

Appendix K

Landscape character and visual impact assessment



Proposed Olympic Highway Intersection Upgrades,
Wagga Wagga

Landscape Character and Visual Impact Assessment

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Landscape Character and Visual Impact Assessment

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1.1 Purpose of this report

Envisage Consulting was commissioned by Umwelt (Australia) Pty Ltd on behalf of Transport for New South Wales (TfNSW) to assess the landscape character and visual impacts of two proposed Olympic Highway intersection upgrades at Wagga Wagga (the Proposal).

This specialist assessment has been prepared to inform the Review of Environmental Factors (REF) for the Proposal which responds to the considerations for determination under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.2 Proposal overview

TfNSW is proposing to upgrade two intersections along the Olympic Highway in Wagga Wagga:

- The Old Narrandera Road/Olympic Highway intersection, and
- The Travers Street/Olympic Highway intersection.

A project description and plans of the Proposal footprint are provided in SECTION 4. A detailed project description of activities, and a full set of Plans of the Proposal, are provided in the Proposal REF.

1.3 Report format

The report is set out in the following format:

SECTION 2 - Defines the methodology for the assessment

SECTION 3 - Describes the Site location

SECTION 4 - Describes the Proposal and its main visual changes

SECTION 5 - Assesses the impact to Old Narrandera Road intersection

SECTION 6 - Assesses the impact to Travers Street intersection

SECTION 7 - Assesses construction impacts of ancillary sites

SECTION 8 - Describes relevant mitigation measures

SECTION 9 - Presents a summary of key findings.



Figure 1-1: Location of Proposal

This section outlines the applied assessment methodology which is based on TfNSW’s *Guideline for Landscape Character and Visual Impact Assessment, Environmental Impact Assessment Practice Note EIA-NO4, 2020* (referred to hereafter as the ‘Guideline’).

2.1 Assessments

Two types of assessments are required by the Guideline to assess impacts and improve design outcomes:

- Landscape character assessment - the assessment of impact on the aggregate of an area’s built, natural and cultural character or sense of place – which helps determine the overall impact of a project on an area’s character and sense of place.
- Visual impact assessment - the assessment of impact on views - which helps define the visual effects of a project on people’s views.

The applied method measures impact through the combination of sensitivity to change (of the existing area or view), and magnitude of the Proposal (on that area or view). Those two terms are defined in the Guideline as:

- Sensitivity: refers to the qualities of an area, the number and type of receivers and how sensitive the existing character of the setting, or view, is to the proposed nature of change.
- Magnitude: refers to the physical scale of a project, how distant it is and the contrast it presents to the existing condition.

By combining sensitivity and magnitude, a rating is derived of the likely impact of a project on landscape character, or the visual impact to individual viewpoints (refer TABLE 2-1).

Table 2-1: Impact levels (based on relationship between ‘sensitivity’ and ‘magnitude’)

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High	Moderate-high	Moderate	Negligible
	Moderate	Moderate-high	Moderate	Moderate - Low	Negligible
	Low	Moderate	Moderate - Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Landscape character assessment

The Guideline sets-out the tasks for landscape character impact assessment as:

1. Analyse existing landscape character and its sensitivity
2. Identify landscape character zones (if required because of the size or complexity of the project)
3. Determine the magnitude of change
4. Assess landscape character impact (based on both the sensitivity of the character zone and magnitude of the Proposal in that zone).

Visual impact assessment

The Guideline sets-out the tasks for visual impact assessment as:

1. Identify the extent of visibility of the Proposal
2. Identify existing viewpoints and their sensitivity to change
3. Determine the magnitude of change from each viewpoint
4. Assess visual impact (based on a composite of the sensitivity of the view and magnitude of the Proposal in that view).

2.2 Field survey

The site was inspected on 28 January 2021. The inspection included a walk-over of the intersections and some parts of the surrounding area. The weather was dry and sunny. An approximate area of visibility or 'viewshed' was determined while on site and potentially sensitive viewpoints were identified. Private property was not accessed. Viewpoints were assessed from the nearest publicly accessible location.

2.3 Photography

Photographs included in this report have been taken with a full frame sensor camera and 50mm focal length lens using Global Positioning System (GPS) location data. The 50mm focal length is generally accepted as closest to the view perceived by a human eye. Unless otherwise noted, all photographs within this report were taken by Envisage Consulting on 28 January 2021.

3

Site description

3.1 Location context

Old Narrandera Road intersection and Travers Street intersection are located north of Wagga Wagga within the Murrumbidgee River catchment.

Old Narrandera Road intersection is situated north of the Murrumbidgee River on the northern fringe of Wagga Wagga, in a vicinity undergoing transition from rural land use to urban. New residential areas are located just to the north-west of the intersection, with additional residential areas planned to the south of Old Narrandera Road. There are rural properties and semi-rural uses near the intersection on the eastern side of the highway.

The location context of this intersection is shown in Figure 3-1.

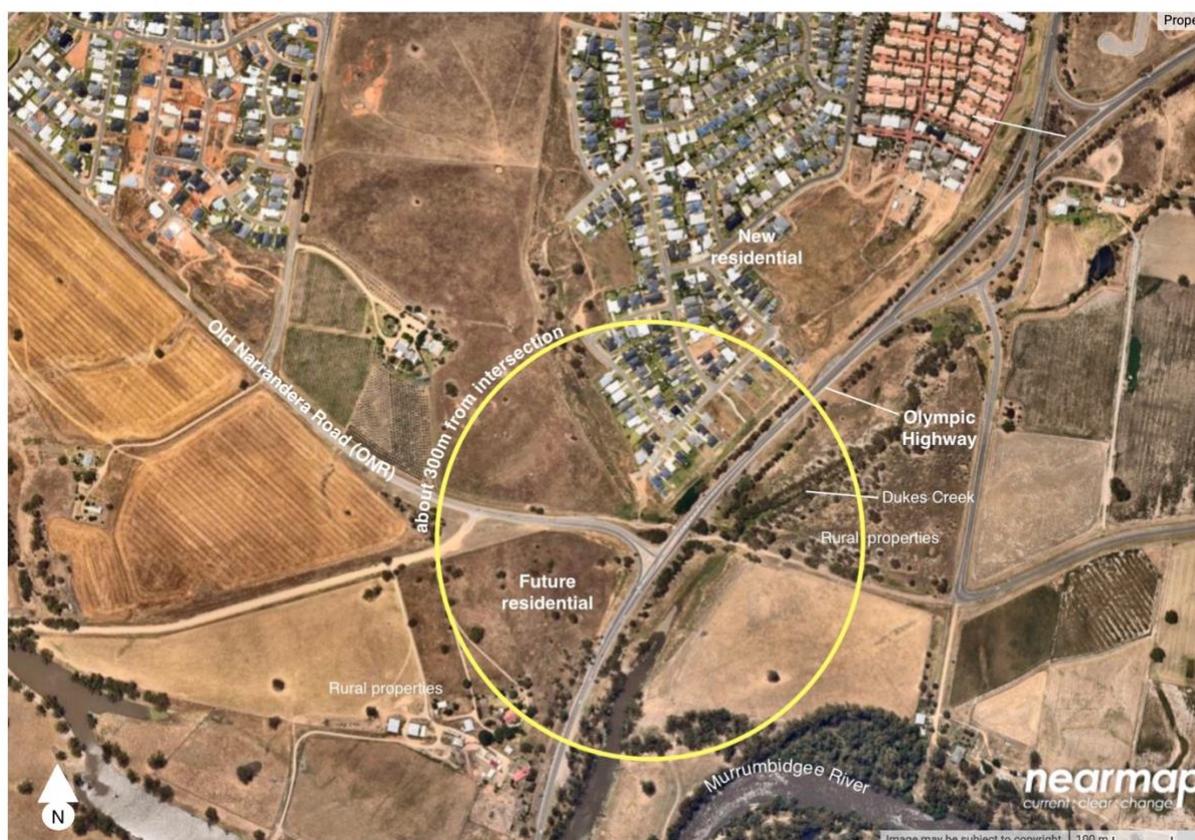


Figure 3-1: Old Narrandera Road intersection - Location context

Travers Street intersection is situated closer to Wagga Wagga city centre, south of the Murrumbidgee River and the Gobbagombalin Bridge (which crosses the Murrumbidgee River and its floodplain). Near the intersection is the Murrumbidgee Turf Club (MTC). There are commercial businesses along the western side of the Highway and on Travers Street north of the MTC. North of the intersection, closer to the Murrumbidgee River, is open space which supports some recreational uses, such as equestrian and walking/cyclist trails which form part of the Wiradjuri Walking Track (described further below).

The location context of this intersection is shown in Figure 3-2.



Figure 3-2: Travers Street intersection - Location context

3.2 Wiradjuri Walking Track

The Wiradjuri Walking Track is a 42-kilometre loop around Wagga Wagga connecting many significant Aboriginal places and encompasses parts of the Murrumbidgee River, recreation reserves (including Silvalite Reserve and Pomingalarna Reserve) and surrounding hilltops¹. The trail is well used by recreational users, and therefore, the Travers Street intersection is seen by people using the trail on a frequent basis.



Figure 3-3: Section of Wiradjuri Walking Track north of Travers Street intersection

¹ Visit Wagga Wagga website, accessed 25 February 2021 (<https://visitwagga.com/seendo/trails/wiradjuri-walking-track>)

A section of the Wiradjuri Walking Track trail extends along the western side of Moorong Street (Olympic Highway) and crosses under the Gobbagombalin Bridge north of the Travers Street intersection, before travelling north to the Murrumbidgee River (refer Figure 3-4).

