

Modification to the Picton Water Recycling Plant

Section 75W modification application
Environmental assessment

November 2014



This report was prepared for Sydney Water by **ENSure**

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Submission of environmental assessment

Under Section 75W of the *Environmental Planning and Assessment Act 1979*

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Applicant:	Applicant name:	Sydney Water
	Applicant address:	1 Smith St, Parramatta NSW 2150
	Land to which modification application applies:	Lot 2, DP1042285
	Modification sought:	As described in Sections 1.3, 2.4 and 6 of this document
Environmental impact assessment:	An environmental assessment is attached.	
Certificate:	I certify that I have prepared the contents of this environmental impact assessment and to the best of my knowledge:	
	- It is in accordance with the requirements of Section 75W of the <i>Environmental Planning and Assessment Act 1979</i> - It contains all available information that is relevant to the environmental assessment of the activity to which this environmental impact assessment applies - That the information contained in the environmental impact assessment is neither false nor misleading	
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Document status

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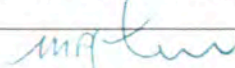
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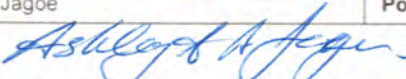
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Executive summary

Overview

Sydney Water is proposing to amplify the Picton Water Recycling Plant (the Picton WRP).

This environmental assessment (the modification EA) has been prepared to accompany the application to modify the existing approval. It has been prepared in accordance with the environmental assessment requirements of the Secretary of the Department of Planning and Environment, which were issued on 17 November 2014.

Need for the proposal

The existing approved capacity of the Picton WRP is 2.7 mega litres per day (ML/day). Sydney Water has predicted that wastewater flows to the Picton WRP will increase to about 4 ML/day between 2023 and 2027. This increase will occur as a result of:

- the transfer of residential flows from the Bargo and Buxton wastewater scheme
- urban growth around the villages of Picton, Tahmoor and Thirlmere
- connection of Inghams Enterprises' turkey processing facility
- future connection of the Wollondilly Abattoir.

There is currently insufficient capacity at the Picton WRP to treat this forecast increase in wastewater flows. Various planning and design investigations have been undertaken to identify what is required to enable the WRP to meet future requirements. These investigations have also identified some operational improvements required at the WRP.

The proposal is needed to ensure that the Picton WRP has the right facilities and adequate capacity to manage the forecast increase in wastewater flows.

The proposal

The proposal would involve constructing and operating the following facilities to amplify the Picton WRP:

- two additional intermittently decanted aerated lagoons (IDALs)
- new inlet works and associated components to distribute flows to the existing and proposed IDALs
- two additional sludge lagoons
- a new chemical dosing unit (CDU) for pH correction
- a new pipeline (about 275 metres long) to deliver chemicals from the CDU to the Western Dam
- various ancillary works.

Options to manage and/or reuse the additional effluent produced by the amplified WRP are currently being considered. The preferred option will be the subject of a separate assessment process.

Planning process and scope of the environmental assessment

Sydney Water is seeking to modify the existing approval for the Picton Sewerage Scheme according to the provisions of Section 75W of (the now repealed) Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The application is being made in accordance with the transitional provisions associated with the repeal of Part 3A, for approval by the Minister for Planning. This modification EA supports the application to modify the existing approval under Section 75W of the EP&A Act.

Summary of the findings of the environmental assessment

Construction impacts

Potential impacts of construction include:

- erosion and water quality impacts as a result of land disturbance
- removal of some planted trees in the vicinity of the Picton WRP
- noise due to the operation of machinery and equipment
- amenity impacts to the surrounding community.

These construction impacts would be relatively minor and short term, and would be minimised by implementing the mitigation measures listed in section 17. The proposal has been designed to minimise the potential for impacts as far as practicable. The majority of the proposal site has been subject to past disturbance as a result of the construction and operation of the Picton WRP and Picton Farm.

Operation impacts

The proposal would enable the Picton WRP to service new connections and growth up to 2023 to 2027. The proposal also includes operational improvements that would improve the overall reliability of the WRP.

Overall, the potential adverse impacts associated with the proposal are considered to be minor and able to be adequately managed by implementing the mitigation measures listed in section 17. The proposal is unlikely to have a significant impact on the environment.

The proposal would be designed to meet the effluent concentration limits specified by the environmental protection licence for the Picton Sewerage Scheme.

The key potential amenity impacts associated with the Picton WRP are noise and air quality (odour) impacts. The concept design for the proposal incorporates management measures and design features to minimise the potential for off-site odour and noise impacts, including a new odour control system to treat air extracted from the inlet works, flow distribution chamber and ancillary equipment; and noise attenuation incorporated in the blower room. The noise and air quality assessments have assessed the potential impacts of the proposal including these measures, and concluded that noise and odour impacts during operation are unlikely.

Justification and conclusion

The proposal is considered to be justified because:

- it was developed as an outcome of an extensive range of studies, investigations and evaluation of potential options
- it responds to a recognised need
- it would enable the Picton WRP to service new connections and future urban growth in Picton, Tahmoor and Thirlmere
- the proposed works would be located within the existing boundary of the Picton WRP and Picton Farm.

Sydney Water has designed the proposal to avoid environmental sensitivities and has also committed to a range of mitigation measures to minimise adverse environmental impacts. The modification EA demonstrates that the proposal is in the public interest and can be managed to meet appropriate environmental performance requirements.

Glossary

alum	Alum is the most common coagulant (the process causing particles to stick together) used in water treatment. Adding alum decreases the pH of treated water.
biosolids	Biosolids are a nutrient rich organic material that is a by-product of the wastewater treatment process.
catchment	The area drained by a drainage system, stream, or body of water.
chemical dosing unit	Facilities that provide for the controlled dosing of chemicals into wastewater to assist the treatment process and/or control odours.
contamination	Concentration of substances above that naturally present that poses, or is likely to pose, an immediate or long-term risk to human health or the environment.
effluent	Treated wastewater.
equalisation basin	A tank used to temporarily store wastewater to be processed. The tank acts like a gateway that controls the amount to be processed.
Secretary's environmental assessment requirements	Outlines the requirements of the Secretary of the Department of Planning and Environment for an environmental impact assessment in accordance with the EP&A Act.
ENSure	ENSure is a GHD and Jacobs Joint Venture.
flora and fauna	Plants and animals
intermittently decanted aerated lagoon (IDAL)	A tank where wastewater undergoes treatment processes in rotation including sedimentation, biological treatment and clarification.
modification EA	The modification environmental assessment (this document) has been prepared to support Sydney Water's application to modify the existing approval for the Picton Sewerage Scheme, in accordance with the requirements of Section 75W of the EP&A Act.
noxious weed	A plant declared by an order under Section 7 of the NSW Noxious Weeds Act 1993 to be a noxious weed.
Picton Farm	Picton Farm, also known as 'Picton Reuse Farm', is a property of about 306 hectares owned by Sydney Water. The Picton WRP and the effluent reuse (irrigation) areas are located within the farm. The main objective of Picton Farm is to maximise reuse of effluent and beneficially apply all biosolids generated by the Picton WRP, in accordance with applicable environmental, economic and health and safety standards and guidelines.
Picton WRP	Picton Water Recycling Plant.
pollutants	Contaminants in water, soil or air that, when in sufficient quantity, may cause environmental degradation.
pollution	Any harmful or undesirable change in the physical, chemical or biological quality of air, water or soil as a result of the release of chemicals, radioactivity, heat and large amounts of organic matter.
proposal	The construction and operation of the works required to amplify the Picton WRP.
proposal site	The immediate location of the various features of the proposal, which are the areas that has the potential to be directly disturbed by construction and operation.
the Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
runoff	Water that drains along the surface from one area of land to another location.

Supervisory control and data acquisition (SCADA)	A system operating with coded signals over communication channels to provide remote control of equipment.
sediment	Soil or other particles that settle to the bottom of lakes, rivers, oceans and other waters.
sludge	Solid matter that is removed during wastewater or water treatment. It can be processed into a material called biosolids.
stakeholder	Any individual or group with an actual or potential interest in a project.
stormwater	Rainwater that runs off the land, frequently carrying various forms of pollution such as litter and detritus, animal droppings and dissolved chemicals.
study area	Land in the vicinity of, and including, the proposal site. The 'study area' is the wider area surrounding the proposal site.
wastewater	The waste material passing through a sewerage system.

Abbreviations

ADWF	Average dry weather flow
CEEC	Critically endangered ecological community
CEMP	Construction environmental management plan
CDU	Chemical dosing unit
dB(A)	A-weighted decibels
DECC	(former) Department of Environment and Climate Change
DECCW	(former) Department of Environment, Climate Change and Water
DotE	Australian Government Department of the Environment
EA	Environmental assessment
EEC	Endangered ecological community
EIS	Environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment protection licence
GHD	GHD Pty Ltd
ICNG	<i>Interim Construction Noise Guideline</i> (DECC, 2009)
IDAL	Intermittently decanted aerated lagoons
INP	<i>Industrial Noise Policy</i> (EPA, 2000)
km	Kilometres
LEP	Local environment plan
LGA	Local government area
M	Metres
ML	Mega litres
mm	Millimetres
OEMP	Operation environmental management plan
OU	Odour unit
PEMP	Property Environmental Management Plan
PIRMP	Pollution Incident Response Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
REF	Review of environmental factors
SCADA	Supervisory control and data acquisition
SEPP	State environmental planning policy
SREP	Sydney regional environmental plan
TSC Act	<i>Threatened Species Conservation Act 1995</i>
WRP	Water recycling plant

1. Introduction

1.1 Overview

Sydney Water is proposing to amplify the Picton Water Recycling Plant (the Picton WRP) to respond to existing and future needs.

The construction and operation of the works required to amplify the Picton WRP (referred to as 'the proposal' for the purposes of this report) requires approval from the NSW Minister for Planning under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act), in the form of a modification of the existing approval for the Picton Sewerage Scheme.

This environmental assessment (the modification EA) has been prepared by the Ensure Joint Venture (ENSure) to accompany the application to modify the existing approval. It has been prepared in accordance with the environmental assessment requirements provided by the Secretary of the Department of Planning and Environment (the 'Secretary's environmental assessment requirements') issued on 17 November 2014. A copy of the requirements is included in Appendix A.

1.2 Need for the proposal

The existing approved capacity of the Picton WRP is 2.7 mega litres per day (ML/day). Sydney Water has predicted that wastewater flows to the Picton WRP will increase to about 4 ML/day between 2023 and 2027. This increase will occur as a result of:

- the transfer of flows from the Bargo and Buxton wastewater scheme
- urban growth around the villages of Picton, Tahmoor and Thirlmere
- connection of Inghams Enterprises' turkey processing facility
- future connection of the Wollondilly Abattoir.

There is currently insufficient capacity at the Picton WRP to treat this forecast increase in wastewater flows. Various planning and design investigations have been undertaken to identify what is required to enable the Picton WRP to meet future requirements. The most recent of these is the *Picton WRP Upgrade and Amplification – Stage 2 Concept Design Report* (ENSure, 2014). This report identifies that to manage the predicted increase in flows, the secondary treatment process capacity of the WRP needs to be augmented, essentially doubling the capacity of the intermittently decanted aerated lagoons (IDALs) and sludge lagoons.

These investigations have also identified some operational improvements required at the Picton WRP. These improvements also form part of the proposal.

In summary, the proposal is needed to ensure that the Picton WRP has the right facilities and adequate capacity to manage the forecast increase in wastewater flows.

1.3 The proposal

The location of the proposal is shown in Figure 1.1.

The proposal would involve constructing and operating the following facilities to increase the capacity of the Picton WRP:

- two additional IDALs

- new inlet works and associated components to distribute flows to the existing and proposed IDALs
- two additional sludge lagoons
- a chemical dosing unit (CDU) for pH correction
- a pipeline (about 275 metres long) to deliver chemicals from the CDU to the Western Dam
- various ancillary works.

Options to manage and/or reuse the additional effluent produced by the amplified WRP are currently being considered. The preferred option will be the subject of a separate assessment process.

1.4 Scope, methodology and structure

1.4.1 Approval pathway and purpose of the modification EA

The Picton Sewerage Scheme was originally approved by the Minister for Urban Affairs and Planning in January 1997 (Development Consent 1997-01-15). As the original scheme was subject to Ministerial approval, Sydney Water is seeking to modify the approval according to the provisions of Section 75W of (the now repealed) Part 3A of the EP&A Act. The application is being made in accordance with the transitional provisions associated with the repeal of Part 3A, for approval by the Minister for Planning.

