2.6 PEDESTRIAN/CYCLIST NETWORKS

The walking community is not well connected to Ourimbah or east of the railway line. There are very few formed footpaths and pedestrians use either the gravel edges, grassy verges of the road or the road pavement.

There are also no safe crossing facilities (such as a signalised intersection) to traverse the highway from east to west, to access bus stops, commercial properties or the Baileys Road Pedestrian Bridge over the railway. Safe pedestrian access is essential for a successful community access network.

Baileys Road Pedestrian Bridge although it is underutilised should linked into the pedestrian access network to ensure there is at least one connection over the railway corridor between Lisarow and Ourimbah Stations. This would safeguard community access for the current population and any future growth or development to the west of the station.

There are no formalised cycle ways and cyclists currently use the shoulder of the road.

Bus stops are located on both sides of the highway however access to those on the west is difficult, dangerous and often impossible during peak hours. Two of the bus stops on this section have bus shelter facilities however the others are only signposted.
Figure 2.6.1: Local Access

KEY

- Study boundary
- Pacific Highway
- Railway Station
- Bridge
- Pedestrian Route
- Bus Route
- Bus Stops
- Driveway access to property frontage
- Gate access to rear of property
- Retail / Commercial Premises
2.7 LANDSCAPE AND BUILT FORM CHARACTER PRECINCTS

The distribution and frequency of key qualities, built elements and vegetation present along the corridor, contribute to different character settings. In addition the topography, geology and water courses lend themselves to specific landscape characters. Combined with the adjoining land uses, these form three distinct precincts with specific visual qualities and characters. The following three precincts follow closely the identified landscape characters which have been identified as a result of the contextual analysis:

Precinct 1 - Hills

This precinct is typified by a mixed eucalypt forest/Warm-temperate rainforest plant community.

Located at the southern end of the corridor this area incorporates the hilly area surrounding the Railway Crescent intersection, Dora Street and Lisarow Cemetery.

The bushland vegetation along Cut Rock Creek on the eastern side of the railway corridor, a remnant patch of coastal warm temperate rainforest, is highly visible from the highway and contributes significantly to the character of this precinct.

Precinct 2 – Flats

This precinct is typified by remnants of Swamp Sclerophyll Forest plant community with Freshwater wetlands nearby.

Located in the central section of the corridor this flatter section extends from Lisarow Cemetery to the southern end of the Lions Club Rest Area. This precinct is typified by stretches of low scale, semi-rural residential development often well setback from the road to the west. The vegetation of the domestic garden landscape with introduced exotic species on this western edge then transitions into a heavily vegetated bushland which forms the road edge where Cut Rock Creek travels parallel to the highway on the western side. The non residential area is a zoned conservation area and over time has become heavily infested with weed species. Some remnant endangered plant species, namely the Melaleuca bicorona have been identified and mapped and those to be retained and those to be translocated. These are further referred to in the Environment report prepared by Hyder.

The entire eastern edge of this precinct is bordered by the railway corridor close to the edge of the highway. This area has been cleared as a result of the railway works and has medium height planting. Beyond the Rail corridor to the north east distant ridgeline views are visible.

Precinct 3 – Ourimbah township

Located at the northern end of the project, this precinct is characterised by a transition into the commercial/retail strip of the Ourimbah township. The western edge of the road begins with the Lions Club Rest Area, with established mature tree plantings of Camphor Laurel and Liquidamber in an avenue arrangement. This rest area provides a pleasant shady public open space with a playground and new picnic facilities, and is highly valued by the local community. The western edge continues as a mix of low scale, residential development and mixed business such as the Tall Timbers Hotel, the Little Bottler bottle shop, Ourimbah Thai, ending at Glen Road with a cluster of retail shops. This mixture of uses provides a discontinuous street edge with poor pedestrian amenity. Some retail premises which have generous setbacks often have 90 degree car parking in front of the premises, creating at times a difficult and unsafe pedestrian environment, exacerbated by the lack of footpaths.

The eastern edge of the corridor consists of larger commercial/industrial uses interspaced by vacant lots. The highway alignment has recent tree plantings in an attempt to mimic the avenue plantings of Lions Park and to provide some visual amenity both to and from the carriageway. The tree species chosen provide little amenity in terms of screening. The existing uses are well setback from the edge of the highway with a service road accessible by two driveway entries. The land uses, from south to north, consist of Modular Sheds, Ourimbah Landscape Supplies, Affordable Wardrobes, Ourimbah Veterinary Hospital and the Metro Petroleum service station.
Figure 2.7.1: Character Precincts

KEY
- Study boundary
- Pacific Highway
- Railway Station
- Precinct 1: Hills
- Precinct 2: Flats
- Precinct 3: Township
- Tree lined edge
2.8 SCHEDULE OF VIEWPOINTS

The following viewpoints are assembled as an understanding of place and as a means of analysing the impacts of the design proposal. The viewpoints are arranged in order of the linear sequence of travel from south to north, as a driver or pedestrian may experience in part serve as a means of defining the character zones. They record the current status before the proposed works take place and indicate the key viewpoints, areas of visual significance in addition to areas requiring remediation or reinforcing.
Figure 2.8.1: Views + Vistas
2.9 VISUAL ASSESSMENT AND MITIGATION

PURPOSE

The purpose of a visual assessment and mitigation analysis is to record and categorise information about the visual qualities of the area in order to assess the visual impact of the proposed development and to develop mitigation strategies concurrently throughout the concept design process.

METHODOLOGY

To capture the likely impact of an upgraded Pacific Highway through the study area, the following tasks were undertaken:

A contextual analysis recording the following: Topography, Geology and Soils, Vegetation communities, Land use Character and Views, Built elements, Local access & circulation, Landscape and Built Form character precincts.

The study area was divided into character precincts, (Hills, Flats, Ourimbah Township), which are homogenous in character and or have strongly defined spatial qualities (the character precincts are illustrated in the previous section Landscape and Built Form Character Precincts).

An on-site field inspection was undertaken to confirm the boundaries of each character precinct.

An assessment of the impact of the proposal on each character precinct was undertaken using a select viewpoints indicative of a character precinct and took into consideration the sensitivity of the spatial precinct set within the viewpoint and the magnitude of the proposal.

This assessment was recorded in text and photographic record identifying the sensitivity of the spatial precinct contained within the viewpoint, the magnitude of the proposal on the spatial precinct, and the proposed mitigating strategies. The findings of the assessment were then summarised using the following visual impact matrix and are presented in a table with comment.

