevant, apart from the specific assessment of the Pukerua Bay bypass.
- The landscape report has a strong focus on landscape and visual effects with a lesser focus on amenity, which was not such an issue for TGM.
- The overall TGM assessment concludes that while visual and landscape impacts would be significant, they can be mitigated over time by planting.

2.4 SH1 Upgrade Environmental Assessment of Mana Clearways and Bypass Options Volume 1 and Volume 2 (Plans), (Beca Carter Hollings & Ferner, August 1999).The full landscape report with a matrix showing nine Mana Bypass options was not available to review.

Option A3, a four-lane, two way bypass with Pascoe Avenue elevated over the bypass is considered the option most comparable to the Coastal Route expressway as shown in the October 2005 Consultation Document. The major difference is that the bypass is located east of the railway line which is moved west into Ngatitoa Domain and the speed limit of 70km/hr for the bypass rather than the current proposed 100km/hr (Volume 1 page 35). Option A3 was not considered the most favourable option. An option featuring High Occupancy Transit Lanes at peak times within the existing road corridor was eventually constructed (completed November 2005).

2.4.1 Report conclusions

In summary, the assessment noted that after mitigation, the visual effect on all areas except the coastal section was assessed as being no more than moderate. The effect on the coastal section remained significant. The overall landscape effect was assessed as significant, with the houses near the interchange and the coastal section most adversely affected.

2.4.2 Summary

- Option A3, the most comparable option to this section of the Coastal Expressway, was not considered the most favourable option for Mana.
- Landscape effects were considered significant for the length of the route.
- While visual effects could be mitigated, they remained significant in the coastal area north of Ngatitoa Domain and Goat Point.

3. Policy Overview

These are relevant national and local policies that must be taken into account when assessing the landscape effects of significant land use planning and development.

Relevant policy

- New Zealand Coastal Policy
- Greater Wellington Regional Council: Regional Policy Statement
- Kapiti Coast District Council: District Plan
- Porirua City Council: District Plan
- Transit Planning Policy Manual Supplement
- Transit Environmental Plan
- National Walkways and Cycling Strategy
- New Zealand Urban Design Protocol 2005

A brief overview of relevant sections follows.

3.1 New Zealand Coastal Policy

Matters of National Importance include the preservation of the natural character of the coastal environment

Policy 1.1.1
It is a national priority to preserve the natural character of the coastal environment by:

Policy 1.1.1 (a) encouraging appropriate subdivision, use or development in areas where the natural character has already been compromised and avoiding sprawling or sporadic subdivision, use or development in the coastal environment

Policy 1.1.1 (b) taking into account the potential effects of subdivision, use or development on the values relating to the natural character of the coastal environment, both within and outside the immediate location; and

Policy 1.1.1 (c) avoiding cumulative adverse effects of subdivision, use and development in the coastal environment.

3.2 Greater Wellington Regional Council: Regional Policy Statement

The coastal escarpment and small beaches from Paekakariki to Owhiro Bay (excluding Pukerua Bay settlement, Porirua Harbour and Plimmerton) have been identified in the Regional Policy Statement by Greater Wellington as a "Landscape and Seascape of Regional Significance."

The national transport corridors at the base of the escarpment were implemented prior to 1940 and so the status of significant regional landscape was assessed with these modifications in place.

Objective 1

The natural character of the coastal environment is preserved through:

1) the protection of nationally and regionally significant areas and values
2) the protection of the integrity, functioning and resilience of physical and ecological processes in the coastal environment
3) the restoration and rehabilitation of degraded areas; and
4) the management of subdivision, use and development, and the allocation of resources in the coastal environment so that the adverse effects are avoided, remedied or mitigated.

Objective 2

Existing provisions for public access to and along the coastal marine area remain and appropriate opportunities are taken to enhance public access.

3.3 Kapiti Coast District Council: District Plan

Kapiti Coast District Council in their District Plan has identified the coastline and Paekakariki escarpment within the council boundary as an "Outstanding Landscape Area" [3]

3.4 Porirua City Council: District Plan

The plan has a number of policies that relate to the visual and amenity aspects of both the Coastal Route and TGM. *(Note policies that apply to TGM yet to be covered)*

C4 The Rural Zone

Porirua's rural area is a significant resource of outstanding character and beauty.

Objective C4.2

To avoid or reduce the adverse effects of the activities on ecosystems and the character of the rural zone.

C9 Landscape and Ecology

Policy C9.1.5

To protect the visual and ecological character of the Rural Zone

Policy C9.1.11

To protect the natural character of the coastal Scarp north of Pukerua Bay settlement.

The coastal scarp north of Pukerua Bay was identified as a landscape protection area within the text of the Porirua District Plan but there is an anomaly in that the area is not shown on the District Plan Maps. The actual extent of the area defined as 'scarp' is therefore not shown and the location is unclear from the text. The coastal route and its effects will however be clearly within the 'escarpment' area, being located along the base and steepest parts of the coastal Scarp.

[3] KCDCC District Plan Districtwide Zone Map 5

C10 Coastal

Coastal Resources

Coastal landforms and the effects of coastal processes give the City its distinctive form. To the west, the City is bounded by the Tasman Sea extending from the steep coastal scarps north of Pukerua Bay to the remote steep sided cliff areas just south of Rock Point. Along this coast are popular recreational beaches such as Plimmerton and Titahi Bay with long established beach-front residential properties and structures, such as boatsheds. This coastline comprises a range of outstanding coastal landscapes from steep scarps, shallow harbours and inlets and sandy beaches with associated foredune complexes (Mana Esplanade area).

C10.1 Objective
To protect and enhance the spiritual, cultural, ecological and amenity values of the coast.

C10.2 Objective
To minimise any adverse effects of buildings and activities on the coastal margin.

Landscape and Ecological Values: A significant portion of the City's coastline is of outstanding visual and ecological value. Much of the open coastline is steep coastal scarp and inaccessible, or in Crown Reserves, and therefore unlikely to come under development pressure.

Areas such as Plimmerton, Mana and Pauatahanui etc. are however particularly sensitive to these development pressures. Regard shall therefore be had to ensuring development is sensitive to the particular landscape and ecological characteristics of the locality and any adverse effects such an activity or building may have on the environment.

C10.3 ENVIRONMENTAL OUTCOMES ANTICIPATED
The following environmental outcomes are anticipated:

C10.3.1 The continued use of the coastal margin for a range of activities and a variety of buildings which contribute positively to the overall use and enjoyment of the coast.

C10.3.2 The retention of the natural character of the coast.

C10.3.4 The imposition of appropriate and effective environmental standards to avoid, remedy or mitigate any adverse effects of development on the coastal environment.

3.5 Transit Planning Policy Manual Supplement

(Transit New Zealand, September 2005)

The Land Transport Management Act 2003 (LTMA) introduced a new statutory regime and confirmed that the role of Transit New Zealand (Transit) is not simply to build roads in response to traffic pressures, but to manage the state highway network as a key component of New Zealand's transport system. This, together with the New Zealand Transport Strategy (NZTS), signals a clear focus on achieving an integrated, safe, responsive and sustainable land transport system.

For Transit, this broad focus requires:

- integration of growth, development and land use planning with multimodal transport planning;
- protection of state highways and their functionality as strategic components of the transport system, positioned at the top of the roading hierarchy
- consideration of all transport options;
- active management of vehicle travel demand; and
- avoidance, to the extent reasonable in the circumstances, of adverse social and environmental impacts.

The sustainability context

Prior to the enactment of the LTMA, Transit's principal objective was "to operate a safe and efficient state highway system"2. Section 77(1) of the LTMA now provides a much broader objective for Transit:

…to operate the state highway system in a way that contributes to an integrated, safe, responsive, and sustainable land transport system.

