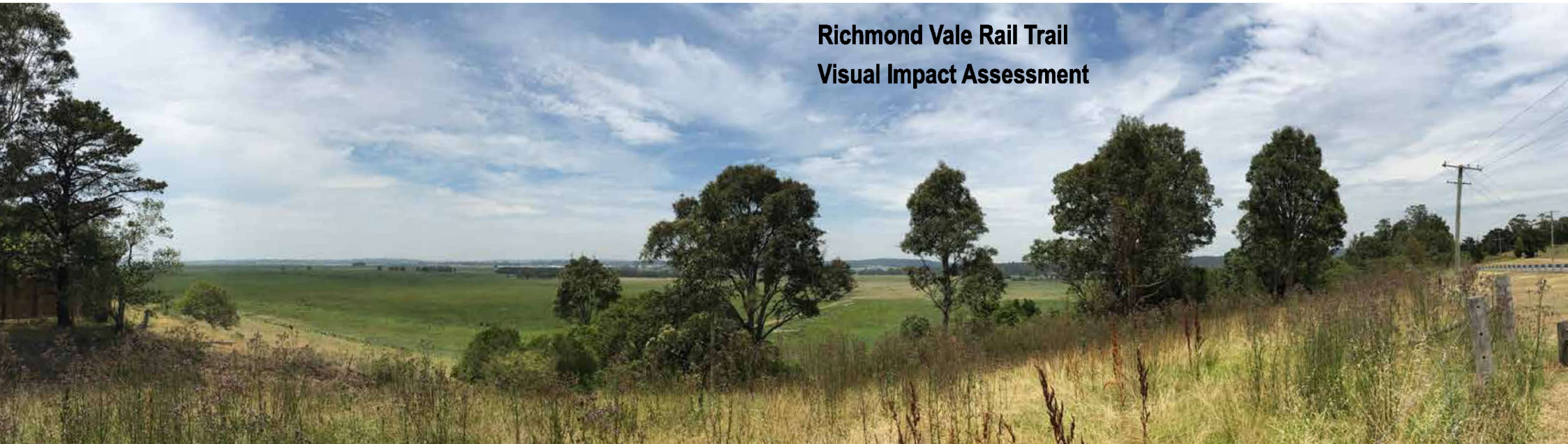




Richmond Vale Rail Trail Visual Impact Assessment



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Document history and status

Project Number: 16_005
Richmond Vale Rail Trail

Version	Date issued	Description	Author	Approved by
A	22.12.2016	Visual Impact Assessment	Vanessa Colclough Jason Hildridge	Vanessa Colclough
B	14.06.2017	Revised Visual Impact Assessment	Vanessa Colclough Jason Hildridge	Vanessa Colclough

CONTENTS

1.0	INTRODUCTION	1
1.1.	The proposal	1
1.2.	Purpose of VIA	2
1.3.	Background	2
2.0	VISUAL IMPACT	3
2.1.	Methodology	3
2.2.	Visual Impact Assessment	4
2.3.	Summary	35
3.0	MITIGATION MEASURES	36

1.0 INTRODUCTION

1.1. The proposal

Newcastle City Council in conjunction with Cessnock City Council and Lake Macquarie City Council are undertaking a concept design and environmental assessment for the development of a 32 km shared trail from Kurri Kurri to Shortland. The trail utilises the former Richmond Vale Railway alignment, and the route is indicated on Figure 1. The route is generally defined as follows:

- Shortland to Tarro utilising a Hunter Water Corporation easement.
- Hexham to Minmi utilising the Richmond Vale Railway alignment.
- A connection to Fletcher is proposed utilising an existing Hunter Water Corporation easement.
- Minmi to Kurri Kurri utilising the Richmond Vale Railway alignment.

The trail is to provide a safe cycling and walking experience between Cessnock and Newcastle without the use of current road networks and to attract both local and regional users to enjoy the environmental and heritage attractions along the route. The proposed trail provides an opportunity for the Lower Hunter regional communities to develop key growth areas of transport, tourism, recreation, heritage, and economic and social by connecting into the proposed trail users.

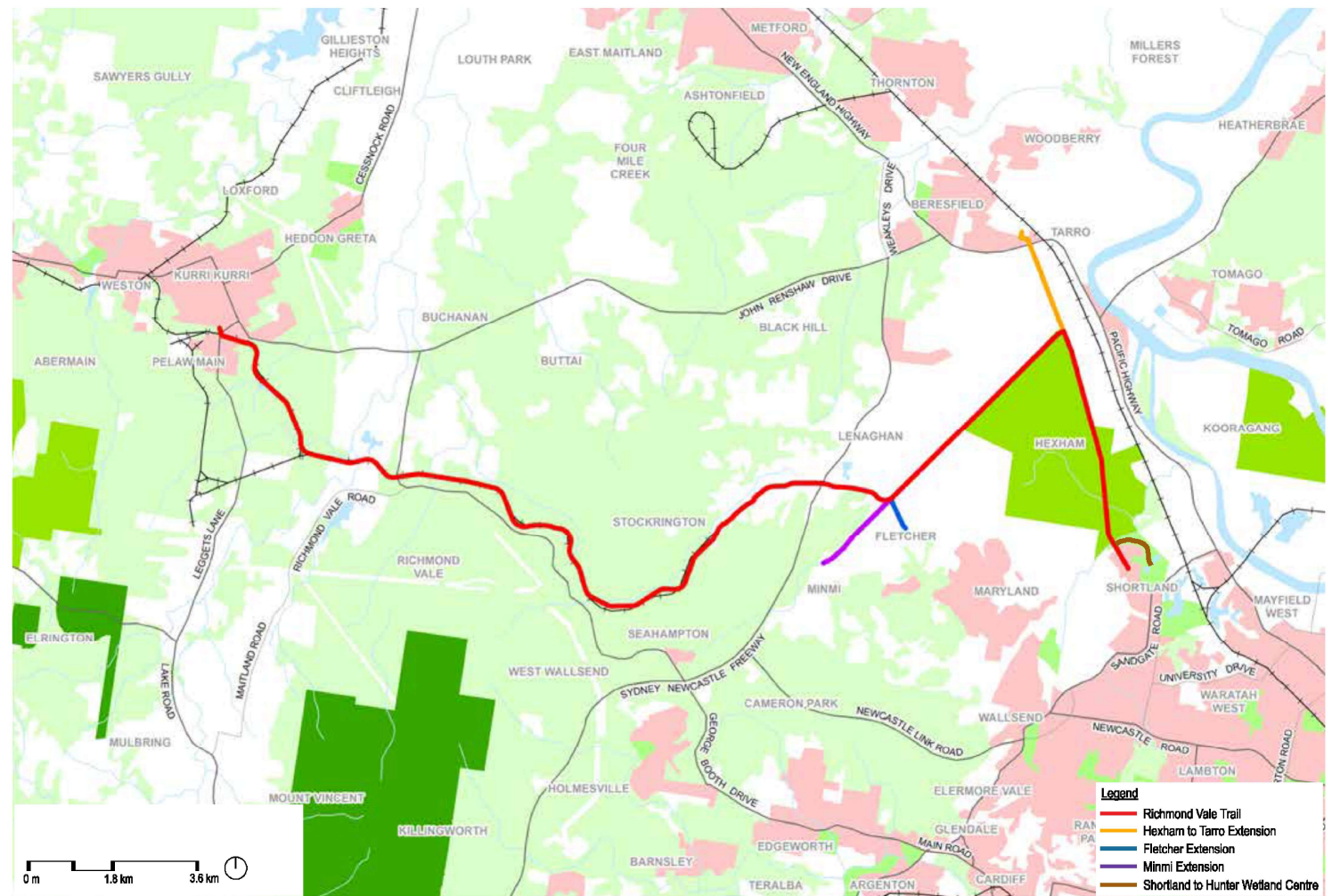


Figure 1 – Locality Plan
Source: GHD 2017

INTRODUCTION CONT.

1.2. Purpose of VIA

This Visual impact assessment (VIA) has been prepared for the Richmond Vale Rail Trail to form part of the environmental assessment.

An Environmental Impact Statement is being prepared for the Richmond Vale Rail Trail that is located in the Newcastle Local Government Area. The Secretary's Environmental Assessment Requirements outlined that a visual impact assessment at private receptors and public vantage points is required for the trail.

A Review of Environmental Factors is being prepared for the Richmond Vale Rail Trail that is located in the Cessnock and Lake Macquarie Local Government Areas. This VIA also addresses the key view points within the Cessnock and Lake Macquarie Local Government Areas to assist in the assessment.

The Visual impact assessment has been prepared as follows:

- A desktop review was undertaken of the trail to identify key areas that could view the proposal. These key areas have been identified as zones.
- Site investigations of the zones were undertaken on 2 to 5 December 2016 to determine visual impacts from the proposal. Site investigations were undertaken from public areas as access was not possible from private dwellings.
- Preparation of site contextual analysis including landscape character for each of the zones.
- Identification of the potential future visual impacts from the proposal (the trail and ancillary facilities such as carparks and amenities) for each of the zones from the surrounding area. It is not possible to review every view of the proposal due to the length of the trail, inaccessible land and private property. However, assumptions and mitigation measures are proposed for the trail within these areas.
- Determination of appropriate mitigation measures for any visual impact.

1.3. Background

The Richmond Vale railway is a former rail line that runs from Hexham to Pelaw Main in the Lower Hunter region of NSW and various extensions were developed over time to service the collieries.

Industrial operation of the railway ceased in 1987 following the closure of the collieries in the region. In 1991, a direct passenger line was re-opened along a section of railway from the former Richmond Main Colliery to the former Pelaw Main Colliery. This passenger line continues to operate as a tourism facility managed by the Richmond Vale Railway Museum. The balance of the line has remained closed since 1987.

There are various structures along the trail including timber bridges and tunnels as well as broad open spaces that will contribute to the visual interest of the users of the trail. Refer Figure 2.



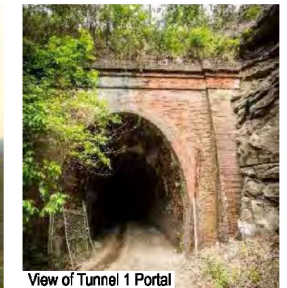
View of Tunnel 2 Portal



Wallis Creek Bridge



Trail along Hexham looking toward Minmi



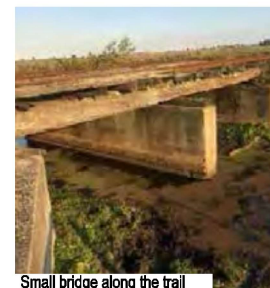
View of Tunnel 1 Portal



Underpass near the Log of Knowledge Park



Tunnel under the M1 Motorway



Small bridge along the trail



Wallis Creek from the Kurri Kurri end

Figure 2 – Existing bridges, tunnels and trail
Source: GHD 2016

2.0 VISUAL IMPACT

2.1. Methodology

A desktop analysis was undertaken to determine the key areas that may be visually impacted upon by the proposal. Ten (10) zones have been identified that may be impacted visually by the works proposed and the use of the trail and are shown on Figure 3.

Site investigations were carried out of the proposal to confirm the key zones identified as part of the desktop review. Further site investigations were then carried out of each of the ten (10) zones from public areas to determine any change in the landscape character and impact on the visual amenity from the surrounding land uses.

The potential visual impact of the proposal has been assessed in relation to the key viewpoints identified in each zone. The levels of potential visual impact has been assessed through consideration of the combination of magnitude of visual change in the landscape and its proximity to the viewer and the sensitivity in relation to the quality of the view and how sensitive it is to the proposed change.

The magnitude of visual change is strongly influenced by the level of visibility of the new works resulting from the combination of scale, extent, distance and duration of the views.

Visual sensitivity depends on the nature of the existing environment and on the likely response from people viewing the scene. People driving on a busy road and/or at high speeds are likely to be less sensitive to a change in the environment since they are focused on changes in traffic conditions and driving and the short duration of the view, compared to someone who is enjoying a recreational experience or someone who is viewing the scene from their living room.