<table>
<thead>
<tr>
<th>Spatial Precinct Sensitivity</th>
<th>H</th>
<th>M</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>H</td>
<td>MH</td>
<td>M</td>
</tr>
<tr>
<td>M</td>
<td>MH</td>
<td>M</td>
<td>ML</td>
</tr>
<tr>
<td>L</td>
<td>M</td>
<td>ML</td>
<td>L</td>
</tr>
</tbody>
</table>

H=High  M=Medium  L=Low

The visual impact of the highway upgrade is assessed by combining the spatial precinct sensitivity and the magnitude of the proposal.

ASSUMPTIONS

The visual assessment is one tool within the larger urban and landscape investigation and design process.

The minimum amount of existing vegetation will be cleared for the construction of the road minimising the extent of mitigation required.

Those aspects influencing the road alignment which are not covered by the visual assessment process are captured in other parts of this report and/or by other design disciplines and consultant reports.

DEFINITIONS

The key terminologies which underpin the visual assessment and are used in describing the visual impact methodology are:

Character Precinct – A character precinct is defined by specific visual qualities and characters formed by the consistent distribution and frequency of key qualities such as topography, geology, water courses, built elements, infrastructure and vegetation communities which occur along the road corridor.

Spatial Precinct- a landscape with distinct visual qualities or character. The boundaries or edges of a spatial precinct are typically those elements that contain or limit one’s view from within the precinct, such as ridgelines, vegetation or built form. A spatial precinct can comprise one or more landscape units.

Landscape Unit- a single identifiable land use (town, grazing or infrastructure), land form (ridges, rolling hills, flats, river or river edge) or vegetation community (forest, mangrove, Banksia heath) that contributes to the overall landscape character of a spatial precinct. A number of different landscape units may make up one spatial precinct.

Sensitivity- refers to how able the spatial precinct is to accommodate change. A national park for example will be more visually sensitive to new development than a precinct whose topography and character has greater variety.

The factors which together contribute to the Spatial Precinct Sensitive are:

The extent to which the landscape is pristine or has been modified; Its coherence or variability; The number of users and frequency of view; and Scenic quality

Scenic quality – is associated with the integrity of the landscape. It includes consideration of prominent topographical features and cultural landmarks within each precinct.

Magnitude of Proposal – refers to the nature of the proposed development with relation to the physical properties, the scale of the proposal and consequent impact on visual amenity.

Visual Impact - an indication of the degree of impact of future development on a specific Spatial Precinct, Character Precinct or Area Setting as a whole in terms of the visual experience of its landscape character, determined by overlaying the Spatial Precinct Sensitivity ranking with the Magnitude of the Proposal ranking.
2.9 VISUAL ASSESSMENT AND MITIGATION

**Character Precinct 1 - Lisarow Hills**

**Viewpoint 1**

Considered as of medium visual significance as the setting is created by distant tree canopies.

The design proposes to improve the setting with the introduction of additional vegetated verges and a planted median to lesson the impact and scale of the new asphalt paving.

The new works will provide consistency to the road and enhance the distant vistas.

Mitigating strategies include:

- Provide a planted median to break down the scale of the road expansion
- Provide planted verges to either side of the road carriageway to reinforce the semi-rural character of the area

**Viewpoint 2**

The setting is considered to be of high visual significance because of its location at a busy intersection. The corner features a sandstone escarpment above which is a prominent stand of well established trees.

The visual effect of the proposed design is considered to be significant if the existing tree canopy is removed. Otherwise the actions are considered short term medium as a rock cutting into the escarpment will result in significant vegetation loss. The design strategy is to reinstate the escarpment with a complementary facing material and new landscaping treatments.

Mitigating strategies include:

- Introduce a planted verge at the base of the rock cutting.
- Introduce benching into the retaining structure able to support vegetation
- Retain as many of the existing trees as possible

**Viewpoint 3**

The setting is considered as visually significant as the well established trees aligning the road create a high quality setting and a boundary to the cemetery edge.

The visual effect of the existing trees is significant as the constraints of the narrow road corridor offer little opportunity for additional greening opportunities.

Mitigating strategies include:

- Retain and protect the existing trees and heritage stone fence posts
- Provide quality fencing complimentary to the existing iron gates
- Retain as many of the existing trees as possible

**Viewpoint 4**

This setting is considered to be of high visual significance as it demonstrates the open nature of the rail corridor adjacent to the road alignment with existing mature trees in the distance.

The visual effects of the road upgrade is negligible. The high voltage power lines are to remain.

Mitigating strategies include:

- Provision of a recessive colour, such as black chain wire fencing, to the fence boundary if required.
- Road design to be such that side barriers are not required
- Avoid any future advertising billboards

1-1 Railway Crescent looking north to the intersection of the Pacific Highway and Dora Street

1-2 Pacific Highway Railway Bridge, crossing the main northern line, looking north up to the intersection of the Pacific Highway and Dora Street

1-3 Pacific Highway looking north, Station 500

1-4 Pacific Highway facing northeast station 500
Character Precinct 2 - Lisarow Flats

Viewpoint 1
The front yards of residential dwellings feature open grassed setbacks with random tree plantings. The setting is considered of medium significance as the properties are set back and are lower than the current road alignment.

The visual effect of the change will be a reduction in the depth of property setbacks.

Viewpoint 2
The setting is considered to be of medium visual sensitivity. It comprises a wide verge with an informal residential access road and a mix of front and rear dwelling entries.

The visual effect of the design will be a significant improvement of the interface between the road way and the highway alignment through formalisation of the residential access arrangement.

Viewpoint 3
This setting is considered to be of medium visual importance indicated by the wide open character of the corridor flanked by vegetation. The detracting visual elements are the advertising billboards and the multitude of power lines/poles.

The design proposes to reinforce the green character of the corridor with planted medians, the removal of roadside clutter and the undergrounding of the domestic power lines.

Mitigating strategies include:
- Provide planted verges of 1.5 metre between the property fence and shared path to reinstate landscape character to the road edge.
- Introduce median planting as the road corridor width allows for additional landscaping to the corridor.

Viewpoint 4
This setting is considered to be of high visual sensitivity due to the wide open nature of the corridor with views to the hills and the significant tree canopy. Distant Billboards and the high voltage powerlines are considered detracting elements.

The design proposes the removal of weed species from the conservation area on the right and the provision of an off road shared path within a reinstated wetland planting environment which is typical of the landscape species and character of the precinct.

