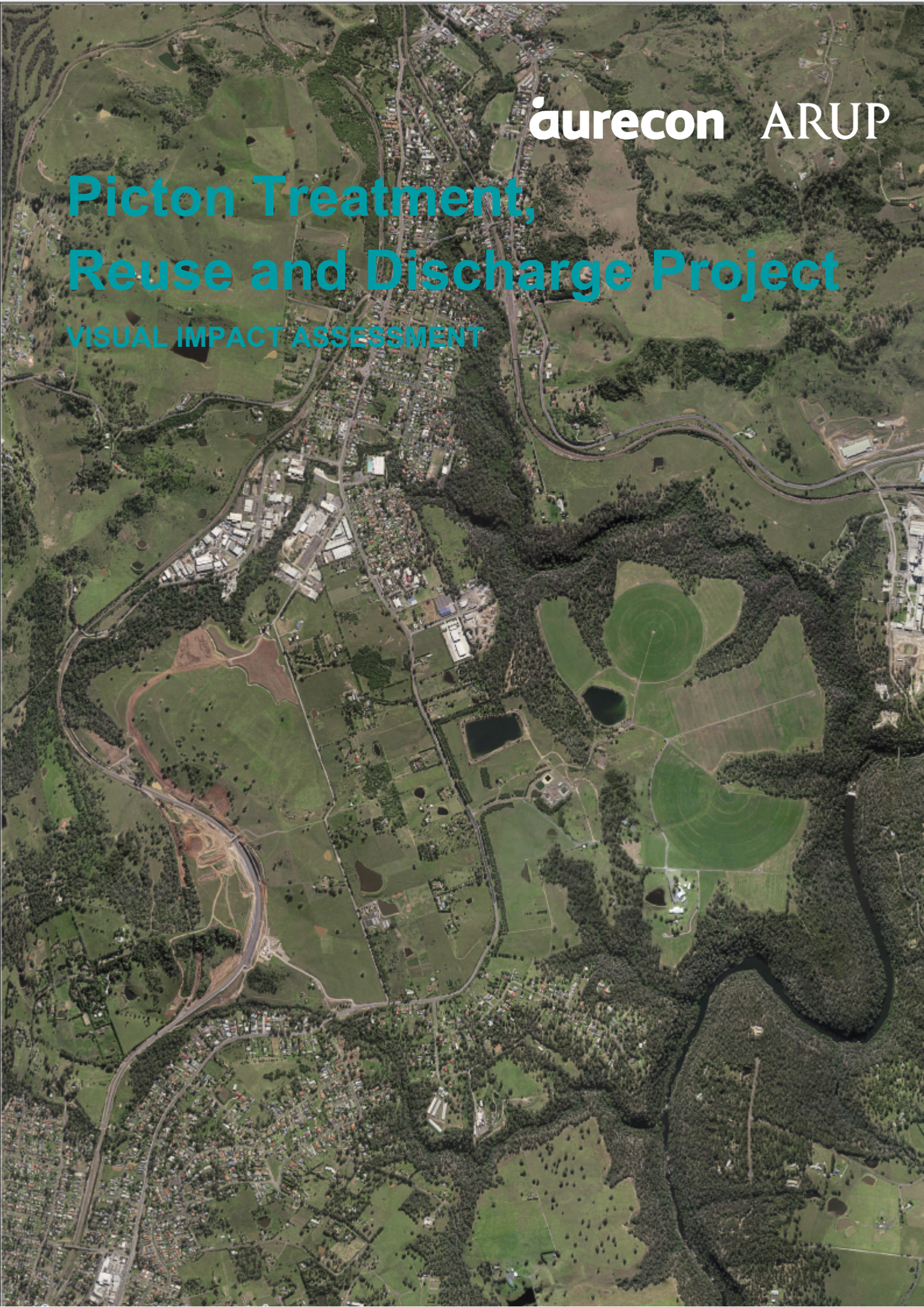

aurecon ARUP

Picton Treatment, Reuse and Discharge Project

VISUAL IMPACT ASSESSMENT

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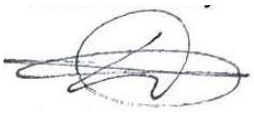
		Signature			
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1 Introduction

