

5.0 North Street Precinct

The North Street precinct is located at the north edge of the Berry township, and includes the North Street streetscape, the Berry Bypass alignment and the strip of rural land between. At the precinct's western extent are George Street, and a triangular parcel of grazing land. The proposed Kangaroo Valley Road Interchange adjoins this parcel to the northwest. In the east the precinct extends to Prince Alfred Street, the Berry sports facilities; that include tennis courts and skate park; Berry Oval and Camp Quality facilities.

5.1 Setting and streetscape character

The precinct benefits from spectacular panoramic views to the north, across picturesque pastureland to the dramatic backdrop of the Cambewarra Escarpment. Small creeks and tributaries wander across the floodplain and support strings of dense vegetation. The pasture to the north of North Street is currently utilised for agistment, with horses grazing a common sight.

North Street varies in character along its length. The west end (between George and Edward Streets), is quiet and intimate in scale, has a narrow central pavement, grassed swales (rather than kerb and gutter) and informal avenue tree planting along each side. The mature tree planting tightly frames views west along the street to the escarpment – defining a quintessential country laneway. A mix of native and exotic street trees is proposed. Natives predominate with the occasional burst of colour provided by lighter coloured exotic foliage or Jacarandas.

Between Edward and Alexandra Streets (the middle section) there is sparser street tree planting on both sides (occasional groups of trees), that open up views north to pastureland. The residential frontages change in character in this section. There are tended front lawns, overhead power lines, concrete driveways and typical suburban residential house construction, that tends to contrast with the attractive rural character of the north side of the street.

Between Alexandra Street and Prince Alfred Street (the eastern section) there are even fewer street trees and the streetscape is exposed and lacks definition. Residences are set back in this section and the mid-block southern frontage is defined by a section of dense planting.

The precinct forms the transition from urban to rural land uses - from the regular town grid of residential streets and blocks, to the expanse of rural pastureland.

Refer to Figures 31 to 34.

5.2 Design philosophy

The guiding urban design philosophy for the North Street Precinct, has been to maintain as much as possible the:

- Small scale 'country laneway' character of North Street.
- Rural outlook and character of the pastoral landscape to the north.
- Expansive views to the impressive Cambewarra Escarpment.

5.3 Urban design principles

The following urban design principles have guided the urban and landscape design of the North Street precinct:

- Enhance township green space connectivity and recreational opportunities.
- Maintain North Street pedestrian and cycle connectivity.
- Integrate noise mitigation structures within the landscape setting.
- Re-establish facilities valued by the community, such as the Riding School green, and attractive pastures for agistment.
- Provide an attractive journey and outlook for drivers on the Berry Bypass.
- Provide a safe pedestrian and cyclist environment for parks and walkways through adopting Crime prevention through Environmental Design (CPTED) principles.
- Develop an urban and landscape design that would be low maintenance, durable and that deters graffiti.
- Develop a materials and finishes palette that wherever practical incorporates elements of locally sourced stone and timber, and colour finishes that complement the natural colours of the environment.
- Generally utilise native plantings that are endemic to the region, whilst also incorporating cultural exotic plantings, when warranted, as highlight or feature plantings.

5.4 North Street pedestrian and cyclist connectivity

At the workshops held with the community working group, it was related that North Street is currently used as an informal jogging and cycling route, and that this access was important to the community. Subsequent 3D modelling and costing studies showed that pedestrian overbridges on or near the North Street alignment were expensive and would impinge on the northern views and outlook of residents along North Street. The scale of the structures that would be necessary was also of concern to North Street residents in attendance.

Due to the cost and likely low level of use, the readily available alternative route (via the proposed bridge connecting Kangaroo Valley Road and Queen Street), and in light of residents concerns relating to scale and impact on views and amenity, the RMS decided not to pursue a pedestrian overbridge at this location. The adjoining map illustrates the short additional distance of 100metres and small additional walking time of 1.25 minutes of the alternative pathway.



Figure 35: North Street access study.

5.5 Berry Bypass infrastructure

The Berry Bypass consists of a highway standard roadway, designed to a 100 kilometre/hour posted speed. Initially the bypass would be four lanes, with the capacity to expand to six lanes (built-in to the design and cross sectional footprint) if required in the future.

North Street (west) would be connected to Rawlings Lane to maintain vehicular access to the two farm properties located to the north of the Bypass.

A vegetated, noise reinforced, soil mound is proposed along the southern edge of the bypass corridor. A 2.5metre wide shared pathway would be provided along the north side of North Street, connecting east and west into the existing network of township footpaths.



Figure 36: Berry Bypass infrastructure.

5.6 Urban design strategy

The proposed construction of the highway-scale Berry Bypass infrastructure would bring changes for the township of Berry. Some of these changes would be positive including:

- Completion of this important section of the Princes Highway would provide a quicker and safer route for locals travelling regionally and along the NSW coast, tourists visiting South Coast destinations and day-trippers visiting the popular heritage and festival destination of Berry travelling to/from Sydney; boosting tourist accommodation, cafe/restaurant and retail business opportunities and employment in the township.
- The upgrade to a highway standard roadway would reduce fatalities and accidents along this currently difficult stretch of highway.
- The volume of truck and through traffic on the Queen Street retail 'Main Street' would be considerably reduced. There would be an opportunity to refocus 'Main Street' as a pedestrian friendly zone with increased and safer crossings, more opportunities for outdoor cafe-style seating, street tree planting and urban furniture.

The highway corridor and interchanges are large physical structures and the urban strategy has been to investigate means by which these structures could be integrated into the northern edge of the township and into the surrounding attractive rural floodplain landscape - minimising the urban, landscape and visual impacts on the environment.

The strategy incorporates a series of urban and landscape design initiatives to reinforce the attractive rural character of the North Street Precinct, including:

- Reducing the visual impact of the road corridor through adjustments to the highway's vertical and horizontal alignment – moving the alignment and Northern Interchange further north of the township.
- Introducing generous open space buffers between Berry Bypass and the north and northwest edges of the township.
- Wherever possible re-establishing rural land uses on RMS residual, non-operational, property – Riding School, pastures for agistment, re-establishing land suitable for dairy farming, re-establishing the riparian vegetation and habitat along creek lines.

- Reducing the noise impacts through incorporation of landscaped noise barriers along the edges of the alignment to EPA requirements.
- Screening the roadway from the township with innovative landscaped 'Ha Ha' sloped landform.
- Retaining as much as possible existing landscape defines the rural character of the region and which screens from view the new roadway, bridge and interchange structures.
- Establishing a landscape strategy that reinforces the small scale, rural, 'country lane' character of North Street.

The Urban Design Strategy diagram illustrates the key initiatives that are proposed to integrate Berry Bypass within this uniquely picturesque setting.

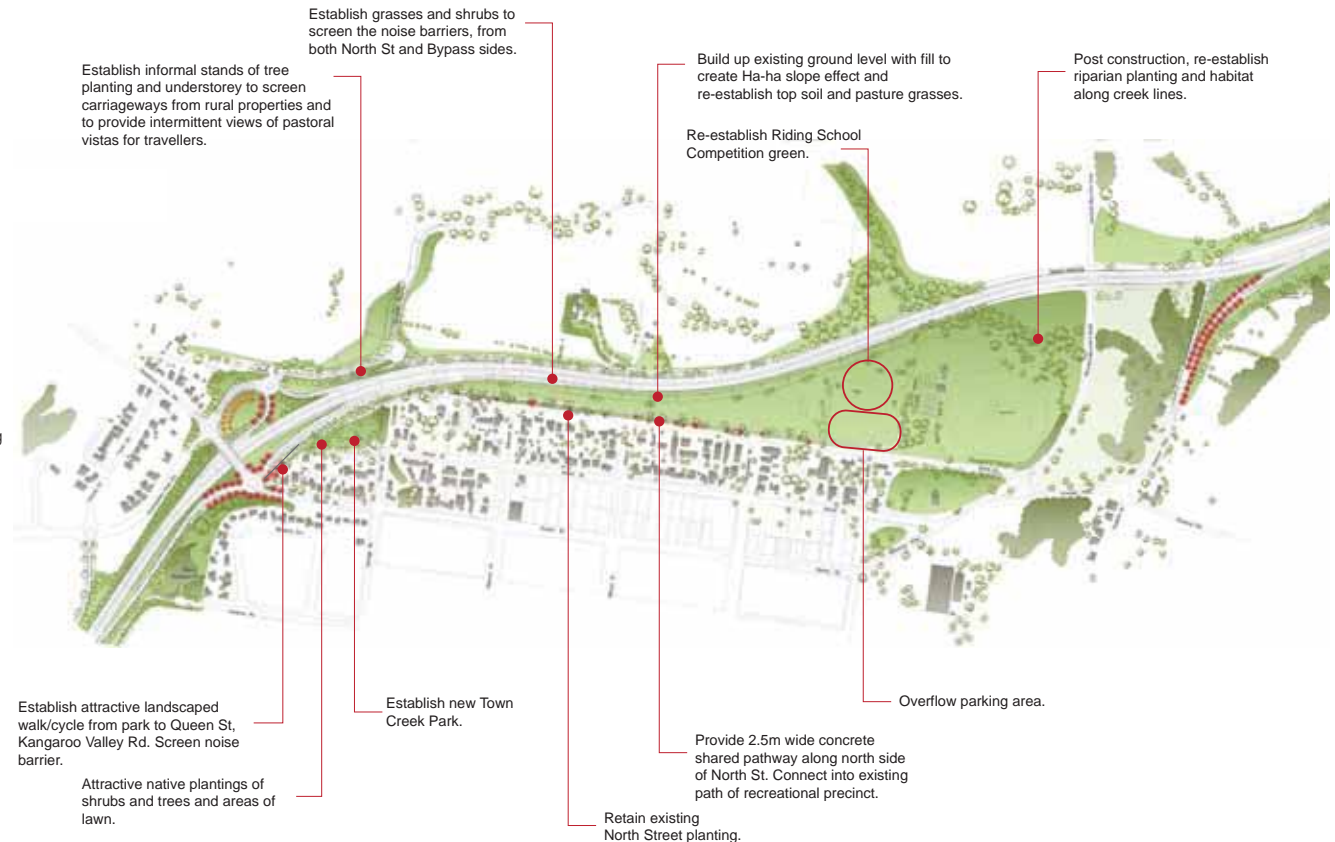


Figure 37: Urban design strategy.