This modification EA supports the application to modify the existing approval for the Picton Sewerage Scheme under Section 75W of the EP&A Act.

Further information on the approval pathway for the proposal is provided in section 3.

1.4.2 Methodology

Preparing the modification EA has involved the following tasks:

- discussions and meetings with representatives of Sydney Water, relevant agencies and stakeholders
- reviewing the concept plan for the proposal and relevant option assessment reports
- undertaking a preliminary environmental risk assessment
- addressing the Secretary's environmental assessment requirements
- undertaking and reviewing the following specialist impact assessments:
 - a flora and fauna impact assessment (undertaken by ENSure)
 - an Aboriginal heritage assessment (undertaken by Kelleher Nightingale)
 - a noise and vibration impact assessment (undertaken by ENSure)
 - an odour impact assessment (undertaken by ENSure).
- undertaking a qualitative desktop assessment of other potential impacts, including reviews of existing information and database searches
- identifying mitigation measures to manage the impacts identified and preparing the draft statement of commitments.

1.4.3 Definitions

The following definitions have been applied for the purposes of the modification EA.

- The 'proposal' refers to the construction and operation of the works to amplify the Picton WRP, as summarised in section 1.3 and described in section 6.
- The 'proposal site' includes the immediate location of the proposal. These are the areas that have the potential to be directly disturbed by construction and operation of the proposal. The location of the proposal site is shown in Figure 1.1.
- The 'study area' consists of land in the vicinity of, and including, the proposal site. The study area is the wider area surrounding the proposal site, including land that has the potential to be indirectly impacted by the proposal (for example, as a result of any noise impacts). The size of the study area varies according to the nature of the particular assessment undertaken.

1.4.4 Structure of the assessment documentation

The modification EA is structured as follows.

- Section 1 – provides an introduction to the assessment.
- Section 2 – provides information on the location of the proposal and the existing operation of the Picton Sewerage Scheme, including existing approvals and operations.
- Section 3 – provides information on the approval pathway and assessment requirements under relevant legislation and environmental planning instruments.
- Section 4 – provides information on consultation undertaken to date and a summary of the issues raised.
- Section 5 – describes the need for the proposal and the options considered.
- Section 6 – describes the proposal.
- Sections 7 to 16 – provide an assessment of the potential impacts of the proposal on the environment, focussing on the matters specified by the Secretary's environmental assessment requirements.
- Section 17 – summarises the proposed environmental management regime and the proponent's draft statement of commitments for the proposal.
- Section 18 – justifies the proposal and provides a conclusion to the assessment.

Appendices include the specialist technical/background reports and information prepared as part of the assessment process (refer section 1.4.2).

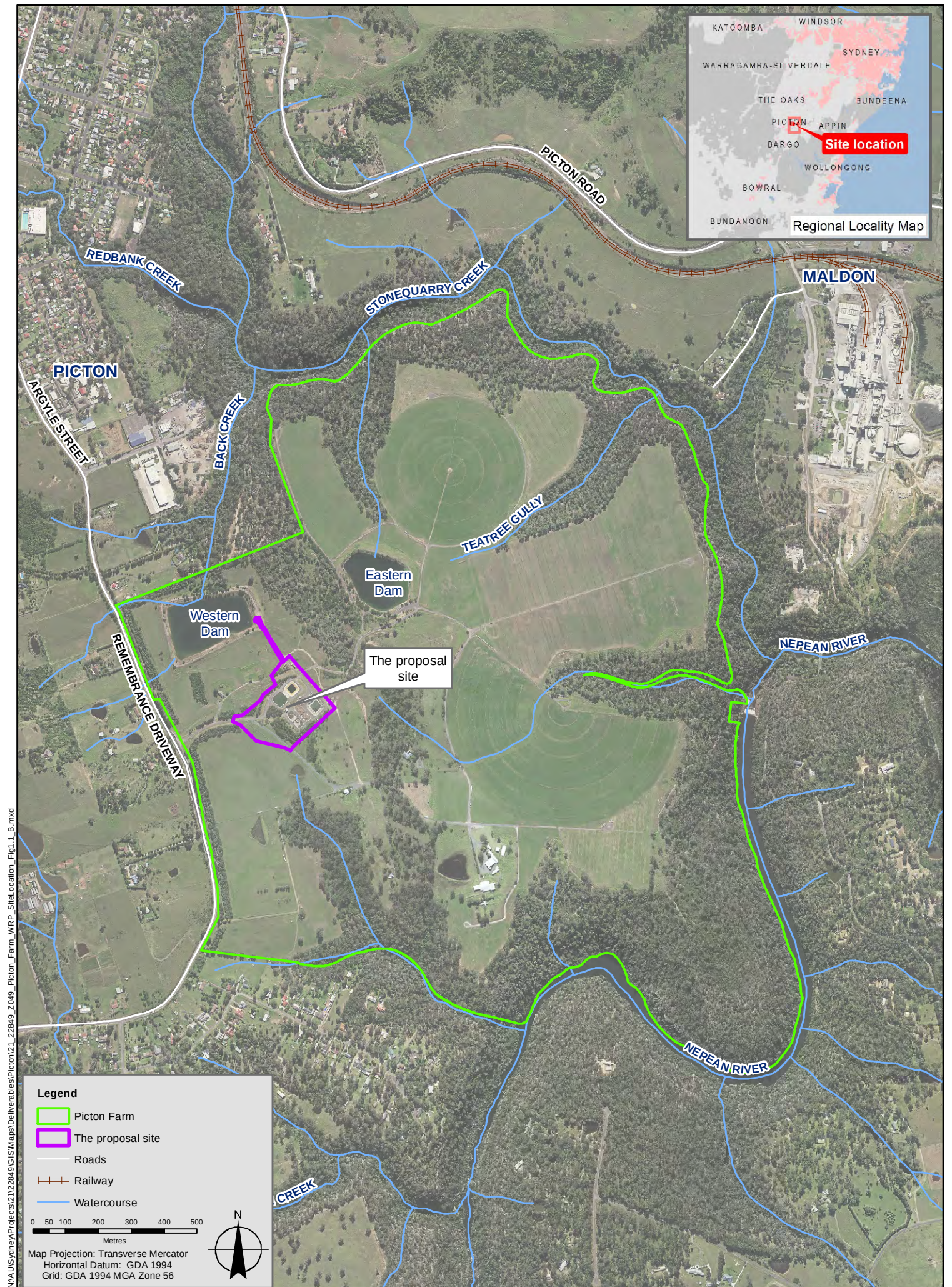


Figure 1.1
Location of the proposal

2. Location, existing facility and approvals

2.1 Overview

This section provides a description of the proposal's setting and location, including the key features of the surrounding environment (section 2.2). Further information on the existing environment is provided in sections 8 to 14. A description of the Picton WRP as it is now is provided in section 2.3. Section 2.4 describes the scope of the modification sought, and includes an assessment of the consistency of the proposal with the existing approval.

2.2 Location of the proposal

2.2.1 Study area context

The proposal is located within the Wollondilly Shire local government area (LGA) near the town of Picton (refer Figure 1.1). The Wollondilly LGA is situated at the south-western edge of the greater metropolitan region of Sydney, in the Macarthur region. The administrative centre of the LGA is located at Picton, which is about 80 kilometres to the south-west of Sydney's central business district. Picton is located about 20 kilometres and 30 kilometres to the south-west of Camden and Campbelltown respectively.

The majority of the LGA consists of reserves or forms part of Sydney's drinking water catchments. Remaining areas include rural/semi-rural areas, interspersed with a number of small towns and villages.

Picton is located to the south-east of the LGA. Picton initially developed when a new line of the Great South Road was cut over the Razorback Range from Camden, and development increased after the railway arrived in 1863. The town was established as Stonequarry in 1841 and was later renamed Picton in 1845. It remained a stopping point on the Great South Road, later renamed the Hume Highway, until the town was bypassed in 1980. In 2011, the population of Picton was 4,595 (ABS, 2011).

The main road providing access to and through the study area is Remembrance Driveway. The Picton WRP is located about 350 metres east of Remembrance Driveway. Remembrance Driveway passes through Picton roughly in a north-south direction. To the north-east, it connects to Camden (via the Old Hume Highway), Campbelltown and the Hume Motorway (via the Camden Bypass and Narellan Road). To the south, Remembrance Driveway connects Picton to Tahmoor.

Stonequarry Creek and the Nepean River are the main watercourses located in the study area. Stonequarry Creek is a tributary of the Nepean River. It is located about 800 metres to the north of the proposal site at the nearest point. The Nepean River is located about 1.3 kilometres to the east of the proposal site.

Tea Tree Gully, which drains to Stonequarry Creek, is located about 800 metres to the north-east of the proposal site. An ephemeral watercourse, Back Creek, is located between the Western Dam and Stonequarry Creek. At the nearest point, it is located about 180 metres to the north of the proposed pipeline location.

2.2.2 Proposal site

The proposal site for the purposes of the modification EA is shown in Figure 2.1. The Picton WRP, which is surrounded by Picton Farm, is located about 1.5 kilometres south of Picton. The WRP is

accessed via a gate located on the Picton Farm access road, which intersects with Remembrance Driveway. The WRP is located within a fenced site, which is about 3.5 hectares in size.

The majority of the proposal would be located within the existing fenceline of the WRP as shown in Figure 2.1. Other works would be located outside the existing fenceline, on land within Picton Farm that is not being used for irrigation.

Further information on existing characteristics of the proposal site is provided in sections 8 to 14.

2.3 The Picton Sewerage Scheme as approved

The original approval for the construction and operation of the Picton WRP formed part of the approval for the Picton Sewerage Scheme.

2.3.1 The Picton Sewerage Scheme

The assessment process for the Picton Sewerage Scheme identified that the scheme would be likely to have a significant impact on the environment. Therefore, approval for the scheme was sought under (the then) Division 4 of Part 5 of the EP&A Act. An environmental impact statement (EIS) was completed for Stage 1 in January 1996, and the (then) Minister for Urban Affairs and Planning gave conditional approval on 15 January 1997. The approved scheme includes:

- a collection system in Picton, Tahmoor and Thirlmere
- a water recycling plant (the Picton WRP) designed to treat an average dry weather flow (ADWF) of 2.7 ML/day
- use of treated effluent at a reuse area of up to 175 hectares (Picton Farm)
- precautionary discharge of excess treated effluent to Stonequarry Creek.

The approval history for the scheme is summarised in Table 2.1.

Table 2.1 Picton Sewerage Scheme approval history

Reference	Approval date	Scope of approval/application
1997-01-15	15 January 1997	Original approval for the Picton Sewerage Scheme.
1997-01-15 Mod1	5 March 1999	• relocation of the plant • increase in the irrigation area • construction of a transfer main from the plant to Picton
1997-01-15 Mod2	30 March 2009	Extension of the approved service area boundary.
1997-01-15 Mod3	24 January 2013	Removal of the boundary of the Picton Sewerage Scheme to allow properties outside the approved scheme boundary to connect to the scheme using uncommitted spare capacity at the Picton WRP and Picton Farm.



Figure 2.1
The proposal site

2.3.2 Picton WRP

Existing facilities and operation

The existing Picton WRP is shown in Figure 2.2. The WRP receives pumped flows from two wastewater pumping stations. The current ADWF is about 1.4 ML/day (at June 2014). Wastewater flows into the WRP through the inlet works, which consist of a step screen, flow measurement flume, flow distribution channel and odour control system.

Screened wastewater then flows from the flow distribution channel to two IDALs. Each IDAL has a volume of 1,985 m³. Liquid alum is added to the IDALs and the equalisation basin to precipitate phosphorus. Excess sludge is transferred to the sludge lagoons. There are currently two sludge lagoons, each with a volume of 2,600 m³.

Decanted effluent from the IDALs flows to the equalisation basin.

The Picton WRP produces both secondary and tertiary treated effluent. A portion of the secondary treated water is pumped to the tertiary filters and then to the ultra-violet (UV) disinfection system for tertiary treatment.

Effluent quality

The existing environmental protection licence (EPL) for the Picton Sewerage Scheme (EPL 10555) specifies the quality requirements for the effluent produced by the Picton WRP. The requirements are specified within section L3 ('limit conditions') of the EPL as concentration limits for two monitoring/discharge points (being point 1 at the 'outlet of the Effluent Buffer Tank at the Western Dam' and point 11 at the 'outlet of the effluent irrigation dam'). Condition L3.1 requires that 'for each monitoring/discharge point or utilisation area specified in the table below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table'.