1.1 Background

The Picton Water Recycling Plant (WRP) is situated in the Wollondilly Shire Council local government area, approximately 70 km south west of Sydney CBD and in the Upper Nepean catchment. The WRP was constructed in 2000 and currently services 16,000 people in the townships of Picton, Thirlmere, Tahmoor and the villages of Bargo and Buxton. Growth in the catchment is forecast to increase to approximately 25,000 people by 2036.

On average, 3 mega litres (ML) of wastewater is treated at the WRP with a current capacity to treat approximately 4 ML/day. However, the management of this recycled water is limited on average to 2.2 ML/day. This is achieved by the irrigation of 119 hectares on Picton Farm adjacent to the WRP and licensed precautionary discharges to Stonequarry Creek (subject to flow conditions in the creek including flows in excess of 8 ML/day). Due to these limitations, excess recycled water is discharged under an emergency operating protocol (EOP) to prevent on site storage dams from spilling. In addition, the WRP has been unable to accept new wastewater connections to the WRP despite increasing development in the catchment.

Extensive planning efforts have been made to address the problem including applications for licence variations since 2015 and conducting pollution reduction studies such as monitoring for changes in Stonequarry Creek, source control investigations to reduce inflows and infiltrations to the network, investigations to expand reuse options and pilot wetland trials to further reduce nutrients.

1.1.1 Proposal Objectives

The overall project objective is to increase recycled water management capacity to match the current WRP treatment capacity of 4ML/day to enable servicing future growth to 2026.

The proposal objectives are to:

- allow new wastewater connections into the WRP;
- resolve current non-compliances to the operating licence;
- maximise beneficial reuse of recycled water where feasible; and
- minimise discharges and maintain community waterway values.

1.1.2 Proposal Overview

The proposal would involve:

- improving water quality treated by the WRP through technological improvements and upgrades;
- enabling re-use of treated water for irrigation to nearby farms (‘Farms 1 and 2’) subject to farmer agreements; and
- seeking flexibility to the current operating licence including the current precautionary discharge regime to Stonequarry Creek or providing a second discharge point to the Nepean River downstream of Maldon Weir.

1.2 Assessment scope

This Visual Impact Assessment (VIA) has been prepared to inform a Review of Environmental Factors for the proposal. This assessment addresses impacts of the construction and operation of the proposed secondary discharge point to the Nepean River.

The following proposal details are relevant to the scope of this assessment:

- New Discharge pipeline to the Nepean River
  - This will involve open trench excavations for a new discharge pipeline from Eastern Dam, horizontal directional drilling under vegetation with pipeline exiting into a constructed dissipation structure (in ground pit) within an existing access track. An outlet pipe (300mm diameter) would be open trenched for approximately 6m from the dissipation structure to the edge of a rock face, extend down the rock face and across into the Nepean River with the outlet submerged.

The scope of works to assess the potential visual impacts associated with the above proposed works are further outlined in section 1.3.

The location of the proposal and indicative arrangement is provided in Figure 1.1.