5.7 Precinct plan

The Precinct Plan illustrates the proposed urban and landscape concept design for the North Street Precinct.



Figure 38: Precinct Plan - North Street.

5.8 Cross section and vantage point study

At the end of 2011 and beginning of 2012 a series of cross sectional studies were undertaken that aim to minimise the potential acoustic and visual impacts of the proposed Berry Bypass. It was during this period that the 'Ha Ha' concept was developed. A 'Ha Ha' is basically an artificially created, gently sloping, usually grass covered landform, that screens from view a distant structure, such as a security fence, or in this case, traffic passing along a highway.

The slope would be so gentle that the progressively increasing height would not be noticed. When viewed from North Street the grassed 'Ha Ha' slope would provide a foreground of pastureland, whilst allowing occasional views of the taller tree canopies to the north of the Bypass and importantly to the dramatic backdrop of the Cambewarra Escarpment. The 'Ha Ha' slope and landscaped noise mound would screen views of traffic along the highway, whilst achieving the required acoustic barrier height of 4.0metres above the Bypass carriageway.

A series of photomontage images, generated by accurate 3D computer modelling, were prepared at four key locations along North Street. The existing view is provided on top, whilst for direct comparison purposes, the same view with the noise barrier mound and proposed screen landscaping in place, is illustrated below.

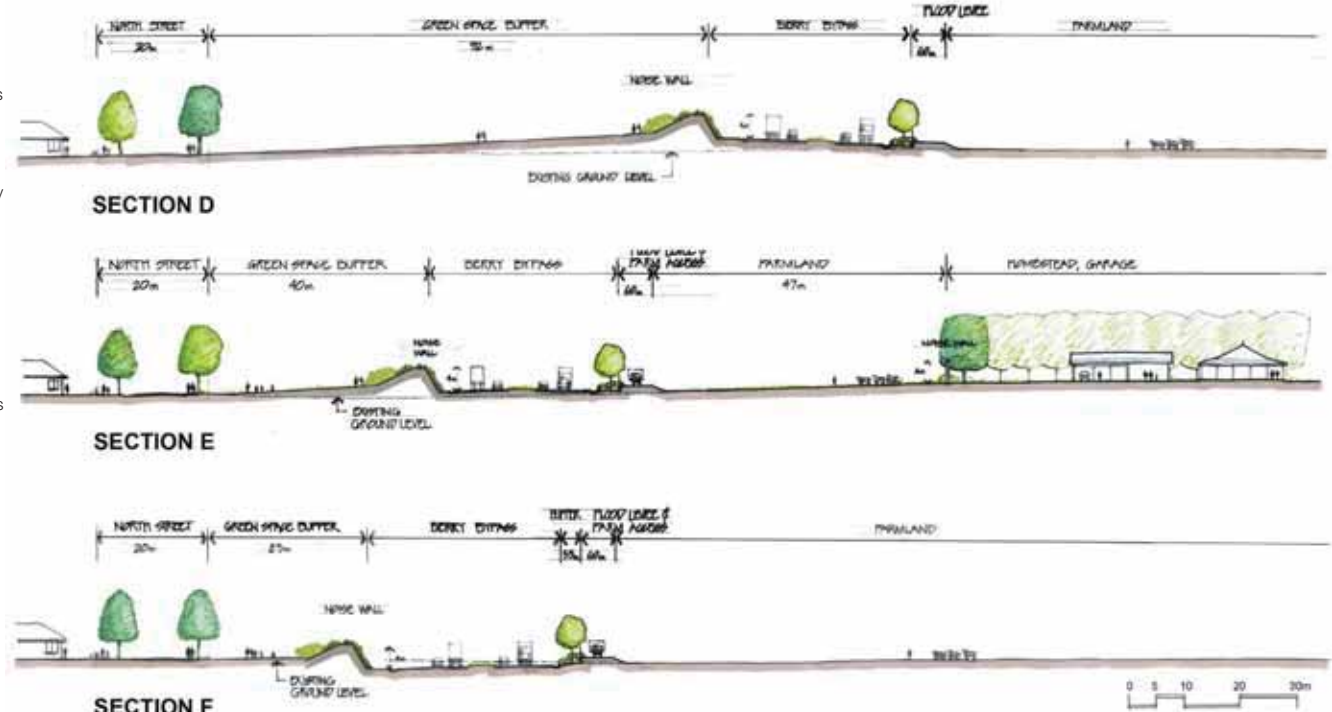


Figure 39: North Street cross section study.



Figure 40: Cross section and photomontage viewpoint location plan.



Figure 41: Viewpoint 1 (near Edward Street) - existing view.



Figure 42: Viewpoint 1 (near Edward Street) - with noise barrier and landscaping.



Figure 43: Viewpoint 2 (at Albany Street) - existing view.



Figure 44: Viewpoint 2 (at Albany Street) - with noise barrier and landscaping.



Figure 45: Viewpoint 3 (at Alexandra Street) - existing view.



Figure 46: Viewpoint 3 (at Alexandra Street) - with noise barrier and landscaping.



Figure 46: Viewpoint 4 (at Prince Alfred Street) - existing view.



Figure 48: Viewpoint 4 (at Prince Alfred Street) - with noise barrier and landscaping.

5.9 Urban design elements

The North Street Precinct section of the Berry Bypass would incorporate a number of urban design elements. These include an approximately 800metre long and 4.0metre high noise barrier, a shared path and associated footpath connections, street and local park furniture and precinct lighting. All these elements have been considered as contributing to an overall coordinated design outcome.

5.9.1 Noise barrier options study

Three noise barrier design options were investigated, presented to the North Street Precinct working group, then published in local news media and exhibited at the RMS project office in Berry,; to provide an opportunity for broader community comment. The three options are:

1. Precast concrete wall

A precast concrete retaining wall, at a 10 degree slope from vertical. Angling the wall reduces the sense of being walled in, and reduces the incidence of reflected vehicular noise. A 2.0metre wide landscaped planter bed would be raised up 815millimetres above the carriageways on the bypass side, and planted with shrubs and grasses – this breaks down the apparent overall barrier height and introduces some contrasting green vegetation into the bypass corridor. On the North Street side there would be a 2H:1V sloped earth batter. The wall extends 1.2m above the top of the batter to provide a balustrade for pedestrian safety. The batter would be planted with native grasses, shrubs and small trees to screen the top of the wall from view. All visible surfaces of the noise wall are finished in a charcoal-dark green colour to visually recede in the overall pastoral landscape.

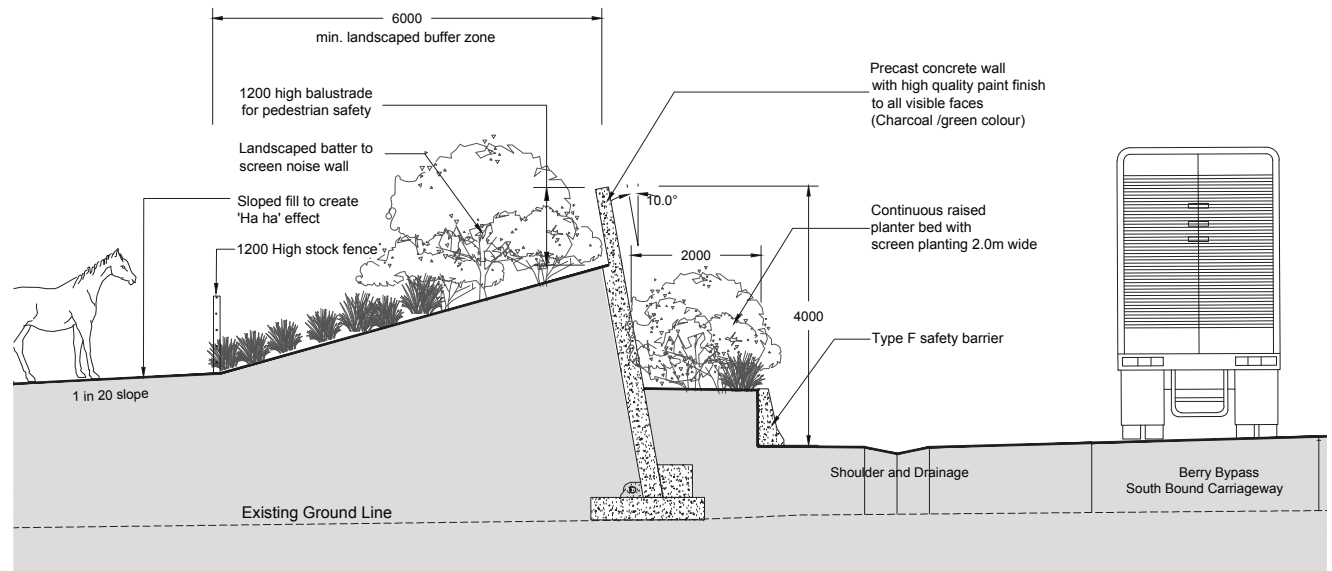


Figure 49: Noise barrier option 1 - precast concrete wall typical cross section.



Figure 50: Noise barrier option 1 - precast concrete wall photomontage.

2. Planted soil reinforced mound

This barrier type was suggested by Berry Alliance/BOB. The noise barrier consists of a 4.0m high reinforced soil mound, with a thirty degree slope face, from vertical, on the bypass carriageway side. This would be hydroseeded with pasture grasses, whilst on the North Street side there would be a 2H:1V sloped earth batter, planted with native grasses, shrubs and small trees to screen the mound from view. RMS Maintenance has advised that this type of planted soil retaining structure has been used on a number of RMS projects in NSW and if carried out in accordance with the relevant technical specifications, would be acceptable to the RMS. Photos and diagrams of proprietary reinforced soil systems are illustrated in Figure 53. This option would be the preferred barrier type to proceed to the next stage of development.