The categories of magnitude and sensitivity of visibility are defined in Table 1.

Table 1 – Magnitude and sensitivity of visibility

Rank	Description
Negligible	Very minor loss or alteration to one or more key elements/features/characteristics of the baseline visual character and/or introduction of elements that are consistent with the existing visual character.
Low	Minor loss of/or alteration to one or more key elements/features/characteristics of the baseline visual character and/or introduction of elements that are consistent with the existing visual character.
Moderate	Partial loss of/or alteration to one or more key elements/features/characteristics of the baseline visual character and/or introduction of elements that may be prominent but not considered to be substantially uncharacteristic.
High	Substantial to total loss of key elements/features/ characteristics of the baseline visual character and/or introduction of elements considered to be totally uncharacteristic.

The combination of sensitivity and magnitude provides an impact rating for the proposal on the key view points based on Table 2.

Table 2 – Impact matrix

		MAGNITUDE			
SENSITIVITY		High	Moderate	Low	Negligible
	High	High Impact	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-Low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

(Roads and Maritime Services, 2013)

VISUAL IMPACT CONT.

2.2. Visual Impact Assessment

The ten key zones identified for the trail include:

- Zone 1 Kurri Kurri / Pelaw Main
- Zone 2 Wallis Creek
- Zone 3 Surveyors Creek
- Zone 4 Dog Hole Road
- Zone 5 Pambalong Nature Reserve
- Zone 6 Minmi Connection
- Zone 7 Fletcher Connection
- Zone 8 Hexham to Hunter Wetland Centre
- Zone 9 Shortland
- Zone 10 Tarro Extension

The following analyses the visual impact of the proposal from the key viewpoints.

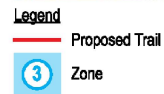
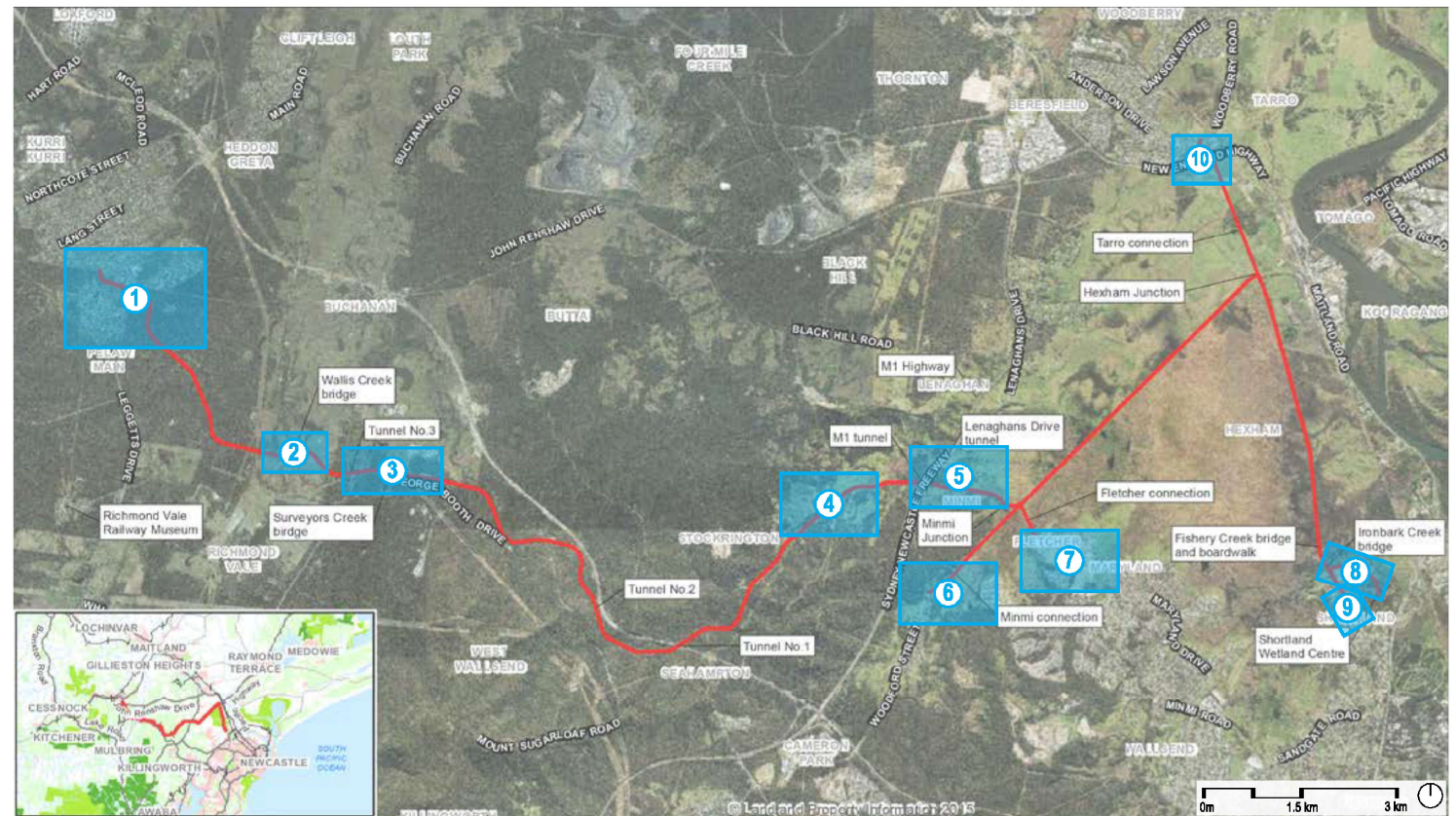


Figure 3 – Locality Plan
Source: Base - GHD 2016

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 1 - Kurri Kurri / Pelaw Main Landscape character

The trail commences in the north east from the Log of Knowledge Park at Kurri Kurri. Parking is proposed on the vacant land opposite the park on Mulbring and Allworth Streets.

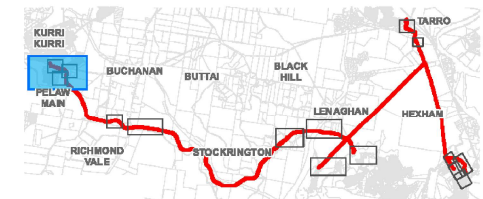
The trail continues along vacant land adjoining Pokolbin Street through the residential area of Pelaw Main. The trail then continues in a south easterly direction through lands zoned Rural Landscape and the Werakata State Conservation Area.

The following outlines the key landscape character of zone 1.

Landform	Generally flat throughout the area. The trail is raised from the surrounding land along Pokolbin Street. Informal drainage is located either side of the trail.
Land use/built environment	Surrounding development includes older style single storey dwellings and the two storey Empire Hotel. Log of Knowledge Park incorporates some older play equipment and seating. Kookaburra Walk is located to the west of the park. The trail is located in bushland to the east of Pokolbin Street and goes through the Werakata State Conservation Area.
Vegetation	Vegetation within Kurri Kurri and Pelaw Main and incorporates mainly an Open Woodland. Land to the east of Pokolbin Street is heavily vegetated and is identified as a rural landscape zone and forms part of the Werakata State Conservation Area.
Landscape features	The broad open areas including the wide streets and open space areas throughout Kurri Kurri and Pelaw Main. The Werakata State Conservation Area and surrounding bushland.
Infrastructure	Stanford Street raises over the trail along the Log of Knowledge Park. A concrete pathway connects the Park to Pokolbin Street under the Stanford Street road bridge. Pokolbin Street runs along the southern extent of the trail in Pelaw Main. An existing formed and unlined parking area is located adjoining the northern boundary of the Park. An existing pedestrian refuge is located on Mulbring Street.
Major economic components	The Empire Hotel is located opposite the Log of Knowledge Park on Mulbring Street. The trail is located in part of the Werakata State Conservation Area. State conservation areas are reserved to protect and conserve areas that: <ul style="list-style-type: none"> Contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance Provide opportunities for sustainable visitor or tourist use and enjoyment, the sustainable use of buildings and structures, or research Providing opportunities for uses permitted under other provisions of the NPW Act.
Spatial quality of zone	The trail from its commencement to the east of Pokolbin Street is fairly open and will be visible from the surrounding areas. The trail east of Pokolbin Street is enclosed by the existing vegetation and is not visible from the surrounding areas.



Figure 4 – Zone 1 Landscape character
Source: Bana - GHD 2018



Key Diagram - Zone 1

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 1 - Kurri Kurri / Pelaw Main Landscape character



①
Vacant land - Allworth / Mulbring Streets



②
The Log of Knowledge Park



③
Kookaburra Walk



④
The Empire Hotel



⑤
Car park adjoining the Log of Knowledge Park



⑥
View from the Bridge on Stanford Street



⑦
Trail corridor along Pokolbin Street west
Landscape character



⑧
Trail corridor along Pokolbin Street east



⑨
Trail at the eastern extent of Pokolbin Street

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 1 - Kurri Kurri / Pelaw Main Visual impact

The key viewpoints for zone 1 are shown on Figures 5 and 6. Table 3 analyses the visual impact on these view points.



Figure 5 – Zone 1 View point Locations
Source: Bana - GHD 2018

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 1 - Kurri Kurri / Pelaw Main Visual impact



Figure 6 – Key viewpoints

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 1 - Kurri Kurri / Pelaw Main Visual impact

Table 3 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	A vacant parcel of land on Coronation, Mulbring and Allworth Streets with some larger trees.	Moderate	The dwellings address Coronation Street and the vacant parcel of land currently have views of wide open spaces and vegetation.	Moderate	Moderate	The provision of a carpark on this vacant land would have a moderate impact on the dwellings that face onto the land with a park like setting. The design of the carpark would need to consider access and visual amenity to the residents. Alternatively, the carpark could be located within the existing carpark adjoining the Log of Knowledge Park. The visual impact would therefore be negligible.
2	The land opposite the Log of Knowledge Park includes single storey residential dwellings and the two storey Empire Hotel. These buildings face onto Mulbring Street, the Log of Knowledge Park and existing carpark. However, some of the dwellings have large front fences, which would restrict its views to the park.	Negligible	The infrastructure is already in place and would be upgraded as part of the proposed works.	Negligible	Negligible	As outlined, the infrastructure is already in place and would be updated as part of the proposal and therefore have little impact on the surrounding land uses.
3	View across Log of Knowledge Park to the Stanford Street road bridge.	Low	The infrastructure is already in place and would be upgraded as part of the proposed works.	Negligible	Negligible	The infrastructure is already in place. The upgrade to this section, particularly the thoroughfare under the road bridge would have a positive impact by opening up the area and making it safer for its users. The upgrade of facilities and implementation of interpretative and way finding signage would also be beneficial to the residents and users of the trail as it would assist in ensuring the users are knowledgeable of the public areas and minimise impacts on the surrounding dwellings.
4	View from the Stanford Street road bridge to the trail along Pokolbin Street.	Negligible	There is no pedestrian access on the road bridge. The only users are drivers and passengers of vehicles. The view is not towards the trail and the main views are to the south and north along Stanford Street. Further, the existing trees along the trail would reduce any visual impact.	Negligible	Negligible	The visual impact is negligible.
5	Dwellings adjoining the southern side of the trail along Pokolbin Street alignment and to the northern side of the trail at this location.	Low	The trail is located on land that is raised above the adjoining land. Whilst there is no infrastructure currently in place, low key facilities including the trail and interpretative signage would have a low impact on the surrounding land uses as most dwellings do not face onto this open space. Further, trees are located along the corridor and would assist in minimising any visual impact.	Low	Low	It is considered that the provision of a trail and interpretative signage along this section would have a low impact based on retention of the existing vegetation and that suitable materials would be used to reduce any visual impact. Further, dwellings generally do not face onto this open space area.
6	The entry into the bushland and conservation area to the east of Pelaw Main.	Negligible	The entry from Pokolbin Street into the bushland is visible from the surrounding road network. The trail within the bushland and conservation area is visible for the users, however it is not visible from the surrounding area due to the extent of vegetation. Vegetation removal is not proposed.	Negligible	Negligible	The entry into the bushland should be easily recognisable. The design should use measures that will assist in way finding. Vegetation will not be removed. Vegetation removal through the bushland and conservation area further to the east should be minimised to enhance the experience of the user. Materials should also be considered that are appropriate within the bushland and conservation areas.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 2 - Wallis Creek Landscape character

Zone 2 was identified as a key zone as the trail passes two rural residential properties and passes over Wallis Creek. Desk top investigations have been undertaken only as this area is not publicly accessible and is located on private land.