Mitigating strategies include:
- Underground the domestic power lines to remove the visual clutter.
- Introduce median planting as the road width allows to provide additional greening to the corridor.

Character Precinct 3 - Ourimbah township

Viewpoint 2
The setting is considered to be of medium visual sensitivity. It comprises a wide verge with an informal residential access road and a mix of front and rear dwelling entries.

The visual effect of the design will be a significant improvement of the interface between the road way and the highway alignment through formalisation of the residential access arrangement.

Mitigating strategies include:
- Retention of turfed verge to existing residences.
- Formalised residential access road and cul de sac.
- Reinstated landscaped grassland and treed area with WSUD stormwater mitigation.

Viewpoint 3
This setting is considered to be of medium visual importance indicated by the wide open character of the corridor flanked by vegetation. The detracting visual elements are the advertising billboards and the multitude of power lines/poles.

The design proposes to reinforce the green character of the corridor with planted medians, the removal of roadside clutter and the undergrounding of the domestic power lines.

Mitigating strategies include:
- Underground the domestic power lines to remove the visual clutter.
- Introduce median planting as the road width allows to provide additional greening to the corridor.

- Continuation of un-kerbed road edges along the eastern boundary of the road corridor, typical of semi-rural environments.

Character Precinct 3 - Ourimbah township

Viewpoint 2
The setting is considered to be of medium visual sensitivity. It comprises a wide verge with an informal residential access road and a mix of front and rear dwelling entries.

The visual effect of the design will be a significant improvement of the interface between the road way and the highway alignment through formalisation of the residential access arrangement.

Mitigating strategies include:
- Retention of turfed verge to existing residences.
- Formalised residential access road and cul de sac.
- Reinstated landscaped grassland and treed area with WSUD stormwater mitigation.

Viewpoint 3
This setting is considered to be of medium visual importance indicated by the wide open character of the corridor flanked by vegetation. The detracting visual elements are the advertising billboards and the multitude of power lines/poles.

The design proposes to reinforce the green character of the corridor with planted medians, the removal of roadside clutter and the undergrounding of the domestic power lines.

Mitigating strategies include:
- Underground the domestic power lines to remove the visual clutter.
- Introduce median planting as the road width allows to provide additional greening to the corridor.

- Continuation of un-kerbed road edges along the eastern boundary of the road corridor, typical of semi-rural environments.
Viewpoint 1

This setting is considered to be of high visual significance due to the distant ridge line vistas. The foreground view comprises views of the light industrial commercial precinct typical of rural town outskirts.

The design proposes to mitigate the informal character of the industrial area with additional tree planting and vegetation buffers to screen the industrial site and redirect the focus to the Ourimbah Township entry and natural ridge line setting.

Mitigating strategies include:
- Tree plantings of local species in informal groupings to highlight the signalised intersection.
- Generous vegetation buffers along the eastern edge of the road corridor.
- Provision of feature median planting to reinforce sense of entry and transition into the Ourimbah township.

Viewpoint 2

This setting is considered to be of high visual significance as it is the entry to the Ourimbah Township. The corridor is framed on the right hand side by an avenue of Liquidamber trees behind which is the Lions Club Rest Area.

The design strategy is to retain the grassy verge and minimise any potential impact to the Lions Park Rest Area and trees.

Mitigating strategies include:
- No paving and minimal kerbing along the road corridor edge.
- Provision of feature median planting to reinforce sense of entry and transition into the Ourimbah Township.
- Retention of existing trees as far as possible.

Viewpoint 3

This setting is considered of medium to low visual significance due to the semi-rural character of the streetscape but poor public domain which is part of the Ourimbah Township entryway.

The design proposes to continue the green theme with landscape treatments to the eastern side of the corridor including the greening of fence frontages and the provision of street trees, in addition to providing a structured street edge with improved pedestrian amenity.

Mitigating strategies include:
- Undergrounding of overhead powerlines.
- Planted 1.5 metre vegetated verges between the fence lines and the shared path.
- Feature median planting where possible to reinforce sense of entry and transition into the Ourimbah Township and continuation of the green corridor theme.
- Turfed verge and or shrubs with street trees of a local endemic species similar in scale to the trees planted in Stage Two works.

Viewpoint 4

This setting is considered to be of low visual significance due to the poor public domain address including a lack of definition of the street edge and the retail parking in the street verge, at times across the public right of way.

The design proposes to remove the retail parking in the verge due to the increase in the width of the road corridor. Substantial off road parking is provided for the Pub and Bottle Shop premises to the rear.

The addition of the shared path with new landscape treatments will significantly improve this streetscape and town centre character.

Mitigating strategies include:
- Removal of 90 degree car parking.
- Planted 1.5 metre vegetated verges between the fence lines and the shared path.
- Provision of landscaped verges with street trees of a local endemic species similar in scale to the trees planted in Stage Two works.
The following table summarises the visual sensitivity and magnitude and also the potential visual impact.

**Character Precinct 1 - Hills**

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Photograph</th>
<th>Sensitivity of viewpoint</th>
<th>Magnitude of proposed design</th>
<th>Visual impact</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-1</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium impacts to the character of the road, once the planting is established, the setting should improve.</td>
</tr>
<tr>
<td>2</td>
<td>1-2</td>
<td>High</td>
<td>High</td>
<td>High impact (initially) Medium (long term)</td>
<td>High impacts post construction. Once planting is established the impact could be considered medium. Loss of significant tree canopy (if occurs) is considered a high impact.</td>
</tr>
<tr>
<td>3</td>
<td>1-3</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>Moderate impact due to change in scale of road corridor. Post construction, the landscape strategies should reinforce the semi-rural setting.</td>
</tr>
<tr>
<td>4</td>
<td>1-4</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>The proposed works have little scope to improve upon the amenity of the road, but also do not impact upon this particular viewpoint.</td>
</tr>
</tbody>
</table>