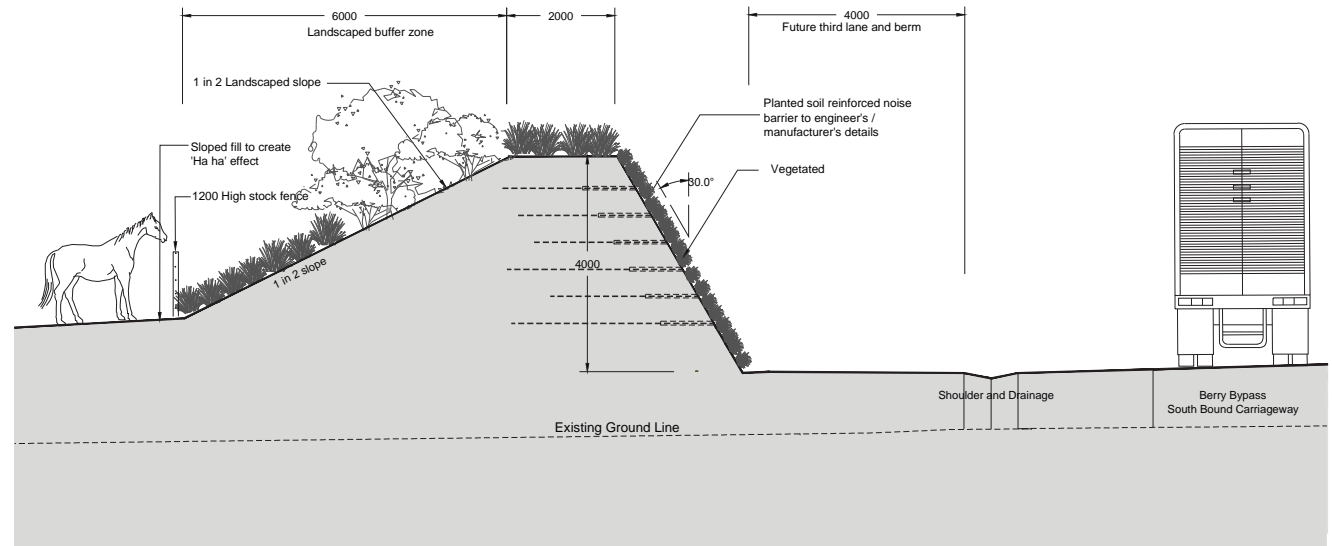
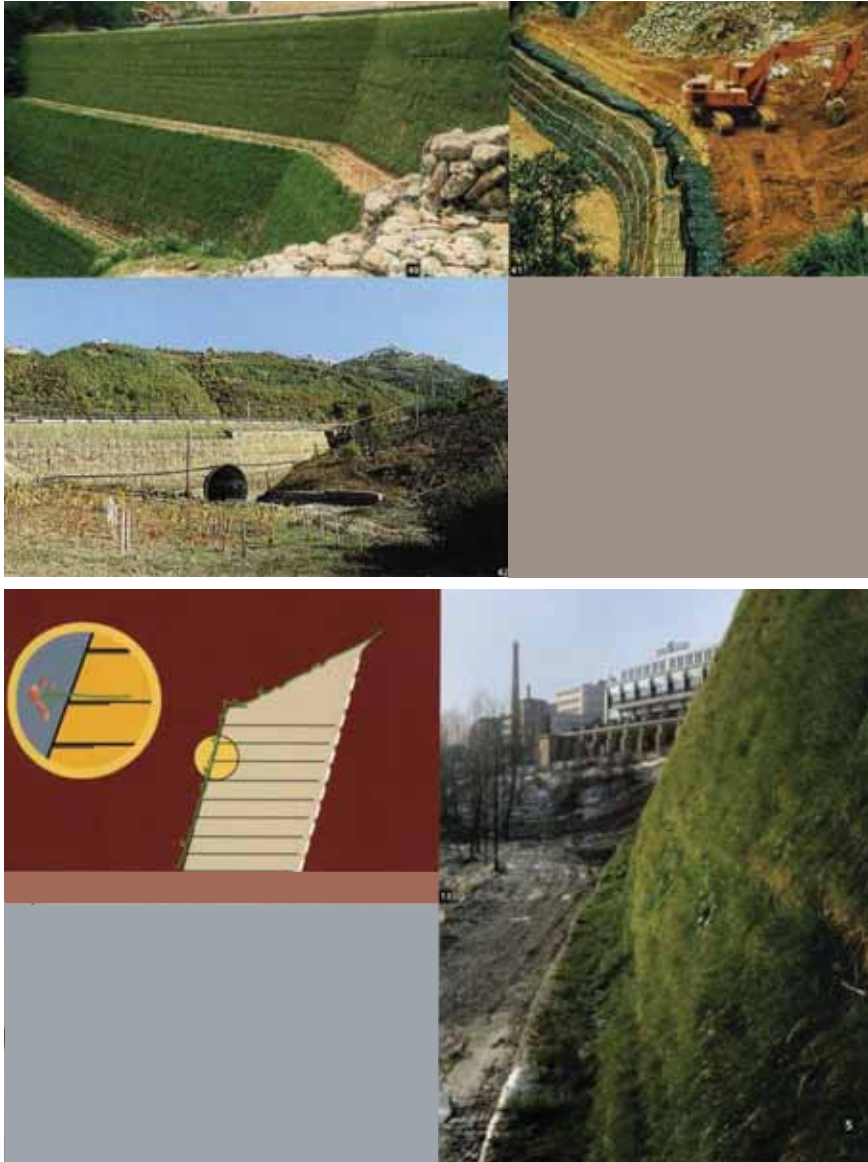


Figure 51: Noise barrier option 2 - Planted soil reinforced mound typical cross section.



Figure 52: Noise barrier option 2 - Planted soil reinforced mound photomontage.



The reinforcement: solutions

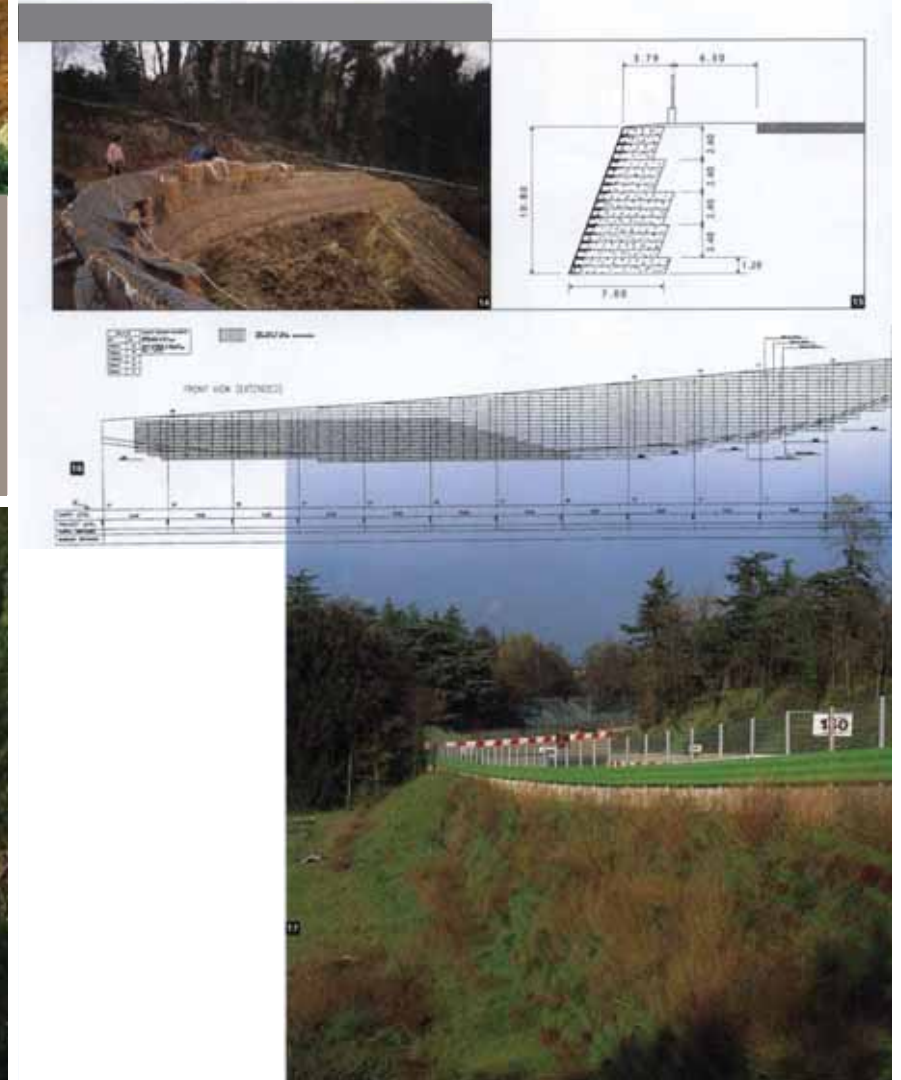


Figure 53 : Noise barrier option 2 - Planted soil reinforced mound examples of proprietary systems.

3. Combined stone wall and timber fence

This hybrid noise barrier option, is part local stone retaining wall, part timber noise wall, part landscaped mound – reducing the apparent scale of the barrier by breaking it into a series of steps and terraces. A palisade fence would be required at the top of the stone retaining wall for OH&S reasons. An advantage of this barrier configuration is that the landscape can be maintained from the North Street side without the need, on occasions, to close off the bypass road shoulder.

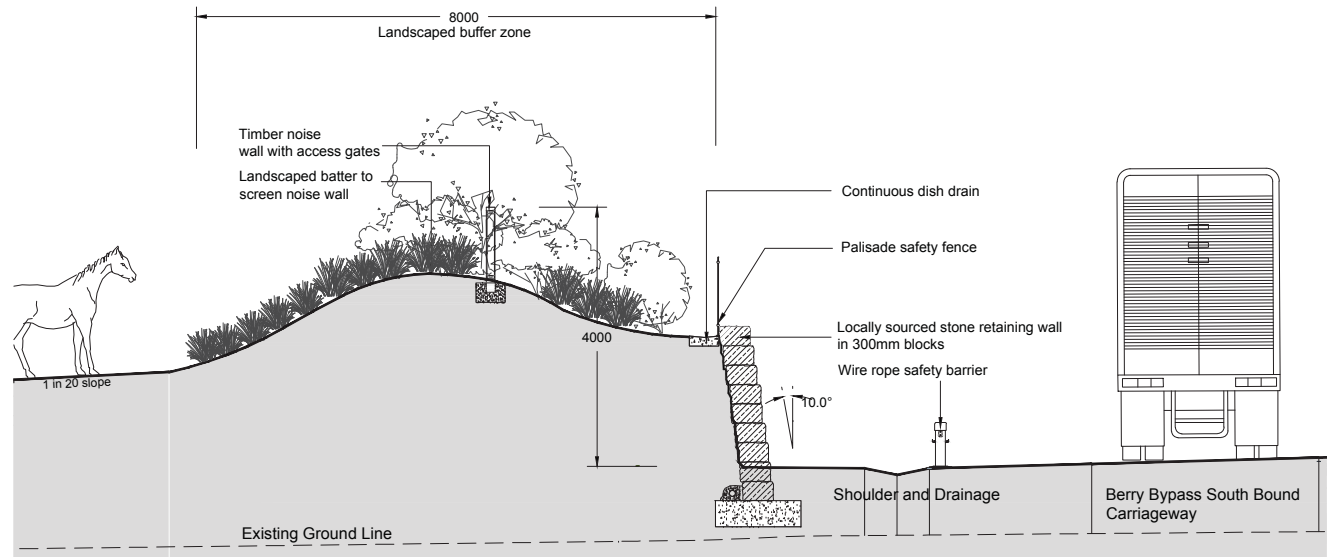


Figure 54: Noise barrier option 3 - combined stone wall and timber fence typical cross section.