The following outlines the key landscape character of zone 2.

Landform	The land is generally flat and slopes towards Wallis Creek.
Land use/built environment	Private property adjoins the trail with a rural dwelling located in close proximity to the trail. Land is zoned rural landscape.
Vegetation	Open scattered Woodland is located along the trail. Denser vegetation is located along both sides of Wallis Creek with more extensive vegetation on the western side of the creek.
Landscape features	Wallis Creek and the old Wall Creek Bridge.
Infrastructure	The old Wallis Creek Bridge, which is no longer used and in disrepair. Driveway access to the rural dwelling.
Major economic components	Rural landholdings.
Spatial quality of zone	Generally an open spatial zone along the corridor and an enclosed corridor along Wallis Creek due to the creekside vegetation.

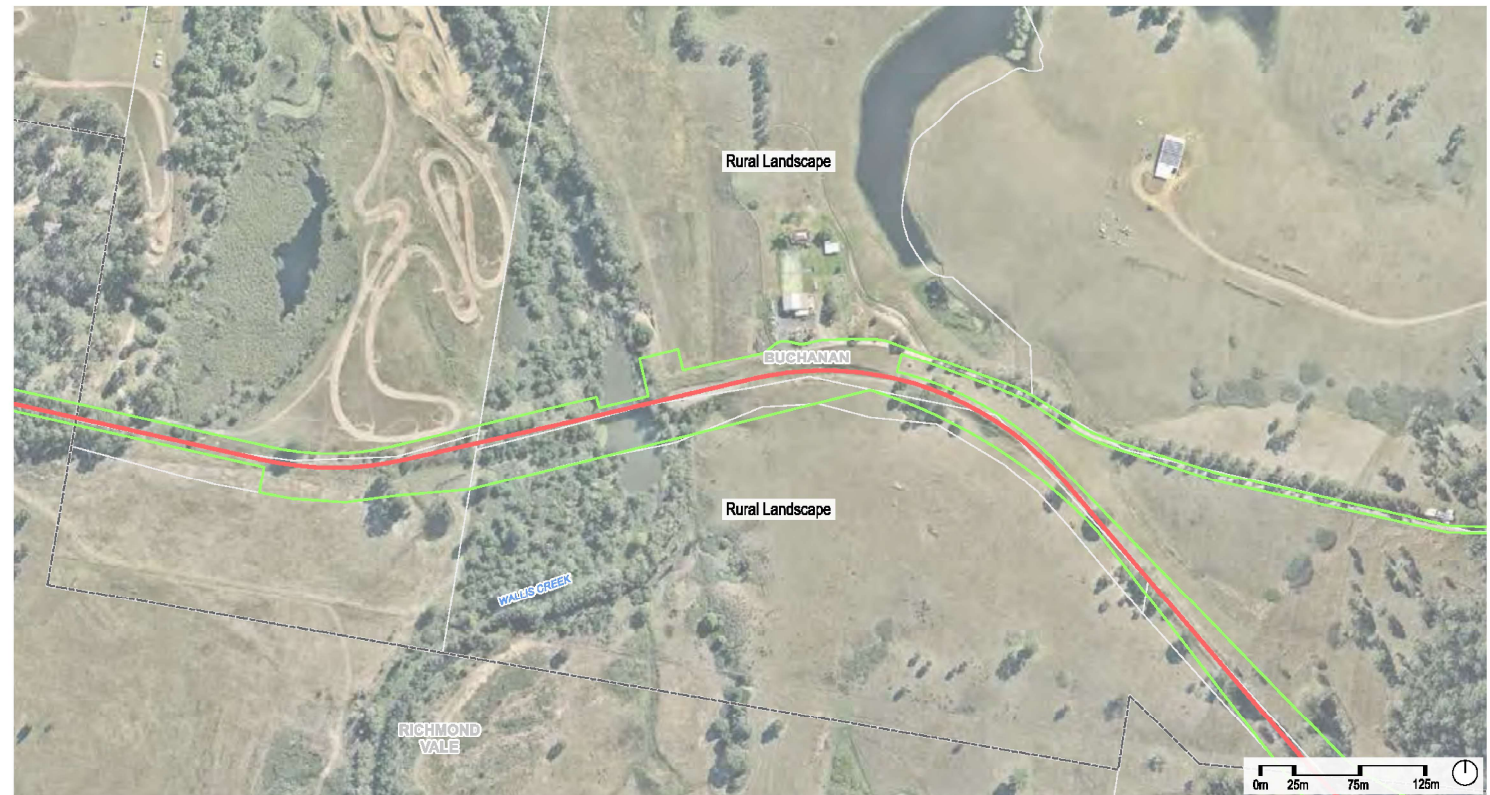
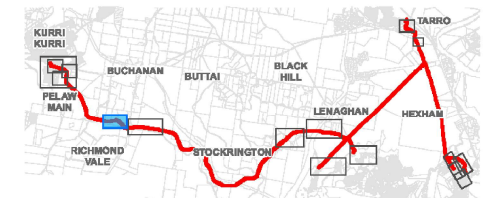


Figure 7 – Zone 2 Landscape character
Source: Bana - GHD 2018



Key Diagram - Zone 2

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 2 - Wallis Creek Visual impact

The key viewpoints for zone 2 are shown on Figures 8 and 9. Table 4 analyses the visual impact on these view points.



Figure 8 – Zone 2 View point Locations
Source: Base - GHD 2016

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 2 - Wallis Creek Visual impact



Trail looking towards the Burk property / approach to Wallis Creek
Source: GHD 2016



Eastern approach of Wallis Creek Bridge
Source: GHD 2016



Wallis Creek Bridge from the western embankment
Source: GHD 2016

Figure 9 – Key viewpoints

Table 4 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View from the trail to the rural dwelling.	Moderate	The proximity of the trail to the properties and dwelling and the possibility of a moderate to intensive use of the trail.	Moderate	Moderate	It is assumed that removal of vegetation along the trail will be minimised and therefore not impact visually on the users or the adjoining land uses. However, the trail is within close proximity to rural land uses and a dwelling and the use of the trail by the public may reduce the visual amenity.
2	View of the trail on the eastern approach to Wallis Creek.	High	The removal of vegetation along Wallis Creek. The removal of the Wallis Creek timber bridge and provision of a new bridge.	High	High	The removal of vegetation along the creek and the replacement of the Wallis Creek bridge with a new bridge will impact on the visual character in this area in the short term. The existing Wallis Creek bridge could be retained to assist in maintaining the visual interest. Whilst it is acknowledged that the timber bridge is unable to be repaired it would create visual interest and forms part of the heritage of the trail. The design of the new bridge should consider the landscape character and be an appropriate structure that will enhance the area and provide visual interest.
3	View of the trail on the embankment of Wallis Creek.	High	The removal of vegetation along Wallis Creek. The removal of the Wallis Creek timber bridge and provision of a new bridge.	High	High	The removal of vegetation along the creek and the replacement of the Wallis Creek bridge with a new bridge will impact on the visual character in this area in the short term. The existing Wallis Creek bridge could be retained to assist in maintaining the visual interest. Whilst it is acknowledged that the timber bridge is unable to be repaired it would create visual interest and forms part of the heritage of the trail. The design of the new bridge should consider the landscape character and be an appropriate structure that will enhance the area and provide visual interest.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 3 - Surveyors Creek Landscape character

The following outlines the key landscape character of zone 3.

Landform	The trail runs parallel to George Booth Drive at Buchanan and crosses over at George Booth Drive near Richmond Vale Road. The trail is elevated from the adjoining land to the west of the proposed carpark. The trail then goes into a cutting to the east of the proposed carpark. The trail is generally enclosed due to the existing vegetation. A carpark is proposed on adjoining land. Access to the carpark is from an existing turn lane from George Booth Drive at entry Gate J4.
Land use/built environment	Land to the immediate south of the trail is zoned National Parks and Nature Reserves and to the north is Rural landscape.
Vegetation	The corridor is densely vegetated. Land to the south is also densely vegetated. Land to the north is a mix of open landscape, dense vegetation and scattered vegetation.
Landscape features	The raised trail surrounded by dense tall trees. The cutting could also be a prominent feature but is overgrown with vegetation.
Infrastructure	There is an existing turn bay off George Booth Drive and road network providing access to the rural land further to the north. There are a number of large overhead easements throughout this area.
Major economic components	Existing road network.
Spatial quality of zone	The trail corridor is generally enclosed by the existing mature vegetation to the west and the cutting to the east. The area does open up where the proposed carpark is to be located due to the easements and existing road network.

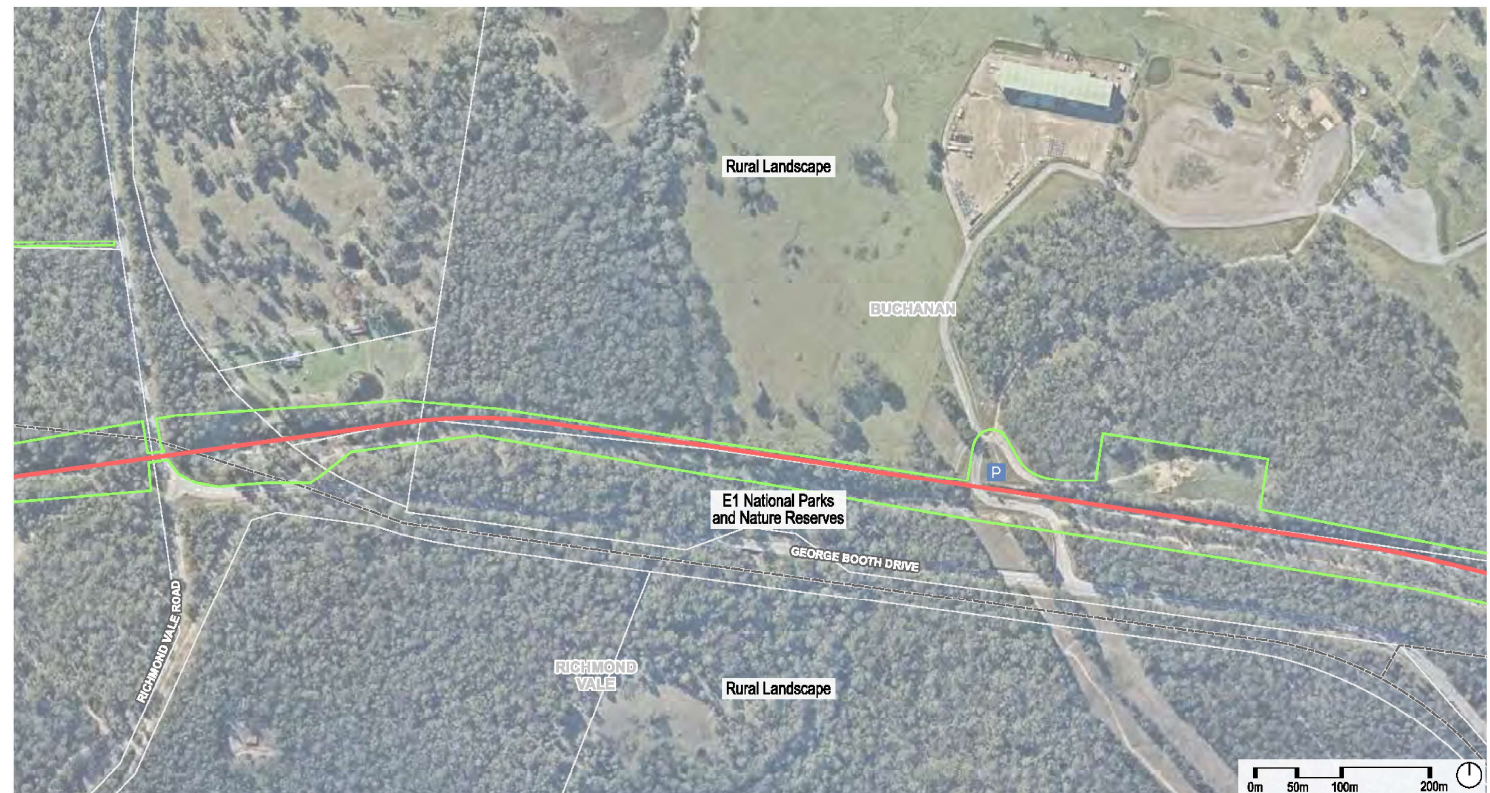


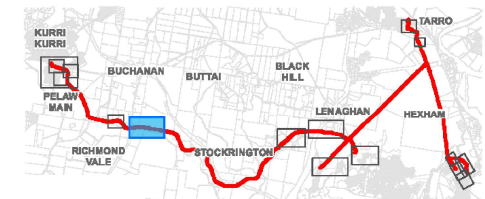
Figure 10 – Zone 3 Landscape character
Source: Bano - GHD 2018