2.3.3 Existing effluent management system

Storage dams

The effluent produced by the Picton WRP is stored and used as follows:

- secondary treated effluent is stored in the Eastern Dam for reuse via irrigation at Picton Farm
- tertiary treated effluent is stored in the Western Dam for:
 - reuse around the WRP
 - discharge to Stonequarry Creek as precautionary discharges.

The total holding capacity of the Eastern Dam and Western Dam is about 163 ML and 169 ML respectively. Most of the effluent produced by the WRP is used for irrigation.

Picton Farm

Picton Farm has a total area of about 306 hectares. The approved irrigation areas are specified by conditions L7 and P1 of the EPL (as utilisation areas).

Picton Farm operates as a 'deficit irrigation system'. A deficit irrigation approach involves the application of water strictly to meet plant water requirements. Water is applied so that soil moisture does not reach the field capacity (that is, it remains in deficit).



Figure 2.2
Picton WRP – existing facilities

The main objective of Picton Farm is to maximise the reuse of effluent, and beneficially apply all biosolids generated by the Picton WRP. The operation of Picton Farm involves the application of treated effluent to about 119 hectares of mixed pasture species.

The majority of the reuse areas at Picton Farm are planted with perennial ryegrass. The pasture produced is cut and baled as silage, and sold to local dairy producers as a high quality supplementary feed source.

Picton Farm also includes a network of run-off collection banks and terminal ponds to capture uncontrolled run-off from the areas subject to irrigation.

Biosolids application

Liquid sludge (biosolids) from the sludge lagoons at the Picton WRP are applied to the land at Picton Farm to increase soil fertility, with application typically occurring two to three times a year. This process takes about one week and involves pumping the liquid sludge directly into trucks. Liquid sludge is then applied at Picton Farm by direct injection beneath the surface of the crop.

Biosolids application is undertaken in accordance with the EPL and the NSW *Environmental guidelines: use and disposal of biosolids products* (EPA, 2000) (the NSW Biosolids Guidelines).

Precautionary discharges

Precautionary discharge from the Picton WRP is permitted during wet weather. Excess effluent is discharged to Stonequarry Creek via the Western Dam as precautionary discharges in accordance with EPL 10555. The EPL regulates precautionary discharges in the following ways:

- Discharges are only permitted when flows in Stonequarry Creek are more than 8 ML/day.
- A discharge of up to 25% of the creek flow is permitted when flows in Stonequarry Creek are greater than 8 ML/day.
- The total discharge to Picton Farm and Stonequarry Creek is limited to 14 ML/day.

2.3.4 Existing environmental management framework

The existing management framework for the Picton Sewerage Scheme is provided by the documents outlined in Table 2.2.

Table 2.2 Environmental management framework

Document	Summary
<i>Picton Regional Recycled Water Scheme – Picton Farm Operational Environmental Management Plan</i> (the OEMP)	The OEMP was prepared in accordance with the conditions of approval for the Picton Sewerage Scheme and the <i>Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006</i> . Its main focus is on the environmental risks specific to operation of Picton Farm. The OEMP details operational environmental management, monitoring and compliance requirements. It is revised annually.
<i>Review of Environmental Factors - Picton Farm Biosolids Application</i> (Sydney Water, 2014) (the Picton Farm Biosolids Application REF)	The Picton Farm Biosolids Application REF assessed the potential environmental impacts of the application of biosolids to land within Picton Farm. The REF identifies the management measures to avoid or minimise the potential environmental impacts associated with the application of biosolids, and to ensure compliance with NSW Biosolids Guidelines.
<i>Picton Regional Sewerage Scheme - Operations Interface Protocol</i> (July 2013) (the Picton Operations	The Picton Operations Interface Protocol defines the roles and responsibilities at the interface of Picton Farm and the Picton WRP. It defines the responsibilities for management of environmental issues and environmental compliance. The protocol covers the

Document	Summary
Interface Protocol)	communications and operation interfaces between the Operations Contracts Team, the farm manager and the manager of the Picton WRP.
<i>Recycled Water Quality Management Plan - Picton Recycled Water Irrigation Scheme</i> (September 2012) (the Picton Recycled Water Quality Management Plan)	The Picton Recycled Water Quality Management Plan was prepared in accordance with the <i>Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006</i> . The plan addresses each of the twelve elements of these guidelines. It focuses on the Picton wastewater catchment, the Picton WRP treatment processes, and the effluent delivery system. The plan considers the intended uses of the effluent by customers, and the management controls required for implementation.
<i>Property Environmental Management Plan - Picton Sewage Treatment Plant</i> (June 2010) (the PEMP)	The PEMP provides guidance in relation to environmental management of the property and grounds at the Picton WRP and Picton Farm. It identifies the key environmental issues associated with property and grounds maintenance activities, and the actions to manage the identified risks. The PEMP also identifies areas and/or items of environmental significance, and provides guidance on appropriate property and grounds maintenance activities.
<i>Pollution Incident Response Management Plan for Picton Water Recycling Plant</i> (May 2014) (the PIRMP)	The PIRMP was prepared in accordance with Part 5.7A of the <i>Protection of the Environment Operations Act 1997</i> and Part 3A of the <i>Protection of the Environment Operations (General) Regulation 2009</i> . The PIRMP provides a framework to ensure pollution incidents are managed and reported in accordance with statutory requirements.

2.4 Scope of the modification

2.4.1 Consistency of the proposal with the existing approval

Sydney Water has assessed whether the proposal is consistent with the existing conditions of approval for the scheme (as modified). The results of the consistency assessment indicate the following:

- The proposal would be inconsistent with the approved project defined by Condition of Approval 1, as it involves an increase in the capacity of the Picton WRP.
- There is the potential for additional impacts associated with the proposal that have not been assessed previously. As a result, additional assessment is required.

2.4.2 Summary of the modifications for which approval is sought

As the proposal is considered to be inconsistent with the existing terms of approval, Sydney Water is seeking approval to modify the existing development approval, to enable the Picton WRP to be amplified.

In summary, approval is sought under Section 75W of the EP&A Act to modify the existing approval for the Picton Sewerage Scheme, undertake the works listed in section 1.3, and operate the amplified Picton WRP. The amplified WRP would have the capacity to treat wastewater flows of 4 ML/day. It is predicted that the amplified WRP would provide capacity until between 2023 and 2027.

Options to manage and/or reuse the additional effluent produced by the amplified WRP are currently being considered. The preferred option will be the subject of a separate assessment process.

3. Statutory framework

3.1 Overview

This section provides a description of the approval process for the proposal, in particular, the modification process under Part 3A of the EP&A Act. It includes consideration of the:

- permissibility of the proposal under relevant environmental planning instruments
- requirements of other planning instruments and environmental planning legislation that are directly relevant to the assessment and approval of the proposal
- requirements for the environmental assessment.

3.2 Approval under the Environmental Planning and Assessment Act 1979

The EP&A Act provides the statutory basis for planning and environmental assessment in NSW. The EP&A Act provides the framework for environmental planning and development approvals, and includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision making process.

As outlined in the following sections, the proposal is considered to be subject to assessment and approval as a modification of the existing approval under Section 75W of the EP&A Act.

3.2.1 Application of Section 75W

Part 3A of the EP&A Act, which consolidated the assessment and approval regime for major projects, commenced in August 2005. The transitional provisions for the introduction of Part 3A provided that projects likely to have a significant effect on the environment, which would have previously required an EIS under Part 5 of the EP&A Act, would fall under Part 3A.

The Picton Sewerage Scheme was subject to these requirements, and it became a Part 3A project. Under Clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* (the Regulation) the 1997 approval for the scheme was therefore taken to be an approval under Part 3A. Although Part 3A has since been repealed, clause 12 of Schedule 6A relates to the continued application of Part 3A to modifications of certain approvals. It states that:

Section 75W of Part 3A continues to apply to modifications of the development consents referred to in clause 8J(8) of the Environmental Planning and Assessment Regulation 2000, and so applies whether an application for modification is made before or after the commencement of this clause.

Therefore, as the Minister for Urban Affairs and Planning approved the original scheme, Section 75W applies for the purposes of a modification. The current application to modify the existing approval is made under Section 75W for approval by the Minister for Planning.

3.3 Environmental planning instruments

Under Section 75R(3) of the EP&A Act, environmental planning instruments (other than State environmental planning policies) do not apply to a project once it is approved. However, under sections 75J(3) and 75O(3), the Minister may take into account the provisions of environmental planning instruments that would otherwise apply. In addition, the Minister may not approve a project or part of a project that would be otherwise prohibited by an environmental planning instrument (Section 80 of the Regulation).

Table 3.1 considers the environmental planning instruments that are relevant to the approval and assessment of the proposal.

Table 3.1 Consideration of relevant environmental planning instruments

Planning instrument	Relevance to the proposal
<i>Wollondilly Local Environmental Plan 2011</i> (Wollondilly LEP)	Under the Wollondilly LEP, the proposal would be undertaken on land that is zoned RU2 Rural Landscape. Clause 5.12(1) of the Wollondilly Local Environmental Plan 2011 states that <i>'This Plan does not restrict or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out without consent, or that is exempt development, under the State Environmental Planning Policy (Infrastructure) 2007'</i>. As the proposal is permitted without consent under the Infrastructure SEPP (see below), the consent requirements of the LEP do not apply.
<i>State Environmental Planning Policy (Infrastructure) 2007</i> (Infrastructure SEPP)	The proposal would meet the definitions of 'sewage treatment plant' under Clause 105 of the Infrastructure SEPP. Under Clause 106(1), development for the purposes of sewage treatment plants may be carried out by, or on behalf of, a public authority without consent on land in a prescribed zone. The prescribed zones include RU2. As the proposal is being carried out by Sydney Water on land in a prescribed zone, it is permissible without consent under the Infrastructure SEPP. For development undertaken by a public authority, clauses 13 to 16 of the Infrastructure SEPP also specify requirements for consultation with local councils and other public authorities. As the proposal would not trigger any of the requirements under these clauses, consultation in accordance with the Infrastructure SEPP would not be required. However, consultation with Wollondilly Council and other relevant stakeholders has been, and will continue to be undertaken as outlined in section 4.
<i>Sydney Regional Environmental Plan No. 20 – Hawkesbury Nepean River (No.2 – 1997)</i> (SREP 20)	The proposal is located on land to which SREP 20 applies. The proposal does not require consent under SREP 20. However, under Clause 4(1)(b), the matters listed under Clauses 5 and 6 that apply to a proposal must be considered by a public authority or State owned corporation carrying out development that does not require consent. Table 3.2 addresses these matters as they apply to the proposal.

Table 3.2 Consideration of the provisions of SREP 20

Consideration	Comment
Clause 5	
The aim of this plan which is to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context	This modification EA assesses the impacts of the proposal and takes into account the potential regional impacts. The proposal is not anticipated to have any significant and/or regional level impacts.
The strategies listed in the Action Plan of the Hawkesbury-Nepean Environmental Planning Strategy	The proposal is not inconsistent with any of the strategies listed in the Action Plan.
Whether there are any feasible alternatives to the development or other proposal concerned	Alternatives to the proposal have been considered and are outlined in section 5.

Consideration	Comment
The relationship between the different impacts of the development or other proposal and the environment, and how those impacts would be addressed and monitored.	Sections 8 to 16 of the modification EA assess the potential impacts of the proposal and identifies mitigation measures to minimise these impacts.
Clause 6	
Total catchment management	Sections 8 to 16 assess the potential impacts of the proposal. The proposal would not result in any significant impacts on the catchment.
Environmentally sensitive areas	Mitigation measures, provided in sections 8 to 16, would be implemented to minimise impacts on environmentally sensitive areas.
Water quality	Mitigation measures would be implemented to minimise impacts on water quality (refer section 8.3).
Water quantity	Options to manage and/or reuse the additional effluent produced by the amplified WRP are currently being considered. The preferred option will be the subject of a separate assessment process
Cultural heritage	An assessment of the potential for heritage impacts was undertaken, and the results are summarised in section 10. The Aboriginal heritage assessment report is provided in Appendix C.
Flora and fauna	An assessment of the potential for flora and fauna impacts was undertaken, and the results are summarised in section 9.
Riverine scenic quality	The proposal would not impact on the scenic quality of the Nepean River.
Agriculture/aquaculture and fishing	The impact of the proposal on the operation of Picton Farm is considered in section 6.5.
Rural residential development	Not applicable
Urban development	Not applicable
Recreation and tourism	The proposal would not impact upon any recreational land or tourism operations.
Metropolitan strategy	The proposal is consistent with the vision, goal, key principles and action plan of the Metropolitan Strategy.