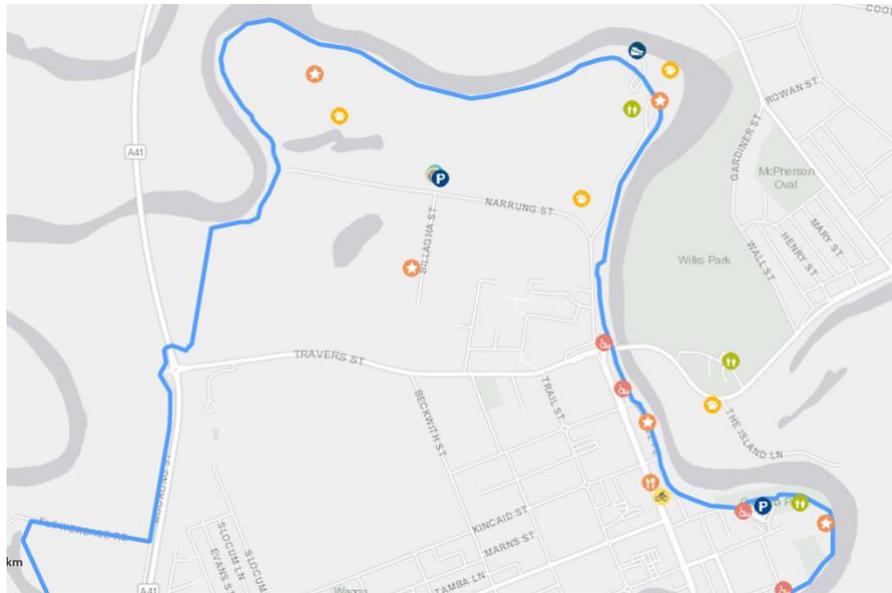


Figure 3-4: Wiradjuri Walking Track in the vicinity of Travers Street intersection²

3.3 Vegetation

A separate Biodiversity Report has been prepared (Umwelt, 2021) and should be referred to for a detailed assessment of biodiversity resources and potential impacts.

Field surveys identified the following communities Plant Community Types (PCTs) within the Proposal Area:

- PCT 5: River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplain in the lower slopes subregion of the NSW South Western Slopes Bioregion and the eastern riverina bioregion
- PCT 346: White box - Blakely's Red Gum - White Cypress Pine shrubby woodland on metamorphic hills in the Wagga Wagga – Cootamundra region of the NSW South Western Slopes
- PCT 277: Blakely's Red Gum - Yellow Box Grassy tall woodland of the NSW South Western Slopes Bioregion
- Exotic pasture
- Native planted trees with mixed native and exotic understorey.

The assessment sections in this report describe the potential impact on vegetation and any associated landscape character and visual impacts.

² Visit Wagga Wagga website, accessed 25 February 2021 (<https://visitwagga.com/seendo/trails/wiradjuri-walking-track>), excerpt of map

This section describes the components of the Proposal relevant to landscape character and visual impacts. A full description of the Proposal, and plans, are provided in the Proposal REF.

This section does not provide details on design criteria, engineering constraints, earthworks, source and quantity of materials, traffic management and access, public utility adjustments and property acquisition.

4.1 Key Proposal features relevant to this assessment

The Old Narrandera Road intersection

Figure 4-1 illustrates the proposed operational and construction footprint at Old Narrandera Road intersection, and an artist's impression is shown in Figure 4-2.

Key visible Proposal features are:

- building a second right turn lane for traffic exiting Old Narrandera Road onto the Olympic Highway
- extending the current Boorooma Street ramp to form a second southbound through lane on the Olympic Highway, merging south of the intersection
- retention of the existing right turn lane from the Olympic Highway into Old Narrandera Road
- retaining the current right-turn lane from the Olympic Highway into Old Narrandera Road
- retaining the current left-turn slip lane from the Olympic Highway into Old Narrandera Road
- installation of traffic lights at the intersection of Old Narrandera Road and the Olympic Highway, and associated utility connections
- potential construction of a second northbound through lane on the Olympic Highway from Old Narrandera Road to Boorooma Street exit.
- property acquisition (up to 1.4 ha) in the south-western corner of the intersection
- extension of existing culverts under the Olympic Highway and Old Narrandera Road
- changes to the existing road cutting south of the intersection to allow for a second northbound lane. This may include cutting into the road cutting and constructing retaining walls.
- native vegetation removal (up to 10.06 ha), including the removal of up to 0.61 ha of a threatened ecological community and 26 hollow-bearing trees (HBTs)
- general construction activities, including embankment widening, excavation and adjustments to existing cut batters, drainage works, scour protection works, street lighting, construction access tracks, medians, possible noise wall construction, and relocation of existing utilities such as street lights and electricity poles/lines.
- construction access tracks would be retained permanently to provide future safe access for inspection and maintenance of the road, traffic signals and utilities.

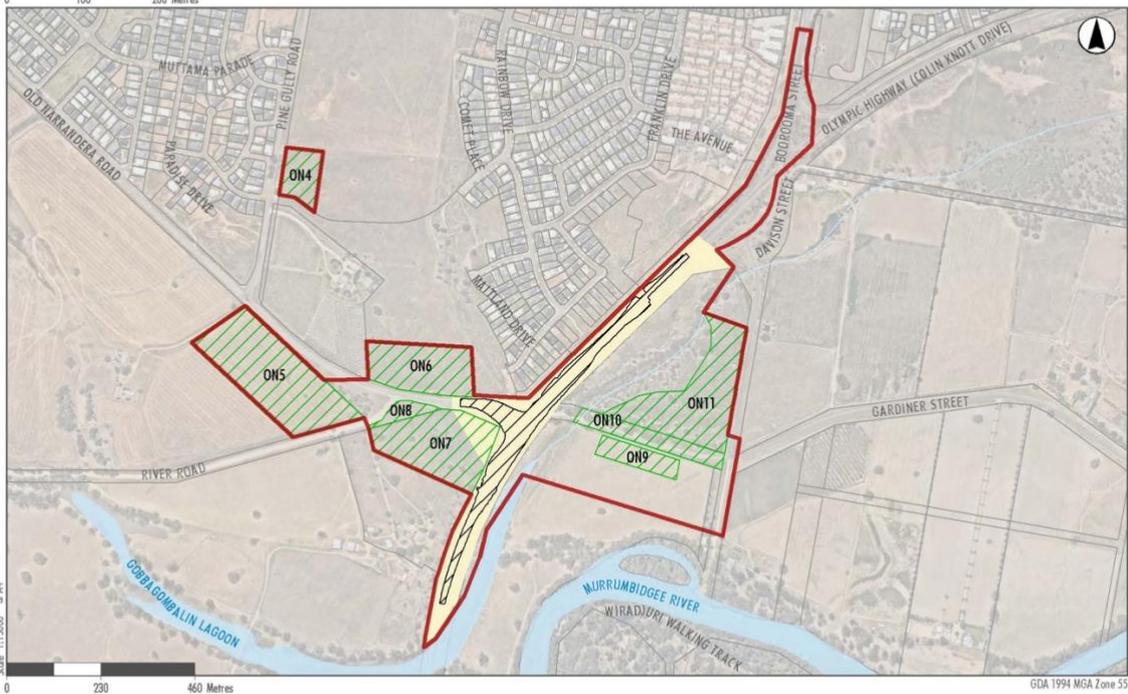


Figure 4-1: Operational and construction footprints at Old Narrandera Road intersection



Figure 4-2: Old Narrandera Road - Artist's Impression of general layout (looking north)

Travers Street intersection

Figure 4-3 illustrates the proposed operational and construction footprint at Travers Street intersection, and an artist's impression is shown in Figure 4-4.

Key visible Proposal features are:

- relocating the intersection about 80 metres south of the existing roundabout to allow for two southbound lanes on the Olympic Highway
- building about 200m of new road as a realignment of Travers Street
- installing of traffic lights at the new intersection and associated utility connections
- reconfiguring Olympic Highway lanes at the new intersection to include turning lanes into Travers Street
- changes to the Moorong Street northern connection onto the Olympic Highway to create a left-in left-out arrangement
- building of a northbound right turning lane into Travers Street
- changes to Olympic Highway northbound lanes south of the Travers Street intersection, with traffic to merge into a single lane before the intersection and new right turning lane
- native vegetation removal (up to 1.42 ha), including removal of seven hollow-bearing trees (HBTs)
- removing the roundabout and existing Travers Street connection to the Olympic Highway. Part of this road may be retained to provide access to the Wiradjuri walking track
- extending the horse underpass culvert at the Olympic Highway, increase the headwall and wingwall height and installation of traffic barriers
- changes to the horse pathway both sides of the Olympic Highway horse underpass culvert, including relocation of the pathway and the installation of fencing or similar to control the risk of horses bolting
- providing driveway access and parking on the old Travers Street road pavement for the Wiradjuri Walking Track
- potential temporary relocation and/or widening of the Wiradjuri Walking Track under the Gobbagombalin Bridge



Figure 4-3: Operational and construction footprints at Travers Street intersection

- general construction activities including changes to the existing roundabout pavement levels and medians, noise treatment work, construction access tracks, temporary relocation of fencing, temporary relocation of existing shared user path.

It is noted that noise walls are not proposed as a result of the noise and vibration impact assessment carried out for the project. However, noise walls are still a treatment option for the project, if they are needed as a result of any construction impacts.