View of trail to the west of the carpark



View of trail to the east of the carpark



Key Diagram - Zone 3

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 3 - Surveyors Creek Visual impact

The key viewpoints for zone 3 are shown on Figures 11 and 12. Table 5 analyses the visual impact on these view points. The red line identifies the location of the trail in the image.



Figure 11 – Zone 3 View point locations

Source: Base - GHD 2018

Table 5 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View from George Booth Drive towards the trail.	Low	The trail will require the removal of some vegetation.	Low	Low	Removal of vegetation will change the vegetated view driving along George Booth Drive at the crossing of the trail. Vegetation removal should be limited to minimise the impact.
2	View of the trail and proposed carpark to the east.	Low	The trail will require the removal of vegetation, however it is mostly weeds. The reinstatement of the trail will enhance this area.	Low	Low	Removal of weeds will improve the area. This area is not visible from George Booth Drive and is only visible to the users and the owner of the adjoining property. The treatment of the carpark area should be of suitable materials and planting to minimise the impact on the surrounding area.
3	View of the trail to the west from the proposed carpark.	Low	The trail will require the removal of some vegetation.	Low	Low	Removal of vegetation will change the vegetated view along the trail. The trail should incorporate the vegetation where possible.



Figure 12 – Key viewpoints

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 4 - Dog Hole Road Landscape character

The following outlines the key landscape character of zone 4.

Landform	The land is generally level to the north and west of the trail. The land slopes up from the trail to Dog Hole Road.
Land use/built environment	The area consists of rural residential land holdings.
Vegetation	Large mature vegetation is located throughout the area along Blue Gum Creek, along the trail and within the rural residential land holdings.
Landscape features	Blue Gum Creek adjoins the trail to the north and to the west of Jacobs Lane.
Infrastructure	Electrical easements, rural fences, sealed roads.
Major economic components	Rural industries.
Spatial quality of zone	The area is generally enclosed by the mature vegetation adjoining property boundaries, the creek line and the trail.

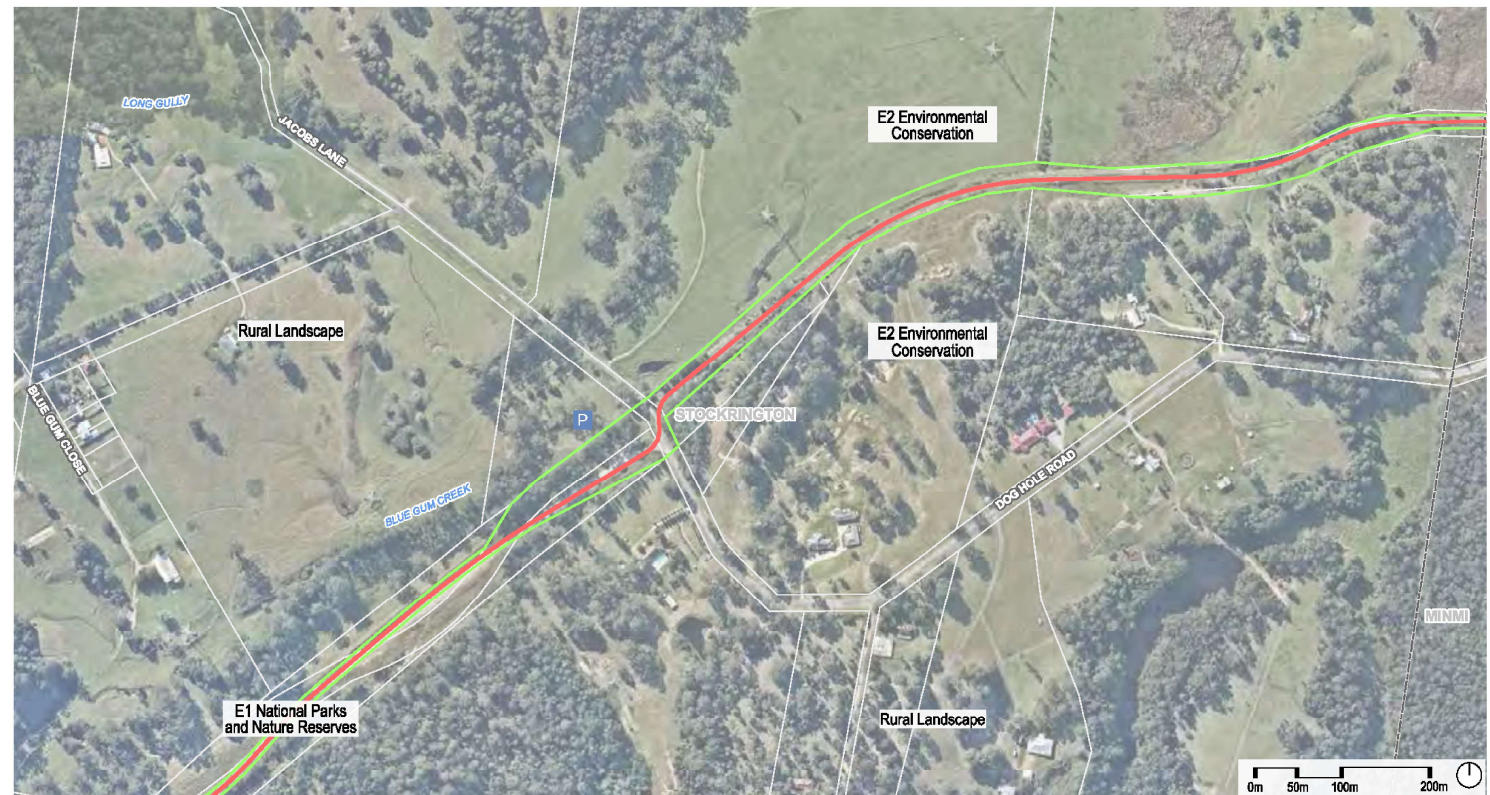
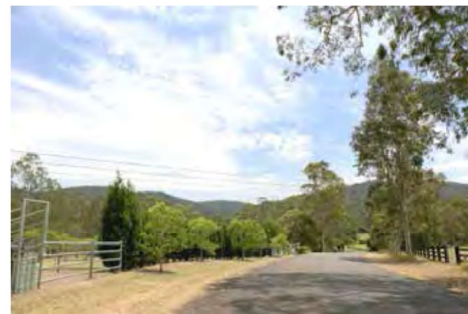


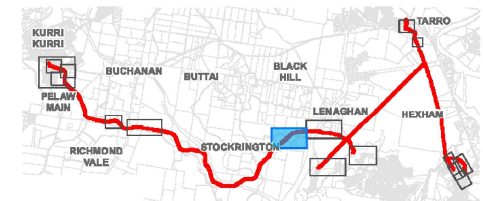
Figure 13 – Zone 4 Landscape character
Source: Bano - GHD 2018



Rural residential land to the south east



Rural residential land to the north west



Key Diagram - Zone 4

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 4 - Dog Hole Road Visual impact

The key viewpoints for zone 4 are shown on Figures 14 and 15. Table 6 analyses the visual impact on these view points.

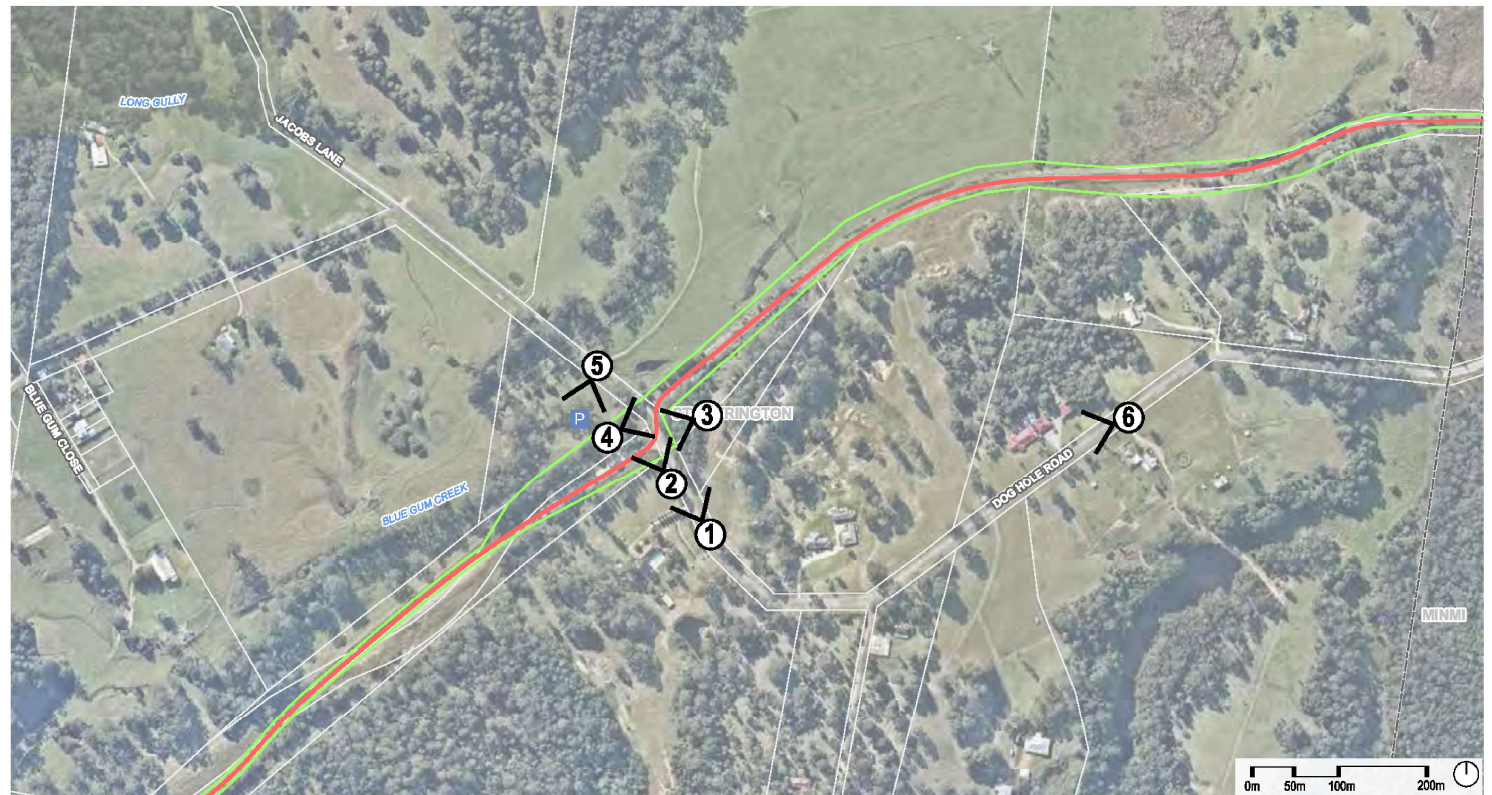


Figure 14 – Zone 4 View point locations
Source: Bana - GHD 2018

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 4 - Dog Hole Road Visual Impact