3.4 Consideration of relevant NSW legislation

3.4.1 Approvals that do not apply

Section 75U(1) of the EP&A Act specified certain authorisations which are not required for an 'approved project' under Part 3A. These included the following authorisations, which may otherwise have been relevant to this project:

- *Fisheries Management Act 1994* – a permit under section 201, 205 or 219
- *Heritage Act 1977* – approval to disturb an item under Part 4 or an excavation permit under section 139
- *National Parks and Wildlife Act 1974* – a section 87 research permit or a section 90 consent to destroy
- *Native Vegetation Act 2003* – an authorisation referred to in section 12 to clear native vegetation
- *Rural Fires Act 1997* – a bushfire safety authority under section 100B

- *Water Management Act 2000* – a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91.

3.4.2 Approvals legislation to be applied consistently

Under section 75V(1) of the EP&A Act, the following authorisations cannot be refused if necessary for the carrying out of an 'approved project' and are to be substantially consistent with an approval to carry out the project given under Part 3A:

- *Protection of the Environment Operations Act 1997* – an environment protection licence under Chapter 3 of the Act
- *Roads Act 1993* - a permit under s138 to impact on public roads.

3.4.3 Consideration of other requirements under NSW Acts

Other environmental legislation that is directly relevant to the approval and/or assessment of the proposal is considered in Table 3.3.

Table 3.3 Consideration of relevant legislation

Act	Potential approval requirement	Relevance to the proposal
<i>Protection of the Environment Operations Act 1997</i> (POEO Act)	An EPL is required for scheduled activities or scheduled development work.	The operation of a sewage treatment system is a scheduled activity under Clause 36 of Schedule 1 of the POEO Act. Sydney Water holds an EPL for the operation of the Picton Sewerage Scheme (EPL 10555). The licence conditions set limits on the quality and quantity of effluent used on Picton Farm, and the quality of effluent discharged to Stonequarry Creek in precautionary discharges. The licence does not specify a limit for wet weather overflows. The proposal would be designed and operated to ensure that Sydney Water continues to comply with the effluent concentration limits specified in Section L3 of the EPL. Relevant conditions are considered in Table 6.2.
<i>Roads Act 1993</i>	Approval under section 138 for works to a public (classified) road	The proposal would not impact on any classified roads.
<i>Threatened Species Conservation Act 1995</i> (TSC Act)	The TSC Act lists threatened species, populations or ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, or their habitats. If any of these could be impacted by the project, an assessment of significance that addresses the requirements of section 5A of the EP&A Act must be completed to determine the significance of the impact.	The proposal site has been cleared in the past and subject to previous disturbance. The proposal would not result in any impacts to listed flora, fauna or communities, and a species impact statement is not required. Further information is provided in section 9.
<i>Noxious Weeds Act 1993</i>	Under Part 3 Division 1 of the Act, all private landowners, occupiers, public authorities and Councils are required to control noxious weeds on their land.	Four noxious weeds have been recorded within the proposal site. Further information is provided in section 9.

Act	Potential approval requirement	Relevance to the proposal
<i>Mine Subsidence Compensation Act 1961</i>	Approval is required under Section 15 to alter or erect improvements within a mine subsidence district	The proposal site is located within the Bargo Mine Subsidence District. Once the proposal has been approved and the detailed design completed, Sydney Water would seek approval for the proposal from the Mine Subsidence Board.

3.5 Commonwealth legislation

3.5.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas and species, populations and communities and heritage items. The approval of the Commonwealth Minister for the Environment is required for an action:

- which has, would have or is likely to have, a significant impact on 'matters of national environmental significance'
- likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

Several nationally threatened species and communities are listed as potentially occurring within the study area. The flora and fauna assessment concluded that the proposal would not result in a significant impact on any matters of national environmental significance (refer to section 9). No national heritage properties are located in close proximity to the proposal. No Commonwealth owned land would be affected by the proposal.

3.6 Assessment requirements

The Secretary's environmental assessment requirements issued on 17 November 2014 identify the key issues to be addressed and the level of assessment required. A copy of the requirements is included in Appendix A. The issues raised for consideration, and the section of the environmental assessment that addresses them, are outlined in Table 3.4.

Table 3.4 Summary of the Secretary's environmental assessment requirements

Issue	Requirements summary	Where addressed
General requirements	Executive summary	Executive summary
	Detailed description of the proposed modification, including:	
	• construction methods	Section 6.4.1
	• location and alignment of project components	Sections 2.2 and 6.3
	• operation details	Sections 6.3.2 and 6.5
	• wet weather event management	Section 6.5.5
	• interfaces with existing infrastructure	Section 6.5.3
	• energy requirements	Section 6.5.6
	• staging	n/a
	Consideration of any relevant statutory provisions	Section 3

Issue	Requirements summary	Where addressed
	Assessment of the environmental impacts	Sections 8 to 16
	Draft Statement of Commitments	Section 17.5
	Justification	Section 18
	Certification by the author	Front of document
Strategic justification	Strategic context	Sections 5.2 and 5.3.1
	Need and alternatives	Section 5
Water quality	Impacts of construction	Section 8.2.1
	Impacts of changes in operation	Sections 6.5 and 8.2.2
	Management measures	Section 8.3
Ecological impacts	Impact assessment	Section 9.3
	Management of impacts	Section 9.4
Aboriginal heritage	Assessment of potential impacts and proposed mitigation measures	Section 10
Non Indigenous heritage	Assessment of potential impacts and proposed mitigation measures	Section 10
Human health	Identify any change to risk to human health and proposed management measures	Section 16
Odour	Assessment of potential impacts and proposed mitigation measures	Section 11
Noise and vibration	Assessment of potential impacts and proposed mitigation measures	Section 12
Traffic and transport	Assessment of impacts to the local and regional road network	Section 13
Visual amenity	Assessment of changes to visual amenity and mitigation measures	Section 14
Hazards and risk	Assessment of potential impacts and proposed mitigation measures	Section 16
Environmental risk analysis	Include an environmental risk analysis	Section 7
Consultation	Consultation with agencies, stakeholders and community	Section 4

4. Stakeholder consultation

4.1 Overview

This section describes the consultation undertaken by Sydney Water during development of the proposal. It includes a summary of the consultation plan for the proposal (section 4.2), the Aboriginal consultation undertaken as part of the Aboriginal heritage assessment (section 4.3), and the agency stakeholder engagement undertaken by Sydney Water (section 4.4). The key issues raised to date are summarised in section 4.5.

4.2 Consultation plan

A Communications Management Plan for the proposal has been prepared by Sydney Water. The plan:

- outlines the approach to communication during the planning, design and construction of the proposal
- describes the communication strategy and approach
- identifies the stakeholders, and the issues and key messages to be used in communicating with these stakeholders
- provides an overview of the communications tools and techniques to be used.

Overall, the plan is designed to establish a positive framework for stakeholder relationships that will provide support to the ongoing development of community and stakeholder engagement throughout all phases of the proposal.

4.3 Aboriginal consultation

Consultation with Aboriginal people was undertaken as part of the Aboriginal heritage assessment (described in section 10) in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005). The formal consultation process included:

- government agency notification letters
- contacting Aboriginal groups to register interest in the proposal
- advertising for registered stakeholders in the Macarthur Chronicle (on 28 January 2014) and the Wollondilly Advertiser (29 January 2014)
- notification of closing date for registration
- ongoing compilation of registrant's list, continuing to register individuals and groups for consultation on the proposal
- consultation/information day held on 25 February 2014 at 50 Matthews Lane, Picton, to present the results of the preliminary Aboriginal heritage assessment and discuss relevant cultural information for incorporation into the assessment report
- provision of draft Aboriginal heritage assessment report for review
- ongoing consultation with the local Aboriginal community.

Further information on the consultation process, including registered statements and outcomes is provided in Appendix C.

4.4 Stakeholder engagement undertaken to date

Sydney Water has engaged agency stakeholders and sought feedback on both the current proposal, and options to manage the additional effluent. Table 4.1 provides a summary of the consultation undertaken. Issues raised that are relevant to the proposal are summarised in Table 4.2.

Table 4.1 Consultation undertaken

Stakeholder	Summary of consultation	Date
Office of Water	Overview of proposal provided via email.	27 November 2013
	Meeting held to provide an overview of proposal.	12 December 2013
	Specialist studies, including the land capability and flora and fauna assessments, provided for review and comment.	Land capability assessment provided 17 January 2014 Flora and fauna assessment provided 3 February 2014
	Meeting held to present findings of specialist studies.	12 February 2014
	Update on revised scope of modification provided via email.	14 October 2014
EPA	Meeting held to provide an overview of changes to the Bargo and Buxton Wastewater Schemes and implications for the Picton Sewerage Scheme.	30 September 2013
	Meeting held to discuss current and future management of Picton WRP and farm, including the proposal.	24 January 2013
	Meeting held to discuss a number of issues related to the EPL, pH buffering and the modification in general.	6 February 2014
	Specialist studies, including the land capability, flora and fauna, odour, and the noise and vibration assessments, provided for review and comment.	6 February 2014
	Meeting held to present findings of specialist studies.	18 February 2014
	Letter received from the EPA with preliminary comments on the specialist studies.	19 March 2014
	Meeting held to discuss Picton EPL and load limit re-distribution with Wallacia WWTP.	20 May 2014
	Update on revised scope of modification provided via email.	13 October 2014
	Updated draft specialist studies, including odour and noise and vibration assessments, provided for review and comment.	21 October 2014
	Meeting held to discuss revised scope and findings of specialist studies.	27 October 2014
	Email received from the EPA with feedback on the updated odour and noise and vibration assessments.	28 October 2014
Wollondilly Council	Overview of proposal provided via email.	16 December 2013
	Meeting held to provide overview of proposal.	30 January 2014
	Specialist studies, including the land capability and flora and fauna assessments, provided for review and comment.	5 February 2014
	Letter provided to Council regarding the Picton Bypass Corridor.	17 July 2014

Stakeholder	Summary of consultation	Date
	Update on revised scope of modification provided via email.	14 October 2014
	Email received from Council acknowledging revised scope of modification.	14 October 2014
NSW Ministry of Health	Overview of proposal provided via email.	16 December 2013
	Update on revised scope of modification provided via email.	14 October 2014
	Email received from the Ministry of Health acknowledging revised scope of modification.	14 October 2014
Office of Environment and Heritage (OEH)	Overview of proposal provided via email.	20 November 2013
	Specialist studies, including the land capability, flora and fauna and Aboriginal heritage assessments, provided for review and comment.	Offered on 4 February 2014, however OEH declined to review at this stage
	Update on revised scope of modification provided via email.	14 October 2014
Local Land Services (formerly Hawkesbury Nepean Catchment Management Authority)	Overview of proposal provided.	27 November 2013
	Meeting held to provide overview of proposal.	12 December 2013
	Specialist studies, including the land capability and flora and fauna assessments, provided for review and comment.	Land capability assessment provided 17 January 2014 Flora and fauna assessment provided 3 February 2014
	Meeting held to present findings of specialist studies.	12 February 2014
	Update on revised scope of modification provided via email.	14 October 2014
Australian Rail Track Corporation	Overview of proposal provided via email.	16 November 2013
	Update on revised scope of modification provided via email.	14 October 2014
Roads and Maritime Services	Overview of proposal provided via email.	9 December 2013
	Feedback received from Roads and Maritime Services via email.	13 December 2013
	Response provided in relation to issues raised.	20 January 2014
	Feedback received via email regarding long term plans.	30 January 2014
	Update regarding revised scope of modification provided via email.	14 October 2014
	Feedback received on the revised scope of the modification.	4 November 2014
Tharawal Local Aboriginal Land Council	Overview of proposal and due diligence study provided via email.	27 November 2013
	Meeting held to discuss proposal.	14 February 2014
	Update on revised scope of modification provided via email.	14 October 2014
Mine Subsidence Board	Overview of proposal provided via email.	16 December 2013
	Feedback received from the Mine Subsidence Board.	17 December 2013
	Update on revised scope of modification provided via email.	14 October 2014
	Feedback received on the revised scope of the modification.	14 October 2014

4.5 Issues raised

A summary of the issues raised by stakeholder agencies that are directly relevant to the current proposal are listed in Table 4.2.