Ancillary facilities would be established to support the proposal at both intersections, including site compounds, stockpile areas, parking areas and temporary fencing. Several possible ancillary sites have been identified by Transport. The ancillary sites used as part of the proposal would be selected by the construction contractor during the delivery phase. Separate ancillary sites are expected to be used for work carried out at each intersection. Potential ancillary sites have been assessed to help inform site selection and minimise potential environmental impacts of the proposal in the REF.

An artist's impression of the general layout of the intersection is shown in Figure 4-4.



Figure 4-4: Travers Street Intersection - Artist's Impression of general layout (looking north)

4.2 Vegetation removal

A separate Biodiversity Report has been prepared (Umwelt, 2021) and should be referred to for a detailed assessment of biodiversity resources and potential impacts.

In summary, the proposal would result in the removal of up to 11.48ha of native vegetation within the construction footprint, including:

- 10.06ha to be cleared at the Old Narrandera Road intersection
- 1.42ha to be cleared at the Travers Street intersection.

The assessment sections in this report describe the potential impact on vegetation and any associated landscape character and visual impacts.

4.3 Construction

The Proposal construction is described below (note that many of the construction details would be finalised during detailed design and once the construction contractor has been appointed during delivery).

Timing and duration

The proposed work is expected to start in late 2022/early 2023. The breakdown of construction work, stages and timeline of the proposal would be determined by the construction contractor during delivery. It is likely the proposal would be delivered in two stages: one stage for each intersection. The total construction time for both intersections is expected to be up to 12 months.

Construction activities

Construction work would be expected to involve the following activities for each intersection:

- Pre-construction identification and marking of sensitive areas as identified in the REF and the Construction Environmental Management Plan (CEMP)
- Limited clearing for early works (early works clearing not yet determined, however, likely to be about 600m along eastern side of ONR road formation)
- Utility adjustments for early works
- Site establishment, including installation of temporary fencing, marking of stockpile sites, treatment of access roads (if needed), construction of access roads and establishment of a site compound
- Installation of temporary traffic management measures such as safety barriers and speed limits, in accordance with the Traffic Management Plan
- Shared user path adjustment and/or temporary closure
- Vegetation removal
- Stripping and stockpiling of topsoil and installing erosion and sediment controls
- Utility protection/removal/relocation (e.g. replacing street lights at the existing intersection with temporary lighting)
- Bulk excavation
- Earthworks
- Lengthening of existing drainage and culvert structures
- Drainage work
- Widening works/construction of additional lanes
- Installing w-beam guardrails and/or wire ropes, if needed
- Road pavement construction including asphalt
- Median construction
- Kerb and gutter construction
- Horse path construction
- Footpath construction, if needed
- Installing permanent traffic lights
- Installing street lighting
- Installing line marking and signposting
- Removing existing road features, including the existing Travers Street connection and roundabout
- Treatment of driveways and median strips, if needed
- Landscaping work, if needed
- Site clean-up and disposal of all surplus waste materials and decommissioning of the compound site. This includes undertaking appropriate waste classification of soil that requires off-site disposal to a licensed landfill facility.

Construction workforce

It is expected that no more than 150 workers would be present at one time during construction. Construction parking would be available at the proposed ancillary sites.

Construction hours

The proposal would be carried out during the following standard construction hours:

- Monday to Friday: 7.00 am to 6.00 pm
- Saturday: 8.00 am to 1.00 pm
- Sunday and public holidays: No work.

Out of hours work would likely be needed as TNSW curfew requirements for the Olympic Highway do not allow construction work to impact traffic flow between 7 am and 9:30 am and 3:30 am and 6:30 pm. Out of hours work would be subject to permitted road occupancy licences (ROLs) and construction staging, and would be carried out in line with procedures contained within the *Interim Construction Noise Guideline* (DECC, 2009) and the *Transport for NSW Environmental Noise Management Manual* (RTA, 2001).

Plant and equipment

A range of plant and equipment would be used during construction of the Proposal. The final equipment and plant requirements would be determined by the construction contractor during detailed design. The largest of the indicative plant and equipment are as follows:

- Front end loaders
- Excavators
- Road trucks
- Dump trucks
- Road sweepers
- Graders
- Back-hoes
- Loaders
- Mobile cranes and Franna cranes
- Concrete trucks and concrete pumps
- Rollers
- Water trucks
- Elevated work platforms (EWPs) or cherry pickers.

Temporary ancillary facilities

Potential sites for temporary ancillary facilities (such as construction site sheds and stockpile areas) are identified in the REF.

About eleven potential ancillary sites have been identified for the Old Narrandera Road intersection. There is no preferred ancillary site for this intersection at this stage. Compound site facilities would include portable buildings with amenities (such as lunch facilities and toilets), secure and bunded storage areas for site materials such as fuel and chemicals (where needed), office space for onsite personnel, and parking.

The ancillary sites would be securely fenced and include signage. Upon completion of work, the temporary site compound, work areas and stockpiles would be removed, the site cleared of all rubbish and materials, and restored.

5

Impact of Old Narrandera Road intersection

5.1 Impact to landscape character

This section describes the existing landscape character and its sensitivity to change, assesses the 'magnitude' of impact of the Proposal on landscape character, and determines the level of overall impact on landscape character.

Existing landscape character

The key characteristics of the landscape character of this intersection are:

- the prominent existing intersection on a raised embankment several metres high
- both sides of the highway are bordered by Eucalypts and other native trees, (with a greater density of trees on the eastern side)
- a new residential estate is situated to the north-west, comprised mostly of detached housing
- undeveloped, rural land lies to the east of the highway and on the western side of the highway south of Old Narrandera Road (planned for future residential)
- land is quite flat on the eastern side of the highway; the western side slopes up from the base of the highway embankment to a local ridgeline some 500m to the west
- Dukes Creek flows along the eastern side of the highway, joining up to Gobbagombalin Lagoon just to the south.

There are no particular rare, unusual or outstanding landscape features at the site. Figure 5-1 shows various images of the local landscape illustrating its main characteristics.



Figure 5-1: Landscape Character Around Old Narrandera Road Intersection

Future landscape character

Planned land use changes, including further residential development to the south of Old Narrandera Road, means that the landscape character around the intersection will change over time. As that new residential development is likely to occur after the proposed construction of the intersection, viewpoints from future residences have not been assessed. Refer to the Proposal REF for details of the proposed residential development.

Sensitivity of the landscape character

The sensitivity of the landscape character is assessed as **low** based on the following aspects:

- The site and vicinity are part of one of the main vehicular entries to the regional city of Wagga Wagga – the Olympic Highway is an important 'gateway' to the city
- The landscape includes attractive native trees within the road reserve, particularly around Dukes Creek on the eastern side, which provide visual amenity
- However, the landscape is not particularly scenic, is not designated as having national or state-wide value, is not pristine and includes substantial urban development.

Magnitude of change to landscape character

The Proposal's predicted magnitude of change to landscape character is **moderate** based on the following aspects:

- The removal of trees (up to 20m wide for a distance of about 450m on all sides of intersection (effectively 1,050m from south limit of works to north limit of works on ONR), including those on the eastern Highway side and north-western intersection corner, would reduce the scenic quality of the view for Highway viewers at the location of the intersection
- Increased area of Highway including a second right turn lane from Old Narrandera Road and second northbound and southbound lanes
- Increased visual clutter with introduction of traffic lights, overhead wiring and signage
- General construction activities, including embankment widening, excavation/adjustments to existing cut batters, drainage works, scour protection works, street lighting, construction access tracks, possible noise wall construction, and relocation of existing utilities such as street lights.

Note that the **low to moderate** rating for magnitude of change is based on a maximum tree clearing either side of the affected section of road surface of up to 20m wide. Should that clearing be reduced to a 5 -10m wide maximum, then it is predicated that the magnitude of change could be reduced (and therefore lower the overall impact rating).

Overall landscape character impact

Based on the combination of the sensitivity and the magnitude of change, the assessed impact of the Proposal on landscape character is predicted to be **moderate-low**.

5.2 Visual impact to surrounding viewpoints

Visibility

The extent of potential visibility is defined by surrounding landform, vegetation and buildings. The potential viewing area to the Old Narrandera Road intersection extends to parts of the residential estate to the north-west, over rural land to the east and rural land south of Old Narrandera Road (future residential area), as indicated by the main viewpoints identified in Figure 5-2.