Figure 15 – Key viewpoints

Table 6 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View from Dog Hole Road towards the trail adjoining rural property.	Negligible	The trail is along an existing path that will not require removal of vegetation.	Negligible	Negligible	The trail that is visible occurs only along the existing formed road and therefore has a negligible impact.
2	View from Dog Hole Road towards the trail.	Negligible	No loss of vegetation and the trail will incorporate removal of weeds.	Negligible	Negligible	Beneficial visual impact by improvements to the trail.
3	View along the trail to the west of Dog Hole Road.	Low	The existing trail is rural in nature with mature vegetation along either side.	Low	Low	The treatment of the trail should consider the rural nature of this area. Further, the mature vegetation either side of the trail visually screens it from the adjoining rural residential land holdings.
4	View along the trail to the east of Jacobs Lane.	Low	The existing trail is rural in nature with mature vegetation along either side.	Low	Low	The treatment of the trail should consider the rural nature of this area. Further, the mature vegetation either side of the trail visually screens it from the adjoining rural residential land holdings.
5	View of the proposed car park north of the trail and south of Blue Gum Creek off Jacobs Lane.	Moderate	Potential loss of vegetation and the formation for a carpark.	Moderate	Moderate	This location is proposed for a carpark. Whilst the vegetation has been modified and there is a cleared area, it is located adjoining Blue Gum Creek. It would be more appropriate to locate the carpark on the southern side of the trail off Dog Hole Road (refer image 2) where the area is more disturbed and does not adjoin the creek. The visual impact of this would be less than the current location. This location could be utilised for other facilities such as a low key picnic area.
6	View from Dog Hole Road to the south west of the trail.	Negligible	Vegetation will not be removed and the trail is not visible from the surrounding properties.	Negligible	Negligible	The mature vegetation either side of the trail and vegetation within properties visually screens the trail from the adjoining rural residential properties.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 5 - Pambalong Nature Reserve Landscape character

The following outlines the key landscape character of zone 5.

Landform	The trail is on fairly level ground as it passes from the east of the Sydney/Newcastle Freeway to the west of the Freeway. It utilises a tunnel under the Freeway. Land to the east of the Freeway and north of the trail is elevated from the trail. The trail to the west of the Freeway passes through the Pambalong Nature Reserve and is slightly elevated within the surrounding wetland.
Land use/built environment	There are several rural properties on land east of the Freeway and north of the trail. The Pambalong Nature Reserve is located to the west of the Freeway.
Vegetation	Vegetation incorporates mature trees on both sides of the Freeway as well as wetlands and associated vegetation.
Landscape features	Pambalong Nature Reserve.
Infrastructure	The Sydney/Newcastle Freeway, Lenagahans Drive, Dog Hole Road and electrical easements. The existing tunnel under the Freeway.
Major economic components	Pambalong Nature Reserve and rural industries.
Spatial quality of zone	The trail along both sides of the Freeway are semi-enclosed as various mature vegetation aligns the trail or is in close proximity.

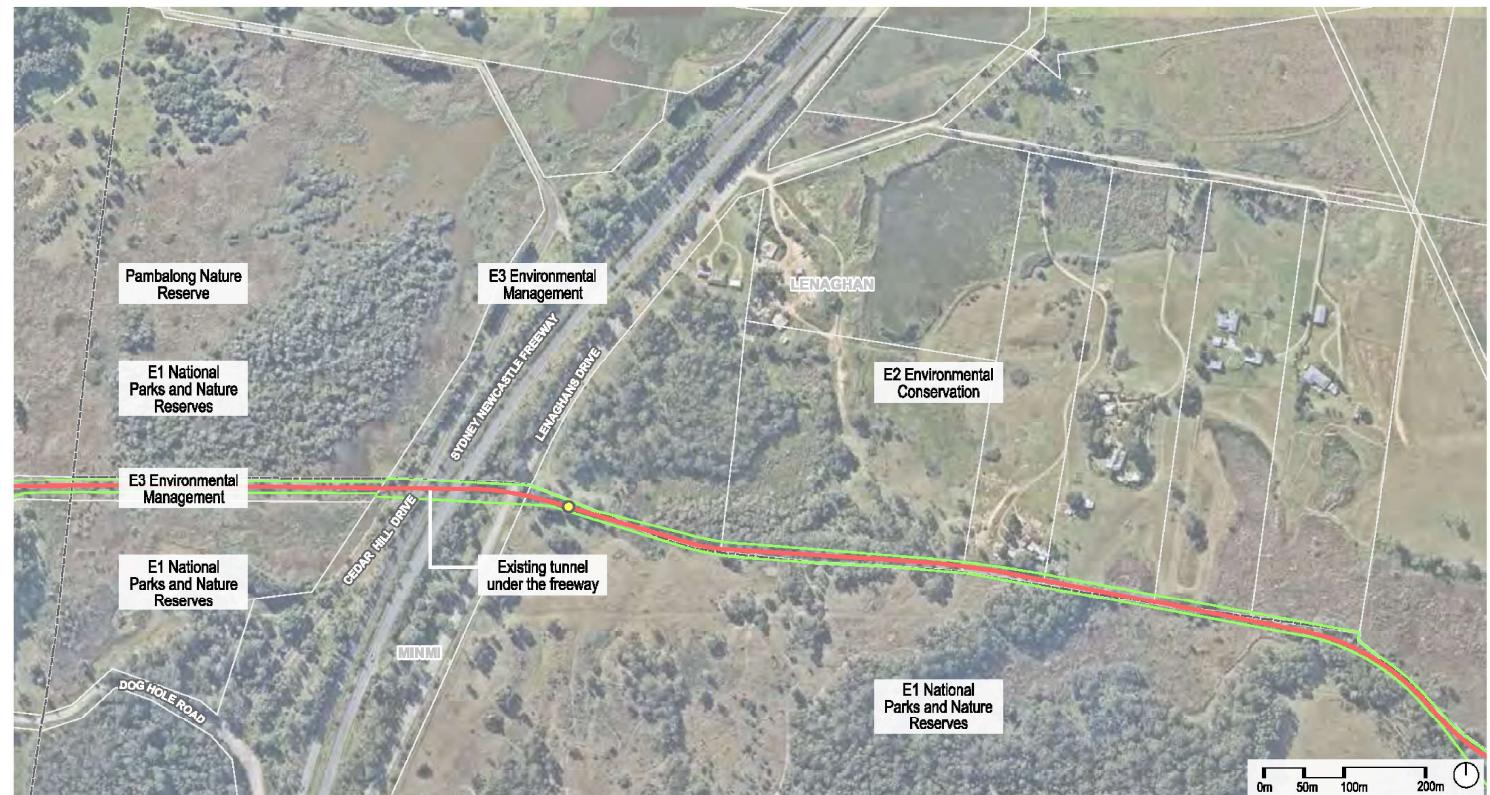


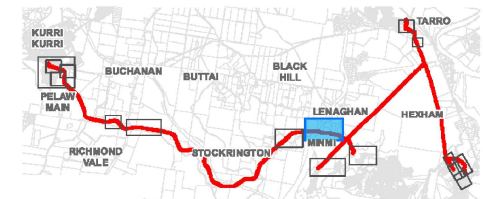
Figure 16 – Zone 5 Landscape character
Source: Base - GHD 2018



Pambalong Nature Reserve



Landscape to the east of the freeway



Key Diagram - Zone 5

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 5 - Pambalong Nature Reserve Visual impact

The key viewpoints for zone 5 are shown on Figures 17 and 18. Table 7 analyses the visual impact on these view points.



Figure 17 – Zone 5 View point locations
Source: Base - GHD 2018

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 5 - Pambalong Nature Reserve Visual impact



Figure 18 – Key viewpoints

Table 7 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View to the east along the trail from Lenaghans Drive.	Low to Moderate	The loss of vegetation and proximity to existing dwellings (located further to the east of Lenaghans Drive and not visible from this image).	Low to Moderate	Low (near Lenaghans Drive) to Moderate (near the existing dwellings).	Vegetation will be required to be removed. However, the landscape is fairly open to the south of the trail and removal of vegetation would have a lower impact at this point. The trail does pass in close proximity to existing dwellings further to the east and the use of the trail by the public may reduce the visual amenity.
2	View to the west along the trail from Lenaghans Drive to the tunnel under the Sydney/Newcastle Freeway.	Negligible	The area has been modified. Reinstatement of the trail will remove weed infested vegetation within this area.	Negligible	Negligible	Whilst there will be negligible impact, there is the opportunity to enhance this area and ensure the path is visible.
3	View of the trail in the Pambalong Nature Reserve from Cedar Hill Drive.	Low to Moderate	The loss of vegetation and the treatment proposed within the Nature Reserve.	Low to Moderate	Low to Moderate	The trail is an existing raised platform within the nature reserve and is visible from part of Cedar Hill Drive. The visual impact will be dependent on the treatment of the trail in the reserve. The treatment should minimise any impact on the reserve.
4	View of the trail in the Pambalong Nature Reserve from Dog Hole Road.	Low	The loss of vegetation and the treatment proposed within the Nature Reserve.	Negligible	Negligible	The trail is an existing raised platform within the nature reserve and is located some distance from Dog Hole Road. The visual impact will be dependent on the treatment of the trail in the reserve, however it is unlikely that the trail will be visible from Dog Hole Road.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 6 - Minmi Connection Landscape character

The following outlines the key landscape character of zone 6.

Landform	The trail is undulating and raised through to Minmi.
Land use/built environment	The surrounding area includes the Hexham Swamp and land identified as nature reserves and environmental conservation. Land to the south of the trail includes the village of Minmi.
Vegetation	Mature vegetation and grasses along the trail.
Landscape features	Wetlands.
Infrastructure	Access from Lenaghans Drive, Minmi Fire Station opposite on Lenaghans Drive.
Major economic components	Local village of Minmi.
Spatial quality of zone	The trail is fairly open with the swamp located to the east of the trail. Land is heavily vegetated to the north and west of the trail.