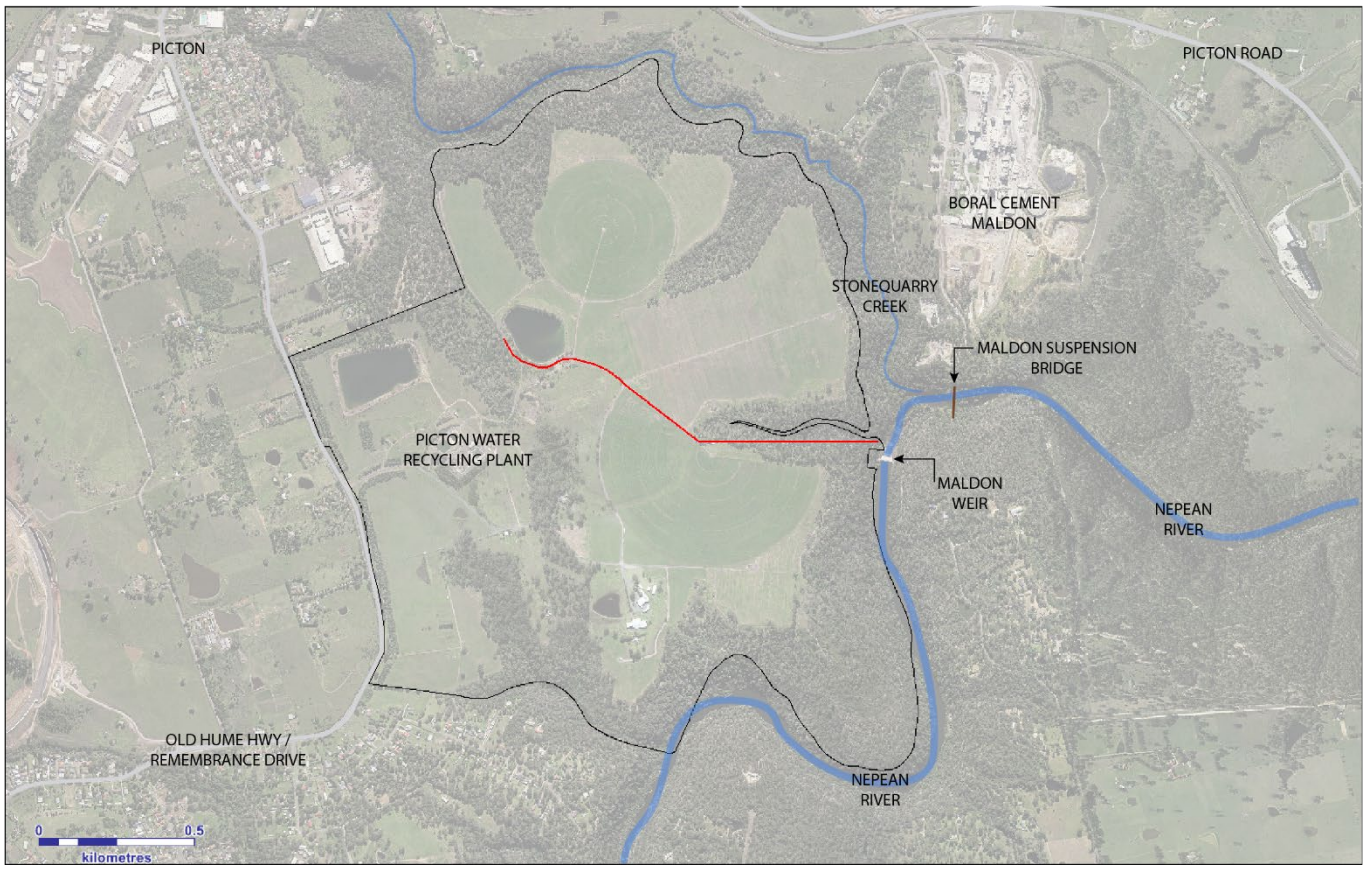

Figure 1.1 Site plan and context, discharge pipeline in red line

1.2.1 Report Objectives

The objectives of this report are to:

- understand the existing conditions at the subject site and assess the potential impacts of the proposed change on the visual amenity of the surrounding area.
- describe how the proposal may affect views throughout the area.
- inform the development of the concept design to avoid and minimise impact early in the design process.
- inform Sydney Water, other agencies and the community about the landscape character impact and visual impact of the proposal and what mitigation strategies are recommended to be implemented as part of the proposal.