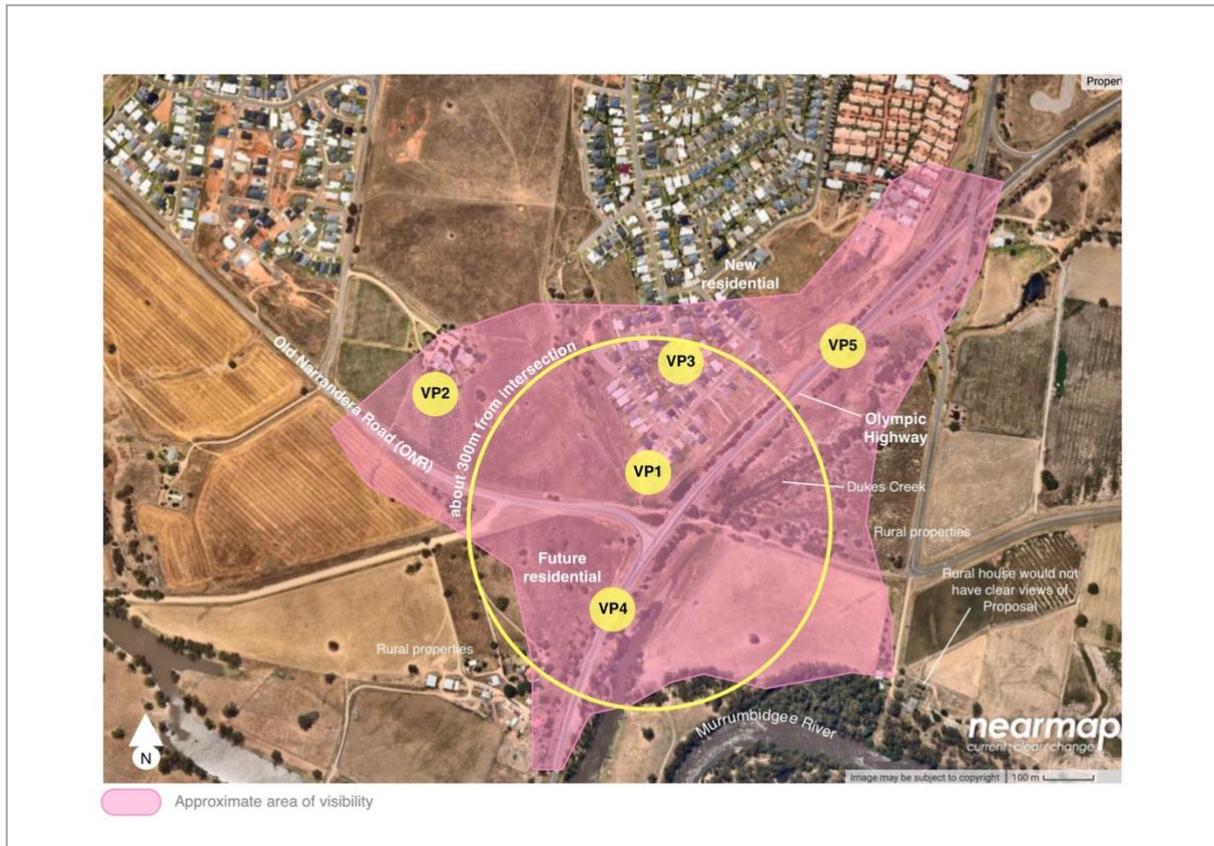


Figure 5-2: Old Narrandera Road – Visibility and main assessed viewpoints

Assessment of surrounding viewpoints

Five viewpoints have been identified for assessment, including locations with a higher number of viewers (such as main roads, recreation areas and shopping centres) and nearby private viewpoints:

- VP1: Closest house, number 33 Sunvale Crescent (within the residential estate just to the north-west)
- VP2: Nearby house on semi-rural property to west, on Pine Gully Road
- VP3: Elevated viewpoint within the residential estate to the north-west (Samson Street)
- VP4: Olympic Highway, near Old Narrandera Road intersection
- VP5: Olympic Highway, north of intersection.

The location of the viewpoints is shown in Figure 5-2 and assessed in Tables 5-1 to 5-5. There is one rural house on the eastern side (about 500m away), situated close to the Murrumbidgee River, however, vegetation around the house obstructs views toward the Proposal and hence that viewpoint has not been assessed in detail.

Table 5-1: VP1 Closest house, 33 Sunvale Crescent

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP1</p> <p>Closest house, 33 Sunvale Crescent</p>	<p>The assessed sensitivity of this private viewpoint to its residents is low based on:</p> <ul style="list-style-type: none"> ▪ The existing view is of the elevated Olympic Highway with native vegetation in the foreground and background. ▪ VP1 is upslope and slightly elevated above the Proposal site, with the Old Narrandera Road intersection mostly screened by existing trees (located on the north-western side of the intersection) ▪ The viewing distance is very close – the rear fenceline of VP1 is approximately 60m from the Proposal site ▪ Views are possible from the rear and side of the house and rear garden, although a sheet metal fence obstructs some of that view. <p>An image indicating changes to this view is shown below.</p>	<p>The assessed magnitude of change to the view is moderate based on the following aspects:</p> <ul style="list-style-type: none"> ▪ The Proposal requires the removal of the native trees on the north-western side of the intersection, which currently screen the intersection and would open up more direct views of the Highway and moving traffic from this residence. 	<p>The predicted level of impact to the view is moderate-low:</p> <ul style="list-style-type: none"> ▪ The removal of trees would increase views of the intersection, slightly reducing the scenic quality of the view for this resident and nearest neighbour.

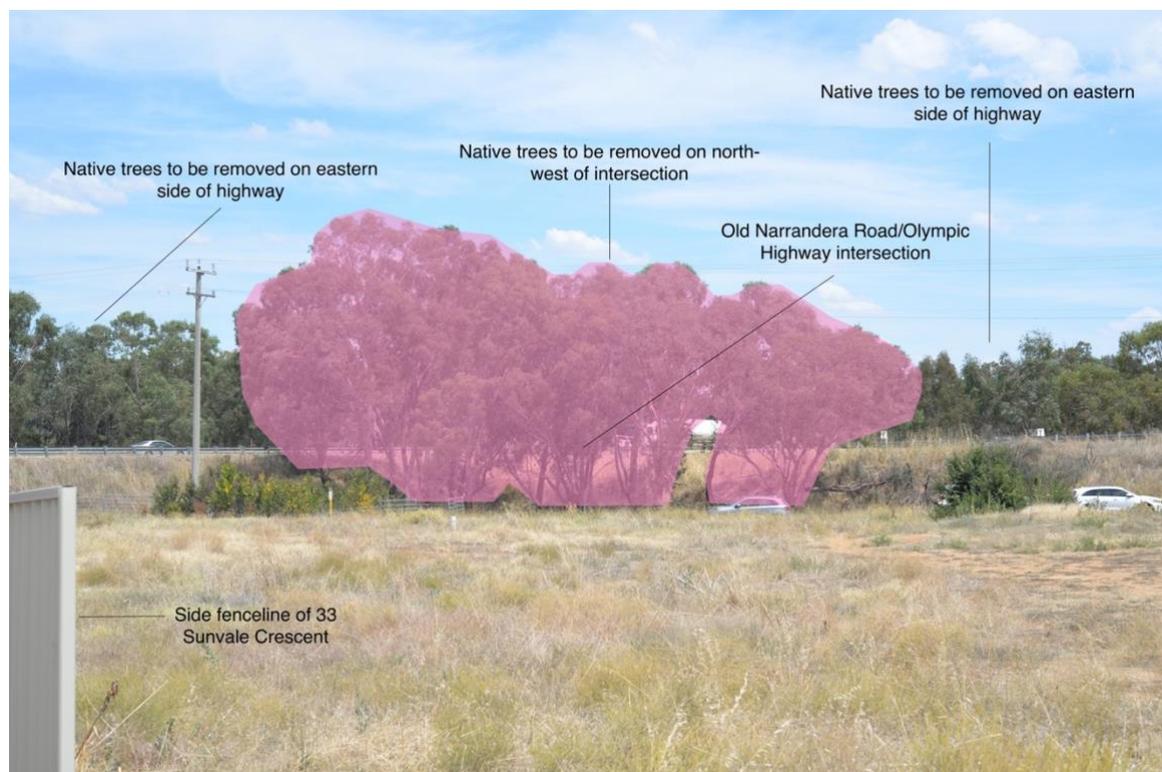


Table 5-2: VP2 - Nearby semi-rural house, Pine Gully Road

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP2</p> <p>Nearby house on semi-rural property, Pine Gully Road</p>	<p>The assessed sensitivity of this private viewpoint to its residents is low based on:</p> <ul style="list-style-type: none"> VP2 is upslope and elevated approximately 30m above the Proposal site, with the Old Narrandera Road intersection mostly screened by existing intervening trees (on the north-western side) The view would primarily comprise open pastures with a small area of the view including the Olympic Highway in the foreground. The viewing distance is relatively close, yet the focus of view from this house are unlikely to be focussed on the intersection, as views from the house would be quite panoramic due to its elevated position. <p>An image of the house as seen from the Old Narrandera Road intersection is shown below.</p>	<p>The assessed magnitude of change to the view is low based on the following aspects:</p> <ul style="list-style-type: none"> The Proposal requires the removal of the native trees on the north-western side of the intersection, which would open up some more direct views of the highway from this residence However, the intersection is a small component in the seen view and not the main focus. 	<p>The predicted level of impact to the view is low:</p> <ul style="list-style-type: none"> The removal of trees would slightly increase views of the highway and slightly reducing the scenic quality of the view.