Table 4.2 Summary of issues raised by stakeholders

Agency	Issue raised	Where addressed
Office of Water	Proposed site water use and management arrangements.	Sections 6.5 and 8
	Licensing considerations.	No approvals/licences under the <i>Water Management Act 2000</i> are required
	Groundwater assessment.	Section 8.2
	Impacts on watercourses and riparian land and mitigation measures.	Sections 8.2 and 8.3
	Impacts on groundwater dependent ecosystems.	No impacts predicted
	Consideration of Water Sharing Plans and relevant policies and guidelines.	No impacts predicted
EPA	Groundwater impacts.	Section 8.2
	Out of hours work requirements, noise impacts and mitigation measures.	Section 12
	Impacts of the proposal on nutrient loads within the Hawkesbury-Nepean River system.	Construction impacts – section 8.2 Operation impacts – would be assessed once the preferred approach to managing the additional effluent generated is confirmed (refer section 6.5.2)
	Licensing requirements and EPL issues including water, air, noise, waste.	Sections 3.4.3, 6.5, 8, 11, 12 and 15
	The capacity of the Picton System to treat increased flows whilst minimising impacts on the receiving environment.	Section 6.5
	Sydney Water's ability to ensure ongoing compliance with the conditions of the EPL (in the short and long term).	Table 6.2 and section 6.5
	Impacts of the proposal on local waterways, endangered ecological communities and the local groundwater system.	Sections 8.2 and 9.3
	Actions that will be taken to avoid or mitigate impacts or compensate for unavoidable impacts.	Sections 8 to 16
Local Land Services	Impacts on precautionary discharges.	Section 6.5.2
	Total predicted inflows to Picton WRP and Picton Farm.	Section 5.3
Mine Subsidence Board	The proposal will need to be designed to cater for subsidence parameters.	Noted
Wollondilly Council	Servicing of future growth by the Picton Sewerage Scheme.	Section 5.3
	Corridor for future Picton by-pass road.	Noted
NSW Office of	Impacts on water quality (surface and groundwater) and	Section 8.2

Agency	Issue raised	Where addressed
Water	watercourses.	
	Impacts on riparian vegetation.	Potential for indirect impacts only – refer section 9.3
Roads and Maritime Services	Increase in traffic along Remembrance Driveway during construction. Impacts to be managed in accordance with the Traffic Control at Worksites Manual.	Section 13.2

5. Need for the proposal and options considered

5.1 Overview

This section describes why the proposal is needed, how it developed, and the main options considered during development of the proposal. Various studies, design reviews and investigations were undertaken during the proposal development process. These investigations, which provide the planning context for the proposal, are listed in section 5.2. The need for the proposal, which is summarised in section 5.3, was identified as an outcome of these investigations. The outcomes of the various studies have indicated that the existing capacity of the Picton WRP is insufficient to meet future demands. Various options to increase the capacity of the Picton WRP were identified and assessed. These options are discussed in section 5.4.

5.2 Planning context

The Picton Sewerage Scheme was commissioned in 2000 to serve the towns of Picton, Tahmoor and Thirlmere. Since that time, the service area and surrounding areas have been the subject of increased growth pressures. As a result, Sydney Water recognised that detailed planning was required to determine the new wastewater infrastructure needed.

In 2012, Sydney Water commissioned GHD to undertake detailed planning for amplification of the Picton Sewerage Scheme. The outcome of this study was the *Report for Detailed Planning for Picton Sewerage Scheme, Amplification Picton WRP Capacity Constraints & Opportunities Assessment* (GHD, 2012). This report identifies the amplifications required to service medium term (2018) and long-term (2036) growth.

Other studies and reports commissioned by Sydney Water to assess the need and options for amplification of the scheme include:

- *Report for Picton Sewerage Scheme Amplification, Desktop Assessment of Potential Environmental Constraints*, GHD, August 2012
- *Detailed Planning for Picton Sewerage Scheme Amplification, Technical Memo – Picton Water Balance Modelling*, GHD, November 2012
- *Report for Detailed Planning for Picton Sewerage Scheme Amplification, Desktop Review of Picton Reuse Farm Capacity Constraints & Opportunities*, GHD, December 2012
- *Detailed Planning for Picton Sewerage Scheme Amplification, Options Report & Augmentation Plan*, ENSure, April 2013
- *Picton Constraints Assessment – Biodiversity*, ENSure, July 2013
- *Picton Irrigation Areas Constraints Assessment – Aboriginal Heritage Due Diligence Assessment*, Kelleher Nightingale, August 2013
- *Growth System Strategy Picton WRP*, Sydney Water, August 2013
- *Picton WRP - Augmentation Needs to Receive Flows From Bargo & Buxton, Options Report*, ENSure, October 2013
- *Picton Farm Reclaimed Water Irrigation, Land Capability Assessment*, ENSure, December 2013

- *Feasibility of Land Treatment by Subsurface Irrigation at Picton*, BMT WBM, January 2014
- *Picton WRP Upgrade and Amplification – Stage 2 Concept Design Report*, ENSure, October 2014.

As an outcome of these studies, Sydney Water identified the actions that need to be undertaken over the short, medium and long term. The proposal that is the subject of the current application focusses on those actions that need to be implemented in the short term to increase the capacity of the Picton WRP to 4 ML/day.

Other actions (such as those required to manage the additional effluent produced by the Picton WRP) will be subject to separate assessment processes.

5.3 Need for the proposal

5.3.1 Future needs

The need for the proposal is driven by the following:

- the transfer of residential flows from the Bargo and Buxton wastewater scheme
- connection of Inghams Enterprises' turkey processing facility
- future connection of the Wollondilly Abattoir
- urban growth around the villages of Picton, Tahmoor and Thirlmere.

Further information is provided below.

The Bargo and Buxton Wastewater Scheme

The Priority Sewerage Program aims to provide improved wastewater services to unsewered urban villages and suburbs in the greater Sydney metropolitan area. Improved wastewater services would provide environmental and social benefits, and reduce potential risks to public health. In November 2011, the NSW Government announced that under the Priority Sewerage Program, six villages (including Bargo and Buxton) would receive an improved wastewater service by mid 2014. Sydney Water's Operating Licence was modified to require the delivery of wastewater services to these villages by 30 June 2014.

In July 2014, the Bargo and Buxton Wastewater Scheme was connected to the Picton Sewerage Scheme at Tahmoor. Improved wastewater services were provided to about 830 properties in Bargo and about 700 properties in Buxton.

Inghams Enterprises

Sydney Water's most recent application to modify the approval for the Picton Sewerage Scheme (1997-01-15 Mod3, approved 24 January 2013) identified that Inghams Enterprises had inquired about a possible future connection to the scheme at Tahmoor. This connection was proposed to manage the wastewater associated with their turkey processing facility.

Sydney Water agreed to a connection for Inghams Enterprises, to transfer the treated wastewater from their Tahmoor facility to Sydney Water's wastewater system. The flow will be limited to 0.23 ML/day from June 2014 to June 2015. From this date, flows will increase over time to 0.5 ML/day, as detailed in the EPL for the facility (EPL 1699).

Future connection of the Wollondilly Abattoir

Wollondilly Abattoir has been directed by the EPA to connect to the Picton Sewerage Scheme (as part of a pollution reduction program under EPL 422). Sydney Water has given the managers of the abattoir conditional approval to connect to the scheme. The abattoir is expected to discharge an average of 0.06 ML/day to the scheme from August 2015.

New urban growth

Amplification of the Picton WRP would also cater for the growth areas and developments located on the outskirts of Picton, Tahmoor and Thirlmere. These were identified in Sydney Water's boundary modification application (1997-01-15 Mod3) as noted in Table 2.1.

5.3.2 The existing situation

Existing operations

The existing operations of the Picton WRP are described in section 2.3.

Operational constraints

The existing approved capacity of the Picton WRP is 2.7 ML/day. In 2013 Sydney Water audited the Picton WRP and found that the capacity of the biological treatment processes had been over estimated. In September 2013, the capacity of the IDALs was down rated from 4 ML/day to 1.7 ML/day. The previous capacity was based on hydraulic load, rather than the industry standard practice of biological load. An upgrade of the IDALs aeration system to increase the capacity to 2.6 ML/day is currently underway and due for completion in December 2014. 2.6 ML/day is considered to be the existing capacity of the WRP for the purposes of this assessment.

Future needs vs the current situation

The existing capacity of the Picton WRP cannot accommodate the projected increases in ADWF. To manage the projected increase in flows, Sydney Water proposes to increase the capacity of the WRP to 4 ML/day. This would provide capacity to treat wastewater flows at the Picton WRP until 2023 to 2027, depending on the level of growth and new connections to the Picton Sewerage Scheme.

Sydney Water has assessed the works required at the Picton WRP to treat an ADWF of 4 ML/day. The main requirement is to augment the secondary treatment process capacity, essentially doubling the capacity of the IDALs and sludge lagoons.

Operational improvements

Sydney Water and ENSure have identified a number of opportunities for operational improvements at the Picton WRP. Key areas for improvement include:

- the existing inlet works do not provide for grit removal
- the flow distribution structure is in poor condition
- the existing sludge lagoons do not have adequate facilities for sludge withdrawal and are not capable of being operated in series
- the existing alum dosing system does not comply with usual standards in relation to operability and spill prevention
- the additional biological oxygen demand caused by citric acid dosing increases the risk that the WRP would exceed the annual load limit for biological oxygen demand.

These operational improvements are also included as part of the proposal to ensure that the Picton WRP is able to meet existing and future needs.

5.4 Options and alternatives considered

5.4.1 Options considered

The options considered by Sydney Water to manage the identified future requirements are summarised in Table 5.1.

Table 5.1 Consideration of options

Option	Description	Key risks and opportunities
1	Amplify the Picton WRP to cater for additional flows	- would allow Sydney Water to continue to comply with the effluent concentration limits specified in the EPL - would allow for growth to 2023 - 2027 - a modification to the approval for the Picton Sewerage Scheme would be required
2	Delay/refuse additional connections (ie only accept up to the existing capacity)	- would lead to community and stakeholder dissatisfaction - would be inconsistent with the approval for the Picton Sewerage Scheme
3	Accept connections and operate plant above treatment capacity	- could lead to plant breakdowns - would not comply with the EPL and the existing conditions of approval

5.4.2 The preferred option

Option 1 (the proposal) was identified to be the preferred option, as it would minimise the potential risks in terms of:

- environmental impacts
- the existing approval and modification requirements
- the existing EPL
- community and customer impacts.

5.4.3 Consideration of alternatives and refining the preferred option

Options for the proposal

Sydney Water engaged ENSure to undertake the detailed planning for the Picton WRP to define the system amplifications required to service medium-term and long-term growth. In addition, Sydney Water engaged ENSure to determine the requirements for the Picton WRP to receive flows from Bargo and Buxton (ENSure, 2013a). The assessments involved the following tasks:

- determine the design basis
- assess the current capacity of process units at the Picton WRP
- assess the capacity constraints of process units
- identify and assess options for augmentation works to address the identified gaps
- provide planning-level cost estimates and timing for the recommended works.

The following options were identified.

IDAL upgrade options

The gap analysis identified that the IDAL capacity would be exceeded when the ADWF exceeds 2.6 ML/day.

The capacity of each existing IDAL (with a surface aeration system) is 1.3 ML/day per tank.

The preferred option is to construct two additional IDALs, providing a total capacity of 4 ML/day.

This option was preferred for the following reasons:

- the catchment loading rates indicated that a fourth IDAL would be required as early as 2018 based on current growth scenarios
- to provide redundancy in the treatment process, which would allow one of the IDALs to be taken off-line for maintenance (not currently possible).

To minimise potential operational complexity and cost, other possible secondary treatment systems (such as a membrane bioreactor) were not considered.

Inlet works

Options for the inlet works included modification of the existing structure or installation of new inlet works. ENSure (2013a) recommended that new inlet works be installed for the following reasons:

- the existing inlet works would not be capable of distributing flows to the new IDALs, and it is not practicable to modify the existing inlet
- there are significant issues with the existing inlet, including corrosion, inadequate ventilation and odour control, and inadequate hydraulic freeboard
- building a new inlet would provide an opportunity to install a grit removal process, which would enhance the performance of the Picton WRP.

Sludge lagoons

Two additional sludge lagoons, similar to the existing lagoons, are required to meet future requirements. No other options were considered.

CDU

The effluent stored in the Western Dam is currently dosed with citric acid to control the pH to a target of about 7.5. The existing system is only temporary, and a permanent acid dosing system is required. A number of options for the dosing system were evaluated. The preferred option is to make the CDU capable of dosing using either citric or hydrochloric acid. Carbon dioxide was discounted due to a lack of experience in its use and operation, and the additional cost of carbon dioxide.