Figure 55: Noise barrier option 3 - combined stone wall and timber fence photomontage.

5.9.2 Shared path

A shared pathway is a generous width concrete pathway that can accommodate both pedestrians and cyclists. Shared paths often incorporate line markings and signage identifying their intended use. A strict speed limit allows cyclists and pedestrians to share the same pathway safely. Shared paths cater for recreational cyclists, prams, motorised mobility scooters, children on bikes, joggers and walkers, and often become a focus for community interaction and socialising.



Pathways - a catalyst for community.

5.9.3 Street and park furniture

The proposed Town Creek Park and North Street shared pathway would incorporate comfortable bench seating at intervals along its length, to provide opportunities to rest and to enhance the enjoyment and amenity of these local green spaces.



Proposed park seating.

5.9.4 Lighting

North Street currently has overhead power supply and street lights on about every second power pole along the south side of the street. Additional pole mounted street lights may need to be installed on the existing poles without lights, to adequately illuminate the shared pathway on the north side of the street.

The proposed Town Creek Park and landscaped pedestrian link from North Street through to Queen Street, would require pedestrian scaled lighting to supplement adjoining street lighting and to provide a safe passage in the evening. The proposed type of pole top light is illustrated below.



Proposed park lighting.



Example of recreational pathway.

5.10 Landscape design strategy

The landscaping would complement and unify the proposed cross section, to blend seamlessly with the surrounding context. An informal rural landscape character is proposed, with groupings of endemic native trees and shrubs planted in grasslands to create a 'parkway'.

Road embankments, either in cuttings or raised, would be planted with low groundcovers or native grasses, endemic shrubs and trees. Movable embankments with slopes less than 1:3, would be planted with pasture grasses and copses of trees. Sound barrier mounds, where required, are softened by endemic trees and shrubs.

The use of native species would strengthen the local ecology and provide potential wildlife and habitat corridors for local fauna. Refer to Figures 56.

5.10.1 Bypass verges and noise barrier

View from Bypass Road side

Embankment batters to be planted with native grasses and groundcovers.

Proposed species:

Lomandra longifolia

View from Bypass road side:

Informal copses of Eucalypts, tall shrubs, occasional groundcovers and pasture grasses.

View from property:

Informal copses of Eucalypts and tall shrubs in grassland.

Proposed species :

Eucalyptus punctata (Grey Gum)
Eucalyptus globoides (White Stringybark)
Eucalyptus eugenoides (Thin Leaved Stringybark)
Eucalyptus amplifolia (Cabbage Gum)
Hakea dactyloides
Melaleuca linariifolia

Groundcover:

Pasture grasses

Refer to Figures 57 and 58.



Figure 56: Bypass verges and noise barrier typical landscape plan.



Figure 57: Species selection.

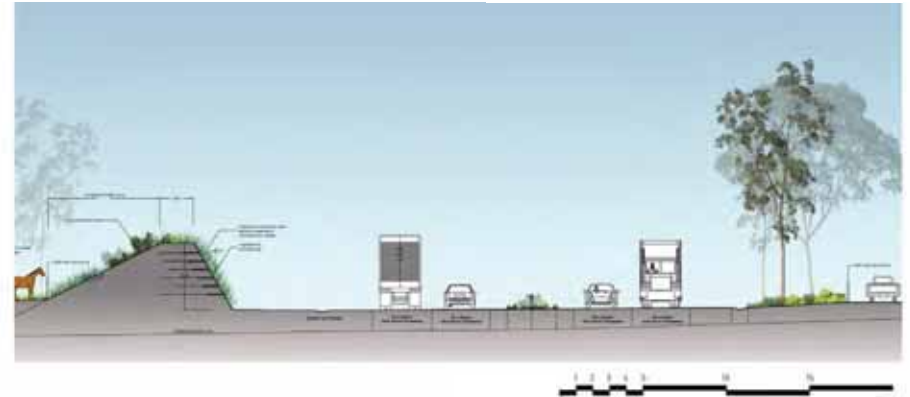


Figure 58: Typical cross section.

5.10.2 North Street

Road side character:

Informal country lane character overlooking open fields, fringed by groups of indigenous Eucalypt trees. Occasional exotic trees to add colour and to complement existing character. Refer to Figure 59.

Proposed species:

Eucalypt trees to reinforce existing trees, which would be retained, as shown in Figure 60.

Eucalyptus punctata (Grey Gum)

Eucalyptus globoides (White Stringybark)

Eucalyptus eugenoides (Thin Leaved Stringybark)

Possible exotic highlight trees:

Jacaranda mimosifolia (Jacaranda)

Fraxinus oxycarpa aurea (Claret Ash)

View from North Street

Backdrop of informal groupings of Eucalypts trees and shrubs planted on the bypass noise mound, providing partial screening to the new bypass.

Proposed species :

Eucalyptus punctata (Grey Gum)

Eucalyptus globoides (White Stringybark)

Eucalyptus eugenoides (Thin Leaved Stringybark)

Hakea dactyloides

Melaleuca linarifolia

Groundcover:

Pasture grasses

Refer to Figure 61.

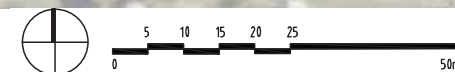
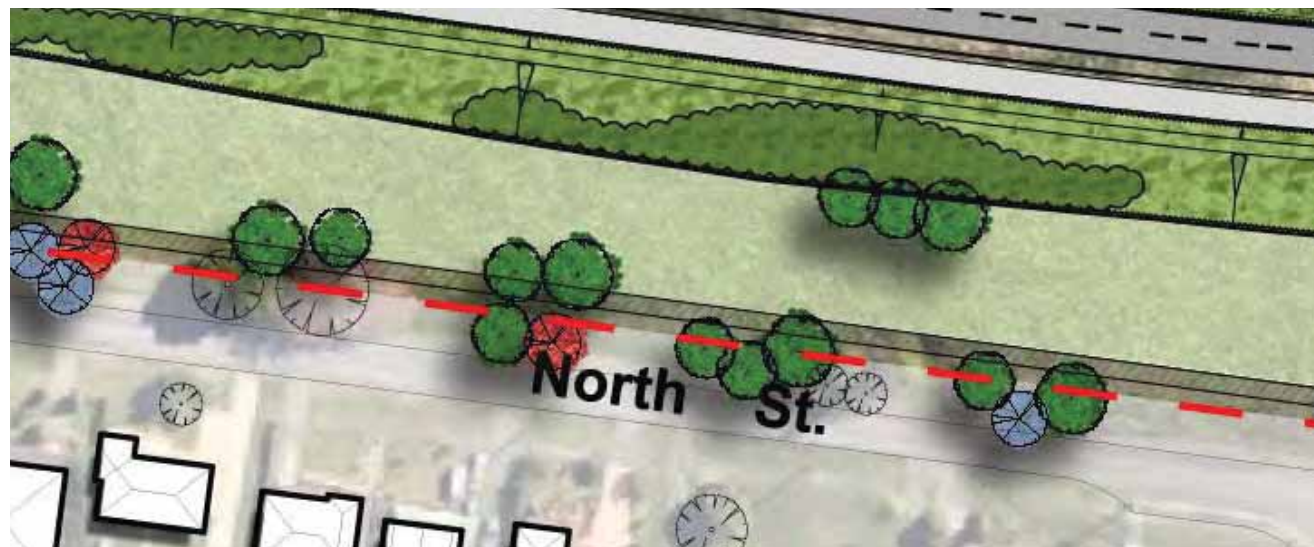


Figure 59: North Street typical landscape plan.



Figure 60: Species selection.

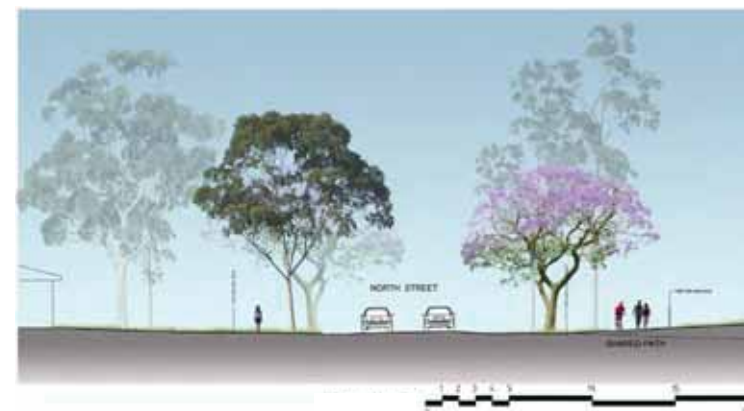


Figure 61: Typical cross section.

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5.10.3 Town Creek Park and Queen Street link

A new open space incorporating the upper reaches of the former Town Creek, and shared path link to Queen Street.

Character:

Informal parkland with central open grass area, native trees defining the perimeter and new road embankment. A new gateway into park to be created at the corner of George Street and Albert Street. Clear sightlines into the park are maintained for safety and security. Refer to Figure 62.

Activities:

Passive recreation, seating areas. Running and jogging trail. Shared path from the Berry sports precinct to Mark Radium Park traverses the precinct.