In meeting this objective, Transit must exhibit a sense of social and environmental responsibility. This objective reflects government transport policy as stated in the NZTS. A number of key principles are contained in the NZTS, including a principle of "sustainability":

"To ensure that transport is underpinned by the principles of sustainability and integration, transport policy will need to focus on improving the transport system in ways that enhance economic, social and environmental wellbeing, and that promote resilience and flexibility. It will also need to take into account the needs of future generations, and be guided by medium and long term costs and benefits".

Furthermore, under the LTMA, Transit is required to assess how its activities contribute to the NZTS objectives of:

- assisting economic development;
- assisting safety and personal security;
- improving access and mobility;
- protecting and promoting public health;
- ensuring environmental sustainability.

3.6 Transit New Zealand Environmental Plan – Version 1

(Transit New Zealand, November 2004)

The Transit New Zealand Environmental Plan discusses issues such as visual quality, ecological resources and land use planning.

Key messages of the Environmental Plan include:

- The appearance of roadside vegetation and hard structures can affect the overall safety, environmental impact and visual impression of the state highway network.
- The final treatments of roadside areas are managed to meet safety, environmental and visual quality objectives.
- Protecting significant ecological resources is important when planning, designing and constructing state highways.
- Transit promotes biodiversity within state highway corridors.
- Influencing and integrating urban development affecting state highways will lead to long-term benefits for communities and road users.
- Maintaining and improving working relationships with territorial and regional authorities will help promote sustainable transportation and land use planning.

3.7 National Walkways and Cycling Strategy

The New Zealand Transport Strategy: The policy context for *Getting there — on foot, by cycle* (Ministry of Transport, February 2005)

The policy framework for *Getting there — on foot, by cycle* is provided by the *New Zealand Transport Strategy (NZTS).* The *NZTS* has been developed to guide central government and its various agencies when making decisions about transport. The *NZTS* has the following vision: *By 2010, New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system.*

Relevant *Priorities for Action* for the strategy include:

- Encourage action for walking and cycling within an integrated, sustainable approach to land transport
- Encourage land use, planning and design that supports walking and cycling
- Provide supportive environments for walking and cycling in existing communities
- Improve networks for long-distance cycling
- Improve road safety for pedestrians and cyclists

3.8 New Zealand Urban Design Protocol 2005

(Ministry for the Environment, March 2005)

The New Zealand Urban Design Protocol identifies key urban design qualities known as the 'Seven C's'. They provide a checklist of qualities that contribute to quality urban design. Those most relevant to this study include:

Context: **Seeing that buildings, places and spaces are part of the whole town or city.**
Quality urban design sees buildings, places and spaces not as isolated elements but as part of the whole town or city. It also recognises that towns and cities are part of a constantly evolving relationship between people, land, culture and the wider environment.

Character: **Reflecting and enhancing the distinctive character, heritage and identity of our urban environment**
Quality urban design reflects and enhances the distinctive character and culture of our urban environment, and recognises that character is dynamic and evolving, not static.

Choice: **Ensuring diversity and choice for people**
Quality urban design fosters diversity and offers people choice in the urban form of our towns and cities, and choice in densities, building types, transport options, and activities. Flexible and adaptable design provides for unforeseen uses, and creates resilient and robust towns and cities.

Connections: **Enhancing how different networks link together for people**
Quality urban design recognises how all networks - streets, railways, walking and cycling routes, services, infrastructure, and communication networks - connect and support healthy neighbourhoods, towns and cities. Places with good connections between activities and with careful placement of facilities benefit from reduced travel times and lower environmental impacts.

Transit is a signatory to the New Zealand Urban Design Protocol.

4. LANDSCAPE ASSESSMENT ASSUMPTIONS

Throughout the consultation process there have been a great number of background reports, assessments and reviews released by Transit and GWRC. In addition, we have been made aware of numerous related assessments/studies on alternative routes and options, many of which are potentially still valid. We have not been able to access all of this information for various reasons.

Due to the short timeframe for consultation, we have limited our background research by focusing on those indicated in the Consultation Document.

4.1 Transmission Gully

Transmission Gully has been assessed to a greater level of detail than the Coastal Expressway with landscape reports dating back at least 15 years. For this reason and for the time frame available, assessment of the TGM route has been no more than a desktop exercise. For the purpose of this review, the landscape assessment contained in the Planning Balance Sheet Assessment dated September 2005 is the most current and relevant assessment. We based our assessment accordingly and generally concur with its findings.

4.2 Existing landscape assessments

We consider that the most current landscape assessment is that contained within the Planning Balance Sheet Assessment. It is generally sound for landscape and visual effects. However the criteria used in the balance sheet as established by the RLTC and LTSA under-reports on the holistic concept of amenity as 'pleasantness of place'. This tends to diminish significance of amenity as determined by the RMA.

4.3 Route alignment

The Planning Balance Sheet dated September 2005 has the most current plans of the Coastal Expressway route and the Transmission Gully Motorway route, and subsequently the most current assessment of environmental effects. Our assessments were based on this information, read in conjunction with the Consultation Document. Supplementary information came from the peer review document, Cost and Programme review update dated August 2005.

4.4 Options

Given the wide range of options, our overall conclusions show that while both routes/route options have their specific set of landscape/ ecology related effects, a Coastal Route has a greater level of potentially adverse amenity effects because it cuts through existing established coastal communities with diverse landscape character and related infrastructure. In contrast, TGM runs through a rural landscape that is more homogeneous in character with little existing infrastructure and relatively light settlement patterns.

4.5 Route detail

Where conceptual interchanges and routes were indicated on plans e.g. Paekakariki and Airlie Road interchanges, we have assumed what effects are likely, given Transit's best practice. Within these documents and other more technical reports made available, there is a lack of sufficient detail to enable a clear assessment of effects and the extent of landscape mitigation measures to be adopted.

4.6 Pukerua Bay By-pass

We have assumed that the Pukerua Bay by-pass is included only for the Coastal Route.

"If the Transmission Gully Motorway is selected, it is likely that some works must also proceed on the coastal route. These must be included in cost and programme estimates for relevant comparisons to be made. These include:

- *Whitford Brown Interchange (as per the Coastal Route option)*
- *Mungavin Interchange (as per the Coastal Route option)*
- *Local improvements to the alignment in Pukerua Bay*
- *Paekakariki Interchange (as per the Coastal Route option)*
- *Provision for a cycleway along the Coastal Route"*[4]

4.7 Definition of Amenity

The whole is greater than the sum of the parts.

Amenity is defined in the RMA as 'pleasantness of place'. This includes issues such as:

- Natural character
- Connectivity
- Urban design context
- Sense of community
- Livability
- Recreational potential

In this sense the detail is vital in determining the level of effects at a human scale. For example the experience of a pedestrian or a cyclist is quite different from that of a car user traveling at speeds of up to 100kph, where:

- People, especially children and the elderly move easily around the neighbourhood - they can cycle to school or walk to the shops.
- People have access to open space and children can play sports on local fields
- People can enjoy the benefits of coastal living such as access to the sea, fishing, and windsurfing. Families can walk to the beach.

The following criteria were assessed and given a score from 0 (irreparable damage to high value landscape) to 10 (major restoration to a significant natural landscape) in the PBS under 'Landscape and Visual including recreational values':

- The presence and value of significant outstanding natural landscapes;
- Change to landscape character
- Visual Absorption Capability (VAC) or the ability of a landscape to absorb change associated with new transport infrastructure

The ability to measure the potential impacts on amenity is diminished by the structure of the Planning Balance Sheet. The criteria on the sheet by their very nature tend to separate out the various components that make up 'amenity', but fail to bring these items back together and accordingly also fail to recognise amenity as a holistic concept which comprises several components, some of which are included in the balance sheet criteria under 'landscape and visual including recreation'.