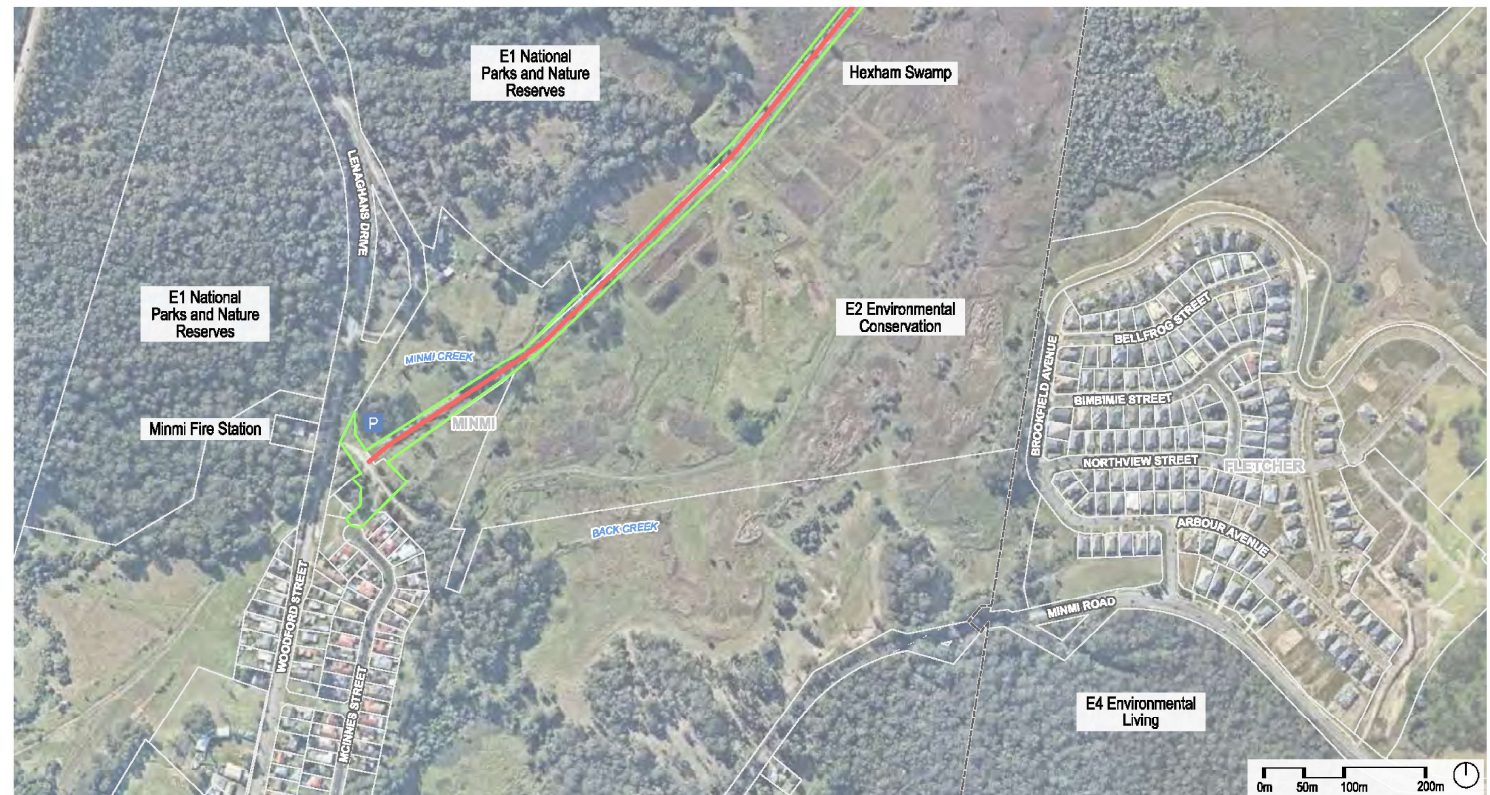
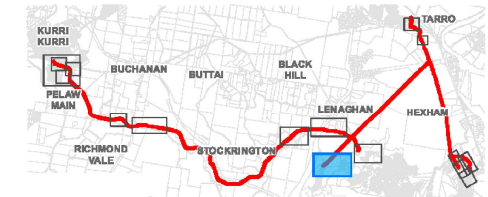


Figure 19 – Zone 6 Landscape character
Source: Base - GHD 2018



View to the north of the trail



Key Diagram - Zone 6

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 6 - Minmi Connection Visual impact

The key viewpoints for zone 6 are shown on Figures 20 and 21. Table 8 analyses the visual impact on these view points.



Figure 21 – Key viewpoints



Figure 20 – Zone 6 View point locations

Source: Base - GHQ 2018

Table 8 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View of trail north of Minmi.	Low	Loss of vegetation.	Low	Low	The visual impact will be dependent on the extent of removal of vegetation. It is assumed very little vegetation would be removed.
2	View of access area south of the trail.	Negligible	The area has already been modified and cleared.	Negligible	Negligible	Whilst the area may be used during construction, this area should also be considered for the carpark area instead of the location proposed as shown on Image 3.
3	View of proposed carpark area west of the trail.	Moderate	The visual impact will be dependent on the extent of removal of vegetation.	Moderate	Moderate	A more suitable location for the carpark would be the south of the trail as it has already been modified and cleared.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 7 - Fletcher Connection Landscape character

The following outlines the key landscape character of zone 7.

Landform	The trail will use the existing Hunter Water Corporation easement that runs through the Hexham Swamp. This land is flat through the Hexham Swamp. Fletcher residential area is elevated above the swamp.
Land use/built environment	Hexham Swamp.
Vegetation	Swamp grasses through the Hexham Swamp. Trees, shrubs and grasses on the periphery of the Fletcher residential area.
Landscape features	Hexham Swamp.
Infrastructure	The road and footpath network in the new residential area of Fletcher. Drainage swales along the road network comprising rocks and grasses.
Major economic components	Fletcher community and sporting facilities.
Spatial quality of zone	The zone is open and visible from the dwellings in Fletcher.



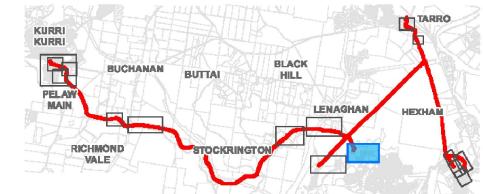
Figure 22 – Zone 7 Landscape character
Source: Base - GHD 2018



Hexham Swamp



Interface of Hexham Swamp and the urban areas



Key Diagram - Zone 7

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 7 - Fletcher Connection Visual impact

The key viewpoints for zone 7 are shown on Figures 23 and 24. Table 9 analyses the visual impact on these view points.



Figure 23 – Zone 7 View point locations
Source: Base - GHD 2018

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 7 - Fletcher Connection Visual impact

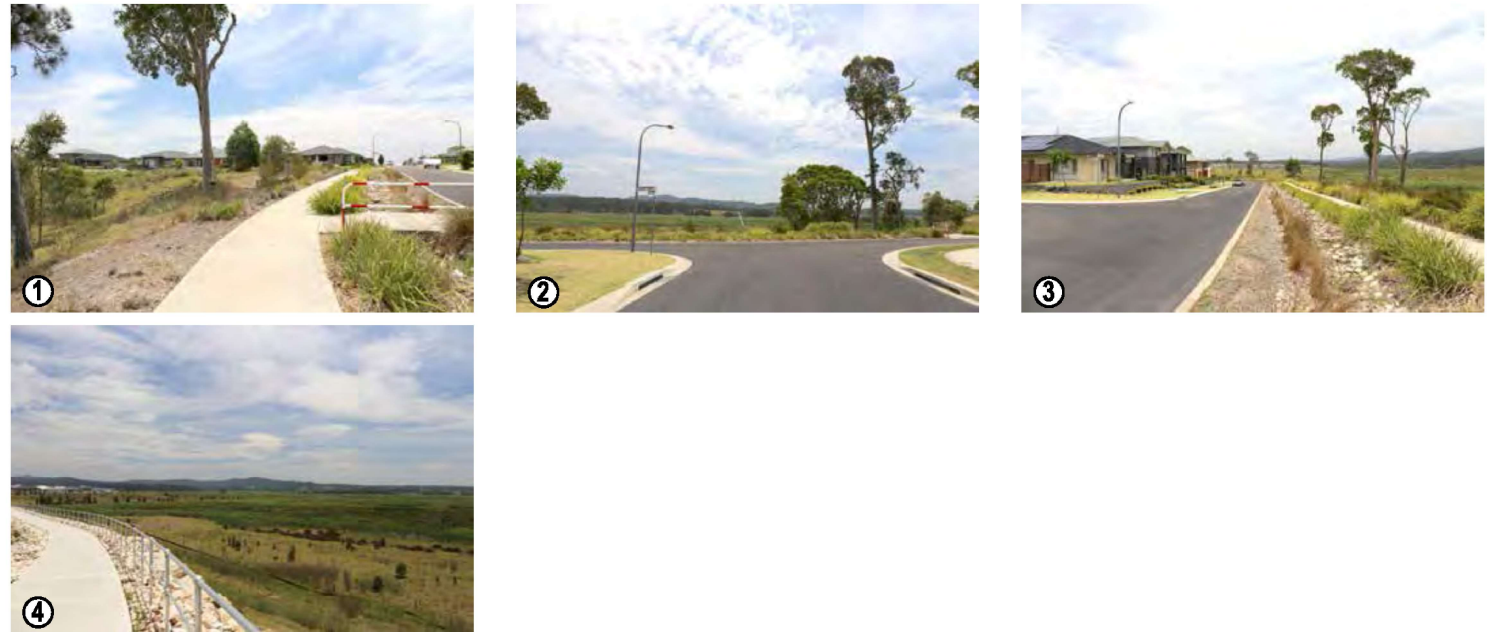


Figure 24 – Key viewpoints

Table 9 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View from the existing footpath on Kural Crescent to the trail.	Low	The land slopes away from the road network with additional fill and retaining works required.	Low	Low	The construction of the trail in this location requires additional fill and retaining wall. However, only the path will be viewed from this location. The trail through the Hexham Swamp will also need to consider appropriate materials and height to ensure the views to the swamp are not impacted.
2	View along Mitti Street looking north west towards the trail.	Negligible	The land slopes away from the road network with additional fill and retaining works required.	Negligible	Negligible	The trail would not be visible at this location due to the slope of the land and existing vegetation.
3	View from Panorama Close to the south and Hexham Swamp.	Moderate	The land slopes away from the road network with additional fill and retaining works required.	Moderate	Moderate	Whilst the land slopes away from the road network, views are available of the Hexham Swamp from the dwellings. The visual impact will be dependent upon the treatment for the proposed trail through the swamp.
4	View from Panorama Close looking west to Hexham Swamp.	Moderate	Whilst the land slopes away from the road network, views are available of the Hexham Swamp from the dwellings. The visual impact will be dependent upon the treatment for the proposed trail through the swamp.	Moderate	Moderate	Whilst the land slopes away from the road network, views are available of the Hexham Swamp from the dwellings. The visual impact will be dependent upon the treatment for the proposed trail through the swamp.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 8 - Hexham to Hunter Wetlands Centre Landscape character



Figure 25 – Zone 8 Landscape character
Source: Base - GHID 2016

Key Diagram - Zone 8

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 8 - Hexham to Hunter Wetlands Centre Landscape character and Visual impact

The following outlines the key landscape character of zone 8.

Landform	The trail corridor is raised above King Street and generally level with the adjoining dwellings. The trail corridor is then lower within the Hexham Swamp. The proposed area for the carpark on Blanch Street slopes away from the road network.
Land use/built environment	Residential dwellings adjoin the trail and the proposed carpark. In most cases, the dwellings do not face onto the corridor. Instead the rear yards adjoin the corridor and rear fences have been erected. Land to the north west includes the Hunter Wetlands National Park and environmental conservation lands. The trail ends at the Hunter Wetlands Centre.
Vegetation	The trail corridor within the urban context consists of a turfed corridor with planted mature trees. The carpark area is heavily vegetated with mature vegetation. The trail through Hexham is an existing path and consists of wetland vegetation.
Landscape features	The Hunter Wetlands National Park, Fishery Creek and Ironbark Creek.
Infrastructure	Urban street network with and without kerb and guttering and overhead power lines.
Major economic components	The suburb of Shortland. Hunter Wetlands Centre.
Spatial quality of zone	The corridor is partly enclosed within the area with rear fences on both sides on the approach to King Street. The trail corridor is generally open with minimal mature vegetation along King Street. The corridor is enclosed by vegetation and rear fences as it makes its way to the Hunter Wetlands Centre.

The key viewpoints for zone 8 are shown on Figures 26 and 27. Table 10 analyses the visual impact on these view points.