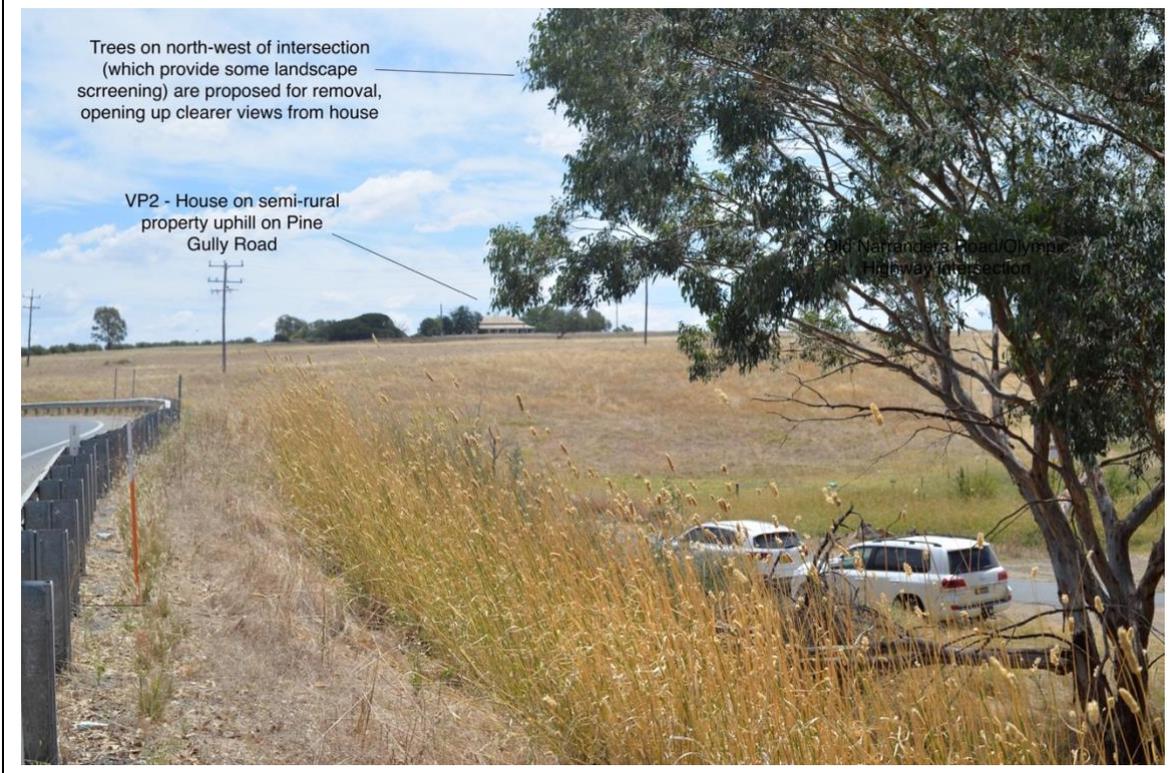


Table 5-3: VP3 - Samson Street, residential estate to north-west

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP3</p> <p>Samson Street (lower end) residential estate to north-west</p>	<p>VP3 is representative of residential views in the range of approximately 250m from the intersection, around Samson Street. The visual sensitivity has been assessed as low based on:</p> <ul style="list-style-type: none"> ▪ The existing view is of the surrounding residential area (houses and local roads) with Olympic Highway seen in the mid-ground partially screened by native vegetation, and trees in the background. ▪ VP3 is further from the intersection (250m) although more elevated (approximately 10m above the level of the Old Narrandera intersection). ▪ Views of the Proposal site from the nearest residences in this vicinity are also partially obstructed by buildings and fences. <p>An image indicating changes to this view is shown below (photograph from approximately 250m from the intersection)</p>	<p>The assessed magnitude of change to the view is low based on the following aspects:</p> <ul style="list-style-type: none"> ▪ The Proposal requires the removal of native trees on the north-western side of the intersection, which would increase exposure of the Highway and allow more direct views from residences, including views of moving traffic. 	<p>The predicted level of impact to the view is low:</p> <ul style="list-style-type: none"> ▪ The removal of trees would increase views of the highway and somewhat reduce the scenic quality of the view.



Table 5-4: VP4 - Olympic Highway (near Old Narrandera Road intersection)

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP4</p> <p>Public views from Olympic Highway (near Old Narrandera Road intersection)</p>	<p>VP4 represents views of Olympic Highway users in the vicinity of the Old Narrandera Road intersection. The visual sensitivity has been assessed as moderate based on:</p> <ul style="list-style-type: none"> There are a relatively high number of users on the highway. Views are temporary and brief The view would be possible from approximately 250m from the intersection as travellers approach the intersection and pass through it. The intersection forms part of one of the main road approaches to Wagga Wagga. The native trees flanking the Highway provide an appealing setting for travellers approaching the city. <p>An image indicating changes to this view is shown below.</p>	<p>The assessed magnitude of change to the view is low based on the following aspects:</p> <ul style="list-style-type: none"> There would be a slightly wider road surface, particularly along the eastern side of the Highway and for the right turn to Old Narrandera Road. The Proposal requires the removal of native trees, including a dense group of native trees on the north-western side of the Old Narrandera Road intersection and along the eastern side of the Highway. However, native trees north and south of the intersection would continue to provide an attractive background and add to the setting of the 'gateway'. 	<p>The predicted level of impact to the view is moderate-low due to:</p> <ul style="list-style-type: none"> The removal of trees (up to 20m wide for a distance of about 450m on all sides of intersection (effectively 1,050m from south limit of works to north limit of works on ONR), including those on the eastern Highway side and north-western intersection corner, would reduce the scenic quality of the view for Highway viewers at the location of the intersection However, the changes would be of a similar type and scale to the current intersection There is an opportunity to incorporate landscape improvements over time (refer Section 8.2.

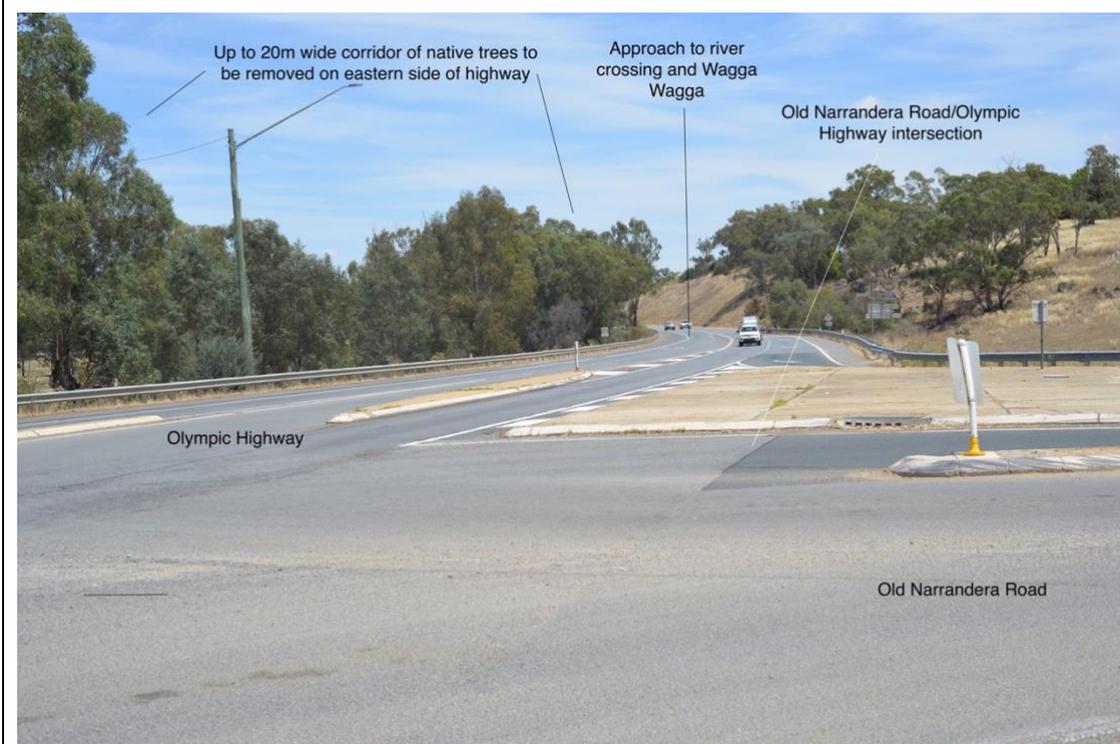
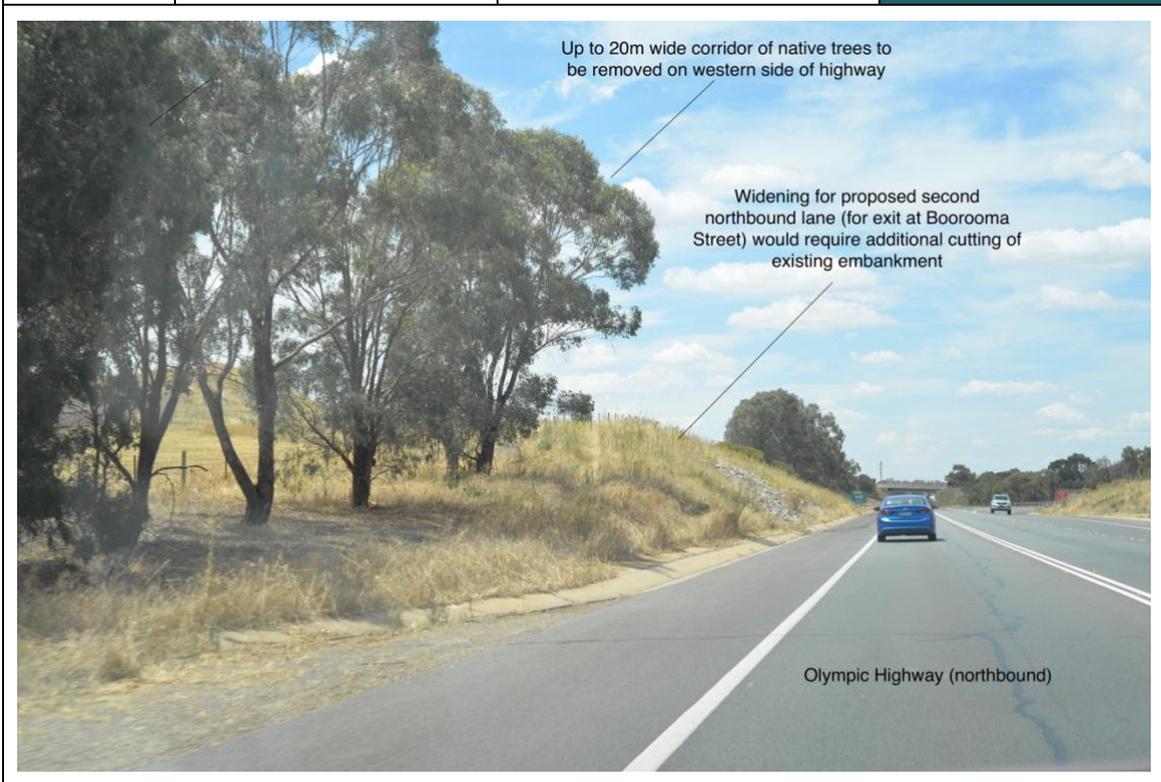