[4] Cost and Programme Review Update. Page 5.

5. ROUTE OVERVIEW

Coastal Route
(See Appendix 1 for complete 'Description of Coastal Route & Landscape Assessment of Effects')

Porirua City's Landscape Strategy of 1994 identified a weakness in the city's landscape due to "*a dominance of transport corridors and development around the harbour and coast which separates the land from the harbour and coast, restricts public access, and prevents it becoming the prime focus of the City*." [5]

The Coastal Route has a degree of uncertainty in terms of length of time for overall route to be completed, the timing of each section of upgrade and/or new construction and commitment to every component of the final route.

The construction of a four-lane 100km/hour expressway through a network of established communities would have inevitable effects on the amenity and perceptions of the people who live, work and recreate there. The landscape along the Coastal Route is varied and made up of several distinct character areas - there are limited opportunities for mitigation in this coastal landscape due to space and environmental constraints.

It is noted that the documentation provides no definitive information on the location of the interchanges at Paekakariki, Plimmerton and Pauatahanui and subsequent impacts on these village landscapes. Grade separated interchanges have severe but localized visual effects. Their scale changes the character of the road and the driving experience. The effects on amenity and potential to mitigate these effects can only be assessed when specific detail is provided at a local level. In order to mitigate these effects, a significant urban design programme would be required to restore or recreate the village character and road hierarchy for these communities. This may also apply in Pukerua Bay.

The loss of the natural coastal edge with dunes at Ngatitoa Domain, sandy and rocky foreshore at Paremata, Plimmerton and Centennial Highway would be extremely difficult if not impossible to mitigate and would require complete replacement or enhancement of beaches in the vicinity. The resultant loss of natural character, amenity and recreational opportunity would be irretrievable in these instances. The requirement for additional property purchase would be highly unlikely to achieve any such mitigation.

Ngatitoa Domain is important in Porirua City for its recreational values. It is the only flat recreation area close to the coast and surrounded by harbour in the city and is unable to be replicated elsewhere in the vicinity. For this reason the loss of open space values and reduction of local and distant visual effects in Ngatitoa Domain would be best mitigated by the 'cut and cover' tunnel beneath the park noted in the 95 percentile estimate for the Coastal Expressway.

In order to mitigate the severe effects on amenity and landscape values on the Plimmerton coast and community, an engineered solution that puts the expressway below ground would be considered the best practice. The coastal reclamation has severe impacts on the ecology, natural landscape and amenity of the Plimmerton community while an elevated option would have severe visual and amenity effects for Camborne and Plimmerton residents who overlook the site. Given the proposed range

[5] Porirua City Landscape Strategy 1994 p12.

of options, a below-ground construction at Goat Point is considered the preferred option to a coastal reclamation and at-grade expressway. Whether this is feasible has yet to be determined.

The coastal expressway would inevitably change the natural coastal /rural character of Centennial Highway to a more structured/built landscape. While a well-designed structure has the potential to create a dramatic architectural statement and an exciting driver experience, the 'iconic' character of this gateway section of SH1 would be irretrievably lost.

No detailed information has been provided to date on the Grays Road upgrade and the Paekakariki/ Paekakariki Hill Road interchange and there has been no analysis of the effects that might result from the interaction of these components, especially with regard to increased demands on Paekakariki Hill Road. Any upgrade of that road has the potential to have significant visual and landscape effects, especially on the coastal escarpment between Pukerua Bay and Paekakariki.

The Gray's Road upgrade will have considerable environmental effects due to its location at the edge of Pauatahanui Inlet, which is rated as a landscape of national significance (GWRC Regional Policy Statement). A new bypass around Pauatahanui Village has implications for its historic context as a staging post on the original route north. No detail has been provided to be able to assess roading design but given the sensitivity of the receiving environment there are limited opportunities to mitigate the landscape effects without avoiding them altogether on a more northerly, inland rural route – the impacts of which have not been assessed.

5.2 Transmission Gully route

(See Appendix 2 for complete 'Description of TGM Route & Landscape Assessment of Effects')

The Transmission Gully Route has been the subject of a number of planning, design and cost reviews to the point that the likely effects and mitigation measures are better known and the cost estimates are more likely to take into account of the elements required.

As far back as 1990 the Parliamentary Commissioner for the Environment raised the opportunity of developing and maintaining the TGM landscape to create a 'Green corridor' into Wellington. Porirua City's District Plan was developed with the Inland Motorway of TGM in mind. The Porirua City Landscape Strategy of 1994 identified the potential for positive development with "careful road planning and design and large scale landscape rehabilitation measures as an integral part of design and construction."

The TGM passes through a less populated landscape with fewer and smaller communities than the Coastal Route and minimal urban infrastructure. It requires fewer interchanges and entry/exit points. For these reasons the overall route would have less impact on local amenity and community values.

While it is acknowledged that the route passes through areas with recreational values of regional importance, the overall landscape character is more homogeneous to the point that standard mitigation techniques can be applied. It has been established that there is space and time for long-term mitigation especially using planting to reduce visual and environmental effects. Significant planting has already occurred along the proposed route.

6. Landscape mitigation and cost implications

6.1 Cost comparison with actual built roading projects

Gross 'Landscaping' costings (the term used in the consultation documents for landscape mitigation works) indicated for each route have been assessed against recent Transit projects in the Wellington region traversing both urban and rural landscapes. On this basis, it appears that costings are fair if based on standard rates. The details of this cost comparison are included at Appendix 5.

For the purpose of this exercise, costs are calculated on a cost/km length of road for urban, rural & transitional landscape character types - transitional being those areas that lie between an urban or rural area, such as immediately north of Pukerua Bay township or at grade-separated interchanges.

It is not clear whether all the required mitigation works have actually been allowed for in the 'landscaping' item listed in the cost estimates. By way of explanation, landscape mitigation considerations require more than landform shaping and planting. Using best practice techniques, it incorporates the whole design spectrum from route selection, urban 'repair', road/pathways layout through to the choice of materials and quality of hard landscape finishes. There is no detailed information within the costings provided to assess whether these have been allowed for.

6.2 Coastal vs Inland Route

The high degree of uncertainty posed by the Coastal Route in terms of the exact route and options for mitigation, makes is difficult to assess the cost for such mitigation. What is certain is that the route will pass within the coastal environment with significant landscape, visual and recreation effects for the communities along the route.

A transport route cutting through existing urban structure and established coastal communities will have a higher level of mitigation costs than a new inland road through a predominantly rural environment. In particular it will be necessary to restore or recreate existing levels of amenity or 'pleasantness of living' to that coastal community.

We have assessed the proposed coastal route at a local level of detail and have identified potential aspects of mitigation of effects that we consider would be necessary over and above standard Transit landscape mitigation provisions. The implication of this is that costs could be significantly under-estimated in those areas where exceptional mitigation measures will be required such as coastal reconstruction works required at Goat Point and Centennial Highway or the urban re-design within Plimmerton village.

The following mitigation measures are considered necessary over and above standard rates: raised or cantilevered bridge structures for Centennial Highway and Goat Point, recreational access to the coast at south Plimmerton Beach and Centennial Highway with pull over bays for access to the coast off Centennial Highway. Landscape treatment for all engineered structures and surfaces should be of a high quality in keeping with the natural landscape character. This may mean reclamation in an appropriate manner using carefully placed riprap or rocks as opposed to, for example, the concrete debris that currently exists at Goat Point. In the case of a cantilevered/ bridge structure for Centennial Highway, there are opportunities for an elegant structure with innovative detailing of safety barriers and railings in keeping with the high tourism values and iconic status of this coastal section of highway.