Figure 26 – Zone 8 View point locations
Source: Base - GHD 2016

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 8 - Hexham to Hunter Wetlands Centre Visual impact

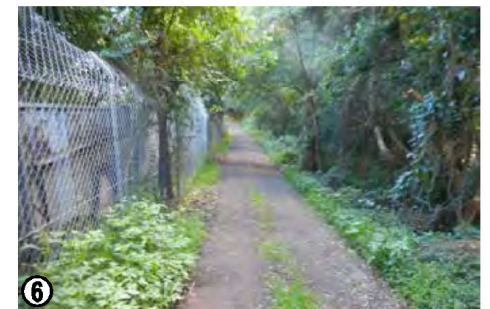


Figure 27 – Key viewpoints

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 8 - Hexham to Hunter Wetlands Centre Visual impact

Table 10 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View of the trail to the north west from King Street.	Negligible	No removal of vegetation. Existing open space area.	Negligible	Negligible	Many dwellings back onto the trail. Dwellings across King Street face onto the street and the trail. The trail is existing.
2	View of the trail further to the north west from King Street.	Low	The area slopes towards the Street. Regrading or filling would be required for the construction of a pathway. There would be a minor visual impact. However, there would be no removal of vegetation and it is an existing open space area.	Low	Low	Dwellings back onto the trail. Dwellings across King Street front onto the street. Reshaping of the land would be required and may change the vista.
3	A view of the trail further to the north west between the dwellings.	Negligible	Due to the location of the dwellings.	Negligible	Negligible	The visual impact will be dependent on the treatment of the trail through this area (between the dwellings). However, the dwellings do not face onto the trail and have erected rear fences along this part of the trail.
4	View from dwelling on Blanch Street.	High	Loss of vegetation, proximity to new carpark, pathway and retaining wall.	High	High	This area is heavily vegetated and the loss of vegetation and proximity of the path and carpark to the adjoining dwelling would have a high visual impact. There is an existing tall wire and barbed wire fence along the Hunter Wetlands boundary, which is not visually pleasing. The Proposal could improve the visual impact from this dwelling and surrounding area with the design of the proposed adjoining retaining wall and fence. A large area of vegetation would be retained.
5	View from Blanch Street and dwellings opposite to the proposed carpark.	Moderate	Loss of vegetation and proximity to carpark.	Moderate	Moderate	This area is heavily vegetated and the loss of vegetation would have a moderate impact. The carpark should be located to minimise vegetation removal. It is noted that a large amount of vegetation will be retained and therefore the impact would be moderate. An opportunity exists in the design of the carpark and to provide fences that are more attractive.
6	View from the existing pathway in the wetlands.	Low	Loss of vegetation.	Low	Low	The proposal will regrade the existing pathway with the possibility of some vegetation removal. The pathway is generally separated from the dwellings by vegetation. In some instances the pathway runs along the rear of the dwellings. However, the dwellings do not face onto the path and has its rear fence adjoining the path. Vegetation removal could be selective to reduce the visual impact.

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 9 - Shortland Landscape character

The following outlines the key landscape character of zone 9.

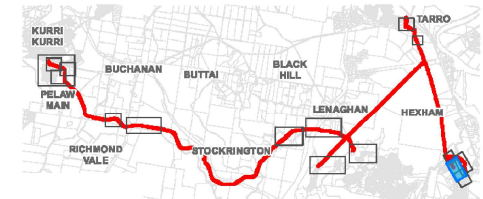
Landform	The trail is generally flat with a slight slope down to the road network.
Land use/built environment	Residential dwellings adjoining the trail.
Vegetation	The trail corridor consists of a turf and planted mature trees.
Landscape features	A wide open space area.
Infrastructure	Urban street network with and without kerb and guttering and overhead power lines.
Major economic components	The suburb of Shortland.
Spatial quality of zone	The trail corridor is generally open with minimal mature vegetation.



Figure 28 – Zone 9 Landscape character
Source: Base - GHD 2018



View of the trail from Mort Lane



Key Diagram - Zone 9

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 9 - Shortland Visual impact

The key viewpoints for zone 9 are shown on Figures 29 and 30. Table 11 analyses the visual impact on these view points.



Figure 29 – Zone 9 View point locations
Source: Base - GHD 2018

Table 11 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View from King Street to the proposed carpark location.	Low	Treatment of the carpark and proximity to the adjoining dwellings.	Low	Low	The carpark should be located away from the existing dwellings and incorporation of an appropriate treatment to screen the carpark.
2	View of the trail from King Street.	Low	Treatment of the trail.	Low	Low	It has been assumed that the trail would not remove or impact the mature vegetation. The removal or impacting of the vegetation would have a higher visual impact.



Figure 30 – Key viewpoints

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 10 - Tarro Extension Landscape character

The following outlines the key landscape character of zone 10.

Landform	The Shortland to Tarro extension will utilise the existing Hunter Water Corporation easement, which crosses the wetlands and then will use the existing road network including the on and off ramp from the New England Highway into the village of Tarro.
Land use/built environment	Land to the south of the Highway is Environmental Conservation lands and land to the north is generally residential land with some Environmental Management and Environmental Living lands.
Vegetation	There are stands of vegetation along the on and off ramps and Anderson Drive entering into Tarro. The environmental lands have scattered vegetation.
Landscape features	The wetlands to the south.
Infrastructure	On and off ramps from the New England Highway and the local street network.
Major economic components	Village of Tarro.
Spatial quality of zone	Generally open within the Village. The on and off ramps and entry road into Tarro are semi enclosed due to the vegetation.

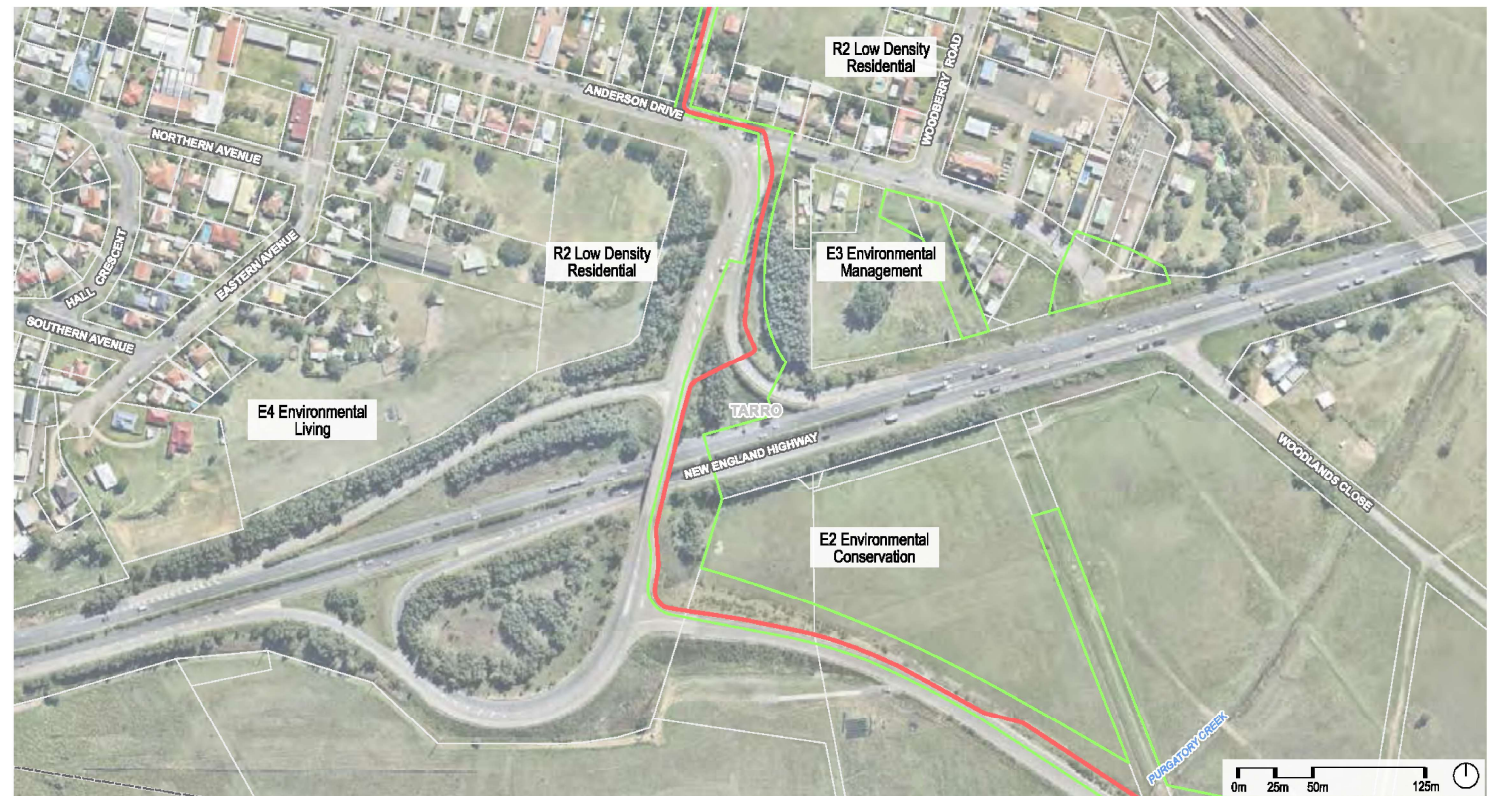


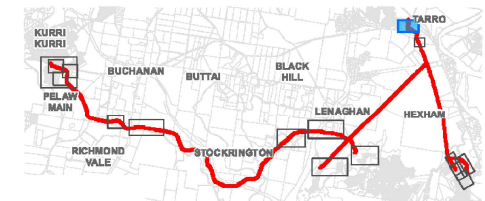
Figure 31 – Zone 10 Landscape character
Source: Banao - GHD 2018



View of Anderson Drive vegetation



View from the New England Highway to the south



Key Diagram - Zone 10

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 10 - Tarro Extension Visual impact

The key viewpoints for zone 10 are shown on Figures 32 and 33. Table 12 analyses the visual impact on these view points.