Table 5-5: VP5 - Olympic Highway (north of Old Narrandera Road intersection)

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP5</p> <p>Public views from Olympic Highway (north of Old Narrandera Road intersection)</p>	<p>VP5 represents views of Olympic Highway users. The visual sensitivity has been assessed as moderate based on:</p> <ul style="list-style-type: none"> There are a relatively high number of users on the highway. Views are temporary and brief This part of the Olympic Highway forms part of one of the main road approaches to Wagga Wagga. The native trees flanking the Highway provide an appealing setting for travellers approaching the city. <p>An image indicating changes to this view is shown below.</p>	<p>The assessed magnitude of change to the view is low based on the following aspects:</p> <ul style="list-style-type: none"> There would be a slightly wider road surface, particularly along the eastern side of the Highway. The Proposal requires the removal of native trees, including a dense group of native trees on the north-western side of the Old Narrandera Road intersection and along the eastern side of the Highway. However, native trees north of the intersection would continue to provide an attractive background and add to the setting of the 'gateway'. There may also be some change to the existing road cutting north of the intersection to allow for a second northbound lane. This may include cutting into the road cutting and constructing retaining walls 	<p>The predicted level of impact to the view is moderate-low due to:</p> <ul style="list-style-type: none"> The removal of trees (up to 20m wide for a distance of about 600m north of the intersection), including those on the eastern Highway side and north-western intersection corner, would reduce the scenic quality of the view for Highway viewers north of the intersection However, the changes would be of a similar type and scale to the current intersection. There is an opportunity to incorporate landscape improvements over time (refer Section 8.2).



5.3 Construction impacts at intersection

Within the active construction zone of the intersection, visible construction changes would include security fencing, signage, construction machinery, active works (e.g. stripping and stockpiling, earthworks, road construction). Night works would likely be required due to the construction curfew for work on the Olympic Highway.

The changes during construction would be seen by road users, the general public (including pedestrians/cyclists and those accessing nearby commercial properties) and some nearby residents. As the majority of impacts during construction at the intersection would be temporary, the overall assessment of impact to the landscape character and surrounding viewpoints is assessed as **low** (apart from vegetation removal which has been assessed separately under landscape character and viewpoints).

5.4 Summary of landscape character and visual impact

The assessed impact of the Proposal on landscape character and to viewpoints (visual impact) is summarised in **Table 5-6**.

The main effects would be:

- The removal of trees (up to 20m wide for a distance of about 450m on all sides of intersection (effectively 1,050m from south limit of works to north limit of works on ONR), including those on the eastern Highway side and north-western intersection corner, would reduce the scenic quality of the view for Highway viewers at the location of the intersection.
- The road width would increase, however, the changes would be of a similar type and scale to the current intersection.
- There is an opportunity to incorporate landscape improvements over time.

Table 5-6: Old Narrandera Road intersection - summary of impacts

Landscape character impact	Assessed impact level
At operation	Moderate-low
During construction	Low
Viewpoints assessed for visual impact	Assessed visual impact
VP1: Closest house, 33 Sunvale Crescent (at operation)	Moderate-low
VP2: Private, semi-rural residence, Pine Gully Road (at operation)	Low
VP3: Residential estate (Samson Street) (at operation)	Low
VP4: Olympic Highway, near Old Narrandera Road intersection (at operation)	Moderate-low
VP5: Olympic Highway, north of intersection (at operation)	Moderate-low
Viewpoints in vicinity assessed during construction	Low

6

Impact of Travers Street intersection

6.1 Impact to landscape character

This section describes the existing landscape character and its sensitivity to change, assesses the 'magnitude' of impact of the Proposal on landscape character, and determines the level of overall impact on landscape character.

Existing landscape character

The key characteristics of the landscape character of this intersection are:

- the existing intersection is constructed on a raised embankment several metres high, with the landform on the eastern side reflecting the existing alignment of Travers Street which slopes down from this highpoint
- surrounding land use includes the MTC to the south-east, mostly larger commercial businesses along the western side (south of the intersection), and public open space incorporating recreational uses, such as equestrian and walking/cyclist trails immediately to the west and on the northern (river) side
- between the MTC and the intersection is open grassland punctuated by single trees, including some large Eucalypts
- the open space area along the river side is more treed, with the landscape part of the flatter floodplain and a mixture of rough grassland and stands of native trees, and the long Gobbagombalin Bridge a dominant structure.

There are no particular rare, unusual or outstanding landscape features at the site, although the Murrumbidgee River floodplain north of the intersection has highly valued cultural landscape characteristics. Figure 6-1 shows various images of the local landscape illustrating its main visual characteristics.



Figure 6-1: Landscape character around Travers Street intersection

Sensitivity of the landscape character

The sensitivity of the landscape character is assessed as **moderate** based on the following aspects:

- The site and vicinity are part of one of the main vehicular entries to the regional city of Wagga Wagga
- The landscape character includes the Murrumbidgee River floodplain, including substantial stands of native trees north of the intersection
- The MTC forms a dominant part of the visual landscape
- However, the landscape is not particularly scenic or designated as having national or state-wide value, nor is it pristine. However, the Murrumbidgee River floodplain north of the intersection has valued cultural and visual landscape characteristics.

Magnitude of change to landscape character

The Proposal's predicted magnitude of change to landscape character is **low** based on:

- There would be a relatively low number of trees removed and road changes would be of a similar type and scale to the current intersection
- Increased area of Highway including a second southbound lane
- Removing the existing Travers Street roundabout (which would improve amenity for cyclists) and disused section of Travers Street
- Changes to the horse pathway on eastern side of Olympic Highway, including that the horse pathway may be temporarily diverted under Gobbagombalin Bridge abutment along Wiradjuri Walking Track during construction
- Increased visual clutter with introduction of traffic lights, overhead wiring and signage
- Potential temporary relocation of the Wiradjuri Walking Track under the Gobbagombalin Bridge (with some potential temporary reduction in scenic quality)
- General construction activities including changes to the existing roundabout pavement levels and medians, noise treatment works, and relocating existing utilities such as street lights and electricity poles/lines.

Overall landscape character impact

Based on the combination of the sensitivity and the magnitude of change, the assessed impact of the Proposal on landscape character is predicted to be **moderate-low**.

6.2 Impact to surrounding viewpoints

Visibility

The extent of potential visibility is defined by surrounding landform, vegetation and buildings. The potential viewing area extends to the MTC, nearby commercial properties and the floodplain/recreation area to the north, as indicated in Figure 6-2.

Assessment of surrounding viewpoints

Four viewpoints have been identified for assessment including locations with a higher number of viewers (such as main roads, recreation areas and shopping centres) and nearby private viewpoints:

- VP6: Murrumbidgee Turf Club (MTC)
- VP7: Western side of intersection (public views from trail)
- VP8: Northern river floodplain (public views from trail)
- VP9: Olympic Highway.

The location of the four viewpoints is shown in Figure 6-2 and assessed in Table 6-1 to Table 6-4.

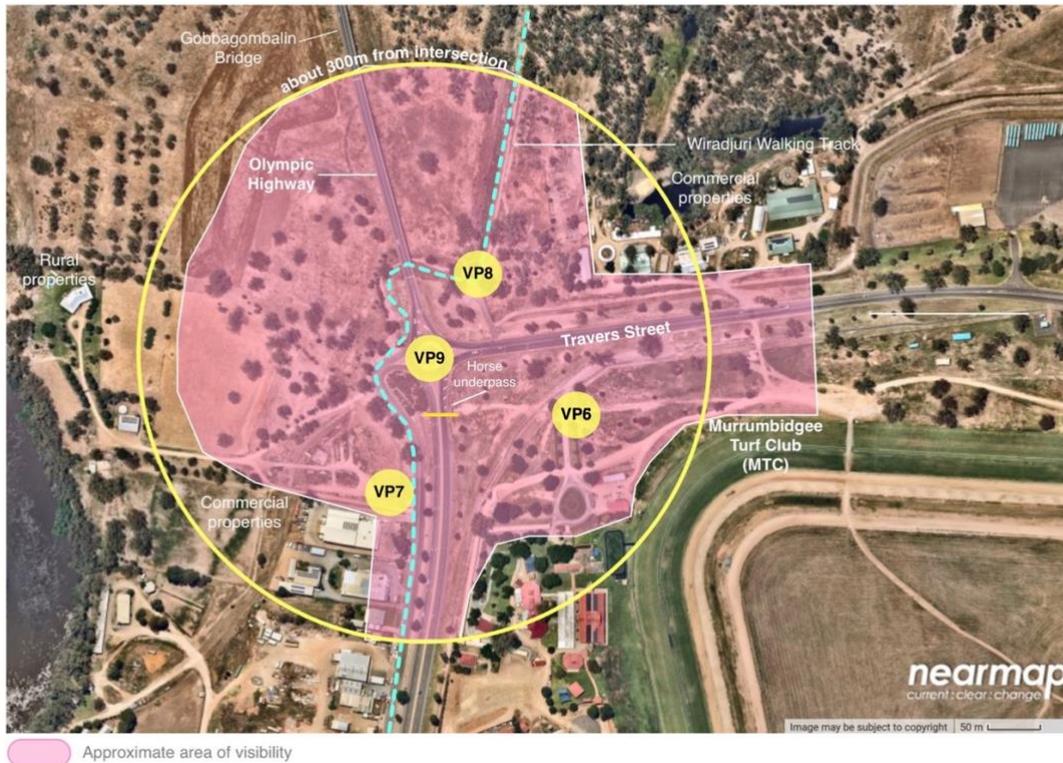


Figure 6-2: Travers Street Intersection - Visibility and main assessed viewpoints