**Character Precinct 2 - Flats**

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Photograph</th>
<th>Sensitivity of viewpoint</th>
<th>Magnitude of proposed design</th>
<th>Visual impact</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2-1</td>
<td>Medium</td>
<td>High</td>
<td>Medium-high (initially) Low (long term)</td>
<td>Medium to high post construction due to increase in scale of road corridor. Once planting in particular, median planting, is established the impact is considered low.</td>
</tr>
<tr>
<td>2</td>
<td>2-2</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Proposed urban / landscape strategies should positively improve and enhance the setting.</td>
</tr>
<tr>
<td>3</td>
<td>2-3</td>
<td>Medium</td>
<td>High</td>
<td>Medium-high</td>
<td>Design will provide positive change and impact. Undergrounding of overhead wires will eliminate clutter and open up corridor. Planting once established will reinforce the landscape character of the corridor.</td>
</tr>
<tr>
<td>4</td>
<td>2-4</td>
<td>High</td>
<td>Medium</td>
<td>Medium-high (initially) Medium-low (long term)</td>
<td>Medium to high impact post construction. Once planting, in particular median planting, is established the impact is considered medium-low and a positive contribution.</td>
</tr>
</tbody>
</table>

**Character Precinct 3 - Ourimbah township**

<table>
<thead>
<tr>
<th>Viewpoint</th>
<th>Photograph</th>
<th>Sensitivity of viewpoint</th>
<th>Magnitude of proposed design</th>
<th>Visual impact</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3-1</td>
<td>High</td>
<td>Low</td>
<td>Medium-high (initially) Medium-low (long term)</td>
<td>Medium to high impact post construction. Once roadside barriers are removed / replaced and planting, in particular medium planting, is established the impact is considered medium-low and a positive contribution.</td>
</tr>
<tr>
<td>2</td>
<td>3-2</td>
<td>High</td>
<td>Medium-high</td>
<td>Low</td>
<td>Proposed works shall endeavour to minimise impact upon the Lions Club Rest area. A small retaining wall is proposed in order to preserve and protect the existing trees, maintaining the established sense of entry into the Ourimbah township.</td>
</tr>
<tr>
<td>3</td>
<td>3-3</td>
<td>Medium -low</td>
<td>Medium</td>
<td>Medium</td>
<td>Undergrounding of power lines shall improve visual amenity. Proposed street trees and landscaped verges shall reinforce the green corridor, and soften the urban environment.</td>
</tr>
<tr>
<td>4</td>
<td>3-4</td>
<td>Low</td>
<td>Medium low</td>
<td>Low</td>
<td>Moderate to low impact, main impact is to private property. Defined shared path, landscaping and street trees will positively define the street edge. In addition to the undergrounding of overhead power lines, will remove the clutter of the street edge. The landscape works will significantly improve the visual amenity of the current environment.</td>
</tr>
</tbody>
</table>
2.10 OPPORTUNITIES & CONSTRAINTS

The upgrade of the highway and the expansion of the existing carriageways brings with it the opportunity to unify the corridor and lift the appearance of the road thereby instilling a stronger identity to the corridor.

Constraints include:

- Proximity of existing dwellings, retail and commercial properties to the road corridor.
- Proximity to the Main Northern Rail Line corridor easement.
- Cut Rock Creek running roughly parallel to the road corridor and crossing the road corridor twice.
- Part of the corridor traverses a flood plain.
- Steep gradients along the western edge in particular in Precinct 1.
- Potential impacts on items of local heritage significance.
- Potential removal of mature tree planting of visual significance.
- Overhead low voltage powerlines to both sides of road corridor create visual clutter and potentially restrict additional tree planting.
- High voltage powerlines adjacent to the eastern side of the road corridor in Precinct 1 and partially in Precinct 2 precludes significant tree planting and further movement of the road corridor alignment to the east.
- District 900mm diameter water main adjacent to majority of road corridor along eastern edge.

Opportunities exist to:

- Provide pedestrian and cyclist access for the length of the upgrade providing pedestrian / cyclist links to Stage 2 and 4 of the proposed works.
- Provide safe cross corridor pedestrian and cyclist connections with the introduction of signalised crossings.
- Retention of the existing alignment and expansion of the existing corridor to minimise disturbance to the natural habitat and existing communities.
- Improve the appearance and therefore travel experience of the corridor through the removal of weeds and the reinstatement of endemic plant species.
- Provide landscape design interventions to improve and reinforce the existing character precincts.
- Introduce median planting to break down the scale of the road and further "green" the corridor.
- Relocate and/or underground overhead power lines during road corridor upgrade to minimise visual clutter.
- Provision of green landscaped verges and street trees to town precinct to provide buffer to Pacific highway and reinforce the township like character of the town precinct.
3.0 CONCEPT DESIGN

In general, the urban design theme is to provide consistency with recent, adjacent and future highway upgrades. A desired semi-rural character has been established by the RTA in the “Central Coast SH10 Pacific Highway Urban Design Framework – Kariong to Doyalson (2004)” and this forms the basis for aesthetic design decisions for the project.

Vision

The proposed road upgrade will provide an integrated urban landscape treatment which will enhance and maintain the rural and semi rural urban character of the historic Ourimbah Township outskirts. These works will provide an accessible high quality pedestrian and cyclist road edge treatment, in addition to positive improved road user experience, through the enhancement and reinforcing of the intrinsic qualities for the natural environment, public domain, local built form, historic and cultural settings, and local resident amenity.

Urban Design objectives include:

– Improve the safety, capacity and efficiency of the highway;
– Selection of optimum highway alignment to minimise construction impact, and to reduce the operational impact of the highway on the community;
– Enhanced legibility and visual amenity to improve the travel and local resident experience;
– Recognising and highlighting unique features and scenic qualities;
– Respecting, integrating with, and complementing the adjacent natural and surrounding built environments;
– Selecting design elements, materials, and finishes that befit their context and utilise existing already built palettes where appropriate;
– Ensuring cultural and heritage values are respected and not comprised;
– Improve and/or provide safe access between rail, road, commercial and residential areas.