1.3 Methodology and Relevant Guidelines

The VIA was completed with consideration of best practice guidelines including:

- Guideline for Landscape Character and Visual Assessment - Environmental Impact Assessment Practice Note EIA-NO4, Transport for New South Wales, 2020;
- Guidelines for Landscape and Visual Impact Assessment (third edition), Landscape Institute of Environment Management and Assessment (IEMA), 2013.
- Guidance Note for Landscape and Visual Assessment (June 2018), Australian Institute of Landscape Architects (Queensland chapter).

The VIA report has been undertaken in accordance with the following assessment tasks:

1. Contextual and site analysis of the area through a desktop assessment, building an understanding of the current and future land uses within the locality as well as determining the value of the built and natural environment through strategic plans, character statements and aesthetic value.
2. Identification of key viewpoints that encapsulate potential impacts on sensitive receivers.
3. Preparation of photomontages based on the concept design to demonstrate the effect of the proposal on key views.
    a. The location of each viewpoint was recorded on site to accurately depict the location of the photo and match to the 3d digital model of the key design components. Adobe Photoshop was used to piece together the image and produce an ‘artists impression’ of the proposal.
4. The assessment of visual impact is assessed on a combination of visual sensitivity and the magnitude of the change, based on the concept design produced by the Aurecon-Arup partnership, for the following phases:
    a. Construction stage; and
    b. Year 1 of operation.
5. Rating of sensitivity and magnitude of impact for each viewpoint in accordance with Visual Impact Rating Matrix Table 1.3.
6. Outline mitigation strategy to avoid, manage and minimise visual impacts.

1.3.1 Visual Impact Assessment

Following a thorough desktop study, viewpoints were selected to represent key views of sensitive receivers in the area. Each viewpoint was selected as representative views of key receivers surrounding the proposal. Viewpoints were selected to illustrate:

- a range of:
  - receptor-types including public and private domain views
  - view-types including elevated, panoramic and filtered views
  - viewing distance from the Proposal
  - main or protected views in the study area

Some views were ruled out during site visit as intervening vegetation and topography would fully screen the view of the Proposal.

Sensitivity

Viewpoint sensitivity is dependent on:

- Importance (scenic quality) of the view
- Duration of viewer activity
- Number of viewers exposed to the Proposal
- Nature of the visual receptor (type and volume of sensitive receptors or viewers) experiencing the view

Table 1.1 describes the magnitude aspects used in the assessment.

Table 1.1: Viewpoint Sensitivity ratings

Sensitivity	Description
• High	**Large number** of viewers, or those with **proprietary interest and prolonged viewing opportunities** such as residents and users of attractive and/or well-used recreational facilities.
	Views from a regionally or locally important location such as a scenic lookout whose interest is specifically focussed on the landscape. • Residential properties • Users of community facilities and open spaces, where the purpose of that recreation is the enjoyment of the landscape • Key tourist areas.
• Medium	**Medium number** of residents and **moderate numbers** of visitors with an interest in their environment.
	Larger number of travellers with an interest in their surroundings. • Outdoor works • Schools and other institutional buildings, and their outdoor areas
• Low	**Small number** of visitors with a passing interest in their surroundings.
	Viewers whose interest is not specifically focussed on the landscape. • Indoor workers • Users of main roads or arterial roads • Users of recreational facilities where the purpose of that recreation is not related to the views • Commuters

Magnitude

Magnitude refers to the scale, size and character of the project and its proximity to the viewer and the degree to which its affect has been mitigated. For example, a development situated one kilometre from the viewpoint, will have a much-reduced visual effect than one 100 metres away1. All elements of the project are to be considered including changes to landform, urban structure, vegetation patterns, as well as the nature scale and density of the project within the landscape.

Magnitude is dependent on:

- Scale, regarding the loss of addition of features in the view and changes in its composition.
- Degree of contrast or integration based on scale and form, height, colour and texture.
- Nature of view in relation to the proposal accounting for angle, distance and extent.
- Mitigation, accounting for its effectiveness at reducing impacts over time.