Proposed tree species:

Indigenous Eucalypts such as
Euc.microcorys (Tallowood)
Euc.botryoides (Bangalay)
Euc.pilularis (Blackbutt)
Eucalyptus robusta (Swamp Mahogany) highlighted with
Ficus coronata (Sandpaper Fig)
Melaleuca quinquenervia (Wide Leaved Paperbark)

Refer to Figure 63.



Figure 63: Species selection.

Figure 62: Town Creek Park and Queen Street link typical landscape plan.



Figure 64: Attractive Queen Street vista south, to proposed Kangaroo Valley Road Interchange.



Figure 65: Queen Street and Kangaroo Valley Road intersection.



Figure 66: Climbing up the ridge to Queen Street.



Figure 67: Existing southern Princes Highway approach to Berry.

6.0 Kangaroo Valley Road Interchange and Victoria Street Precinct

The precinct is located at the western edge of the township of Berry, and extends in a broad arc, commencing in the southwest at the current Princes Highway southern approach to Berry, sweeping to the northeast, intersecting with Kangaroo Valley Road and the west end of Queen Street (the township's Main Street). The northeast extent of the precinct, and the northern extent of township development, would be defined by North Street.

The precinct includes the western end of Victoria Street and Queen Street, a proposed new connection from Hitchcock's Lane to Huntingdale Park Road, the eastern end of Kangaroo Valley Road, the western end of North Street and the entry to Huntingdale Park estate (currently in development). In the overlap between this precinct and the North Street Precinct there would be a triangular parcel of vacant land defined by George Street (to the east) and a private access driveway (to the south).

6.1 Setting and urban character

The township of Berry and urban development to the west along Kangaroo Valley Road is elevated above the surrounding floodplains, by a northwest-to-southeast ridgeline. In the southwest, between Hitchcock's Lane and Victoria Street lies an open grassed valley including a small creek, wetlands and scattered stands of trees, following the watercourses and property boundaries.

To the east of the Princes Highway two retirement villages are established – The Grange at Berry and The Arbour. These recent developments consist of clusters of one and two storey residences that have incorporated open space improvements to creek and drainage lines, feature estate entry landscaping, new footpaths and have improved Victoria Street with new street tree planting.

Mark Radium Park is located at the corner of the Princes Highway and Victoria Street and features a large stand of tall mature Eucalypt trees. The popular picnic spot incorporates a small pond, picnic tables, playground, public toilets, walking paths, vehicular loop and parking area.

To the west of the Princes Highway is the Huntingdale Park residential estate that is in its early development phase. The main entry to the estate is established on Kangaroo Valley Road, featuring sandstone estate signage and tree planting. Huntingdale Park Road, the main access for the estate, is elevated above the Princes Highway atop a retaining wall approximately 200metres long and reaches up to 5metres in height.

The western end of Queen Street and the eastern end of Kangaroo Valley Road are characterised by residential properties, set back from the street frontage with mostly informal street tree planting; supplemented by mature trees and shrub plantings, within well kept residential front gardens.

Private front gardens along Queen Street are generally open and defined by low scale fences, whilst on the south side, near the intersection with Kangaroo Valley Road and continuing down to Mark Radium Park, timber paling back fences face the street. A row of large Eucalypt trees is a feature of this corner. The verges have grass nature strips, standard municipal kerb and gutter, and concrete footpaths on both sides.

Currently the main traffic thoroughfare of Berry, Queen Street is an attractive undulating streetscape, with a vista west to the ranges framed by attractive street trees.

Kangaroo Valley Road is an intimate local scale residential street, with significant street tree planting supplementing front gardens. Generally verges are unformed with grass swales providing drainage and generally no footpaths are provided.

Refer to Figures 64 to 75.



Figure 68: Princes Highway and Victoria Street intersection.



Figure 69: The attractive mature stands of Eucalypts in Mark Radium Park.



Figure 70: Victoria Street vista west to Princes Highway.



Figure 71: Victoria Street view east, entry to The Arbour retirement village on right.



Figure 72: Kangaroo Valley Road vista northwest.



Figure 73: Scenic panorama north from the centre of proposed interchange.



Figure 74: Huntingdale Park residential estate entry off Kangaroo Valley Road.



Figure 75: Large retaining wall supports east side of Huntingdale Park Road.

6.2 Design philosophy

The guiding philosophy for the urban design of the Kangaroo Valley Road Interchange and Victoria Street Precinct, has been to:

- Integrate the new interchange within the existing topography and landscape.
- Integrate the new interchange infrastructure within the existing Main Street and the hierarchy of township local access streets.
- Provide a fitting Berry arrival and departure experience.
- Improve pedestrian and cyclist access and amenity and provide a safe pedestrian and cyclist environment for parks and walkways through adopting CPTED principles.
- Integrate noise mitigation structures within the urban landscape.
- Provide an attractive journey and outlook for drivers on the Berry Bypass.
- Develop an urban and landscape design that is low maintenance, durable and deters graffiti.
- Develop a materials and finishes palette that wherever practical incorporates elements of locally sourced stone and timber and colour finishes, that complement the natural colours of the environment.
- Generally utilise native plantings that are endemic to the region, whilst also incorporating cultural exotic plantings, when warranted, as highlight or feature plantings.

6.3 Urban design principles

The following urban design principles have guided the precinct urban and landscape design (refer to Figure 76):

1. Establish a continuity of streetscape from Queen Street to Kangaroo Valley Road.
2. Provide an attractive vista west along Queen Street.
3. Provide a footpath connection from Queen Street to Mark Radium Park.
4. And from Mark Radium Park to the adjoining Windsor Drive residential area.
5. Provide a recreational pathway from Kangaroo Valley Road to North Street.
6. Develop an arc of interconnected green spaces following the southern edge of the bypass corridor.
7. Incorporate the upper reaches of Town Creek as a feature within green spaces.
8. Capture attractive valley and escarpment views as part of the Bypass travelling experience.
9. Establish an attractive Berry township arrival experience
10. Incorporate signature existing eucalypts into township arrival experience.



Figure 76: Urban design principles.

6.4 Berry Bypass infrastructure

The Berry Bypass corridor is generally 34.0metres wide, widening to accommodate the on and off ramps of the Kangaroo Valley Road Interchange. The Kangaroo Valley Road Interchange consists of an overbridge and associated roundabouts to the east and west providing legible local road access. A full northbound and southbound Bypass interchange would be provided with on and off slip roads. Different to the standard 'diamond' interchange configuration the northbound off ramp would continue beneath the overpass bridge to loop around and connect into the proposed interchange roundabout on Kangaroo Valley Road. This configuration would simplify the access arrangements to the entry of the Huntingdale Park estate, and would potentially reduce the visual impacts of the noise barrier on Huntingdale Park residents. North Street (west) would be connected to Rawlings Lane to maintain vehicular access to the two farm properties located to the north of the bypass.

A noise barrier would be proposed along the southern edge of the bypass corridor, extending to Queen Street.

A 2.5metre wide shared pathway would be provided connecting North Street with Queen Street, and on both sides of the interchange overbridge linking Queen Street to Kangaroo Valley Road.

Access to Mark Radium Park and to The Arbour retirement village would be maintained at the western end of Victoria Street, however it is proposed that there would be no access to the upgraded Bypass from Victoria Street. Access would be maintained to the Hitchcock's Lane rural properties with a new road link to Huntingdale Park Road.



Figure 77: Berry Bypass infrastructure.

6.5 Urban design strategy

The proposed construction of the highway-scale Berry Bypass infrastructure would bring changes for the township of Berry. Some of these changes would be positive including:

- Completion of this important section of the Princes Highway would provide a quicker and safer route for locals travelling regionally and along the NSW coast, tourists visiting South Coast destinations and day-trippers visiting the popular heritage and festival destination of Berry travelling to/from Sydney; boosting tourist accommodation, cafe/restaurant and retail business opportunities and employment in the township.
- The upgrade to a highway standard roadway would reduce fatalities and accidents along this currently difficult stretch of highway.
- The volume of truck and through traffic on the Queen Street retail 'Main Street' would be considerably reduced. There would be an opportunity to refocus 'Main Street' as a pedestrian friendly zone with increased and safer crossings, more opportunities for outdoor cafe-style seating, street tree planting and urban furniture.

The highway formation and interchanges are large physical structures and the urban strategy has been to investigate means by which these structures could be integrated at the edge of the township and into the surrounding attractive rural landscape - minimising the urban, landscape and visual impacts on the environment.

The strategy incorporates a series of urban and landscape design initiatives, including:

- Reducing the visual impact of the road formation through adjustments to the highway's vertical and horizontal alignment.
- Introducing generous open space buffers between the Berry Bypass and urban development to the west and east.
- Wherever possible, re-establishing the riparian vegetation and habitat along creek lines.

- Reducing noise impacts through incorporation of landscaped noise barriers along the edges of the alignment.
- Retaining as much as possible existing landscape, that defines the region and screens from view the new roadway and interchange structures.

The Urban Design Strategy diagram illustrates the key initiatives that are proposed to integrate Berry Bypass within this uniquely urban setting.

An aerial view is provided in Figure 79.