Key Urban Design Principles include:

– Incorporate built form elements and plant species within the highway corridor that provide a positive contribution to the visual environment, and reinforce the intrinsic qualities of place.
– Retain and enhance views of surrounding ridgelines to highlight and reinforce the valley floor landscape context of the road.
– Utilise signage and feature planting to signal entries, major intersections, pedestrian crossings, nodes and landmarks, and remove visual clutter such as advertising signs to aid legibility.
– Retain a positive and active street address for residential, commercial and retail uses along the highway. Provide high quality public domain treatments to front yard and new access road works affected by the upgrade.
– Retain, enhance provide and /or reinstate elements of natural and cultural significance such as avenue tree planting, view corridors, significant individual trees and vegetation areas.
– Utilise signature plantings to upgrade key intersections, places and community facilities.
– Utilise a consistent palette of materials, with select materials which where applicable are consistent with the completed highway upgrades and which reinforces the semi-rural environment.
– Retain and reinforce the significance of the locally listed heritage items on the project.
– Incorporate built elements such as kerbs, fences, street furniture and retaining walls that reflect and respect the natural environment in which they are located.
– Minimise visual clutter and rationalise signage to improve legibility.
– Provide robust, low maintenance landscape treatments which enhance, reinforce and complement the existing natural setting.
– Provide a safe, accessible, pedestrian and cyclist environment that offers a variety of pleasant travel experiences.
– Reinforce and enhance the township like character of the town precinct.
– Maintain and enhance locally used facilities such as the Lions Park Rest Area.
4.0 LOCAL ACCESS – CONNECTIVITY + MOVEMENT

The urban design, concept design principles to be applied include:

- Maximise the number of safe and legible pedestrian and cyclist connections to local network roads, cycle and pedestrian paths to ensure accessibility to key destinations.
- Provide signalised intersections in lieu of roundabouts, to provide for safe equitable access for all users of the public domain.
- Provide safe and accessible pedestrian crossings at the following locations:
  » Baileys Road pedestrian bridge over the railway near Teralba St;
  » To and from access all bus stops on eastern side of highway; and
  » Close to Walmsley Rd to access commercial facilities on eastern side of highway.
- Provide strategically placed bus stops with well designed shelters, preferably co-located with signalised intersections.
- Ensure safety is paramount in the design of the pedestrian movements by maintaining sightlines, adhering to Australian Standards for accessibility, installing signage and meeting RTA standards for clearance zones.
- Provide a well integrated shared pedestrian and cycle path along the western side of the highway upgrade to link into the paths in the Stage 2 and Stage 4 upgrades.
- Offset the shared path from the road corridor by 1.5 metres minimum to provide for a planted separation to the road edge to improve and provide variety in the user experience.
- Meander the pedestrian shared path to maximise retention of trees and to provide an informal path character.
- Consider separation of shared path to retain trees and improve safety if required.
- Minimise any level changes associated with property acquisition, driveway, front paths and shop frontages.
- Maintain access to all private property and public space, during and after construction.

4.1 SHARED PATH

A shared use path, 3 metres wide, is located parallel to and on the western side of the main alignment and allows for the safe local travel of pedestrians and cyclists. Commuter cyclists are likely to continue to use the shoulder of the carriageways, however, it is expected that locals and children will benefit greatly from the introduction of a safe, easily accessible shared path with connections to local roads. To soften the road alignment, where practicable, the pedestrian path is separated from the carriageway by a landscaped verge of 1.5 metres min. Between SH 1300 to Walmsley Road (approximately SH 2050) the pedestrian path is separated from the alignment and allowed to continue in a meandering linear manner parallel to the alignment, allowing for an informal pleasant and safe walking path experience, in addition to reinforcing the unique features of the area and enhancing the semi rural character nature of this precinct. The full extent of the shared path should be provided with lighting to allow for maximum safe and accessible pedestrian usage.

Native grasses retain sightlines and soften road edge

Please refer to the Landscape Plans for the location of the shared path.

Further refinement will be carried out during Detailed Design submission.

4.2 DRIVEWAY, FRONT FENCE AND FRONT YARD TREATMENTS

At this stage in the project the driveway access to private property, retaining walls on property boundaries, replacement property fences and potential front yard treatments are yet to be designed. Where practicable a landscaped 1.5 metre verge is proposed between the shared path and the property.

The treatments of private property / road corridor interfaces are to be designed in consultation with individual property owners and while the design may reflect the character of the individual houses and personal preferences of the property owners, it is reasonable to match the existing, wherever possible. It is also suggested that a ‘palette’ of options be made available to property owners to simplify the selection and negotiation process.

Further refinement will be carried out during Detailed Design and will require consultation with the property owners.
4.3 SIGHTLINE AND SAFETY PRINCIPLES

- Passive surveillance for pedestrian movements is to be maintained along the full length of the corridor.
- All planting in narrow medians, at pedestrian crossing points, intersections, roundabouts and edges of paths are to be maximum 500mm high to maintain sightlines.
- Planted mediums at pedestrian crossings and at desire lines away from signalised intersections is encouraged to provide a barrier to prevent pedestrians from making an unsafe crossing.
- Trees planted adjacent to the shared path are to be set back a minimum of 1000mm from the edge of the path.
- All roadside traffic barriers are to be in accordance with RTA standards.
- Where possible and in the interests of visual amenity, the road design should consider level changes so that retaining wall heights and batter slopes will not require vehicle or pedestrian safety barriers.

A shared use path, 3m wide, is located parallel to and on the western side of the main alignment allowing for the safe local travel of pedestrians and cyclists. This path is kept close to the road corridor to allow for passive surveillance for the majority of the alignment. The path moves away from the alignment at a service lane between Stn 930 and Teralba Street. This provides increased footfall to the access road cul de sac improving the safety of the area and providing relief for the pedestrian/cyclist from proximity to highway noise and activity. The shared path alignment also moves away from the alignment at Lions Park. It is recommended that the shared path be provided with lighting for the full extent of the path.

The following lighting fixtures would be suitable to provide additional lighting where the shared path moves away from the highway and it is determined that additional lighting is required. Light fixture selection to be finalised during detailed design.

![Lighting fixtures](image1)

Bega Type 3, Graphite, Pole top Luminaire

Avenue 4 (Thorn) Pole top luminaire, with pole colour to match graphite finish.
5.0 ROAD DESIGN

5.1 PROCESS
The road design process has been one of iterative review and refinement with the engineering team. Several options were explored as best how to accommodate a number of constraints consisting of critical infrastructure and natural systems. The concept design provides:
- A road upgrade which improves the road capacity and safety in addition to providing a safe and equitable pedestrian environment;
- Preserves and enhances the ecological and visual amenity of the proposed upgrade and
- Reinstatement of a pedestrian focussed, treed public domain within the Ourimbah Town Precinct.

Key constraints which have impacted on the alignment and have constrained design actions include:
- The existing high voltage power lines to the east of the alignment - these have prevented future tree planting.
- The existing 900mm district water main - this has required the alignment to be moved further across to the west.
- The future quadrupling of the Northern Rail Line which encroaches upon the road corridor at the southern end of the alignment moving the alignment further to the west.