Table 1.2 below describes the magnitude aspects used in the assessment.

Table 1.2: Viewpoint magnitude ratings

Magnitude	Description
• High	The project, or part of it, would become the dominant feature or focal point of the view.
• Medium	The project, or part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor.
• Low	The project, or part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view.
• Negligible	Only a very small part of the project would be discernible, or it is at such a distance that it would form a barely noticeable feature or element of the view.

Overall Impact

With all factors considered, an assessment was made on each landscape character and representative viewpoint against the known extent of the project. Table 1.3 presents the matrix of how the sensitivity and magnitude of impacts combines to provide an impact rating.

Table 1.3: Visual Impact Rating Matrix[2]

		Magnitude of Impact			
		High	**Moderate**	**Low**	**Negligible**
Sensitivity	**High**	**High**	**High-Moderate**	**Moderate**	**Negligible**
	Moderate	**High-Moderate**	**Moderate**	**Moderate-Low**	**Negligible**
	Low	**Moderate**	**Moderate-Low**	**Low**	**Negligible**
	Negligible	**Negligible**	**Negligible**	**Negligible**	**Negligible**

[1] Guideline for Landscape Character and Visual Assessment - Environmental Impact Assessment Practice Note EIA-NO4, Transport for New South Wales, 2020. pg9
[2] Guideline for Landscape Character and Visual Assessment - Environmental Impact Assessment Practice Note EIA-NO4, Transport for New South Wales, 2020

1.4 Assumptions and Limitations

This report is subject to the following limitations:

- The VIA has been prepared with information provided in completion of the preliminary concept design. Further changes to the preliminary concept design will not be captured in this assessment.
- Photomontages are based on this information and plans provided by Sydney Water which illustrate the nature and extent of the proposal.
- All viewpoints have been photographed from publicly accessible locations and locations within Sydney Water operating land to demonstrate and reflect as closely as possible, the potential visual impacts likely to be from a sample of sensitive receivers such residents and river users.
- Access to sensitive viewpoints on private land, such as residences or accommodation, were not undertaken for this VIA. However, impacts from these locations were considered in the assessment.
- Existing photographs of views from the Wilton Park Road demonstrated existing vegetation and topography screened views of the Maldon Weir, a short distance from the Proposal.
- The methodology adopted for this landscape and visual impact assessment assumes that if the works would not be seen, there is no impact.
- For the purpose of the assessment, an unobstructed viewpoint from a publicly accessible location has been used as a worst-case scenario of potential visual impacts.
- The impact assessment is focused on the current land uses and zoning.

2 Landscape Context

2.1 Site Location

The proposed works are located on the Sydney Water/Picton Farm and extends from the Eastern Dam to the Nepean River. The area is zoned RU2 Rural landscape and includes irrigated fields on site. The Sydney Water/Picton Farm is located within the Wollondilly Shire Council local government area (LGA), east of Remembrance Drive and west of the Nepean River. Figure 2 shows the subject site in context to the surrounding environment and infrastructure. There is no public access to the Picton WRP and farm.

2.2 Surrounding Land uses

The subject site is located within the suburb of Picton and is bounded by the Nepean River in the north, east and south and Remembrance drive in the west (Figure 2.5). Large pockets of bushland surround the cleared irrigated land areas, particularly along the boundary of the Nepean River.

The site is located within a rural locality which contain rural and rural residential uses. The subject site is approximately one kilometre (km) south east and 2.5 kms north east from Picton (Figure 2.8 and Figure 2.9) and Tahmoor townships respectively. The townships contain local neighbourhood commercial/retail shops with the dominant land use being low-density residential developments.

To the east of the Nepean River, the Boral Maldon (Figure 2.2) operations occupy a large concrete batching plant and rail terminal operated by Boral Quarries. The Maldon site is a large industrial site which dominates the area given the scale of the infrastructure on site.