6. Description of the proposal

6.1 Overview

This section describes the proposal. It includes the objectives of the proposal (section 6.2) and the proposal's key components (section 6.3). A description of the construction process, including the indicative methodology, equipment and timing is provided in section 6.4. Section 6.5 describes the operation of the proposal in the context of the existing operation of the Picton Sewerage Scheme, including a summary of how the existing operation of the scheme would be modified by the proposal.

6.2 Objectives of the proposal

The objective of the proposal is to increase the capacity of the Picton WRP to enable it to meet the identified needs in a manner that ensures:

- Sydney Water can service new connections and growth, including meeting the needs outlined in section 5
- the effluent produced by the Picton WRP continues to comply with the effluent concentration limits specified in the EPL for the Picton Sewerage Scheme
- minimal environmental impacts.

6.3 Scope of work and design features

6.3.1 Outline of the proposal

The proposal would involve various works to increase the capacity of the Picton WRP to 4 ML/day (ADWF) and make the identified operational improvements. It would include:

- two additional IDALs
- new inlet works and associated components to distribute flows to the existing and proposed IDALs
- two additional sludge lagoons
- a new CDU for pH correction
- a new pipeline (about 275 metres long) to deliver chemicals from the CDU to the Western Dam
- various ancillary works.

A summary of the key capacity and design flow requirements for the proposal is provided in Table 6.1.

Table 6.1 WRP capacity and design flows

Item	Total
Equivalent persons (EP)	26,000
Unit flow per EP (litres per EP per day)	155
Nominal rating of IDAL tanks (EP)	6500
Minimum dry weather flow (litres per second)	19
ADWF (ML/day)	4
ADWF (litres per second)	46.3
Peak dry weather flow (litres per second)	92.6
Peak wet weather flow (litres per second)	463

6.3.2 Description of the proposal

The key features of the proposal are shown in Figure 6.1.

New IDALs

Two new IDALs (to be referred to as IDALs 3 and 4) would be constructed. The IDALs would be vertical-walled IDALs, with the same hydraulic capacity (1.3 ML/day) as the existing IDALs.

The IDALs would perform biological secondary treatment of the wastewater, including carbonaceous (BOD₅) removal and nitrogen removal (nitrification and denitrification). The approximate dimensions of each IDAL would be 34.5 metres long, 14.5 metres wide and 6.1 metres deep.

New waste activated sludge and return activated sludge pumping stations would be constructed in association with the new IDALs. These would be constructed on a concrete slab, adjacent to the new IDALs. Figure 6.2 shows a similar IDAL to the ones proposed for the Picton WRP.

The new IDALs would use fine bubble diffused aeration. Process air would be delivered via process aeration blowers. These blowers would be housed in a new building located adjacent to the new IDALs. The building would be sized to accommodate potential future blowers to enable the existing IDALs (1 and 2) to be converted from surface aeration to diffused bubble aeration if required in the future.

It is anticipated that the blower building would be constructed using tilt-up concrete panels supported by shallow footings. The blower building would incorporate noise attenuation to reduce the potential for noise impact, and a gantry crane for lifting the blowers. The building would have sufficient room for a service vehicle to drive into the building for maintenance purposes, and for the doors to be kept shut during maintenance. The building would be ventilated by means of mechanical ventilation extraction fans and acoustic louvers on the side of the building.

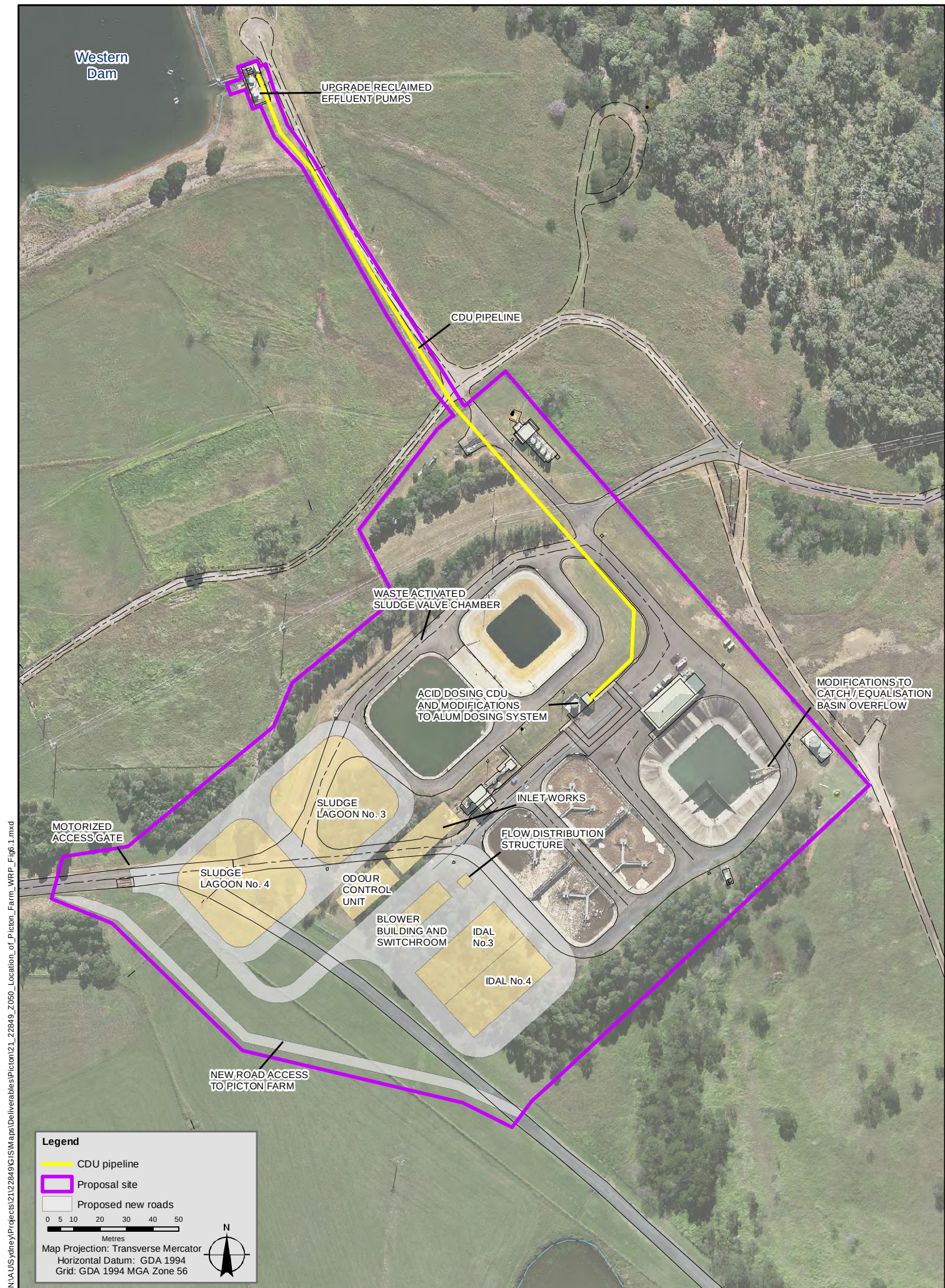


Figure 6.1
The proposal



Figure 6.2 Example of an IDAL

New inlet works and associated components

The existing inlet works would be decommissioned, and new inlet works constructed. The new inlet works would be constructed to screen and remove grit from incoming wastewater. A separate flow distribution structure would evenly distribute flows to the four IDALs.

The new inlet works would include an odour control system which would remove and treat odourous air from the inlet works, flow distribution structure and associated mechanical equipment.

The new inlet works would be located to the south-west of the existing inlet works.

Two new sludge lagoons

Two new sludge lagoons would be provided. These would be similar to the existing two lagoons, with a capacity of 2,600 m³ each. The four lagoons would provide sufficient capacity to manage the increased generation of biosolids. The lagoons would be designed and operated to attain grade B stabilisation of the biosolids. The new lagoons would be located adjacent to the existing lagoons, outside the existing fenceline of the WRP site.

New CDU and pipeline

CDUs provide for the controlled dosing of chemicals into wastewater to assist the treatment process and/or control odours. A CDU would be provided at the Picton WRP to control the pH of the effluent stored in the Western Dam prior to discharge to Stonequarry Creek as precautionary discharges.

For the proposal, the CDU would be housed in a building designed to accommodate a chemical storage tank and its bund, dosing equipment, and electrical and telemetry controls. The CDU would be located adjacent to the existing alum storage area within the WRP site. Either hydrochloric or citric acid would be used.

A new chemical delivery bay would be provided adjacent to the CDU.

Bunds would be provided at not less than 110% of the chemical storage tank sizes in accordance with relevant Australian Standards.

A chemical dosing pipeline (about 275 metres long) would be constructed between the CDU and the chemical injection point at the Western Dam. The pipeline would be a pipe-in-pipe sleeved arrangement with a leak detection system. The injection point would be located at the precautionary discharge pumps, adjacent to the dam.

Ancillary works

Various ancillary works form part of the proposal. Those that have been identified as part of the design process to date are outlined below. Other ancillary works may also be identified during the detailed design process and would need to be undertaken as part of the proposal.

Modifying and renewing the alum system

The existing alum system would be upgraded in accordance with Sydney Water's specifications for alum dosing systems. This would include provision of an upgraded pump skid, instrumentation, tank overflow pipework and piping to deliver chemicals to the new inlet works and upstream of the equalisation basin.

Modifying the equalisation basin

The existing equalisation basin would be modified to raise the height of the weir and increase the capacity of the basin.

Pumps and pipework

Pumps and pipelines would be installed between new and existing structures. This would include:

- the existing rising mains would be relocated and connected to the new inlet works
- the reclaimed effluent pumps located adjacent to the Western Dam would be upgraded to increase the capacity of the reclaimed effluent system
- new waste activated sludge pipework and valve chamber would be provided.

Works to internal roads/access tracks, gates and fences

This would include:

- constructing new internal roads and drainage to provide access to the new structures
- modifying the existing farm access road and drainage
- relocating the existing site fence to accommodate the new sludge lagoons and IDALs
- constructing a new security gate at the entry to the WRP site.

Electrical work

This would include

- upgrading the electrical and supervisory control and data acquisition (SCADA) system
- relocating an existing high voltage power pole adjacent to the new IDALs.

6.3.3 Summary of environmental controls incorporated into the proposal

The proposal would be designed to meet the effluent concentration limits specified by the EPL for the Picton Sewerage Scheme. It would also be designed to minimise the potential for noise and odour impacts, and meet the noise criteria specified by the EPL.

Key design features include:

- Bunding:
 - bunding at the new CDU would be provided in accordance with relevant Australian Standards
 - the existing bund for the alum system would be used to contain any chemical spills from the system or loading bay.
- Odour controls:
 - a new odour control system (incorporating a biotrickling filter combined with activated carbon polishing) would be constructed to treat air extracted from the inlet works, flow distribution chamber and ancillary equipment
 - de-sludging (an occasional and temporary activity) would be limited to occurring for a maximum of ten hours in the day-time after 8am.
- Noise controls:
 - blowers associated with the additional IDALs would be housed in a blower room/building
 - noise attenuation (including) acoustic rated louvres, blower covers, exhaust fans, doors and seals would be incorporated in the blower room to reduce external noise emissions
 - all aeration pipework would be acoustically lagged
 - the proposed IDAL tanks would use diffused bubble aeration rather than surface aeration.

6.4 Construction of the proposal

6.4.1 Indicative construction activities

General and pre-construction activities

In general, the proposal would involve the following pre-construction activities:

- notifying relevant authorities and the public of the commencement of work
- installing environmental and traffic controls in accordance with the construction environmental management plan (CEMP)
- establishing stockpile and compound sites
- locating existing services, including telecommunication cables, power lines and gas and water mains
- relocating any affected services
- clearing and grubbing construction footprint area, as required
- erecting temporary fences as required.

Indicative construction method

Activities associated with the proposal would include:

- earthworks, including excavation for the underground components
- installing formwork, steel reinforcement, pipe connections, conduits etc. in footings and slab where required
- pouring concrete footings where required

- installing new components
- installing pipes, fittings, power supply and connections to other WRP components
- decommissioning redundant elements of the existing process
- testing and commissioning.

Dewatering

Water captured within excavations during construction may need to be pumped out. This water would be treated to remove pollutants such as suspended solids before being released. Where pollutants cannot be adequately removed on-site, the water would receive additional off-site treatment prior to its release. The discharge point would be determined during construction planning. It may be possible to discharge to the Picton WRP if required.