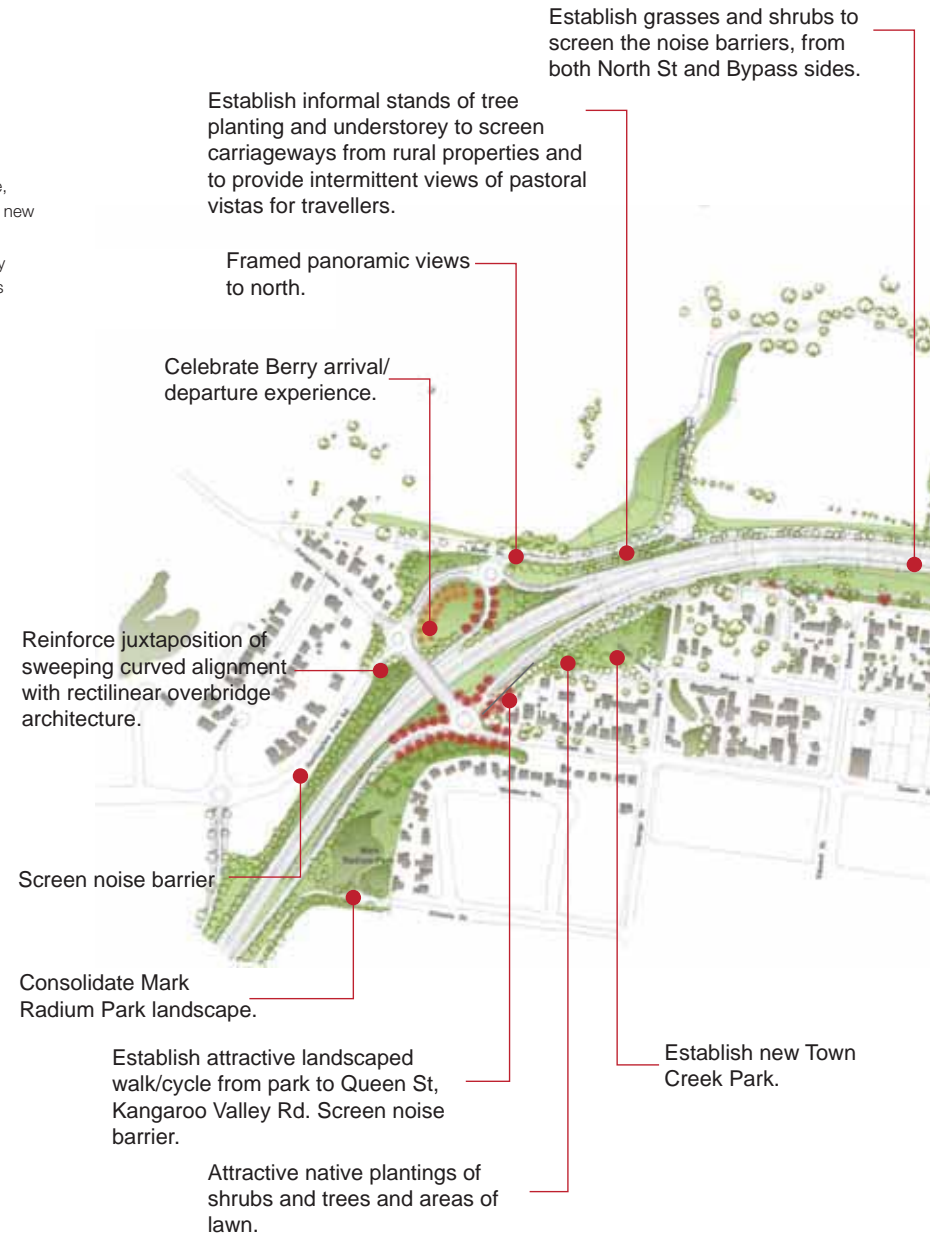


Figure 78: Urban design strategy.



Figure 79: Aerial view looking northeast.

6.6 Precinct plan

The Precinct Plan illustrates the proposed urban and landscape concept design for the Kangaroo Valley Road Interchange and Victoria Street Precinct.



Figure 80: Precinct Plan - Kangaroo Valley Road Interchange and Victoria Street Precinct.

6.7 Cross section studies

Four cross sectional studies were prepared at the Kangaroo Valley Interchange (Refer to Figure 77). The existing ground level is shown as a dashed line. At Kangaroo Valley Road the Bypass is in a cutting, with sloped batters that are landscaped with native grasses and informal tree planting. The predominant landscape plantings are of natives, primarily Eucalypts, with some feature tree plantings of Birch and Ash to highlight arrival and departure.

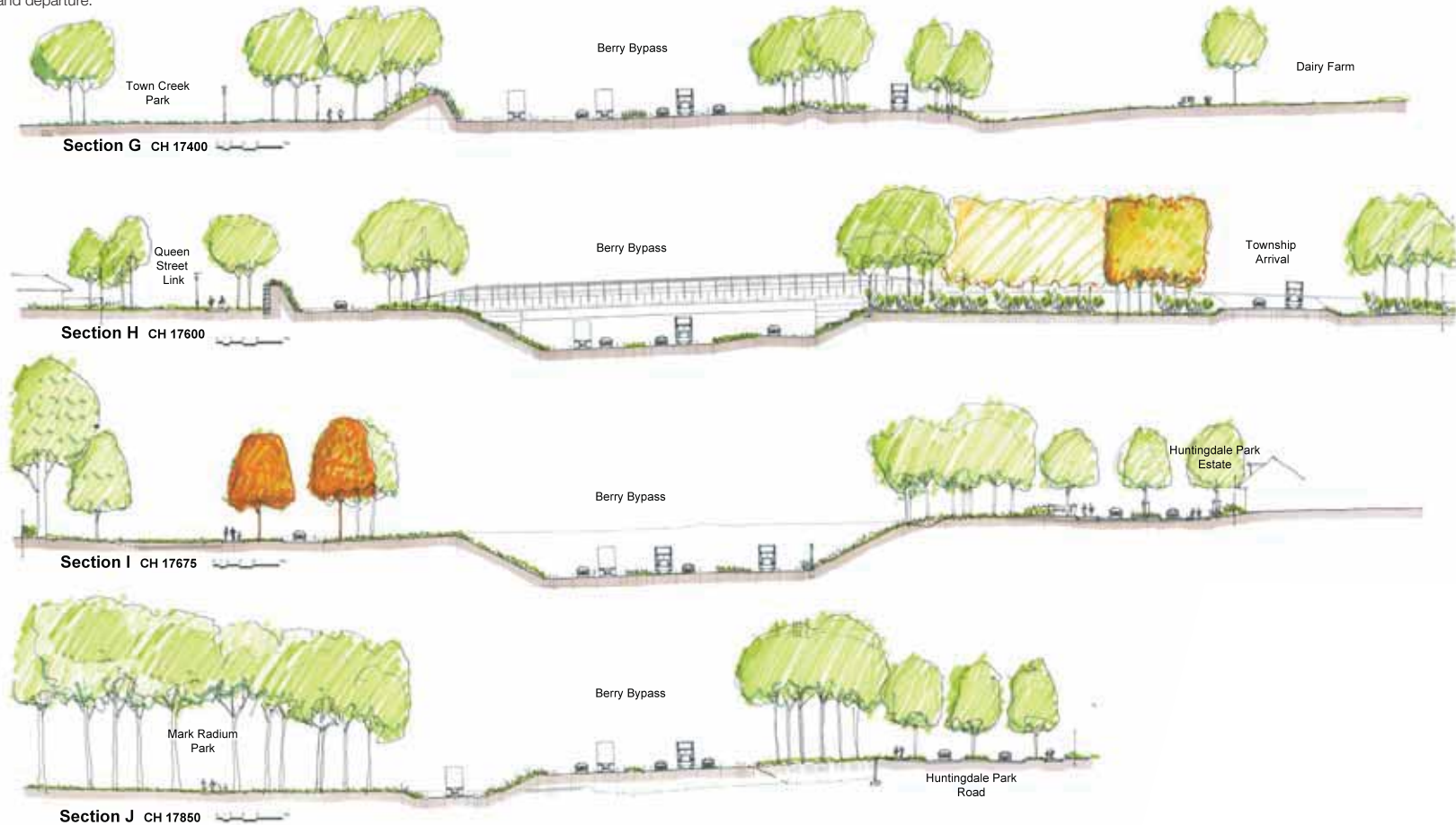


Figure 81: Kangaroo Valley Road Interchange cross sectional studies.

6.8 Urban design elements

The Kangaroo Valley Road Interchange and Victoria Street Precinct of the Berry Bypass would comprise urban design elements ranging from large scale, such as the interchange overbridge, on-off ramps, roundabouts and local access connections, to the smaller scale, including footpaths, street and park lighting, street furniture and signage. Integrated with the urban design would be the landscape design of the interchange, adjoining streets and associated local green spaces. All urban and landscape design elements have been considered as contributing to the overall coordinated design outcome.

6.8.1 Kangaroo Valley Road Interchange

The Kangaroo Valley Road Interchange requires road, ramp, overbridge and noise barrier infrastructure of significant scale. Considerable care would be necessary to fully integrate the interchange within the sensitive residential neighbourhoods situated to the east and west, the open rural pastureland to the north and the valley, creekline and green spaces to the south.

The 100 kilometre/hour highway design standard necessitates a broad sweeping road alignment for the main bypass carriageways. This dramatic curve would be reiterated by 2H:1V sloped cut batters along each side of the roadway as it passes through the local ridgeline. A counterpoint to this dramatic sweeping alignment would be the overbridge that connects Queen Street with Kangaroo Valley Road. The continuity of the curved road alignment, associated landforms and noise barriers should be emphasised, with views beneath the bridge remaining as open as possible to maximise the vistas along the curved corridor to adjoining picturesque rural pastures, local ranges and to the distant escarpment.

As a counterpoint to the curved road alignment the architecture of the bridge should emphasize its inherent horizontal qualities, with streamlined superstructure, abutments, parapet and throw screens.

Two roundabouts are proposed at either end of the bridge. The east roundabout provides an opportunity to complete the Queen Street visual axis. In addition to retaining the row of large Eucalypt trees on the south side to mark the location, colourful feature trees planting and a central planter would be proposed, to provide a fitting arrival/point of departure for travellers. The west roundabout would

complete the Huntingdale Park estate entry; a central feature planter, combining with the existing sandstone estate signage, feature posts and street trees.

Distinctive feature planting would be proposed as part of the arrival approach to Berry, from the south. The Bypass off-ramp continues beneath the overbridge and then curves upwards in a broad sweep to arrive at the west roundabout. The large open space at the centre of the curved ramp would accommodate a large stand of feature Birch trees, with their seasonal foliage colour and distinctive trunks creating a memorable landmark.



Figure 82: Kangaroo Valley Road Interchange design concept.

6.8.2 Interchange overbridge design options

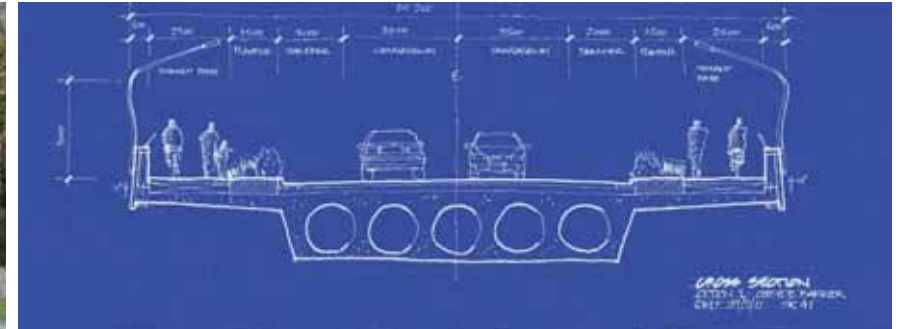
Two options were explored for the design of the cross section of the interchange overpass bridge. Option 1 located the vehicular safety barrier on the outside edge of the bridge deck, provided a more or less standard local street cross section of kerb and gutter and landscaped verge, and explored the possibility of introducing a sculptural profile to the throw screen. This offers a sense of protection from the inherent exposed nature of such elevated bridges, and introduce a sense of delight and lightness for those crossing the bridge. Two landscaped strips approximately 1.5metres were proposed to soften

the otherwise hard paved surfaces and to introduce some attractive landscaping along the shared use pathway. This was the preferred design option at the Community Working Group (CWG) meeting held in Berry on the 29th March 2012.