7. Conclusions

The WCS has taken several forms over the last 15 years. This latest option presented in the Consultation Document (the Coastal Route) is significantly different from previous studies in size and extent, notably the change from a Coastal Upgrade to Coastal Expressway with resulting increase in impacts on landscape, natural character and amenity for the coastal communities from Paremata to Paekakariki. In contrast, the Transmission Gully Route has been the subject of a number of planning, design and cost reviews to the point that the likely effects and mitigation measures are better known and the cost estimates are more likely to take into account of the elements required.

This report outlines an assessment of the effects on landscape and natural character, visual and recreation impacts of that route and the ability to mitigate those effects. Our findings show that many of these effects, particularly where the route encroaches onto the coastal margin, would be unable to be mitigated and as a result would be permanently lost as natural and recreational assets to the region as well as to those communities directly affected by the proposal. It would also significantly affect the way people move around those communities, their choice and mode of travel and current levels of livability and amenity.

The landscape assessment contained within the Planning Balance Sheet Assessment is generally sound for landscape and visual effects. However the method used whereby individual criteria are separated out - as used in the balance sheet, tends to under-report on the holistic concept of amenity as 'pleasantness of place'. This tends to diminish significance of amenity as determined by the RMA.

The costings used in the Consultation Document for landscape mitigation are compared in this report with actual construction costs of recent projects in the Wellington region to establish a basis of costs per kilometre for routes through predominantly rural or urban environments. While on this basis it appears that costings are fair, they are based on standard rates of mitigation. The documents do not provide any definitive information as to the mitigation measures allowed for in the costings. The implications are that costs could be significantly under-estimated in those areas where exceptional mitigation measures will be required such as coastal reconstruction works required at Goat Point and Centennial Highway and additional property purchase to replace lost recreation grounds or village gateway redesign.

In comparing the Coastal route with the Transmission Gully route, in landscape terms the construction of a four-lane 100km/hour expressway through a network of established communities would have effects on the coastal environment and recreational amenity that could not be avoided or mitigated. In contrast, a similar road through the less populated and more homogeneous landscape of Transmission Gully would affect fewer people and would have less impact on amenity and community values where there is space and time for long-term mitigation, some of which has already commenced.

The Coastal Expressway would affect the coastal environment to such a significant extent that it would put the consentability of this option at risk. Coastal development of this magnitude is contrary to the landscape and natural character all the regional and local policy statements relating to including policies relating to urban design and environmental sustainability to which Transit subscribes.

APPENDIX 1

Description of Coastal Route & Landscape Assessment of Effects

The Coastal Route is described as a four-lane median divided expressway from MacKays Crossing to Tawa with grade-separated interchanges at Paekakariki, Airlie Rd, Plimmerton/Ulrich St, Paremata and Whitford Brown. It includes the Centennial Highway coastal section, Pukerua Bay bypass (with connections) and a Mana bypass.

The following table analyses the central section of the Coastal Route from south of the existing Paremata roundabout of MacKay's Crossing. It includes the Mana Bypass which is described as a four-lane median divided highway adjacent to the position of the existing railway line, with grade separated interchanges into Plimmerton and at Paremata with connections to SH58. The Paremata Interchange and Plimmerton interchange between them are designed to provide full local access to Plimmerton, Paremata, Mana and SH58. The existing Mana Esplanade and St Andrews Road would therefore be 'service' roads connecting the two interchanges, a distance of some 3 kilometres.

1. South of existing Paremata Roundabout to south of Pascoe Avenue

The route consists of:

- An additional 4-lane bridge across the entrance to the Pauatahanui Inlet, in between the newly constructed duplicate bridge and the rail bridge.
- A new four lane carriageway through the existing developed area west of Marina View and a consequential shifting of the rail line west onto Ngati Toa Domain north of the Marina. It is estimated that there will be an encroachment of approximately 30 metres into the existing domain and will mean the removal or relocation of some of the sports/community facilities on the Domain e.g. the Paremata-Plimmerton Rugby Club, the Squash Courts and a Play Centre. The new four-lane road then runs inside the realigned railway at grade until it meets the northern end of the Domain.
- A new bridge at Pascoe Avenue over the realigned railway and the new expressway, allowing access from Mana Esplanade to Ngatitoa Domain. It is unclear whether the new expressway will be partially in cutting at this point, but the concept plans indicate the removal of properties, which immediately front Pascoe Avenue east of the current railway line in order to raise Pascoe Avenue to an acceptable height.
- Mana Station in its current location is removed and current levels of access to the rail line are significantly diminished. It is understood that options around how and where to relocate the station are still being investigated.

Assessment of negative effects on the environment	
-Visual	• Large structures of grade separated interchange at Paremata and Pascoe Avenue creates significant local visual effects. • Visible from residential development on surrounding hillsides. • Significant effects on Paremata School • Effects for properties on Mana Esplanade that back onto expressway.
-Landscape	• Loss of water views that contribute to bridge effect as interchange & bridge structure fill in gaps across mouth of inlet. • Loss of remnant tidal mudflat.
-Amenity	• Loss of potential open space at Harbourside Park • Loss of formal/informal access to the coast • Loss of buildings & legible roading system

Assessment of positive effects on the environment	
-Visual	-
-Landscape	-
-Amenity	-
Risks & opportunities	• Ensure walkway/cycling connection along southern and northern side of inlet to coast is not lost under new expressway bridge. • Potential to create new coastal park associated with new road to railway Station. • Opportunity for creating new commercial area with a marine focus between expressway and existing local road to create new commercial context for Paremata
Potential aspects of mitigation of effects	• Create a new area of open space with coastal connections comparative to Harbourside Park. • Limited opportunities for meaningful mitigation for school

2. Pascoe Avenue to Goat Point

North of Ngatitoa Domain the road continues close to the existing railway alignment while the rail is formed on a coastal reclamation. This reclamation continues until the rail line meets its current alignment south of Plimmerton Station. This includes reclaiming the southern portion of south Plimmerton beach, the removal of 8 houses and a new rail bridge across the mouth of the Taupo Stream.

Assessment of negative effects on the environment	
-Visual	• Interchange has high local impacts. • Transport corridor dominates landscape through Ngatitoa Domain
-Landscape	• Loss of significant remnant dunes north of Ngatitoa Domain • Reclamation encroaches on coastal environment.
-Amenity	• Loss of open space within Ngatitoa Domain, largest open space in Mana with regional use. • Loss of amenity within Ngatitoa Domain • Loss of playing fields, recreation facilities and playcentre on Ngatitoa Domain • Loss of walkway • Diminished accessibility to railway station and marina • Loss of residential and commercial buildings north of Paremata Bridge. • Loss of carparking for marina • Loss of public boat launch ramp
Assessment of positive effects on the environment	
-Visual	-
-Landscape	-
-Amenity	-

Risks & opportunities	• Opportunity to improve the existing concrete 'riprap' on shoreline to create a more natural landscape with associated walkway/cycleway.
Potential aspects of mitigation of effects	• Relocation of walkway required with noise and visual screening. This may mean a substantial wall /noise barrier with vegetative mitigation to soften. • Large scale planting alongside expressway required to create better context for large new structures and transport corridor.

Conclusion: a bridge structure at Pascoe Avenue would allow pedestrian access through park with less visual severance (as opposed to the conventional earth bund construction).

3. Goat Point to Ulric Street

The proposed expressway travels at grade between the existing highway at Goat Point and the railway on reclaimed land before rejoining the existing SH1 alignment in the vicinity of the new Palmers Garden Centre. The final form of the expressway around Goat Point and in the vicinity of Steyne Avenue has yet to be decided. The proposal eliminates the current access to Plimmerton via Steyne Avenue and necessitates the removal of the majority, if not all, of the houses on the western side (numbers 75-97) of St Andrews Road.