6.4.2 Construction workforce and equipment

Workforce

The construction workforce would comprise about 16 full-time personnel, depending on the stage of works.

Equipment

Plant and equipment may include (but not be limited to):

- | | |
|---|---|
| • excavators | • tip trucks |
| • graders | • concrete agitator trucks |
| • concrete saws | • concrete pumps |
| • vibrating plate compactors | • air compressor |
| • backhoes | • generators |
| • hand tools | • water trucks |
| • jack hammers | • road sweepers |
| • light commercial and passenger vehicles | • semi-trailers and large delivery trucks |
| • mobile cranes | • sucker truck |
| • chipper truck | |

6.4.3 Work sites, access and vehicle movements

Construction compounds and laydown areas

A construction compound would be established at the Picton WRP prior to construction commencing. It would include areas for storage of plant and equipment, and site offices/amenities. The final location of the compound would be identified during construction planning, and site access would be confirmed at that stage. The following criteria would be used to identify the compound site to ensure minimal environmental impacts:

- the land is relatively level
- not located in close proximity to a watercourse
- removal of native vegetation not required
- no heritage items (non-Aboriginal and Aboriginal, including areas identified as potential archaeological deposits) would be affected

- the use of adjacent properties would not be affected.

Prior to establishing the construction compound, an environmental work method statement would be prepared by the contractor as part of the overall CEMP. This statement would show the proposed locations of structures such as stockpiles, facilities and sediment control measures. After use, the compound would be restored to as close as possible to its original condition.

Access and vehicle movements

Construction sites and vehicle movements

Construction would generate heavy vehicle movements associated with the transportation of construction machinery, equipment and materials to and from the site, and the removal of spoil from the site where it is not able to be reused on-site. Light vehicle movements would be associated with employees and smaller deliveries.

Estimated construction traffic numbers are as follows:

- number of light vehicles per day – 16
- number of heavy vehicles per day – 10.

6.4.4 Construction timing, staging and work hours

Timing

The scheduled commencement date for construction of the proposal is September/October 2015, following the completion of the planning, design and environmental approvals process. Construction would take about 48 weeks. Process proving and commissioning is scheduled to be completed in December 2016.

Construction hours

The majority of construction activities would occur during the standard hours set out in the *Interim Construction Noise Guideline* (DECC, 2009):

- Mondays to Fridays between 7 am and 6 pm
- Saturdays between 8 am and 1 pm
- No work would occur on Sundays or public holidays.

Some aspects of the works may be required outside the standard hours. A 12 hour shutdown would be required for the cutover of the rising mains. This needs to occur during a low flow period (typically between 10 pm and 6 am).

The contractor would request permission from Sydney Water to undertake work outside the standard hours. The contractor would determine whether any additional mitigation measures would be required. This may include the need to monitor noise, install noise barriers, and notifying surrounding landholders.

The contractor would also notify the EPA and Wollondilly Council if out of hours work is required.

6.5 Operation of the Picton WRP and Picton Farm

6.5.1 Picton WRP

The existing operation of the Picton WRP is described in section 2.3. The existing capacity of the Picton WRP is 2.6 ML/day.

During the construction phase, there would be no change to the existing operation up to an ADWF of 2.6 ML/day. If the ADWF exceeds 2.6 ML/day, the operation of the Picton WRP would be refined by:

- reducing the operating sludge age to maximise the capacity of the IDAL aerators
- regulating the transfer of wastewater flows from Bargo, Buxton and Inghams Enterprises to occur outside of peak periods.

The above refinements would ensure that the quality of effluent from the Picton WRP would continue to comply with the requirements of the EPL during construction of the proposal.

Following commissioning of the proposal, the Picton WRP would have the capacity to treat an ADWF of 4 ML/day. The majority of the WRP would continue to operate as it is now. Raw wastewater would enter the site via the two relocated rising mains to the new inlet works. From there, the wastewater would flow to the new flow distribution structure which would distribute wastewater between the existing and new IDALs.

The wastewater would be evenly split between the four IDALs, which would operate using the same cycle arrangement and timing currently used, being aeration, settlement and decanting phases. During the settle phase, mixed liquor would settle to the bottom of the tanks, and during decant phase, the secondary treated effluent would be decanted from the top of the tanks and diverted to the equalisation basin or directly to the Eastern Dam. Depending on farm operational requirements and dam levels, effluent would be transferred from the equalisation basin to the Western Dam (via the tertiary filters and UV disinfection) or the Eastern Dam.

The new CDU would replace the temporary dosing system that is currently in place. It would control the pH of effluent in the Western Dam, prior to precautionary discharges to Stonequarry Creek.

Sludge from the IDALs would be diverted to the two existing and two new sludge lagoons for stabilisation and storage. After stabilisation of the sludge in the lagoons, the resulting biosolids would be carted from the lagoons by a vacuum truck, and then applied to the Picton Farm as per current practice.

The Picton WRP would continue to operate in accordance with the EPL. Consistency with relevant EPL conditions is considered in Table 6.2.

Table 6.2 Consideration of ongoing consistency with the EPL

Condition	Comment
L2 Load limits	As noted in Table 2.1, the boundary of the Picton Sewerage Scheme has been removed (as per approval 1997-01-15 Mod3). To respond to this change, and the predicted increase in wastewater flows to the Picton WRP (as summarised in section 1.3), the load limits specified by the EPL need to be increased. Sydney Water is currently negotiating this increase with the NSW Environment Protection Authority (EPA).
L3 Concentration limits	The proposal would be designed and operated to ensure that effluent produced by the Picton WRP would continue to be treated to a quality that meets the specified limits.
L4 Volume and mass limits	This condition specifies the maximum volumes of effluent that can be discharged per day to Picton Farm (via irrigation) and Stonequarry Creek (via precautionary discharges). It also specifies the conditions under which precautionary discharges occur. No change is proposed to the maximum volume used for irrigation. As noted in section 6.5.2, Sydney Water is considering short term

Condition	Comment
	changes to the current precautionary discharge arrangement. This would be undertaken in consultation with the EPA, in accordance with requirements of condition 20 of the Minister's Conditions of Approval.
L6 Noise limits	The noise assessment, included in Appendix E and summarised in section 12, concludes that operation of the amplified WRP would continue to comply with the noise criteria specified by the EPL.

6.5.2 Effluent management system

As new customers connect to the Picton Sewerage Scheme and wastewater flows to the Picton WRP increase, the proposal would result in an increase in the volume of effluent produced by the Picton WRP. The existing effluent management system, which is described in section 2.3.3, includes effluent storage, irrigation at Picton Farm and precautionary discharges.

The capacity of the effluent management system is highly dependent on weather conditions. Water balance modelling has estimated that the capacity of the system is between 2.3 to 2.5 ML/day (average to dry year). Based on current ADWF forecasts, the capacity may be exceeded between July 2015 and February 2016. Sydney Water is developing short term options to manage this forecast, including changes to the precautionary discharge arrangement. Changes are permitted provided that Sydney Water complies with the requirements of condition 20 of the Minister's Conditions of Approval.

Sydney Water is also considering other alternatives, including negotiating with industrial customers to reduce flows to the system.

Sydney Water is also investigating longer term options to manage and/or reuse the additional effluent produced by the amplified WRP. Long term options include:

- additional storage
- additional irrigation areas outside of the existing boundary of Picton Farm
- an increase in discharge to Stonequarry Creek
- a new discharge to the Nepean River.

The preferred option will be developed with input from relevant stakeholders (including the EPA). It will be developed to take into account:

- potential environmental issues and impacts
- operational requirements
- construction and operational costs
- relevant legislative requirements and guidelines.

Once the preferred option is determined, it will be the subject of a separate assessment process.

6.5.3 Interfaces with existing infrastructure

The proposal would not result in any significant changes to the existing WRP processes. The changes are generally related to upsizing and additional facilities to allow for additional flows.

6.5.4 Water quality standards

Wastewater would continue to be treated to meet the effluent quality requirements included in the EPL (Section L3 Concentration Limits).

6.5.5 Wet weather event management

Wet weather flows at the Picton WRP would continue to be managed as they are now. The hydraulic design of the proposal is based on a wet weather flow of 10 times ADWF. The inlet works are being designed to treat a flow of 12 times ADWF to allow for the peak instantaneous flow that can be delivered by the contributing pumping stations to the WRP. The IDALs are being designed to achieve full treatment at six times ADWF. For flows above this, the IDALs would operate in 'solids contact mode' where the biological treatment is reduced. This is similar to the current mode of operation at the WRP.

6.5.6 Energy requirements

Additional energy would be required to operate the new equipment and treat the future incoming wastewater loads. Additional return and waste activated sludge pumps would be required for the new IDALs. The diffused aeration blowers supplying air to the new IDALs would require energy. The grit chamber, grit classifier, wash press, outloading conveyor and bins would also require energy. The extraction blowers and process units associated with the new odour control system may also be greater than the existing odour control facility. Additional energy would be required for the upgraded reclaimed effluent pump skid. Additional energy would be required to operate the pumps for the new CDU.

6.6 Changes to the scope of work

It is noted that the design of the proposal is conceptual at this stage, and this description does not preclude minor refinements to the design during the future stages of the design process. This may occur due to the need to:

- avoid ground conditions or services that present significant construction difficulties in terms of logistics, time and/or cost
- reduce the construction timeframe
- avoid areas of environmental sensitivity identified following determination
- reduce impacts on local residents
- improve the operation of the proposal without increasing the potential environmental impacts.

Such refinements may include, for example:

- minor changes to the pipeline route, such that the route remains in the same approximate location, with similar characteristics to the original location
- minor changes to the location of key infrastructure involving refinement or reorientation of site boundaries
- minor changes in technology or the features of key proposal components.

It is not considered that the above refinements, which should result in similar or fewer potential impacts, would require additional environmental assessment. Such refinements would not include significant changes to the proposal or its location, or changes to the proposed operational arrangements.

6.7 Future work on the Picton Sewerage Scheme

As part of ongoing operations, Sydney Water will need to undertake future work on the Picton Sewerage Scheme. Changes to the collection, transfer, treatment and effluent management system may be needed to:

- improve reliability
- meet the requirements of the EPL
- address changes in influent quality
- connect new areas
- address increases in ADWF.

These future works are likely to differ from the project as described by the historical approval documents (which are up to 18 years old). There is limited value to our customers, in terms of time and cost, each time Sydney Water makes comparisons against these dated planning documents. Sydney Water proposes to assess and determine future works under Part 5 of the EP&A Act, provided that the future works do not result in a significant environmental impact. The Part 5 self-determination process would enable a more efficient use of limited resources and allow Sydney Water to promptly meet its wastewater servicing obligations.

7. Preliminary environmental risk analysis

7.1 Results of the preliminary environmental risk analysis

The Secretary's environmental assessment requirements specify that the environmental assessment needs to include an environmental risk analysis to identify potential environmental impacts associated with the construction and operation of the proposal. This section provides a general environmental risk analysis of the proposal. The analysis was undertaken in the form of a preliminary, desktop level risk assessment, to broadly assess the potential environmental impacts that may occur as a result of the proposal. The preliminary environmental risk analysis identifies the potential environmental impacts with the aim of focussing the environmental impact assessment for the proposal.

The analysis was mainly based on the information provided by previous assessments and reports, including the Picton WRP amplification report (ENSure, 2013a) and a risk workshop held in July 2013.

The results of the preliminary environmental risk analysis are summarised in Table 7.1. All potential environmental impacts identified were found to be a minor risk. The potential impacts are assessed in sections 8 to 16.

The residual impact assessment is provided in section 7.2.