Key issues which were explored and felt to be important include:
- The retention of the existing trees and existing environment in the Lions club rest area, an important local cultural landmark
- The protection of and reinstatement of ecologically sensitive areas about Cut Rock Creek and nominated areas adjacent to the alignment.
- The RTA’s vision for a green corridor with the introduction of planted mediums throughout the alignment and street trees in the town precinct.

The complexities of utilities, future critical infrastructure, flooding and building near and / or sensitive ecological environments, resulted in numerous design iterations being investigated in collaboration with the Project engineers. This included the re-routing of water mains, re-instating the former the creek lines and numerous shared path alignments. The current concept design is reflective of these decisions and it is expected that outstanding design issues as noted in the following text, will be further resolved and refined during detailed design.

5.2 INTERSECTIONS
Careful design of the shared use path, footpaths, lighting and planting selection around each of the intersections will ensure sight lines and visual safety cues are maintained.

Further work will be carried out for the Detailed Design submission.

5.3 NOISE MITIGATION
The RTA Urban design Framework states a preference for the avoidance of noise walls in semi-rural areas such as the Lisarow to Ourimbah Pacific Highway route. This has been the strategy for previous highway upgrades, and the design team supports their desire to retain the semi-rural road character of the Pacific Highway.
- Avoid the use of noise walls wherever possible.
- Where space allows consider landscaped mounds to assist in retaining the informal landscape character.
- Consider utilising design levels of the road to maximise noise mitigation.
- Provide architectural acoustic treatments to individual dwellings where required.

Further work will be carried out for the Detailed Design submission subject to notified requirements.

5.4 PAVEMENT
- Pedestrian pavements are to of a low maintenance material with a non slip finish and a cross fall slope no greater than 1:40.
- Provide accessible kerb cuts at all pedestrian crossing points.
- Minimise potential conflicts between pedestrians and cyclists using the shared path, in particular at bus stops.

Pavements and shared path treatments for Stage 3 are proposed to be a broom finished concrete, a finish consistent with the Stage 2 Highway and other Central Coast Highway upgrades.

The pavement material for the shared path in Lions Club Rest Area are proposed to be an interlocking brick paving treatment with sandstone edging. The brick colour is proposed to be dark, but will be confirmed in the detailed design stage.

Final finishes to be confirmed in detailed design.

5.5 ACCESS ROADS
As part of the upgrade to this section of the Pacific Highway, a cul-d- sac access road is being provided between Station 920 and Teralba Street for vehicle access to residential properties. This service road provides for two-way traffic circulation for local vehicles with a kerb and gutter to either side of the road. There is no pavement proposed between the existing residences and the road pavement.

This is to retain the existing character of the road, minimise additional loading on the stormwater system and to minimise damage to existing trees within the property boundaries.

It is suggested that a raised threshold of a different surface material is considered at the junction of the service lane and Teralba Street. The shared path leaves the highway alignment and follows along the length of the access road, rejoining the Highway at Teralba Street. This allows for activation of the access road in addition to providing some relief for pedestrians and cyclists from the Highway.

The RTA’s vision for a green corridor with the introduction of planted mediums throughout the alignment and street trees in the town precinct.

The complexities of utilities, future critical infrastructure, flooding and building near and / or sensitive ecological environments, resulted in numerous design iterations being investigated in collaboration with the Project engineers. This included the re-routing of water mains, re-instating the former the creek lines and numerous shared path alignments. The current concept design is reflective of these decisions and it is expected that outstanding design issues as noted in the following text, will be further resolved and refined during detailed design.

Further refinement will be carried out subject to RTA requirements for the Detailed Design.
5.6 MEDIANS

- Provide a planted median where possible to visually break up the scale of the
  road corridor and to extend the landscape across the corridor
- Provide a planted median where the median exceeds 1.5 metre width
- Incorporate WSUD strategies with planted median where practicable
- Use a planted median as a pedestrian barrier in lieu of fencing where practicable
- Utilise planted median treatments to signify journey transitions
- Plant medians with low maintenance species, which will not impede sightlines.

The narrow road corridor is constrained along the boundaries with the provision of utilities along the western edge under the shared path and the adjacency of the rail corridor, a 900mm diameter main water main and high voltage power lines along the eastern edge. This precludes the planting of substantial street trees in these locations.

The treatment of the median therefore plays a vital role in softening and breaking down the scale of the highway, in addition to providing a “natural” barrier to pedestrians not wishing to cross at the signalised intersections. The planted median allows for the introduction of a sequence of events to improve the experience of the road user, whilst also maintaining and reinforcing the intrinsic rural character of the area. The planted median also reinforces the “green” corridor theme expressed in the RTA vision statement in the Urban Design Framework Kariong to Doyalson (RTA pub. April 2004)

The design proposes a planted median separation between the dual carriages where practicable. The planting selection will maintain sight lines and visual safety cues and be low maintenance. The planted median will take the form of low maintenance median height indigenous grasses and tussocks as a vegetated planting strip and/or act as a vegetated swale where conditions allow.

The hard surface median treatments will transition to and be in keeping with the materials palette and detailing of the Stage 2 Pacific Highway Upgrade.

Further refinement will be carried out for Detailed Design to determine the exact start and end points of the planted median and medium details. Refer to the plant palette for proposed species.
6.0 BRIDGES

6.1 INTRODUCTION

The Lisarow to Ourimbah Stage 3A upgrade includes one culvert extension over Cut Rock Creek between stations 850-890, and two new road bridges over Cut Rock Creek between stations 1670-1750.

The Lisarow to Ourimbah Stage 3B upgrade includes one new railway bridge over the main northern railway line where the Pacific Highway crosses the line at the Dora Street, Railway Crescent intersection. Further work will be carried out for the railway bridge when Stage 3B is initiated, however the essential bridge concept design principles shall remain the same. In developing the bridge concept design principles reference has been made to the RTA publication Bridge Aesthetics (January 2004).

6.2 CULVERT EXTENSION OVER CUT ROCK CREEK (APPROXIMATELY STATIONS 850-890)

The culvert extension over Cut Rock Creek allows for the addition of two lanes, cycle lane, a bus stop with pull over lane and a shared pedestrian path to the existing highway. The extension is made with the addition of precast portal frames to match the existing construction and occurs to the western side of the existing highway, upstream of the existing culvert. The addition is not visible from the highway. Standard RTA Picket fencing painted in a recessive colour provides safety for pedestrians and cyclists along the culvert edge and continues along the shared path as needed. Road safety barriers for vehicles are incorporated into a landscaped retaining wall structure, which forms a side to the shared path.