The newly built Plimmerton Domain/Ulric Street roundabout is replaced with a new three quarter diamond interchange with north facing ramps allowing southbound access and northbound egress while the new local road (Saint Andrews Road current alignment) is accessed by a south facing off ramp. This local two lane road also provides the only access between Mana, Camborne, and Plimmerton. There is no direct northbound access to Plimmerton from the proposed expressway. A new connection from the interchange is provided with a new at grade rail level crossing to access Plimmerton connecting in the vicinity of the Beach Road/Steyne Avenue roundabout. This connection also provides access to the Ulric Street industrial area, Plimmerton Domain and the site of the current Palmers Garden Centre.

Assessment of negative effects on the environment.	
-Visual	• Loss of legible entrance to Plimmerton • Effects high for residents of Camborne & St. Andrews Rd. • Visible from Whitireia Park • Severe effects on St Theresa's church and school.
-Landscape	• Loss of beach and natural character • Change in character from residential area to road dominated public area for Steyne Avenue • Change in road character and driver experience with scale of transport corridor • Further encroachment into rural land
-Amenity	• Loss of connectivity for wider community Loss of gateway to Plimmerton • Loss of recreational opportunities/open space values on Plimmerton Domain • Loss of Ara Harakeke path • Loss of casual access to beach especially from residential areas east of expressway such as Camborne. • Significant impacts for St Theresa's church and school, and Plimmerton School. • Impact on Plimmerton village.

Assessment of positive effects on the environment	
-Visual	-
-Landscape	-
-Amenity	• Properties on Steyne Avenue have less through traffic.
Risks & opportunities	• Potential to provide better drop-off facilities for Plimmerton School and Park and Ride to station. • Opportunity for pedestrian access over Ulric Street off-ramp. • Ulric Road off ramp to access Plimmerton at Motuhara Road rather than School Road to avoid extended ramps and disruption of the centre of the village.
Potential aspects of mitigation of effects	• Good noise and visual screening for houses on Steyne Avenue. • Restore logical end to Steyne Avenue. • Create new faculties for beach users such as a windsurf beach and parking area off Steyne Avenue • Plimmerton village re-configured to create new roading hierarchy, access and connections. • Extend footbridge across Expressway to railway station or create underpass. • Reinstate access to Ara Harakeke.

Conclusion: Given the land constraints at Goat Point, an elevated expressway from Goat Point to Steyne Avenue (and possibly to Ulric Street) may be the best practice to avoid reclamation, loss of beach and loss of coastal access, and reduce the number of dwellings required to be removed.

4. ***Plimmerton to South of Pukerua Bay***

From north of Plimmerton the expressway concept runs along the existing SH1 alignment. Full grade separation of the Airlie Road/Whenua Tapu intersection is shown.

Assessment of negative effects on the environment	
-Visual	• Weigh station- no information available but current layout creates large flat area cut into landscape that extends apparent width of carriageway with significant visual effects. • Interchange highly visible from cemetery
-Landscape	• Encroachment into rural land
-Amenity	• Impact on Whenua Tapu cemetery
Assessment of positive effects on the environment	
-Visual	• Good use of natural contour for access ramps to properties east of expressway
-Landscape	-
-Amenity	• Improved access to Whenua Tapu cemetery
Risks & opportunities	• It is assumed that the integrity of Ara Harakeke path is retained
Potential aspects of mitigation of effects	• Planting on the boundary of the cemetery and east of the southbound lane on the hillside to mitigate effects of interchange

5. ***Pukerua Bay Bypass***

This is a 4-lane Pukerua Bay bypass with 2 half diamond interchanges, one at each end.

Two new structures are proposed south of Pukerua Bay to divert and connect local traffic with the expressway. The new road then follows the alignment of the former Pukerua Bay bypass designation east of the existing community and under the railway line at Muri Road. A new rail over bridge will be of sufficient length to also serve as a local connection between properties on the eastern and western sides of the community where new local service roads are proposed. The expressway then continues to descend the hill on a combination of bridge structures and cuttings. North facing on and off ramps are provided which link to the proposed expressway approximately half way down the Pukerua Bay hill.

Assessment of negative effects on the environment	
-Visual	• Potential for extensive cut batters at northern end where meets escarpment • Extensive earthworks required through rural area
-Landscape	• Loss of native bush in valleys
-Amenity	• Loss of rural character east of Pukerua Bay township • Severe impacts on local properties at north end of bypass.
Assessment of positive effects on the environment	
-Visual *-Landscape*	
-Amenity	• Existing SH would revert back to local road with less traffic
Risks & opportunities	• Plans show cycleway in shoulder of expressway but suggest that Transit look for an alternative route that follows local roads & pathway for amenity.
Potential aspects of mitigation of effects	• Cut faces at escarpment and removal of bush in valleys could be reduced by locating by-pass further east

6. ***Centennial Highway: South of Pukerua Bay to Fisherman's Table in Paekakariki***

Centennial Highway is located within a significant coastal environment with unique landscape and scenic qualities. It has been described in a recent landscape assessment as"*traversing a rugged natural coastal landscape with distinctive and outstanding scenic values. This section of coastal road is unique and 'iconic' for commuters, visitors and tourists. The scenic qualities are high, sensitive and vulnerable to change, particularly change that introduces a visual distraction and detraction that compromises the expansive views thereby downgrading the traveling experience."*[6]

This coastal escarpment has been identified in the Regional Policy Statement by Greater Wellington as a "Landscape and Seascape of Regional Significance."

- Centennial Highway is the first view of the Wellington coast/sea for travellers heading south.
- It is the first view of natural coastline for travellers heading north after the highly modified Porirua/Paremata/Plimmerton coastline.
- It is the gateway to Kapiti coast for travellers heading north and a gateway to Porirua City for those heading south.

[6] Visual Effects Assessment of Centennial Highway Lighting. Prepared by Boffa Miskell Limited for KCDC June 2003.

Description

The coastal expressway would be a four-lane median divided highway with grade-separated interchanges at Paekakariki and Pukerua Bay. Reclamation is proposed on the seaward side of the existing state highway. In addition part of the expressway, particularly at the Pukerua Bay end, is staggered (i.e. split in level.)

The western two lanes then follow close to the existing carriageway from the foot of the hill and on the coastal section while two new lanes are constructed on the eastern side, against or cutting into the hillside.

This expressway continues on the flat coastal section to Fisherman's Table as a four-lane alignment with a significant reclamation of up to 40 metres in width in places. In addition part of the expressway, particularly at the Pukerua Bay end, is staggered (i.e. split in level.)

At Fisherman's Table the expressway remains at grade with a new alignment to the west of the existing highway. There is no access proposed to the Fisherman's Table restaurant or the four townhouses immediately to the north.

Assessment of negative effects on the environment	
-Visual	• Will alter the natural coastal /rural character of the landscape to a more structured/built landscape. • Has the potential to have significant adverse impacts on sea views from the road due to safety barriers likely to be required. • Has the potential to have significant adverse impacts on views from the sea looking back to land. • High visual impact of retaining walls and seawall • High impact cut faces on Pukerua Bay hill e.g. at Ch 8050
-Landscape	• Loss of natural character including beaches, rocky shoreline & coastal landscape especially as viewed from the sea and Pukerua Bay - in particular removal of any form of vegetation and natural landform between the driver and the sea.
-Amenity	• Loss of amenity as a tourist route (cycling in particular) as part of a national cycle route. • Loss of beach and coastal access • Change in driver experience • Loss of opportunities for recreational fishing
Assessment of positive effects on the environment	
-Visual	-
-Landscape	• Removal of buildings on seaward side of road has a positive visual effect in terms of coastal policy.
-Amenity	

Risks & opportunities	• The 2.5m footpath/cycleway shown on plans needs spatial separation from carriageway with a barrier. • There is a high risk of long term scarring due to cuts back to parent rock to avoid inherently unstable natural slopes. These cuts may not be able to be mitigated even over time. • Cycleway will put users at risk given proximity to wave action from being closer to deeper water. • A well-designed structure has the potential to create a dramatic architectural statement and an exciting driver experience.
Potential aspects of mitigation of effects	• A more natural rock and riprap finish for coastal protection works is preferred over a more engineered solution (this has cost implications as substantial rocks would need to be imported from outside the district). • A range of concrete barrier finishes should be considered to accelerate the weathering process to reduce visual effects and reflectivity. • A visually permeable barrier is preferred to facilitate views to the sea.