Table 6-1: VP6 – Murrumbidgee Turf Club (MTC) viewpoint

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP6</p> <p>Murrumbidgee Turf Club (MTC)</p>	<p>VP6 has a moderate visual sensitivity based on:</p> <ul style="list-style-type: none"> ▪ The MTC is a large community facility which attracts high numbers of people at race times, and is a recognisable local landmark on this approach into Wagga Wagga ▪ The viewing distance is very close – the MTC abuts the Proposal site ▪ Clear views are possible from near the MTC entrance. <p>An image indicating changes near the MTC entrance is shown below.</p>	<p>The assessed magnitude of change to the view is moderate based on the following aspects:</p> <ul style="list-style-type: none"> ▪ The Proposal results in the Olympic Highway/Travers Street moving closer to the MTC entrance, removing most of the existing grassed area setback ▪ The location of the proposed intersection would mean closer views of traffic and some reduction to the scenic quality of existing views from the MTC entrance. 	<p>The predicted level of impact to the view is moderate:</p> <ul style="list-style-type: none"> ▪ The Proposal would mean closer views of traffic and some reduction to the scenic quality of existing views from the MTC.

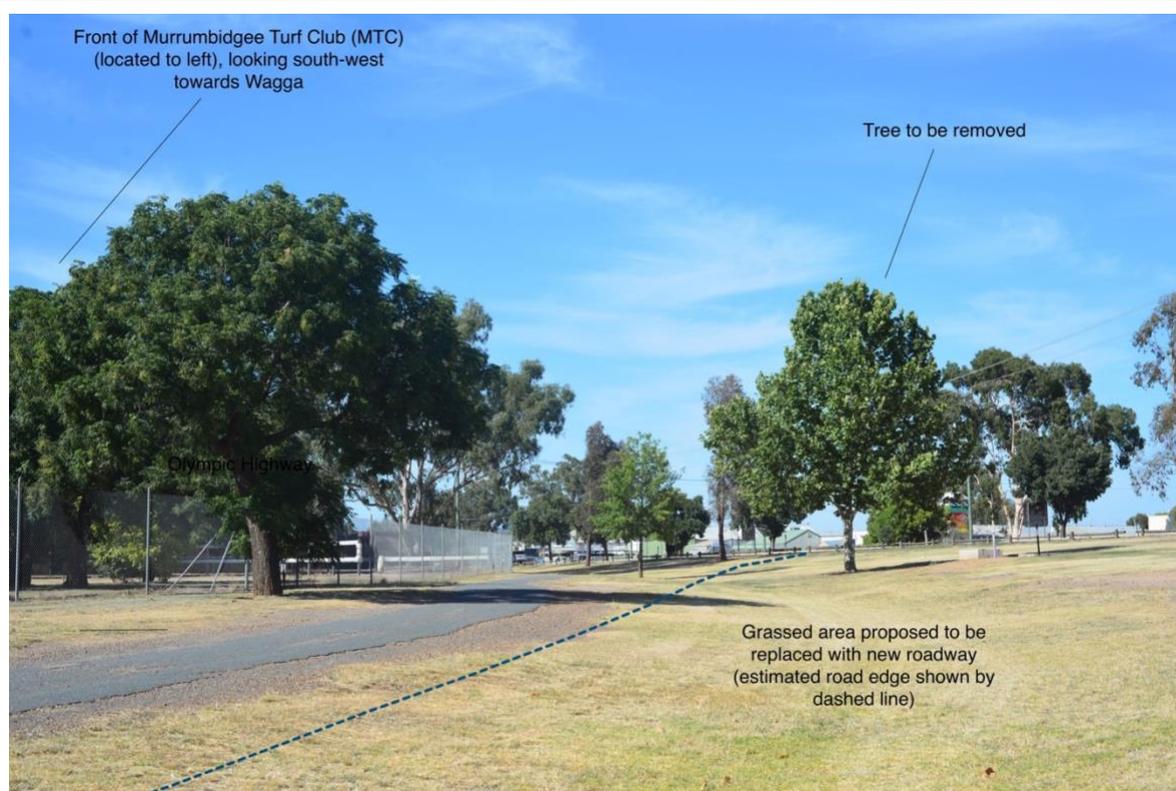


Table 6-2: VP7 - Western side of intersection (including Wiradjuri Walking Track)

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP7</p> <p>Western side of intersection (including Wiradjuri Trail)</p>	<p>VP7 has a moderate visual sensitivity based on:</p> <ul style="list-style-type: none"> ▪ The viewpoint includes the local, culturally significant Wiradjuri trail. It is close to the western side of the intersection with clear views to the intersection ▪ The trail is a popular public and tourist recreational asset of Wagga Wagga. <p>Other viewpoints in this area include those from some rural properties and a number of commercial businesses to the south of the intersection. Changes to those viewpoints would be low as these properties are generally lower in elevation compared to the intersection, are more distant to the intersection, and have limited views of the intersection (restricted by landform and vegetation).</p> <p>An image indicating changes to this view is shown below.</p>	<p>The assessed magnitude of change to the view from the Wiradjuri trail is low based on the following aspects:</p> <ul style="list-style-type: none"> ▪ There would be limited change visible from the trail; the new section of Travers Street is on the opposite side of the Highway ▪ The intersection would be removed further south (away from the trail) resulting in greater separation between the intersection and trail users ▪ There would be limited, if any, tree removal. 	<p>The predicted level of impact to views from this section of the Wiradjuri trail is moderate-low:</p> <ul style="list-style-type: none"> ▪ The limited changes near the trail, and increased distance between trail users and the intersection would result in, an overall minor change to views.



Table 6-3: VP8 - Northern river floodplain (including Wiradjuri Walking Track)

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP8</p> <p>Northern river floodplain (including Wiradjuri Walking Track)</p>	<p>VP8 has a moderate visual sensitivity based on:</p> <ul style="list-style-type: none"> The viewpoint includes the local, culturally significant Wiradjuri Walking Track close to the northern side of the intersection with views to some parts The trail is a popular public and tourist recreational asset of Wagga Wagga. <p>Other viewpoints in this area include those from some rural properties and a number of commercial businesses along Travers Street. Changes to those viewpoints would be low as these properties are generally lower in elevation compared to the intersection, as more distant to the intersection, and have limited views of the intersection (restricted by landform and vegetation).</p>	<p>The assessed magnitude of change to the view from the Wiradjuri Walking Track is low based on the following aspects:</p> <ul style="list-style-type: none"> There would be limited change immediately beside the walking track, although there may be some vegetation removal should an ancillary site be sited in this area (refer assessment in Section 7.0). There would be a visual improvement with the relocation of Travers Street further south and away from this location, the result being the nearest section of Travers Street would no longer be visible. 	<p>The predicted level of impact to the view is moderate-low:</p> <ul style="list-style-type: none"> Based on assumption of limited, if any, tree removal The nearest section of Travers Street would no longer be visible (as it currently is).



Table 6-4: VP9 - Olympic Highway viewpoints

Viewpoint	Viewpoint sensitivity	Predicted magnitude of change	Assessed level of impact
<p>VP9</p> <p>Olympic Highway viewpoints</p>	<p>VP9 represents views for Olympic Highway users. The visual sensitivity has been assessed as moderate based on:</p> <ul style="list-style-type: none"> There are a relatively high number of users on the highway. Views are temporary, seen while in transit The viewing distance would vary as travellers approach the intersection and pass through it <p>The intersection forms part of one of the main road approaches to Wagga Wagga. Refer below for an indication of the effect on one Highway viewpoint in this vicinity.</p>	<p>The assessed magnitude of change to the view is low based on the following aspects:</p> <ul style="list-style-type: none"> The Proposal would require the removal of some trees, including those within the grassed area in front of the MTC, although overall there are few trees that would be lost Travers Street would be relocated further south, the roundabout would be removed and traffic lights would be installed at the new intersection, however, overall highway users would experience a similar road environment to the current one. 	<p>The predicted level of impact to the view is moderate-low due to:</p> <ul style="list-style-type: none"> There would be a relatively low number of trees removed and road changes would be of a similar type and scale to the current intersection There is an opportunity to incorporate landscape improvements over time (refer Section 8.2).