The urban design, concept design principles to be applied to the design of the bridge / culvert include:

- The height of any solid parapets should be kept as low as possible by using open rail or metal barrier systems;
- The footprint of the culvert extension should be kept to a minimum;
- Integrate the culvert into the creek setting through careful grading, maximising tree planting and regeneration opportunities;
- Allow for accessible seamless connections between the on-grade pedestrian shared path and culvert extension;
- Provide for pedestrian lighting to the shared path to allow for safe use during evenings;
- Bridge furniture such as, safety railings and barriers, should be integrated into a coherent, ordered composition;
- Provide adequate protection to pedestrians from the carriageway, consider elevating the pedestrian path above the carriageway to allow for vertical separation;
- Pedestrian safety railings should be simple, with a minimum of visual clutter to allow for appreciation of the landscape setting;
- Pay particular attention to design details;
- The adjacent bus shelter and drop off should be complementary to the landscape setting.

6.3 TWO ROAD BRIDGES OVER CUT ROCK CREEK (APPROXIMATELY STATIONS 1670-1750)

The two new road bridges over Cut Rock Creek each carry two road carriageways and a cycle lane. The western bridge also incorporates the pedestrian shared path along the western side. The design of the new bridges has not yet been finalised and the bridges will require new retaining walls set below the highway alignment. The design of the bridges will be further addressed in the Detailed Design Submission.

The urban design, concept design principles to be applied to the design of the bridge include:

- Bridge structure should be simple and minimal in keeping with the proposed use and complementary to the landscape setting;
- The structure of the bridge should be refined and elegant, and representative of the forces it is to withstand and minimising the apparent thickness of the bridge’s structural elements;
- Footprint and number of bridge supports to be kept to a minimum;
- The height of any solid parapets should be kept as low as possible by using open rail or metal barrier systems to allow for retention of long distance views;
- Integrate the bridge into the creek setting through careful grading, maximising tree planting and regeneration opportunities.

- Allow for accessible seamless connections between the on-grade pedestrian shared path and the shared path bridge component of the bridge assembly;
- Provide for integrated lighting onto the bridge structure to allow for safe use of the shared path during evenings;
- Pedestrian and cyclist safety railings should be simple, with a minimum of visual clutter to allow for appreciation of the bushland setting;
- Bridge furniture such as, safety railings and barriers, should be integrated into a coherent, ordered composition;
- Pay particular attention to design details;

6.4 ROAD BRIDGES OVER MAIN NORTHERN RAILWAY LINE

The two new road bridges over the main northern railway line occur where the Pacific Highway crosses the rail line at the Dora Street, Railway Crescent intersection. The new bridges provide for two dual carriageways. Further detailed design work will be carried out for these bridges when Stage 3B is initiated.

The urban design, concept design principles to be applied to the design of the bridges includes:

- Clearly define the role of the bridges as a railway bridge or tunnel;
- The bridges should be seen as a distinct piece of railway architecture;
- The location of the new bridges should accommodate the safe crossing of pedestrians;
- Minimise view impacts from the highway;
- Bridge furniture such as throw screens, safety railings and barriers, should be integrated into a coherent, ordered composition;
- Pay particular attention to design details;
- Select appropriate, durable materials and finishes which do not significantly degrade over time and minimise opportunities for vandalism and graffiti;
- The height of any solid parapets should be kept as low as possible by using open rail or metal barrier systems;
7.0 EARTH WORKS + RETAINING STRUCTURES

7.1 EARTH WORKS

Earthworks contribute greatly to the aesthetic quality of a highway. The earthworks of this project are characterised by the tight road corridor where the Highway is bounded on the eastern side by the railway line, and high voltage electrical lines and on the western side by residential properties. Where possible the earthworks will consist of earth batters, but where space constraints occur, the earthworks will be predominantly solved by the introduction of retaining structures.

7.2 ROCK CUTTINGS

The approach to concept design has been to minimise the amount of cut & fill while attempting to retain the semi rural bushland character of this section of the Pacific Highway. The one significant rock cutting along the alignment occurs in stage 3B and is expected to require stabilisation although this is dependent on further geological testing.

Due to the prominent location in the road journey shotcrete is not regarded as a suitable facing material, and a facing material consisting of random rubble rough textured sandstone is proposed as a material in keeping with the semi rural bushland character.

Further work and finalisation of the required treatment will be carried during the Detailed Design submission for stage 3B.

7.3 CATCH DRAINS

All visible catch drains and lined drains will be constructed using concrete tinted to a dark grey colour so that they visually blend into adjoining landscape and their visual impact is minimised. Consider using a vegetated swale in lieu of an RT kerb or concrete lined swale when structures are located in a manner which are visually intrusive on the immediate environment.

7.4 BRIDGE ABUTMENTS AND TREATMENTS AROUND CREEK

At the extended culvert at Cut Rock Creek between stations 850-880, reinstate creek embankment to match existing and revegetate with endemic species particular to the Cut Rock Creek vegetation community. Scour protection to bank and creek bed to match existing council "large rock" treatment.

To the new bridges at Cut Rock Creek (sts 1670-1750) provide 1:1.5 batter slope overlaid with rock filled mattresses (reno mattresses) for flood scour protection.

7.5 RETAINING STRUCTURES

The RTA’s Urban Design Framework Kariong to Doyalson recommends that the retaining walls should be designed to complement the character precinct in which they occur with an emphasis on natural materials. Suggested treatments are gabion walls, treated timber, and random rubble for semi-rural environments and, square cut stone, concrete block and precast concrete panels with artistic treatment for urban situations.

The Narara to Lisarow stage 3 upgrade contains a number of new retaining wall structures in the semi rural bushland character precincts in addition to a small section on the outskirts of the town centre. These retaining walls form major design elements in this section of the Pacific Highway upgrade, and occur in some locations at major intersections.

Although in part dependent upon the structural system selected for construction, the design of the retaining walls follows a strategy and hierarchy based on location and orientation. The types of walls that exist along the highway include the following for Stage 3A:

Type 1 - Retaining walls required for residential property boundary adjustments
Type 2 - Retaining walls facing residential neighbourhoods (below the highway)
Type 3 - Retaining walls facing bushland (below the highway)
Stage 3B – On Hold

The following plans indicate the location of the different wall types at this stage of the concept. (4 A3 pages)

7.6 TYPE 1 - WALLS REQUIRED FOR RESIDENTIAL PROPERTY BOUNDARY ADJUSTMENTS

These walls are to be designed in consultation with individual property owners and may reflect the character of the individual houses, while matching any existing walls, wherever possible. The appearance of the wall may vary in order to relate to the character of the existing houses and personal preferences of the property owners. The key issue is to achieve the diversity which is typical of existing front fences and gardens addressing the corridor.