The Nepean River is a major perennial river located in the south west of Sydney Near Picton, the Nepean River is often a popular recreational area for swimming and walks. In particular, near the Maldon Weir (Figure 2.7) which is adjacent to the proposed works, is a popular swimming spot used by locals.

The Maldon Suspension Bridge (Figure 2.6) is located approximately 200m to the northeast of Maldon Weir. The timber and steel bridge, built in 1903, is closed to vehicles and previously connected Maldon Bridge Road at the north, to Wilton Park Road. The closest residential receptors (one or two houses), are located approximately 200m away on Wilton Park Road, though it is not expected that views of the Proposal will be visible through the existing intervening vegetation and topography.

The Maldon Weir has recreational use, a swimming spot directly beneath the weir, which is accessed through a gravel track from Wilton Park Road. This section of Wilton Park Road is accessed by foot only, with vehicle access blocked in this section of the road. The access track is not sign-posted and is likely to be familiar with locals only, limiting the number of recreational users.

Figure 2.1 **Maldon Weir on the Nepean River** (drone image: https://www.youtube.com/watch?v=6ZkGhbdFJ6s)

Figure 2.2 **Boral Cement Maldon**
(image: Google Street View)

Figure 2.3 **Wilton Park Road (road closure gate)**
(image: Google Street View)

Figure 2.4 **Picton Road bridge over Nepean River**
(image: Google Street View)

Figure 2.5 **Entry to Picton Sewerage Treatment Plant from Remembrance Driveway**
(image: Google Street View)

Figure 2.6 Maldon Trestle Bridge
(image: pioneerwalks.com.au/walk/Maldon-suspension-bridge/)

Figure 2.7 Maldon Weir
(image: pioneerwalks.com.au/walk/Maldon-suspension-bridge/)

Figure 2.8 Antil Street, Picton
(image: Google Street View)

Figure 2.9 Old Hume Highway, Picton town centre
(image: Google Street View)

3 Visual Impact Assessment

3.1 Study Area

A study area of 100m radius from the site has been adopted for this report. The proposed pipeline discharge point is a short distance downstream (north) of the Maldon Weir, and south of the Stonequarry Creek confluence with the Nepean River. Within the site visit it was found that views to this point are only experienced within the river environs due to the topography of the river gully and thick intervening vegetation.

3.2 Key Viewpoints

A total of two key viewpoints (VPs) have been identified within the study area, as listed in Table 3.1 and shown in Figure 3.1. The viewpoints were selected based upon a two-stage process involving a preliminary desktop study and a site visit.

A desktop study completed in Section 2 Landscape Context, included an assessment of public open space, residential properties and sensitive locations. The site visit was undertaken by the project team in September 2020. During the site visit the representative viewpoints were confirmed, and an assessment was made of each potential representative viewpoint against the known extent of the proposal. An illustrative photomontage was produced for one of the VPs, demonstrating the most noticeable impacts.

Table 3.1: Key Viewpoints

Viewpoint	Description
VP1	Maldon Weir, Picton NSW 2571 View looking west with proposed discharge point in opposite embankment
VP2	Maldon Weir, Picton NSW 2571 View looking east with proposed discharge point to the left of view