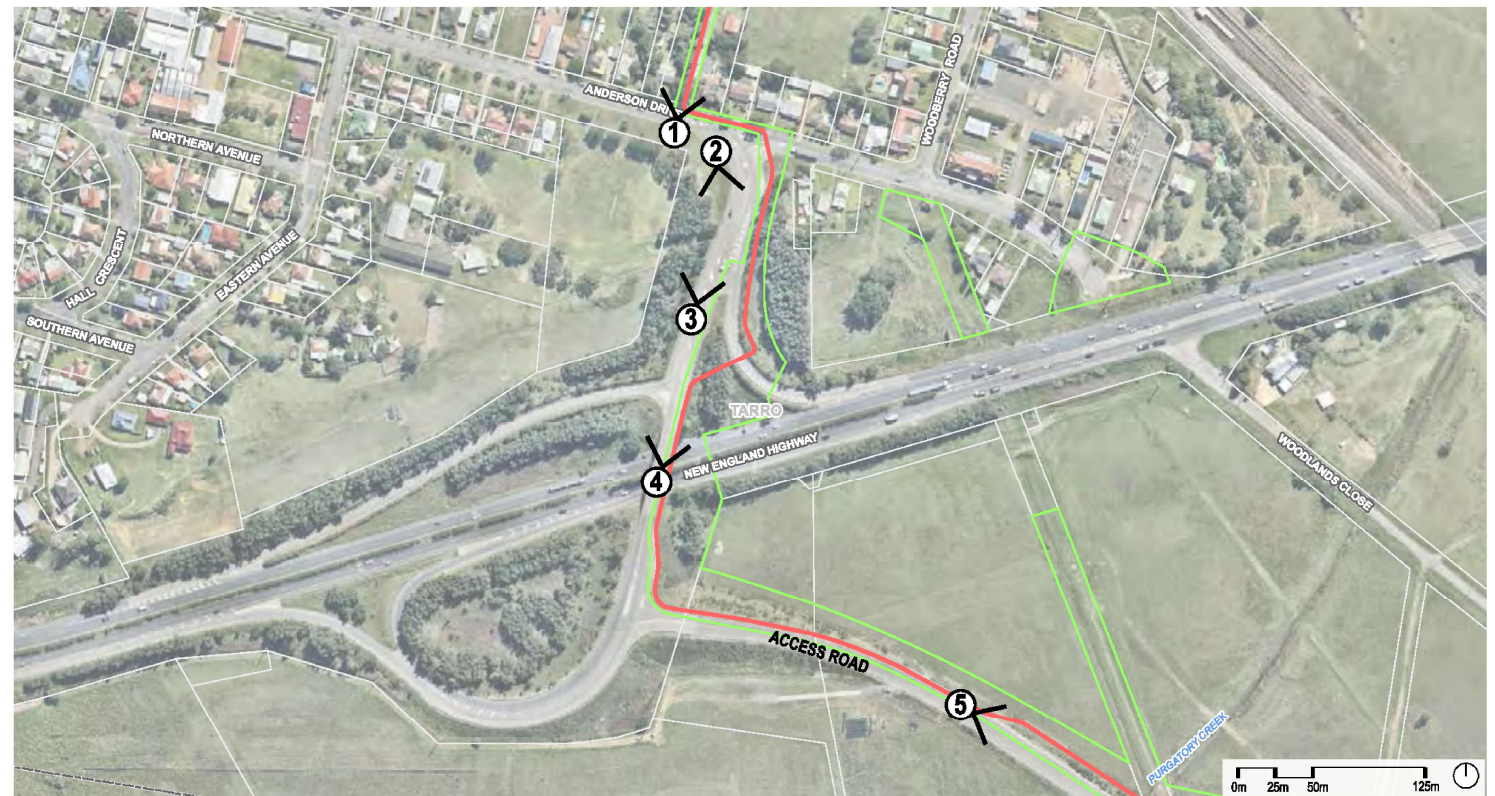


Figure 32 – Zone 10 View point locations
Source: Base - GHQ 2018

VISUAL IMPACT CONT.

Visual impact assessment continued.

Zone 10 - Tarro Extension Visual impact



Figure 33 – Key viewpoints

Table 12 – Viewpoint description and visual impact

View	Description of setting	Visual sensitivity	Sensitivity due to:	Magnitude of visual effect	Visual Impact	Comments
1	View down the lane way from Anderson Drive.	Low	Proximity to dwellings. It is assumed that no vegetation will be removed.	Negligible	Negligible	There is an existing pavement and there should not be any change in the visual amenity.
2	View to the south from the right hand bend on Anderson Drive.	Moderate	Loss of vegetation.	Low	Moderate to Low	Whilst there will be some loss of vegetation, the majority of vegetation will be retained and the view would still be an enclosed view.
3	View to the north from Anderson Drive.	Moderate	Loss of vegetation.	Low	Moderate to Low	Whilst there will be some loss of vegetation, the majority of vegetation will be retained and the view would still be an enclosed view.
4	View to the north from the off ramp from the New England Highway.	Low	Loss of vegetation.	Low	Low	The extent of vegetation removal that would be visible from this location is low.
5	View to the east from the access road .	Negligible	Use of existing easement and no loss of vegetation.	Negligible	Negligible	The treatment of the trail needs to consider the broad open space and lower lands.

VISUAL IMPACT CONT.

2.3. Summary

Table 13 outlines the overall visual impact for each zone on the surrounding area and its users from the proposal. Assumptions have been made within the various zones that vegetation will be retained in some cases. This has been outlined for each of the zones. If vegetation is proposed to be removed then the visual impact may be higher than what has been identified.

The following also provides a summary of the key issues for all of the zones.

Table 13 – Impact Assessment

Zone	View	Visual impact
Zone 1 - Kurri Kurri / Pelaw Main	1	Moderate
	2	Negligible
	3	Negligible
	4	Negligible
	5	Low
	6	Negligible
Zone 2 - Wallis Creek	1	Moderate
	2	High
	3	High
Zone 3 - Surveyors Creek	1	Low
	2	Low
	3	Low
Zone 4 - Dog Hole Road	1	Negligible
	2	Negligible
	3	Low
	4	Low
	5	Moderate
	6	Negligible
Zone 5 - Pambalong Nature Reserve	1	Low to Moderate
	2	Negligible
	3	Low to Moderate
	4	Negligible
Zone 6 - Minmi Connection	1	Low
	2	Negligible
	3	Moderate
Zone 7 - Fletcher Connection	1	Low
	2	Negligible
	3	Moderate
	4	Moderate
Zone 8 - Hexham to Hunter Wetlands	1	Negligible
	2	Low
	3	Negligible
	4	High
	5	Moderate
	6	Low
Zone 9 - Shortland	1	Low
	2	Low
Zone 10 - Tarro Extension	1	Negligible
	2	Moderate to Low
	3	Moderate to Low
	4	Low
	5	Negligible

Zone 1 - Kurri Kurri / Pelaw Main

- Minimal visual impact through the villages as there is an existing trail.
- Dwellings do not generally face onto the trail.
- Improvements to the Log of Knowledge Park will be beneficial.
- Location of the carpark to be further considered as part of the proposal.
- Use of the existing carpark would be beneficial.
- Removal of vegetation should be minimised where possible where the trail extends through the bushland and conservation area.

Zones 2, 3, 4, + 5 - Wallis Creek to Pambalong Reserve

- The trail through these areas is generally not visible from the surrounding road network. As it passes through rural lands, the number of dwellings is also less.
- There are a number of creek crossings with existing timber bridges. The removal of the timber bridges is proposed due to safety and maintenance costs. The retention of the existing timber bridges would be beneficial to the trail providing visual interest along the corridor even if the bridges were not used to cross the creeks.
- The new bridges should be sympathetic with a modern design to reflect the character of the area and limit the removal of vegetation.
- The trail does pass in close proximity to a couple of rural dwellings. The design of the trail should ensure privacy to the dwellings by clearly identifying public versus private space and provide appropriate screening of the trail in consultation with the owners.
- Vegetation removal should be limited in the reinstatement of the trail. The landscape treatment of the trail should consider the spatial quality and landscape character of the zones.

Zones 6 + 7 - Minmi / Fletcher Extensions

- The pipeline is not largely visual.
- The wetland provides visual amenity for the dwellings in Fletcher.
- Fletcher - the dwellings generally face towards the wetlands.
- Minmi - the dwellings do not face onto the wetlands.
- The trail through the wetlands will have a visual impact. The treatment of the trail through the wetlands will need to consider materials and finishes to minimise the visual impact and be appropriate to a wetland setting.
- The location and treatment of the carpark should be further considered as part of the proposal to minimise the visual impact.

Zones 8 + 9 - Hexham to Shortland

- Generally the dwellings face away from the trail with rear boundaries along the corridor.
- There is a large amount of vegetation between the dwellings and the wetlands.
- The wetlands are broad open space areas, however minimal access to the wetlands and generally not visible from many areas. Long distance views are available from various areas.
- The trail through the wetlands will have a visual impact generally for the user. The treatment of the trail through the wetlands will need to consider materials and finishes to minimise the visual impact.
- The removal of vegetation and higher visual impacts will mainly occur due to the location of the carparks. The location and design of the carparks should be further considered as part of the proposal to minimise the visual impact.

Zone 10 - Tarro extension

- The pipeline is not largely visual and blends with the open landscape. The treatment of the trail will need to consider the materials and finishes to ensure it is appropriate to its setting.
- There will be some vegetation removal on the entry road to Tarro. The detailed design will need to consider the minimisation of removal of vegetation to retain the enclosed spatial quality of this location.
- Generally part of the existing pathway in other areas of Tarro and therefore minimal visual impact.

3.0 MITIGATION MEASURES

The detailed urban and landscape design for the proposal should consider the following to minimise the visual impact:

- Location and siting of car parks
- Minimise vegetation removal
- Natural drainage management
- Coordination with other disciplines (vehicular access, service/emergency access, lighting etc.)
- Natural or structural shade to the rest areas
- Location, siting and treatment of amenities
- Theme for signage and furniture throughout the trail
- Seating (benches, seats, informal sitting/leaning elements)
- Robust surface materials
- Planting to complement the natural habitat
- Bridge design using sympathetic materials.

CONSTRUCTION

The following mitigation measures would assist in minimising the visual impact during the construction phase.

- Construction / stockpile sites should be located in cleared areas.
- All parking and site equipment associated with construction should be located in cleared areas and appropriately screened if required.
- All construction sites are to be maintained and removed after completion of the works.
- Rehabilitation of the construction sites should be undertaken upon completion of the works.

DETAILED DESIGN

The following mitigation measures would assist in minimising the visual impact. As stated above the following should be considered as part of the detailed design for the proposal.

Existing Structures / Landforms

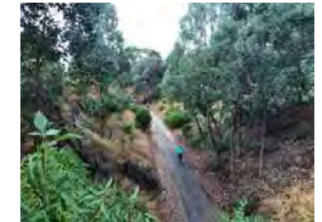
- Existing structures, such as the timber bridges, culverts, etc should be retained wherever possible as these will provide additional visual interest to the users of the trail. Whilst it is acknowledged that some of the structures would not be able to be upgraded and used, they should be retained. The bridges could be fenced with viewing platforms along the trail.
- The existing raised land form of the trail should be maintained where possible.

Spatial Quality

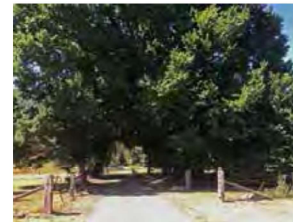
- Vegetation removal should be limited.
- Where vegetation removal is required, additional vegetation should be planted to improve the area.
- The landscape treatments should consider the spatial quality of the existing landscape character and its setting. Retain the openness or enclosed spaces where relevant.

Material and Finishes

- Appropriate materials and finishes for the trail needs to consider the environment that it is passing through, e.g. the wetlands, urban and rural areas and the number of users.
- The trail should continue along the existing raised trail as this ensures that users will keep to the trail.
- The trail should be easily defined for the user so that the user keeps to the trail reducing impacts on adjoining vegetation.



Retain structures and landform to provide visual interest - examples from Victoria



Consider the existing spatial quality of the landscape character, e.g. enclosed, partially enclosed, open landscape characters



Consider the existing urban and landscape character when selecting materials for the rail trail.

MITIGATION MEASURES CONT.

Signage

- Appropriate signage is to be located to assist in way finding and to ensure public and private areas are recognisable for the users.
- Signage should incorporate a theme for the trail, which would also assist in way finding and keeping users on the trail.
- Signage should be developed around the heritage and the locality to inform and educate the users.

Bridges and Structures

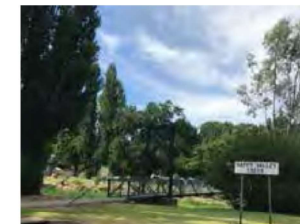
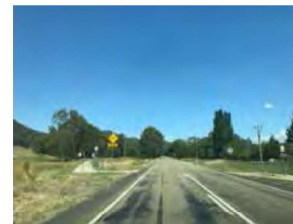
- The new bridges should not replicate the existing bridges but should be sympathetic and a simple design.
- Materials such as steel and timber should be used in preference to monolithic concrete construction.
- Road crossings should be low key within the rural areas but will need to consider road safety.
- Make use of any existing structures / points of interest along the trail.

Car parks

- Treatment should be low key and appropriate to the area, i.e. gravel base in the rural areas and concrete in the urban areas if appropriate.
- If facilities, e.g. amenities are to be incorporated along the trail, these should be incorporated into the carpark areas.
- Facilities should also be low key and the use of suitable materials that are appropriate to the area.
- Review location of carparks to minimise the loss of vegetation and conflicts of interest.
- Existing carparks should be utilised where possible.
- Carparks should be appropriately located to minimise conflicts with dwellings and other land uses.



Signage to be themed and assist in wayfinding and should be educational for users - examples from Victoria



Road crossing and bridges should be simple and elegant treatments - examples from Victoria