6.3 Construction impacts at intersection

Within the active construction zone of the intersection, visible construction changes would include security fencing, signage, construction machinery, active works (e.g. stripping and stockpiling, earthworks, road construction). Night works would likely be required due to the construction curfew for work on the Olympic Highway.

The changes during construction would be seen by road users, the general public (including pedestrians/cyclists and those accessing nearby commercial properties) and some nearby residents. As the majority of impacts during construction at the intersection would be temporary, the overall assessment of impact to the landscape character and surrounding viewpoints is assessed as **low** (apart from vegetation removal which has been assessed separately under impacts to landscape character and viewpoints).

6.4 Summary of landscape character and visual impact

The assessed impact of the Proposal on landscape character and to viewpoints (visual impact) is summarised in **Table 6-5**.

The main effects would be:

- There would be a relatively low number of trees removed and road changes would be of a similar type and scale to the current intersection
- A low change in the vicinity of the Wiradjuri Walking Track and the areas to the west and north of the intersection
- The Proposal would mean closer views of traffic and some reduction to the scenic quality of existing views from the MTC.

Table 6-5: Travers Street intersection - summary of impacts

Landscape character	Assessed impact level
At operation	Moderate-low
At construction	Low
Viewpoints assessed for visual impact	Assessed visual impact
VP6: Murrumbidgee Turf Club (MTC) (at operation)	Moderate
VP7: Western side of intersection (public views from trail) (at operation)	Moderate - low
VP8: Northern river floodplain (public views from trail) (at operation)	Moderate - low
VP9: Olympic Highway (at operation)	Moderate-low
Viewpoints in vicinity assessed during construction	Low

Construction impacts of ancillary sites

This section focusses on potential impacts to landscape character and views for the ancillary sites options being considered. The proposed ancillary sites are indicated in Figure 4-1 and Figure 4-3 (SECTION 4.0).

7.1 General construction impacts of ancillary sites

Separate ancillary sites are expected to be established at each intersection, with about eleven such site options under consideration. The main visual impacts of ancillary sites relate to potential vegetation removal and potential landform change (which would be permanent), and the temporary impact to viewer that could see the ancillary site facilities. Potential vegetation removal and landform change could be addressed with remediation following decommissioning, however, vegetation establishment would take many years and may not adequately replace native vegetation.

7.2 Assessment of ancillary sites

The construction contractor's selection of preferred ancillary site locations would be based on several considerations. The following principles, where possible, would be used to help make this decision (which would also serve to minimise landscape character and visual impacts):

- at least 40 metres away from the nearest waterway
- of low ecological and heritage conservation significance
- at least 100 metres away from residential dwellings and other land uses that may be sensitive to noise
- on relatively level ground
- outside the 1-in-10-year annual recurrence interval (ARI) floodplain.
- in plain view of the public to deter theft and illegal dumping.

It is therefore anticipated that any landscape character and visual impacts due to the ancillary sites would be minimal as:

- vegetation removal and landform change would be low
- most changes would be temporary, with long term change associated with any minor vegetation removal mitigated with offset planting and rehabilitation works.

This section describes the current mitigation measures that have been incorporated into the Proposal and makes recommendations for additional measures to reduce impacts and improve the visual outcome.

8.1 Current mitigation measures

The Proposal incorporates the following mitigation measures:

- All lighting would be designed and installed in accordance with *AS4282 Control of the Obtrusive Effects of Outdoor Lighting*.
- Any existing and future graffiti would be removed in accordance with TfNSW's standard requirements.
- Trees to be removed would be offset in accordance with *Transport for NSW Vegetation Offset Guide (2019)*.

An Urban Design Plan (UDP) would also be prepared to support the detailed proposal design. The UDP would present an integrated urban design for the project, providing practical detail on the application of design principles and objectives identified in the environmental assessment. It would include design treatments for:

- location and identification of existing vegetation and proposed landscaped areas, including species to be used
- any built elements including retaining walls, bridges and noise walls
- pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings
- fixtures such as seating, lighting, fencing and signs
- details of the staging of landscape work, including related environmental controls such as erosion and sedimentation controls and drainage
- procedures for monitoring and maintaining landscaped or rehabilitated areas.

The UDP would be prepared in accordance with relevant guidelines (refer reference list at end of report).

8.2 Recommended additional mitigation measures

In addition, the following measures are recommended to specifically improve the visual outcome:

1. Reduce the proposed tree clearance area - The current Proposal potentially results in a wide corridor (up to 20m wide) for tree clearing either side of the highway potentially affected. It is highly recommended that:
 - a) a detailed tree survey identifying the location of existing trees near the intersection be undertaken
 - b) the road design for both intersections be refined in response to the detailed tree survey to maximise tree retention and minimise the need for removal of existing native vegetation, including the proposed location of any ancillary sites
 - c) where practical, include safety/guard rail in the intersection design as a means of retaining trees that may be close to the roadside.

2. Prioritise offset planting to manage landscape and visual impacts – Based on the area of vegetation that could potentially be removed, there would be a substantial amount of offset planting required. It is recommended that offset planting include:
 - o replanting a landscape screen to replace vegetation removed from the north-western corner of the Old Narrandera Road intersection
 - o replanting areas affected by tree removal alongside Dukes Creek, near the Wiradjuri Walking Track and alongside the Gobbagombalin Bridge
 - o incorporating street trees (native or ornamental) around the MTC.
3. Other landscape improvements:
 - a) undertake ongoing consultation with the City of Wagga Wagga of the planned upgrade as there may be opportunities for Council to coordinate landscape improvements such as additional tree planting near the MTC.
 - b) consider the large expanse of open space which would remain once the unrequired section of Travers Street is decommissioned, including the landform design and potential to improve this area with landscape planting.
4. Visual clutter - reduce visual clutter by minimising new fencing and signage, including around the horse crossing. Preference in the proposed design should be given to fencing alternatives such as mounding and landscaping to direct equestrians and provide a safe and preferred environment for the horses.

9.1 Impact of Old Narrandera Road intersection

The assessed impact of the Proposal on landscape character and to viewpoints (visual impact) from the Proposed Old Narrandera Road intersection upgrade is summarised in **Table 9-1**.

The main effects would be:

- The removal of trees (up to 20m wide for a distance of about 450m on all sides of intersection (effectively 1,050m from south limit of works to north limit of works on ONR), including those on the eastern Highway side and north-western intersection corner, would reduce the scenic quality of the view for Highway viewers at the location of the intersection.
- The road width would increase, however, the changes would be of a similar type and scale to the current intersection.
- There is an opportunity to incorporate landscape improvements over time.

Table 9-1: Old Narrandera Road Intersection - summary of impacts

Landscape character impact	Assessed impact level
At operation	Moderate-low
During construction	Low
Viewpoints assessed for visual impact	Assessed visual impact
VP1: Closest house, 33 Sunvale Crescent (at operation)	Moderate-low
VP2: Private, semi-rural residence, Pine Gully Road (at operation)	Low
VP3: Residential estate (Samson Street) (at operation)	Low
VP4: Olympic Highway, near Old Narrandera Road intersection (at operation)	Moderate-low
VP5: Olympic Highway, north of intersection (at operation)	Moderate-low
Viewpoints in vicinity assessed during construction	Low

9.2 Impact of Travers Street intersection

The assessed impact of the Proposal on landscape character and to viewpoints (visual impact) from the Proposed Travers Street intersection upgrade is summarised in **Table 9-2**.

The main effects would be:

- There would be a relatively low number of trees removed and road changes would be of a similar type and scale to the current intersection
- A low change in the vicinity of the Wiradjuri Walking Track and the areas to the west and north of the intersection
- The Proposal would mean closer views of traffic and some reduction to the scenic quality of existing views from the MTC.

Table 9-2: Travers Street Intersection - summary of impacts

Landscape character	Assessed impact level
At operation	Moderate - low
At construction	Low
Viewpoints assessed for visual impact	Assessed visual impact
VP6: Murrumbidgee Turf Club (MTC) (at operation)	Moderate
VP7: Western side of intersection (public views from trail) (at operation)	Moderate - low
VP8: Northern river floodplain (public views from trail) (at operation)	Moderate - low
VP9: Olympic Highway (at operation)	Moderate-low
Viewpoints in vicinity assessed during construction	Low

9.3 Recommendations

Detailed mitigation recommendations are provided in Section 8.2. In summary, those recommendation encompass:

- reducing tree clearance
- targeted offset planting
- working with local council to instigate other landscape improvements
- reducing potential visual clutter.

9.4 Conclusion

Overall, the Proposal would result in two new intersections of a similar type and scale to the current intersections which are confined to the Olympic Highway corridor. Each intersection would result in a relatively low visual change and overall impact level of moderate-low. Minimising tree removal through the detailed design stage, and eventual replacement offset planting, are both essential to ensure impacts to landscape character and viewpoints are as low as possible.

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
 - Transport for NSW, 2016. (RMS) *Noise wall design guideline: Design guideline to improve the appearance of noise walls in NSW*.
 - Transport for NSW, 2016a. *Shotcrete design guideline: Design guideline to improve the appearance of shotcrete in NSW*.
 - Transport for NSW, 2018 (RMS). *Landscape design guideline*.
 - Transport for NSW, 2019. *Vegetation Offset Guide*
 - Transport for NSW, 2020. *Environmental Impact Assessment Guidance Note – Guidelines for Landscape Character and Visual Impact Assessment*.
 - Transport for NSW, 2020 a). *Beyond the Pavement 2020*. Urban design approach and procedures for road and maritime infrastructure planning, design and construction.
-