Figure 3.1 Viewpoint plan

VP1	**Nepean River** **View looking west with proposed discharge point in opposite embankment**
Existing setting	VP1 is taken from the Nepean River rocky embankment, to the north east side of Maldon Weir. The view comprises of the river gully which has steep rocky embankments with mature native shrubs and trees. The rock striations are a unique feature in this area. The concrete weir is a built feature with water constantly cascading over it. There is a deeper pool at the base of the weir which attracts recreational use. This is upstream of flows that would enter Nepean River from the proposed discharge. Apart from the concrete weir, there is no presence of built infrastructure from this viewpoint, with the natural beauty of the river environs dominating the view. To the centre of the image, green is noticeable within the rocks which comprises mostly weedy species within an existing natural drainage line.
Sensitivity	It is expected that visitors have a proprietary interest of the attractive landscape for recreational use and prolonged viewing opportunities, although the number of visitors to the Maldon Weir is expected to be low based on limited access. The sensitivity to change from this viewpoint is therefore considered **moderate**.
Magnitude of change - **Construction**	During construction the pipeline outlet will be located to the upper embankment within the Picton Water Recycling Plant (WRP) and is expected to be screened from this viewpoint. A shallow trench will be dug for approximately 6m from the dissipation structure to the edge of a rock face, for the 300mm diameter outlet pipe. This trench will then be concreted to cover the pipe, with rocks re-placed over top where feasible. Revegetation works within the river environs will comprise of weed management/removal and planting works within a limited zone where there are similar existing conditions. Due to the difficulty of access, it is expected that works to the outlet pipe and revegetation works will be restricted to small machinery and manual labour. The construction equipment are new elements within this viewpoint. The magnitude of change is considered **medium.**
Magnitude of change - **Year 1 operation**	Whilst the site is located amongst similar water infrastructure assets, the proposed development has the potential to be visible by recreational users of the site, within the viewpoint as illustrated by the photomontage (Figure 3.3). Once operational, it is anticipated that views of the outlet channel will blend with the existing conditions. The underground outlet pipe will be in a narrow and shallow trench covered by concrete and further covered by rocks. This concrete-covered trench has the potential to be visible, however will likely blend with the rocky surrounds by weathering over time. The outlet will be submerged in the Nepean River and will be barely visible. Some revegetation works including removal of weedy species and replacement native tufting species have the potential to naturalise the rocky embankment. The magnitude of change is considered **low.**
Visual impact rating	• **Construction**: the moderate level of sensitivity combined with the medium magnitude of change, would result in a **moderate visual impact** of VP1 during the construction phase. • **Year 1 operation:** the moderate level of sensitivity combined with the low magnitude of change, would result in a **low-moderate visual impact** of VP1 for recreational users of the Maldon Weir.

Figure 3.2 **Viewpoint 1 Existing Conditions – north west of Maldon Weir** (image: Aurecon)

Figure 3.3 Viewpoint 1 Artists Impression of outlet Artists Impression of outlet, with blue line indicating approximate position of discharge pipe in a shallow trench

VP2	**Closest Residential Dwelling** **View looking north-east with proposed project to the left of the frame**
Existing setting	VP2 is taken from the Nepean River embankment, to the north-west side of Maldon Weir. The foreground view comprises of small trees and shrubs amongst the rocky embankment. In the background, steep rock ledges rise steeply above the east side of the river and are a unique feature in this area. The concrete weir to the right of the view is a built feature with water constantly cascading over it. There is a deeper pool beneath the weir, which does attract recreational use. Apart from the weir, there is no presence of built infrastructure from this viewpoint, with the natural beauty of the river environs dominating the view.
Sensitivity	It is expected that visitors have a proprietary interest of the attractive landscape for recreational use and prolonged viewing opportunities, although the number of visitors to the Maldon Weir is expected to be low based on limited access. The sensitivity to change from this viewpoint is therefore considered **moderate**.
Magnitude of change - **Construction**	During construction the outlet pipeline will be located to the left of this view, within the Picton Water Recycling Plant (WRP). The pipe outlet is not expected to be visible, with only limited vegetation removed. Revegetation works within the river environs will comprise of weed management/removal and planting works within a limited zone where there are similar existing conditions. Due to the difficulty of access, it is expected that works to the outlet pipe and revegetation works will be restricted to small machinery and manual labour. The construction will be visible to the left of this viewpoint, behind vegetation and by a small number of visitors. The magnitude of change is considered **low**.
Magnitude of change **Year 1 operation**	Once operational, it is anticipated that views of the outlet pipe will blend with the existing conditions. This will be barely perceptible from this viewpoint with the existing intervening vegetation screening views of completed works. The magnitude of change is considered **negligible.**
Visual impact rating	• **Construction**: the moderate level of sensitivity combined with the low magnitude of change, would result in a **moderate-low visual impact** for VP2 during the construction phase. • **Year 1 operation:** the moderate level of sensitivity combined with the negligible magnitude of change, would result in a **negligible visual impact** for VP2 for recreational users of the Maldon Weir.