Option 2 looked at locating the vehicle safety barrier at the street kerb. This allowed the throw screen to be full height, providing a more open crossing experience. The CWG preferred Option 1 as it was seen to provide a better sense of protection from the elements when crossing the bridge (this was seen as particularly important for children).



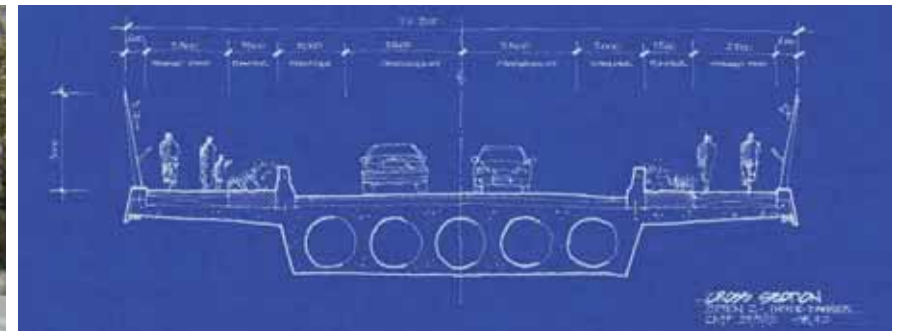
Figure 83: Option 1 - Outside barrier photomontage.



Option 1 - Outside barrier indicative cross section.



Figure 84: Option 2 - Inside barrier photomontage.



Option 2 - Inside barrier indicative cross section.

6.8.3 Preferred interchange overbridge design

The preferred overbridge design would be a concrete structure of a post tensioned, cast in situ, voided slab construction that would achieve a single, clear span of approximately 47.8metres. The abutments would consist of reinforced soil walls incorporating precast concrete facing panels with emphasized horizontal joints in a 2.0metre wide by 1.0metre high grid. Alternate bridge structural types that utilise spill-through abutments would also be assessed to see whether the view corridor beneath the bridge can be opened up further.

The bridge deck would be approximately 20.0metres wide and 2.3metres deep, and accommodates at two way carriageway with paved shoulders. The bridge cross section would be kept as close as possible in appearance to a regular local street: with generous width, pathways, and a standard kerb and gutter and 'nature strip'.

Shared use paths of 2.5metres width would be provided on both sides of the bridge. Between the shared use path and the carriageways would be a landscaped strip of 1.5metres width. To prevent seepage into the bridge structure below, completely separate planter boxes, constructed of glass reinforced concrete (GRC) sit atop the deck and house the minimum 450millimetres depth to accommodate the necessary mulch, soil and drainage course. Hardy plants would be selected, such as Lomandra and the like to ensure a long term low maintenance landscape. Irrigation would be necessary during the initial plant establishment period.



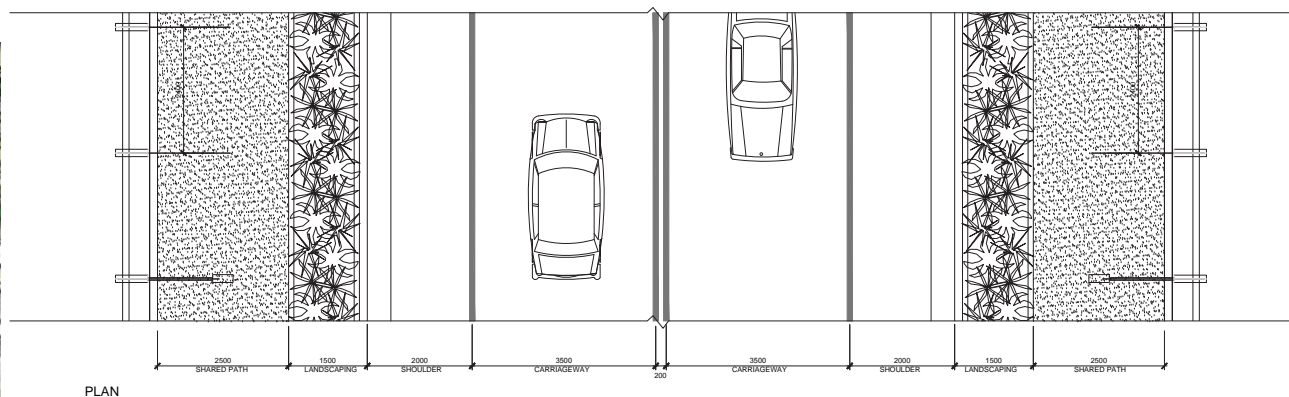
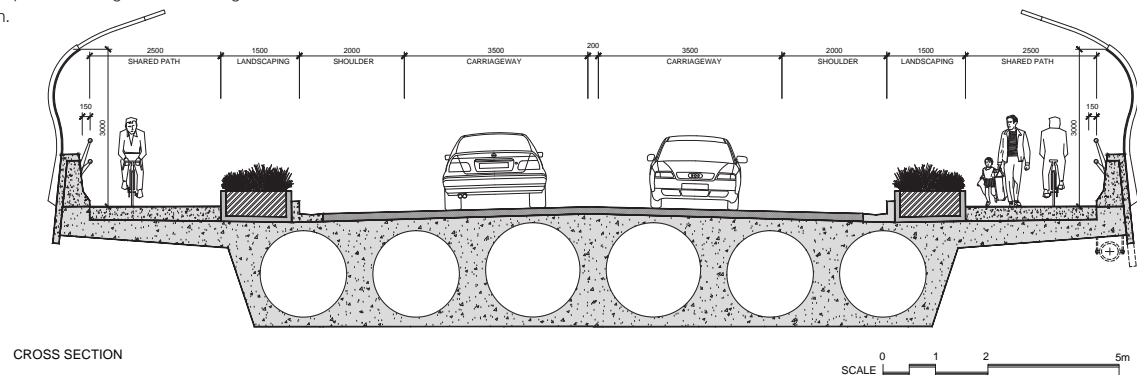
Figure 85: Kangaroo Valley Road Interchange preferred design.

The bridge parapet top and outside face would consist of high quality precast concrete units (visible from the main carriageways) and would be integrated in design with the throw screen structure above. Additional precast concrete 'skirt' length would be provided to screen any services that are required to be hung from beneath the bridge.

The shared use pathways would be lit at night for pedestrian safety (it is recommended that the faces of pedestrians using the paths be illuminated), with efficient long life light fittings integrated within the throw screen structure. A bicycle rail and pedestrian height handrail would be provided along the outside edge of the shared use path.

The bridge has a 4.0% slope from the west to the east. It is envisaged that this slope would facilitate drainage of the deck along its length, avoiding the need for scuppers or drain pipes to be fixed to the underside of the bridge.

Utility services would be accommodated in conduits cast in the concrete shared use path slab and in the Type F edge safety barrier.









KANGAROO VALLEY ROAD INTERCHANGE
PEDESTRIAN VIEW LOOKING NORTH WEST FROM KANGAROO VALLEY ROAD BRIDGE
 Dwg No 12001-SK-062
 Issued 13 July 2012



KANGAROO VALLEY ROAD INTERCHANGE
 PEDESTRIAN VIEW LOOKING SOUTH EAST FROM KANGAROO VALLEY ROAD BRIDGE
 Dwg No 12001-SK-063
 Issued 13 July 2012

6.8.4 Noise barrier

Noise modelling studies undertaken by Aecom have established that two 4.0metre high noise barriers would be required in the vicinity of the interchange. The first noise barrier would be required along the outer edge of the southbound off-ramp. This barrier would be a continuation of the planted reinforced soil 'green wall' that runs along the south edge of the corridor in the North Street precinct. To realise the expression of an uninterrupted, streamlined barrier when seen from the Bypass corridor, it is envisaged that the 'green wall' face would continue up to Queen Street following the grade of the off-ramp.

The width available to the south of the noise barrier is limited in the North Street to Queen Street link. This would necessitate a vertical face to the rear of the barrier through this section. A galvanised steel mesh gabion wall structure is envisaged that would be filled with local stone sourced from project excavation.

A second noise barrier would be required along the northbound off-ramp leading up to the overbridge. It is approximately 140metres long and 4.0metres high (above the level of the main carriageways).

Refer to Figures 86 and 87.

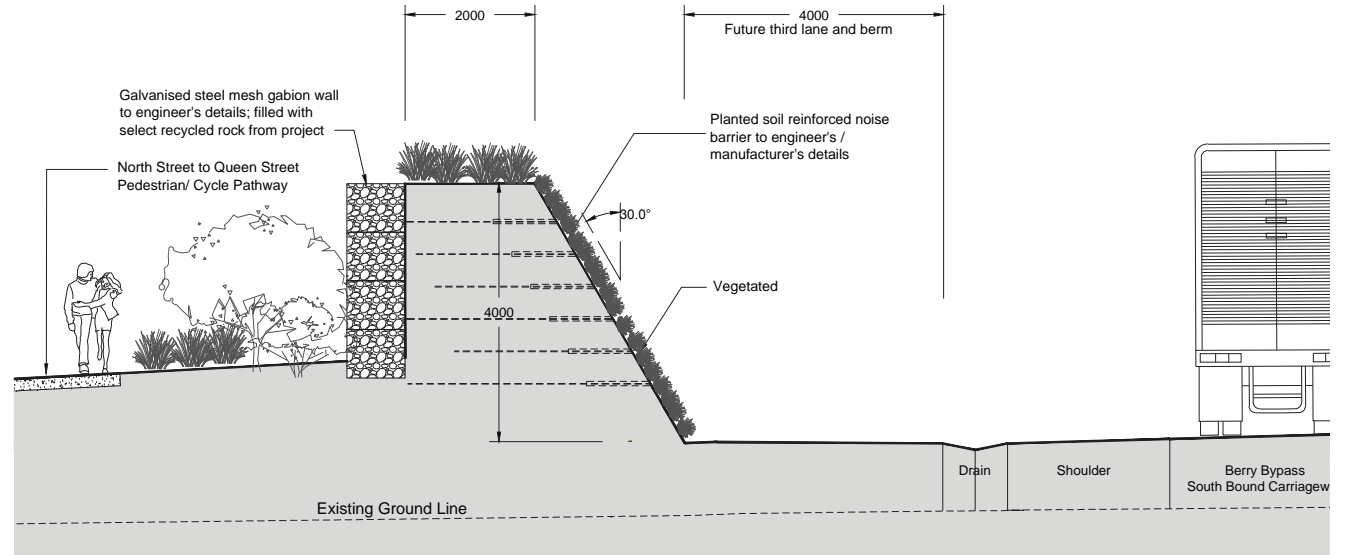


Figure 86: Noise barrier - planted soil reinforced typical cross section.