7. Fisherman's Table to MacKay's Crossing

The first stage of the grade-separated interchange at Paekakariki will cross the existing two lanes of SH1, with later stages capable of spanning a four-lane expressway. There will be a full grade separation of the Beach Road/Paekakariki Hill Road intersection. The exact detail of which is still under consideration. For all options the removal of the Petrol Station, the Motels and the 1906 Restaurant Building is required. The three options currently being investigated are as follows: -

B4 An expressway overbridge crossing Paekakariki Hill Road which continues to link to Beach Road with eastern side connections to the expressway via Paekakariki Hill Road. The north bound off ramp and northbound on ramp connect at ground level in the vicinity of the existing intersection.

B5 An overbridge crossing the expressway south of Beach Road with the local connection linking into Ames Street.

B8 An overbridge crossing the expressway south of Beach Road with local access maintained over the existing level crossing. A high-level eastern side roundabout provides the access to the southbound onramp and the northbound off-ramp.

There also a potential new alignment adjoining the railway line through the site known as Steam Incorporated to link with Tilley Road.

Description

From Steam Incorporated north, the alignment provides a substantial cut into the eastern foothills before crossing the current alignment of SH1. The 5 residential properties in the triangle between the rail and the existing road are removed. The proposed expressway then heads parallel to the existing railway line before it crosses dune farmland on the existing MacKay's Crossing Stage 2 designation to meet the existing alignment of the MacKay's Crossing Interchange currently under construction. The existing alignment of State highway 1 provides the local service road to Car Haulaways, Sang Sue market gardens and other farm and lifestyle blocks in the vicinity.

Assessment of negative effects on the environment	• Lack of detail on exact location and formation of elevated interchange(s)
-Visual	• Any option with ramps that encroach on Beach Road will have severe local impacts.
-Landscape	• Loss of natural landscape south of Paekakariki • Encroachment onto rural landscape north of Paekakariki
-Amenity	• Impacts on Millennium walkway • Any option with ramps that encroach on Beach Road will divide village • Access to property severed between expressway and railway near north end of route • Changed in Paekakariki to road hierarchy, especially if Tilley Road option is chosen. • The village will become a cul-de-sac rather than a main street service road. • Loss of property • Reduction/removal in railway character of village, with removal of railway buildings and change in village layout • Loss of character with removal of local landmarks & stop-off points. • Loss of accessibility increased with potential separation of northbound and southbound access into Paekakariki.
Assessment of positive effects on the environment	
-Visual	
-Landscape	• Removal of buildings on seaward side of road has a positive visual effect in terms of coastal policy.
-Amenity	•
Risks & opportunities	• Closure of Ames Street has local benefits for residents • Opportunities to use land at north end of Centennial Highway to create a destination point/cycleway walkway.
Potential aspects of mitigation of effects	• Mitigation around Fisherman's Table to restore natural character of coastal landscape – opportunities for ecological planting. • Create turnaround at end of Ames Street. • Use urban design programme to restore or recreate character of main street and road hierarchy

8. Grays Road: An upgrade of the existing central portion of Gray's Road and new roads bypassing Camborne and Pauatahanui communities.

The proposed works involve reconstructing the Gray's Road / SH1 intersection. This will involve a new length of road north of the existing intersection, and it will connect to SH1 via a grade-separated interchange at Plimmerton. Other works include curve easing around the Pauatahanui Inlet and a bypass of Pauatahanui Township (this will be constructed behind the local school). The bypass will connect with the SH58 roundabout. The Paekakariki Hill Road / Gray's Road intersection will be a roundabout.

Assessment of negative effects on the environment	Lack of detail in option (option assessed follows existing route, 2 options pass through rural land to north, joining up to SH at Airlie Rd interchange)
-Visual	• High cuts through small headlands on inlet will be visible from Whitby side of inlet • Hillside cuttings where bypass meets SH1 at Plimmerton
-Landscape	• Loss of natural character • Loss of through road for Pauatahanui village
-Amenity	• Loss of rural character for residences • Loss of residences • Disruption to historic context of Pauatahanui village
Assessment of positive effects on the environment	
-Visual	
-Landscape	• Redefinition of village focus with less through traffic
-Amenity	• Relocation of road away from inlet edge allows better opportunities for cycling/walking • Heavy traffic would bypass residential area of Camborne
Risks & opportunities	• Road to be raised above high tide line. • Barrier to edge of road? • Impact on loss of • Potential for traffic to divert from SH1 using Grays Road to link with Paekakariki Hill Road. This would then create pressure to upgrade Paekakariki Hill Road with consequent landscape and visual effects.
Potential aspects of mitigation of effects	• Options which bypass to north across rural land avoid effects of existing route along edge of inlet • Potential to relocate existing road away from salt marsh at head of inlet (not shown on plans)

APPENDIX 2:

Description of Transmission Gully Motorway Route & Landscape Assessment of Effects

HT1 Transmission Gully – full length 4 lane
The Transmission Gully Motorway (TGM) is defined as a 27 km long motorway from MacKay's Crossing, through SH58 to the southern reconnection to SH1 near Linden.

The following description is sourced from Technical Report Final Appendices September 2005 with additional detail for the southern end from the Michelle Rush Report.

Transmission Gully starts opposite Linden on SH1 in the south where the existing highway will be widened from two lanes to three and then four lanes to provide the necessary on- and off-ramps. North of Collins Avenue the northbound off-ramp to TGM will proceed in a straight line up the ridge behind the properties on Tremewan Street. It will then curve across the existing motorway on an over-bridge before proceeding to pass behind Porirua East / Whitby.

Approximately 700m from SH1 a new road will link the TGM with Kenepuru Drive, crossing the existing SH1 and the NIMT railway (it is assumed this will be by way of a flyover). From this point the TGM continues climbing northwards for approximately 3km. Near the highest point the route will cross Cannons Creek gully where a major viaduct (up to 295m long and up to 90m above the gully) will be required.

From Cannons Creek the route descends to Duck Creek before veering eastward to cross SH58 a short distance east of Pauatahanui village. Two local link roads will link the TGM to suburbs within Porirua City: one to Warspite Avenue in Cannons Creek, and the other to James Cook Drive in Whitby. The intersections of these with the TGM will be grade-separated interchanges.

The route crosses SH58 (likely to be a grade separated roundabout) east of Pauatahanui village. North of SH58 the alignment crosses farmland for approximately 6 km before entering the Horokiri Valley (Transmission Gully). There will be another viaduct (150m long) 1.5 km south of the Wainui saddle, in order to avoid high fill. A deep cut (45m) is needed at Wainui saddle. At the summit the alignment follows Te Puka Stream. Approximately 300m north of the saddle will be 1,550m of viaduct to avoid high cut slopes. North of the summit TGM is very steep (grades up to 8.2%).

After exiting Te Puka Stream TGM crosses SH1 south of Sang Sues market garden, and connects to the new section of SH1 constructed as part of MacKay's Crossing realignment.