Figure 3.4 **Viewpoint 2 Existing Conditions – northeast of Maldon Weir** (image: Aurecon)

3.3 Visual Impact Assessment Summary

The visual impacts for the pipeline outlet to the Nepean River during construction and at year 1 of operation are summarised in Table 3.2

Table 3.2 Summary of Visual Impacts

Viewpoint	Receiver	Construction impacts	Year 1 operation impacts
VP1	Maldon Weir View looking west to the east river embankment and proposed pipeline outlet	• Moderate	• Moderate-low
VP2	Maldon Weir View looking east to the west river embankment	• Moderate-low	• Negligible

3.4 Visual Impact Summary

The Proposal introduces a new permanent pipeline, outlet to the rocky embankment about the river just north of the Maldon Weir. The proposed pipeline is constructed underground, with minimum disturbance of the existing vegetation and is proposed to be sited adjacent an existing natural drainage line.

The visual impact assessment completed within this report recognises that the proposed pipeline outlet is likely to be noticeable only within the river environs and experienced by occasional recreation visitors to Maldon Weir.

The number of sensitive receptors is limited to occasional visitors, likely to be locals who are familiar with the area and how to access it through informal tracks in the bush and around steep escarpments. It is recognised that the Proposal would be not prominent from viewpoints from nearby residents and is restricted to occasional recreational users at Maldon Weir.

The existing topography and existing vegetation limits the extent of viewpoints capable of viewing the Proposal. Two viewpoints were selected within the river environs where the Proposal has the potential to be evident and is an assessment of the current concept design.

Both viewpoints (VP1 and VP2) were deemed to be of moderate sensitivity. The site is of natural beauty and attracts recreational use, however the number of visitors is expected to be low.

The visual modification is mainly experience during construction with the addition of small machinery to trench and lay the outlet pipe. It is likely that the works within the river embankment can be conducted with small machinery which reduces impact to surrounding vegetation without the requirement for access tracks. Existing rocks will be re-placed to cover the underground pipeline where feasible, with this expected to be commensurate with the existing rocky embankment.

Overall, the proposal is recognised as having a moderate level of modification during construction which is reduced to a low and negligible visual modification. Moderate to low level visual impacts are therefore experienced for a short duration (< 6 months) during construction, with long term visual impacts barely noticeable.

Any substantial changes during the detailed design can be reassessed with an update to the artists impression photomontage.

4 Visual Mitigation Measures

The following recommended mitigation measures respond to the visual assessment and identified impacts.

Mitigation through design

- **Materials and finishes**
  - any concrete should match the colour of the existing sites sandstone rocks.
  - any replacement rock or rip-rap imported to the site should be the same material type and colour as existing on the river embankment.
- **Alignment of pipeline**
  - options to align the pipeline outlet should maximise the retention of mature trees and native vegetation as far as is practical.

Native vegetation

- With specialist input from an ecologist, explore opportunities to retain native vegetation and minimise impacts to a protected ecological community as part of the design and planning of the proposal
- Identify mature trees to be retained on survey and construction plans and ensure they are protected, with tree protection zones identified to safeguard root networks and canopies
- Engage a qualified arborist to assist with the safe retention of vulnerable trees and the safe removal of trees identified for removal
- Proposed ephemeral planting to the river embankment should be native species and locally sourced. Selected species should be aligned with Sydney Water prescribed vegetation including density.