Example of gabion wall with select local stone.



Figure 87: Noise barrier - planted soil reinforced mound photomontage.

6.8.5 Overbridge throw screen

Throw screens are required on both sides of the overbridge, extending 6.0metres beyond the bridge abutments and extending to 3.0metres height above the finished level of the bridge deck. A sculptural 'S' shaped profile is proposed with galvanised steel mesh and integrated pedestrian safety lighting.

Shared use paths of 2.5metres clear width are proposed on both sides of the interchange overbridge. Refer to photomontages on pages 76 and 77.

6.8.6 Furniture

The proposed Town Creek Park shared pathway would incorporate comfortable bench seating at intervals along its length, to provide opportunities to rest and to enhance the enjoyment and amenity of these local green spaces.

6.8.7 Lighting

Queen Street, Kangaroo Valley Road and the Princes Highway currently have overhead power supply and street lights along the south side of the street.

With the construction of the new interchange, the electrical supply would need to be rationalised in the vicinity. A lighting design would be prepared at detail design stage to ensure appropriate lighting levels are achieved for driver and pedestrian safety.

The proposed Town Creek Park and landscaped pedestrian link from North Street through to Queen Street, would require pedestrian scaled lighting to supplement adjoining street lighting and to provide pedestrian safety at night.

The proposed pole top light is illustrated on page 55.

6.9 Landscape design strategy

The 'arrival' landscape into Berry would be designed to highlight the Kangaroo Valley Road Interchange and reinforce the rural Berry township character.

The landscape design would enhance the endemic tree canopy and habitat corridors, mitigate the visual impact of the road engineering and create a memorable, signature gateway to the Berry township.

6.9.1 Kangaroo Valley Road Interchange

Southern approach

The roadway from the south would be gradually lowered into a cut, densely planted on both sides with Eucalypts, on embankments seeded with native grasses and shrubs. The plantings are designed to create pleasant 'walls of green' along the roadway, and to screen out views of the freeway from the township and adjacent residential estates. As the road rises up to the Berry turn off, groves of Claret Ash (*Fraxinus oxycarpa aurea*) and Birches (*Betula pendula*) would provide colour and contrast against the backdrop of Eucalypt trees. The exotic trees are grouped in groves with generous gaps in between to retain views of the surrounding hills and rural landscape. The roundabouts would be planted with robust and colourful native and exotic groundcovers and incorporate opportunities for public art and signage. Refer to Figure 88.

Proposed native tree species:

Eucalyptus punctata (Grey Gum)
Eucalyptus globoides (White Stringybark)
Eucalyptus eugenoides (Thin Leaved Stringybark)
Hakea dactyloides
Melaleuca linarifolia

Proposed exotic tree species:

Fraxinus oxycarpa aurea (Claret Ash)
Betula pendula (Silver Birch)

Proposed groundcover:

Native pasture grass

Refer to Figure 89.



Figure 88: Kangaroo Valley Road Interchange typical landscape plan.

Northern approach

The northern approach ramp into Berry would be defined by a generously planted median complementing the structure of the overhead bridge that connects Kangaroo Valley Road and Queen Street.

The left embankment would be a continuation of the southern acoustic mound, and would be densely planted with native grasses and tall Eucalypts as a backdrop.

An avenue of Claret Ash is proposed at the roundabout into Queen Street, reinforcing the species and colour proposed for the southern approach.

The groundcovers in this roundabout would include exotic shrubs to highlight the 19th and 20th century garden traditions of the heritage township.

Refer to Figure 88.

Similar robust and colourful groundcovers would also be planted on both sides of the overhead bridge, to create a welcoming and seamless entry statement into the Town's main street.

Proposed native tree species:

Eucalyptus punctata (Grey Gum)
Eucalyptus globoides (White Stringybark)
Eucalyptus eugenoides (Thin Leaved Stringybark)
Melaleuca linarifolia

Proposed exotic tree species:

Fraxinus oxycarpa aurea (Claret Ash)

Proposed groundcover:

Lomandra longifolia (Spiny-Head Mat-Rush)
Native pasture grass

Refer to Figure 89.



Figure 89: Species selection.

6.9.2 Victoria Street

Victoria Street would be closed at its western end to create a cul de sac, adjacent to Mark Radium Park.

The former road would be turfed over and Eucalypts would be planted on the edges, visually extending the size of the park. Refer to Figure 90.

Proposed native tree species:

Eucalyptus punctata (Grey Gum)
Eucalyptus globoides (White Stringybark)
Eucalyptus eugenoides (Thin Leaved Stringybark)
Hakea dactyloides
Melaleuca linariifolia

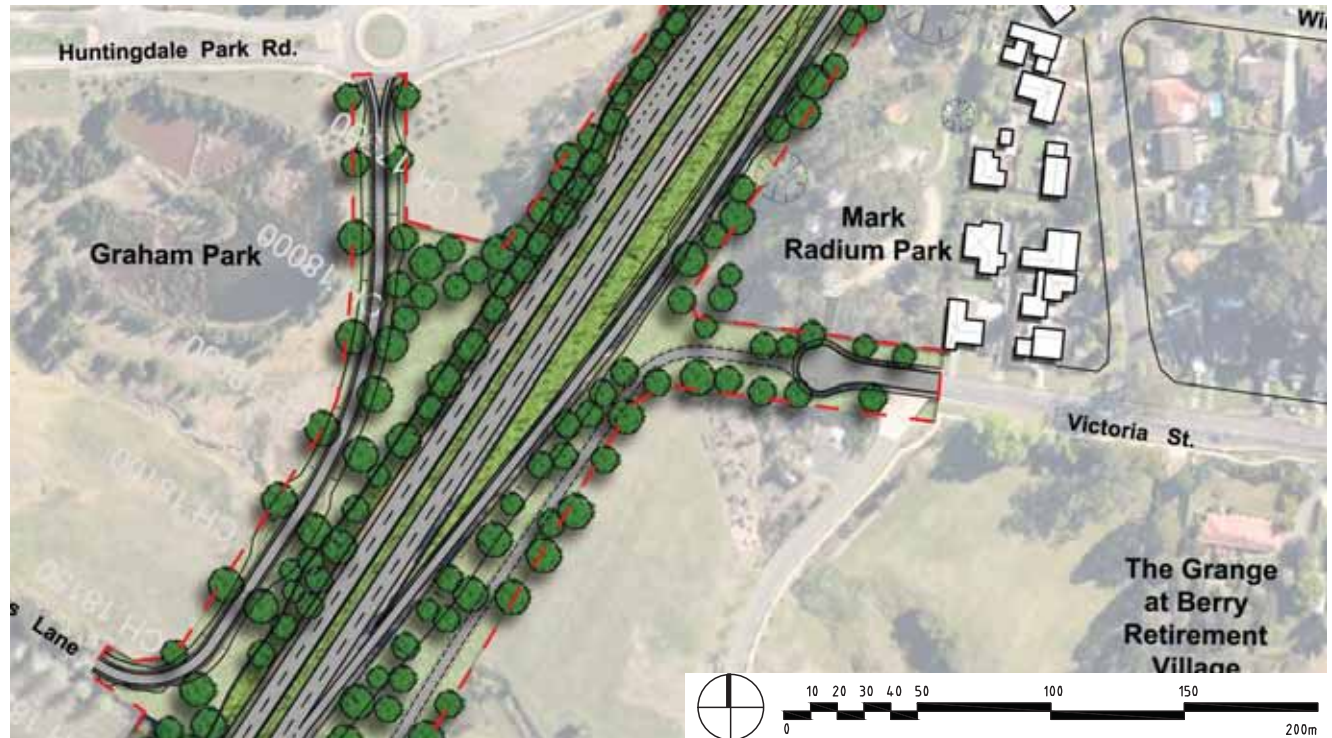


Figure 90: Victoria Street typical landscape plan.

7.0 Materials, finishes and colour strategy

7.1 Philosophy

The following urban design philosophy has guided the selection of the project materials and finishes palette:

- Taking a low-key approach.
- Complementing the natural environment.
- 'Natural' finishes preferred rather than applied.
- Utilising locally sourced stone and timber.
- Selecting finishes that weather and age well.
- Detailing that minimises staining and is self-cleaning.

7.2 Finishes selections

The adjoining sample photos (Refer to Figure 91) illustrate the proposed approach - including utilising local stone and timber when appropriate, and selecting materials and finishes that are generally low-key, robust and that weather well.

7.3 Graffiti strategy

The approach to deterring graffiti is to wherever possible 'design-out' situations where the potential for walls or surfaces that could be defaced are removed. Maximising the opportunity for passive surveillance through creating places that are attractive to people, are easily accessible and well lit at night would deter and minimise the occurrence of graffiti.



Local stone.



Destination signage.



Estate signage.



Local timber.



Stone faced retaining wall.



Complementing the natural contours of the region.



Berry memorial.

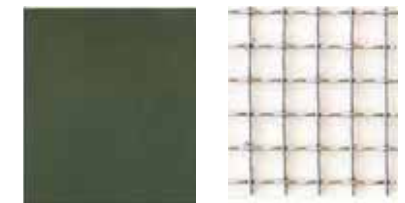


Figure 91: Materials, finishes and colour strategy.

NOTE: The images are for illustration purposes only.