The following analysis is sourced from the Frank Boffa landscape assessment contained within the Planning Balance Sheet – Final September 2005 and the landscape assessment in the Rush Report – May 2004.

Assessment of negative effects on the environment	
-Visual	• Visible to existing rural residential properties at Pauatahanui environs and QEII Regional Park • Highly visible from within parts of Porirua basin, Belmont regional Park and Battle Hill Farm Forest Park • The SH58 interchange, which would occupy a significant portion of the flat land at the head of the Inlet, is likely to have a major impact on visual quality of the Inlet area. • Visual impacts of interchange at Linden and Kenepuru
-Landscape	• Visual effects of structures and significant earthworks in a rural pastoral landscape. • Impact on the flat landscape of the dune lands of interchange where road crosses existing SH1 and railway south of MacKay's Crossing
-Amenity	• Severs western section of Belmont Regional Park in the Cannons Creek area. • Loss of regional recreational opportunities
Assessment of positive effects on the environment	
-Visual	• Scenic route with panoramic views of Pauatahanui Inlet and Kapiti Coast • Use of viaducts and bridges substantially reduces extent of earthworks and so reduces visual impacts. • Improved visual access to Battle Hill Farm Forest and Park and Belmont Regional Park
-Landscape	• Provides a new gateway to and from Wellington
-Amenity	• Opportunities to establish new pedestrian/walking routes on coastal route

Risks & opportunities	• Excavation, cut and fill and vegetation removal could be more extensive than shown • However, the greenfield environment allows excellent landscape design opportunities and greater scope for mitigation. This includes opportunities to design elegant structures that compliment landscapes. There are also opportunities to create and enhance a scenic gateway to and from Wellington, integrate road and structures with landscape and ecological views, and improve access and visibility of local Reserves and Regional Parks.
Potential aspects of mitigation of effects	• Improve and enhance access to Regional Parks. • Integrate roads and structures with existing landscaping. • Ensure nature and scale of earthworks is compatible with natural landform and landscape patterns. • Mitigation planting to extend beyond disturbed areas as appropriate, to provide high level of landscape innovation.

APPENDIX 3: Draft Performance Indicators

From the Planning Balance Sheet Assessment
Final dated September 2005

One of the evaluation tools applied in the assessment of options for the Western Corridor Transportation Study (WCTS) was a Planning Balance Sheet (PBS). The PBS established a framework of objectives and sub attributes and then scored and weighted each item for each option.

Planning Balance Sheet

Broad objectives for the review of the Wellington Regional Land Transport Strategy	**Sub attribute objectives**
Assist Economic and Regional Development	· Minimise average multi- modal user costs · Minimise road freight user costs · Maximise regional GDP.
Assist Safety and Personal Security	· Maximise safety · Maximise personal security.
Improve Access, Mobility and Network Reliability	· Improve accessibility to and integration of all modes of transport · Improve reliability of travel time for road and rail · Improve resilience of the road and rail network · Improve the extent of choice for mode options.
Protect and Promote Public Health	· Promote positive effects on air quality · Minimise adverse effects of noise · Promote facilities for active travel (cycling and walking) · Minimise the extent of community severance and related effects · Minimise the extent of community displacement and construction disruption
Ensure Environmental Sustainability	· Incorporate understanding of iwi values · Minimise greenhouse gas emissions · Minimise effects on indigenous habitats · Minimise environmental effects on significant ecosystems · Maximise landscape, visual and recreational opportunities · Minimise adverse effects on archaeology and heritage.
Consider Economic Efficiency and Affordability	· Consider affordability of elements and packages · Provide economic efficiency of elements and packages.

Reproduced from the Planning Balance Sheet Assessment September 2005.

In addition scoring systems were devised at an early stage for each sub-objective to ensure that a consistent approach was taken to scoring across the PBS. These PBS and Landscape Scoring indicators are shown in the full table set out in Appendix 3. The scoring system is designed to be able to recognise both benefits and disbenefits.

Indicators and scoring for Landscape and Visual including Recreational Values

INDICATOR for Landscape and Visual including recreational values	**Score 0**	**Score 5**	**Score 10**
Expert assessment based on : *1. The presence and value of significant outstanding natural landscapes.* 2. Permanent change to landscape character. 3. The capacity for the landscape to absorb change associated with new transport infrastructure.	Major permanent change to a high value landscape that has low VAC and limited mitigation potential. (VAC = Visual Absorption Capability)	Base Case Effects	Major landscape restoration to a significant outstanding natural landscape.

Reproduced from the Planning Balance Sheet Assessment September 2005.

APPENDIX 4: PBS Landscape Assessment

from the Planning Balance Sheet Assessment
Final dated September 2005

A number of items within the PBS were subject to expert assessment by specialists in accordance with the PBS methodology. This is the summarised assessment for Landscape Effects, part of a larger summary that included indigenous habitats, regionally significant ecosystems and landscape. The full assessment was not available.

The effects are shown in terms of positive and negative effects on the environment, risks, opportunities and areas of potential mitigation for HC4 - Coastal Route, HE3- Gray's Road and HT1- TGM.

HC4: Coastal Expressway Linden to MacKay's via Mana Bypass

Assessment of negative effects on the environment	
-Visual	• Significant landscape and visual impact of raised SH1 over railway alignment from Ngati Toa dunes to Plimmerton (Goat Point)
-Landscape	• Removal of prominent Pohutukawa and Cabbage trees along eastern side of SH1 at Paekakariki • Moderate adverse effects on dunelands at northern end of Ngati Toa Domain and that section of coastline
-Amenity	• Potential of Centennial Highway reclamation and seawall to adversely affect public access to coastal recreation. • Significant disruption on 2 active recreational reserves (Ngati Toa Domain and Plimmerton Reserve), reduction of size and existing use, visual amenity and recreation access.
Assessment of positive effects on the environment	
-Visual	-
-Landscape	• There is an opportunity to improve the quality of environment of the coastal marine area at Goat Point which is adversely affected by existing reclamation using demolition materials.
-Amenity	-

Risks & opportunities	Opportunity to: Improve Mana Esplanade environment Improve 'gateway' into Plimmerton and Paekakariki Provide strong pedestrian and cycle coastal links between Pauatahanui and Plimmerton. Risks of more extensive visual effects if earthworks extend beyond that shown
Potential aspects of mitigation of effects	• Avoid large cuts at Paekakariki • Adequate provision of landscape and ecological buffer areas along the corridor to provide scope for mitigation of visual, noise, ecological issues. Particularly within residential / urban areas • Carefully designed enhancement at Goat Point and replacement of south Plimmerton Beach • Extra care when designing bridge over Pauatahanui Inlet channel • No net loss of indigenous habitat – replacement / reinstatement of up to 7.0 ha of bush and stream habitat • Avoid bush remnants where possible • Provide additional areas for active recreation to supplement the adverse effects on the Ngati Toa Domain and the Plimmerton Reserve • Avoid cuts at Centennial Highway by use of walls • Provide planned public access to Centennial Highway Coast with parking at northern and southern ends.

HE3: Grays Road Upgrade

Assessment of negative effects on the environment	
-Visual	• Major landscape and visual affects associated with earthworks
-Landscape	• Major ecological effects associated with earthworks near Pauatahanui Inlet and Pauatahanui Township, as well as from the loss of indigenous forest remnants
-Amenity	-
Assessment of positive effects on the environment	
-Visual	-
-Landscape	-
-Amenity	-
Risks & opportunities	• An opportunity exists to relocate the road further inland and remove existing causeway at eastern end of estuary to reconnect Horokiri salt marsh to the estuary
Potential aspects of mitigation of effects	• There is virtually no opportunity to buffer this route from Pauatahanui Inlet. The only option for mitigation is to relocate the route further inland • No net loss of indigenous habitat – replacement / reinstatement of up to 4.0 ha of bush and stream habitat.