There are two type 1 walls on the Lisarow to Ourimbah Stage 3 project;

These occur between Stations 680 and 800 and in the Town centre between Stations 2150 and 2200

These walls require a new fence to the top of the wall for the length of the wall. Where the width of the carriageway permits a small planting verge is proposed between the shared path and the proposed retaining wall location. The retaining wall is proposed to be set below shared path level.

Fencing in the town centre should remain in context with existing fencing and be no greater than 1200mm above the shared level with a 50% minimum transparency. For all residential fences it is recommended that a planted verge of 1 to 1.5m be provided between the fence and the shared path.

Further work will be carried out for the Detailed Design submission and will require consultation with the property owners. It is also suggested that a ‘palette’ of options be made available to property owners to simplify the selection of fences and retaining walls.

7.7 TYPE 2 - WALLS FACING RESIDENTIAL NEIGHBOURHOOD

Minor retaining walls that are below the main alignment level should be constructed using textured blockwork, gabion walls or blockwork faced with random rubble sandstone. The textured blockwork is to be used in an urban context such as the town centre should be charcoal or a similar dark recessive colour to minimise visibility. Planting in front of these walls is proposed to soften their appearance and visual impact. The major walls, (walls over 1m in height) should be constructed using either gabion walls or a reinforced block work structure with a random rubble sandstone facing.

There are two type 2 walls on the Lisarow to Ourimbah stage 3 project.

These occur between Stations 890 and 990 between Stations 1890 and 2130.

These retaining walls serve the dual purpose of being both a road barrier and a retaining wall alongside a shared path. The maximum height of the retaining wall next to the shared path is approximately 3metres.

These walls are currently proposed to be to be made of concrete block with a random rubble sandstone facing or as a gabion wall structure. Both these finishes lend themselves to less vandalism and graffiti and provide a pleasing visual aesthetic, appropriate for prominent walls facing a residential neighbourhood.

Further work will be carried out for the Detailed Design submission to finalise details and material selection.
7.8 TYPE 3 - WALLS FACING BUSHLAND
There is one retaining wall facing bushland on the Lisarow to Ourimbah stage 3 project.

This occurs at the culvert extension at the Cut Rock Creek between stations 850-890 and is integral to the culvert structure. The retaining wall is made of concrete and would not be visible from the alignment.

The culvert extension will be further developed in detail design.

7.9 RETAINING WALL LOCATION PLANS
ON HOLD

Figure 7.13.1 Retaining Wall Location Plan 1
Figure 7.13.2 Retaining Wall Location Plan 2

- **3A**
  - **TYPE 1** - Retaining walls required for residential property boundaries adjustment
  - **TYPE 2** - Wall facing residential neighbourhood
  - **TYPE 3** - Wall facing bushland
EARTHWORKS + RETAINING STRUCTURES

Figure 7.13.3 Retaining Wall Location Plan 3

3A

- TYPE 1: Retaining walls required for residential property boundaries adjustment
- TYPE 2: Wall facing residential neighbourhood
- TYPE 3: Wall facing bushland

FOR CONTINUATION REFER TO V38-3A-102
8.0 LANDSCAPE DESIGN

8.1 LANDSCAPE DESIGN PRINCIPLES

A desired semi-rural character has been established by the RTA in the Central Coast SH10 Pacific Highway Urban Design Framework – Kariong to Doyalson (2004) and this forms the basis for aesthetic design decisions for the project. The following landscape design principles have been developed with respect to the RTA landscape guidelines, contextual analysis, landscape character analysis, visual assessment and mitigation strategies, and the landscape design and planting palette established in the previous upgrades.

- Landscape design should consider the retention and framing of views.
- Landscape design should allow for seamless integration with the urban surrounds and should reflect and amplify the identified landscape character precincts of "Hills", "Flats" and "township".
- Landscape design should reinforce the existing landscape character, with the introduction of new landscape treatments to reduce the visual impact of the road upgrade with respect to the natural systems through which the road passes.
- Landscape design should respect and complement the surrounding landscape types such as forest, woodland or wetland.
- Landscape design should consider the ongoing maintenance and longevity of planting.
- Feature landscape treatments should be designed to reinforce significant transitions in the travellers journey.
- Landscape design should be incorporated into the storm water management system.
- Landscape design should not affect the vision of pedestrians or vehicles.
- Landscape design to incorporate the removal of weed species and the re-establishment of the endemic species indicative of the landscape character of the section.
- Existing vegetation and mature trees should be retained where possible to maintain the sense of enclosure, privacy, scale and shade, particularly in the Lions Club Rest Area.
- Street trees should be located in the transition into the Ourimbah Township Centre precinct.
- Provide a planted median where the width of the median exceeds 1500mm.
- Keep the median as wide as possible to accommodate planting in the depressed median/planted swale.
- Remove noxious weeds and replace with ecologically restored areas comprised of species from the Swamp Sclerophyll Forest Community.
- New trees to be planted outside of 3metre clear zone to existing Water Main and 5 meter clear zone to existing High voltage Power Lines.

8.2 LANDSCAPE CONCEPT DESIGN PLANS

Refer to Figures 8.2.1-8.2.5
Figure 8.2.1 Landscape Concept Plan 2

LEGEND
- Native tree
- Native small tree
- Palm
- Shrub
- Accent planting
- Turf
- Groundcovers
- Sedges
- Share used path
- Pedestrian footpath
- Retaining wall
- Grassed swale
- Bus shelter

Detailed shrub planting at bus stop with small trees for shade
Grassed swale to creek

CEMETERY
PACIFIC HIGHWAY
MAIN NORTHERN RAILWAY LINE
Figure 8.2.2 Landscape Concept Plan 3
Figure 8.2.3 Landscape Concept Plan 3
Figure 8.2.4 Landscape Concept Plan 4

LEGEND
- Native tree
- Native small tree
- Palm
- Shrubs
- Accent planting
- Turf
- Groundcovers
- Sedges
- Share used path
- Pedestrian footpath
- Retaining wall
- Grassed swale
- Bus shelter