HT1 Transmission Gully – full length 4 lane

Assessment of negative effects on the environment	• Severs western section of Belmont Regional Park in the Cannons Creek area. • Highly visible from within parts of Porirua basin, Belmont regional Park and Battle Hill Farm Forest Park • Visible to existing rural residential properties at Pauatahanui environs and QEII Regional Park • Visual effects of structures and significant earthworks in a rural pastoral landscape
Assessment of positive effects on the environment	• Scenic route with panoramic views of Pauatahanui Inlet and Kapiti Coast • Use of viaducts and bridges substantially reduces extent of earthworks and so reduces visual impacts. • Improved visual access to Battle Hill Farm Forest and Park and Belmont Regional Park • Provides a new gateway to and from Wellington • Opportunities to establish new pedestrian/walking routes on coastal route
Risks & opportunities	• Excavation, cut and fill and vegetation removal could be more extensive than shown • However, the greenfield environment allows excellent landscape design opportunities and greater scope for mitigation. This includes opportunities to design elegant structures that compliment landscapes. There are also opportunities to create and enhance a scenic gateway to and from Wellington, integrate road and structures with landscape and ecological views, and improve access and visibility of local Reserves and Regional Parks.
Potential aspects of mitigation of effects	• Improve and enhance access to Regional Parks. • Integrate roads and structures with existing landscaping. • Ensure nature and scale of earthworks is compatible with natural landform and landscape patterns. • Mitigation planting to extend beyond disturbed areas as appropriate, to provide high level of landscape innovation.

APPENDIX 5: Cost calculation / comparison with built projects

The following landscape costs have been taken from the *Technical Report – Final Appendices September 2005. Appendix F – Element costs*

Transmission Gully Motorway 'Landscaping' = $9,920,000 or $367,407/km based on a 27km route.

Coastal Expressway 'Landscaping' = $8,107,811 or $503,590.74/km for new road with distances calculated on chainage from plans in the *Cost and Programme Review Update*

Grays Road 'Landscaping' = $399,355 over 5.42km = $71,440/km
Length of extended and upgraded Gray's Road including Pauatahanui bypass is 6.67km. This is based on the known length of existing Gray's Road as 5.59km and the aerial on page A-39 (Scale approx 1:25,000) from the *Technical Report - Final Appendices September 2005.*

It is not clear what measures are included under 'landscaping'. The two routes require different levels of landscape works for mitigation. An expressway through an urban area will require landscape mitigation from land shaping, urban 'repair', road/pathways layout, choice of materials and quality of hard landscape finishes. Rural landscape mitigation will focus mainly on landform shaping and planting.

In order to compare costings for the two routes, they have been broken down into sections according to landscape character. Costs for landscape mitigation for urban, rural and transitional sections of the route are based on are based on 'landscaping' costings from recent Transit projects and Transit's proposed costs for both TGM and 's the CR.

Costs were obtained for the rural Kaitoke route upgrade but no as-built costs were available for an entirely new route through a rural landscape. Therefore Transit's TGM costs /km have been used as the base cost for comparison, although we note that they are 5 times higher than the costs/km for Kaitoke. It is assumed that costs for mitigation on coastal landscapes are similar to those on rural landscapes.

Landscape character	Project	$ Landscape Works	$/km	Multiplying factor
RURAL	Estimated TGM costs	9,920,000	$367,407	1
URBAN	Inner City Bypass	1,700,000 (for urban design only, not including building restoration)	$1,545,454	4.2
RURAL UPGRADE	Kaitoke Upgrade	475,000	$86,363	0.23
TRANSITIONAL**	Newlands Interchange	560,000	$560,000 - $640,000	1.8

** A Transitional landscape character is one that is neither strongly rural/natural nor urban/ built. It has been identified as occurring at grade-separated interchanges or linking an urban to a rural landscape such as between Pukerua Bay township and Centennial Drive. Roading in Transitional areas tends to have higher landscape mitigation costs than in urban areas with more emphasis on planting design and hard landscape detail.

From these figures, the following calculations were made.

Transmission Gully Motorway

Area/Zone	Km distance	% of total route	Cost factor	Total
Overall Route	27.0			
Rural	24.6	92.0	X 1	24.6
Coastal	0	0.0	X 1	0.0
Transitional	2.4	8.0	X 1.8	14.4
Urban	0	0.0	X 4.2	0
Existing	0	0.0	X 0	0
			Total points	39.0
Landscape costs / points				**25,4359**

Assumptions

Interchanges have been graded as Transitional Areas

- Linden/Kenepuru allow 1km transitional
- Warspite Avenue allow 0.2km transitional
- James Cook Drive allow 0.2km transitional
- SH58 interchange allow 0.5km transitional
- SH1 cross-over allow 0.5km transitional

Coastal Expressway

Area/Zone	Km distance	% of total route	Cost factor	Total
Overall Route	26			
Rural	2.8	10.7	X 1	2.8
Coastal	5.8	22.3	X 1	5.8
Transitional	3.6	13.8	X 1.8	6.48
Urban	3.9	15.0	X 4.2	16.38
Existing	9.9		X 0	0
			Total points	31.46
Landscape costs / points				**25,7718**

Assumptions

Interchanges have been graded as Transitional Areas if within existing or rural areas

- Airlie Road interchange 1km transitional

Not included:

- Interchanges at Whitford Brown and Mungavin Ave
- existing 4 lanes south of Paremata, north of Plimmerton,

Grays Road

Landscaping costs = $399,355 over 5.42km = $71,440/km

Area/Zone	Km distance	% of total route	Cost factor	Total
Overall Route	6.67			
Rural	4.52		1	4.52
Coastal	0.70		1	0.7
Transitional	0.20		1.8	.36
Urban	0.0			0
Existing	1.25			0
			Total points	5.58
Landscape costs / points				**71,568**

Conclusion

The landscape costs seem comparable per km for TGM route versus CR when comparing landscape costs with known costs for recent projects. However costs do not include building restoration or purchase of new land for open space such as replacement of recreation land for loss of Ngatitoa and Plimmerton Domains. Nor is there mention of the potential costs of urban redesign within Plimmerton and Paekakariki to allow for the design of a new 'gateway' to each community and compensate for the closure of major roads, although these issues have been noted in the PBS landscape assessment.

APPENDIX 6: Reference List

Consultation Document, October 2005

Draft Technical Report – Stage 1 -15 April 2005, (main text and appendices)

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Cost and programme review update August 2005

Environmental & Social Impact Assessment: A Review of the Transmission Gully Motorway Project & its Roading Alternatives prepared by Michelle Rush Consulting Ltd & PLaCE Consultants May 2004

SH1 Upgrade Environmental Assessment of Mana Clearways and Bypass Options Volume 1 and Volume 2 (Plans), BCHF, August 1999.

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Alternative Scenarios May 2005

Planning Balance Sheet Assessment –Final, September 2005, Maunsell

Transmission Gully cost estimate, Transit

Landscape Assessment – Western Corridor Technical report no. 6, Wellington Regional Council by Boffa Miskell Partners Ltd, September 1989

Porirua Landscape Study & Implementation Strategy: Boffa Miskell Partners Ltd, 1992

Porirua City Landscape Strategy: PCC December 1994.

New Zealand Coastal Policy

Greater Wellington Regional Council: Regional Policy Statement

Kapiti Coast District Council: District Plan

Porirua City Council: District Plan

Transit Planning Policy Manual Supplement

Transit Environmental Plan

National Walkways and Cycling Strategy 2005

New Zealand Urban Design Protocol 2005