Table 7.1 Preliminary environmental risk analysis

Aspect	Potential environmental impacts	Risk analysis
Soils and water quality	Construction: - soil/ground disturbance and potential for erosion - increase in sediment loads entering the stormwater system and receiving watercourses - contamination of soils and water as a result of accidental spills.	This is considered to be a minor risk, as exposure of soil and the stockpiling of spoil would be temporary and short-term in duration. The implementation of standard best-practice environmental management measures during construction would minimise these potential impacts.
	Operation: - chemical spills from the CDU - soil impacts from increased application of biosolids.	This is considered to be a minor risk, as the proposal includes bunding to contain any spills from the CDU. Application of biosolids would continue to be undertaken in accordance with the EPL and the NSW Biosolids Guidelines.
Flora and fauna	Minor disturbance (direct and/or indirect) of existing vegetation during construction.	This is considered to be a minor risk due to the existing levels of disturbance of the proposal site and surrounds. Only planted vegetation would be directly impacted.
Noise and vibration	Construction: increased noise and vibration levels at receivers from	This is considered to be a minor risk. The implementation of standard best-practice environmental management measures during construction would

Aspect	Potential environmental impacts	Risk analysis
	construction works and traffic.	minimise these potential impacts.
	Operation: noise impacts as a result of changes to the operation of the Picton WRP.	This is considered to be a minor risk. The proposal has been designed to ensure that the operation of the Picton WRP meets the proposal specific operational noise levels.
Air quality	Construction: - generation of dust during construction - potential for odour impacts during construction.	This is considered to be a minor risk as any impacts are unlikely to extend beyond the immediate vicinity of the works. The implementation of standard best-practice environmental management measures during construction would minimise these potential impacts.
	Operation: odour impacts as a result to changes in the operation of the Picton WRP.	This is considered to be a minor risk. The proposal has been designed to ensure that the operation of the amplified Picton WRP would not result in odour impacts to sensitive receivers.
Heritage	Disturbance of items or places of Aboriginal and/or non-Aboriginal heritage significance.	No listed sites would be impacted by the proposal. This is considered to be a minor risk as a result of the existing levels of disturbance of the proposal site and surrounds.
Traffic transport and access	Traffic generation and impacts on the local and regional road and transport network during construction.	This is considered to be a minor risk. Given the existing traffic volumes on Remembrance Driveway, any increase in traffic during construction would be negligible.
Land use, social and visual	Construction: - impacts on the amenity of local residents during construction - visual impacts.	The potential for amenity and visual impacts is considered to be a minor risk, which would be addressed by the implementation of standard best-practice environmental management measures during construction
	Operation: - impacts on the amenity of local residents - change to land use due to presence of permanent structures - improved performance of the Picton WRP - ensures the Picton WRP would meet future community needs - service new connections and growth up to 2023 to 27.	The potential for impacts on amenity and land use is considered to be a minor risk. As noted above, the proposal has been designed to minimise the potential for significant amenity impacts (odour and noise). The proposal involves the use of land currently used for infrastructure purposes (the Picton WRP) and adjoining land within Picton Farm that is not suitable for irrigation.
Hazards, risk and human health	Construction: waste handling and disposal.	This is considered to be a minor risk. The potential for impacts would be managed through the implementation of standard management measures.

Aspect	Potential environmental impacts	Risk analysis
	Operation • waste handling and disposal • potential hazards and risks of operating the CDU, including potential chemical spills • management of the additional effluent, grit and screenings and biosolids produced by the amplified WRP.	This is considered to be a minor risk. Waste, including biosolids, would continue to be management in accordance with existing procedures. Chemicals would be stored in bunded and sealed areas to minimise potential impacts on the surrounding environment. The preferred option/s to manage the additional effluent (recycling, reuse and/or discharge) are currently being finalised and would be subject to a separate assessment process.

7.2 Residual impact assessment

The preliminary environmental risk analysis did not identify any potentially significant environmental impacts. Only minor risks were identified. All potential impacts can be adequately managed by implementing the mitigation measures provided in sections 8 to 16. The risk analysis and impact assessment has not identified any potentially significant residual impacts.

8. Soils and water quality

8.1 Existing environment

8.1.1 Geology, topography and soils

The study area is dominated by gentle slopes with undulating hills, with highly incised gorge systems in the vicinity of the main watercourses. Stonequarry Creek and the Nepean River flow about 45 to 65 metres below the surface of the surrounding land.

The proposal site is located at an elevation of about 215 metres Australian Height Datum (AHD). The topography of the Picton WRP site generally slopes from north-west to south-east.

The Wollongong - Port Hacking 1:100 000 Geological Map (Stroud W.J., et al., 1985) indicates that the study area is underlain by Triassic aged Bringelly Shale and Ashfield Shale. This is composed of calcareous claystone, laminate as well as laminate and dark-grey siltstone. The Wollongong-Port Hacking 1:100,000 Soil Landscape Series Sheet (Hazelton and Tille, 1990), shows that the study area is underlain by residual soils of the Blacktown Group and colluvial soils of the Picton Group.

8.1.2 Contamination

No areas of actual or potential contamination have been identified within the proposal site.

8.1.3 Watercourses and drainage

Watercourses in the study area are described in section 2.2.1. The nearest watercourse to the proposal site is Back Creek, located about 180 metres to the north of the proposed pipeline location. The southern part of the proposal site drains to the Nepean River, and the northern part drains to Stonequarry Creek.

8.1.4 Water quality

Sydney Water undertakes water quality monitoring at three locations in the study area:

- N911 Stonequarry Creek, downstream of Picton WRP
- N92 Nepean River at Maldon Weir, upstream of Stonequarry Creek
- N91 Nepean River at Maldon Bridge, downstream of Stonequarry Creek.

Sydney Water (2012) notes that:

- water quality in Stonequarry Creek improved following decommissioning of on-site sewage systems in Picton
- median total nitrogen and total phosphorus values at the three monitoring sites are below the low risk trigger values (Healthy Rivers Commission 1998 values)
- existing water quality is impacted by land uses within the catchment, including urban development, agriculture and mining.

8.1.5 Groundwater

BMT WBM (2014) notes that the main groundwater resource within the study area is the Hawkesbury Sandstone aquifer, which is semi-confined and consists of layered, vertically discrete small aquifers within porous material and fractures/inter-bed joints and other geological features.

The closest groundwater extraction bore to the proposal site is located about 1.5 kilometres to the south.

There is also a number of groundwater monitoring bores located within and in the vicinity of Picton Farm. BMT WBM (2014) notes that limited groundwater quality data was available, mainly as a result of the lack of available water for sampling within the bores. The groundwater quality is considered to be typical of broader groundwater quality in the study area. Nutrient concentrations are elevated above Australian and New Zealand Environment Conservation Council low risk triggers. BMT WBM concluded that groundwater aquifers are located more than 100 metres below ground, and are under pressure.

The geotechnical assessment undertaken as part of the concept design process (ENSure, 2014) involved drilling four boreholes to between five and 8.2 metres in depth. No groundwater was encountered in any of the boreholes. The assessment noted that for the proposal site, groundwater is not expected, and may only occur as perched moisture following extended wet weather.

8.2 Impact assessment

8.2.1 Construction

Construction of the proposal would involve disturbance of the ground surface. Small stockpiles of excavated soil would be created during construction.

Topography and geology

The proposal would not result in any impacts to local topography. Excavated areas would be backfilled to generally match the existing ground level upon completion of the work.

Soil disturbance

Excavation and stockpiling activities, if not adequately managed, could have the following impacts:

- erosion of exposed soil and stockpiled materials
- dust generation from excavation and vehicle movements over exposed soil
- an increase in sediment loads entering local runoff and receiving watercourses.

These impacts are considered to be minimal, as exposure of soil and the stockpiling of spoil would be minimal, temporary and short-term in duration.

It is expected that most of the spoil would be used as backfill. Excess spoil not required or able to be used as backfill would be stockpiled in a suitable location. It would either be reused elsewhere (if appropriate) or removed from the proposal site, and disposed of at an appropriately licenced facility.

Contamination issues

There is the potential for chemical and fuel spills during construction, which may result in localised contamination of soil. The approach to managing any unexpected contaminated material that may be uncovered during construction would be specified in the CEMP.

The potential for erosion, sedimentation and contamination impacts would be minimised by the implementation of the mitigation measures provided in section 8.3.

Watercourses and water quality

The proposal would not result in any direct impacts to watercourses.

There is potential for indirect impacts to water quality. Any pollutants entering watercourses would have the potential to impact on water quality by increasing turbidity and suspended particle levels, altering pH (alkaline cement material), or by increasing hydrocarbon levels.

Indirect water quality impacts could also occur during construction as a result of contamination by fuel or chemical spills from construction vehicles and any fuel and chemicals stored on construction sites.

To minimise the potential for indirect impacts to watercourses, careful management of the potential for erosion and sedimentation would be undertaken. The risk of water quality impacts, and the significance of any impacts that may occur, would be minimised by implementing the mitigation measures provided in section 8.3.

Groundwater

Construction is not anticipated to result in any significant impacts on groundwater resources. Substantial dewatering is not expected to be required. Any dewatering that may be required is likely to be superficial and associated with managing local and recent rainfall at the worksite. There would be no impacts on groundwater bores.

Flooding

Construction of the proposal would not result in any increase in local or regional flooding.

8.2.2 Operation

There is potential for soil impacts from the application of the additional biosolids produced by the amplified WRP. Preliminary calculations indicate that the increased volume of biosolids can continue to be applied at Picton Farm. The ongoing application of biosolids would be undertaken in accordance with the EPL and the NSW Biosolids Guidelines. The increase in biosolids volumes would be gradual, allowing any impacts on soil to be monitored in accordance with the guidelines. Further information on waste management is provided in section 15.

The proposal would be designed to ensure that the effluent produced by the amplified WRP continues to meet the effluent concentration limits specified by the EPL. Furthermore, the proposal includes operational improvements to improve the current treatment process and overall reliability of the Picton WRP.

As noted in section 6.3.3, the proposal also incorporates bunding to contain any potential chemical spills or leaks.

As no groundwater was encountered on site or is expected (refer to section 8.1.5) no ongoing groundwater monitoring is considered to be required.

8.3 Mitigation measures

8.3.1 Construction

Soil and erosion controls

- Sediment and erosion controls would be installed around work sites and stockpiles in accordance with *Managing Urban Stormwater, Soils and Construction, Volume 1 and 2* (Landcom, 2004 and DECCW, 2006). Controls would be inspected at least weekly and immediately after rainfall to ensure their effectiveness over the duration of construction. Any damage to erosion and sediment controls would be rectified immediately.

- Work would cease immediately in the event that any areas of actual or suspected contamination are identified prior to or during work. These areas would not be disturbed and would be cordoned off as if they were a safety risk. The contractor's environmental representative would be contacted for advice.
- Work would cease during heavy rainfall events when there is a risk of sediment loss off site or ground disturbance due to waterlogged conditions.
- Equipment, plant and materials would be placed in designated lay-down areas, away from drainage lines, where they are least likely to cause erosion or damage to vegetation.
- Following completion of work, land disturbed as a result of construction would be restored to its pre-existing conditions.

Water quality and incident management

- All chemicals and fuels would be stored in sealed vessels within watertight bunded areas, away from stormwater or drainage lines. Bunded areas for chemical storage would have the capacity to retain 110% of the total volume of all liquids stored therein. The relevant Material Safety Data Sheets would also be kept at the site compound for all chemicals stored on site.
- Refuelling, fuel decanting and vehicle maintenance work would take place within work compounds where practicable. If refuelling at the proposal site is necessary, it would be undertaken away from stormwater drains, the Western Dam or adjacent native vegetation, and spill kits would be available.
- A functioning spill kit would be kept at the construction site/s and compound at all times. Any contaminated material would be disposed of at an approved waste facility.
- The contractor's incident management plan would include a contingency plan and emergency procedures for dealing with chemical/fuel spills.
- Should groundwater be encountered during construction activities, appropriate management measures would be implemented to minimise the risk of polluting surface water. This may include measures such as water testing, dewatering, temporary water storage and treatment facilities.

8.3.2 Operation

Potential operational soil and water quality impacts will continue to be managed in accordance with existing environmental management procedures, including the PEMP, the Picton Operations Interface Protocol and the PIRMP. No additional measures are required.

9. Flora and fauna

9.1 Overview and methodology

This section provides an assessment of the potential impacts of the proposal on terrestrial flora and fauna. It has been prepared to address the Secretary's environmental assessment requirements, which specify:

Ecological Impacts – include a flora and fauna assessment consistent with the Draft Guidelines for Threatened Species Assessment (DEC and DPI, 2005):

- *taking into consideration impacts on any threatened species, populations, ecological communities; and*
- *details of how flora and fauna impacts would be managed including, where relevant, consideration of offsets in accordance with the NSW Biodiversity Offsets Policy for Major Projects 2014.*

9.1.1 Database and literature review

Databases were reviewed to generate a list of threatened ecological communities, populations and species listed under the EPBC Act, TSC Act and/or *Fisheries Management Act 1994* and other matters of national environmental significance listed under the EPBC Act which have previously been recorded or are predicted to occur within the locality of the proposal site (defined as within a 10 kilometre radius). Databases reviewed included the NSW Wildlife Atlas (OEH, 2014), the protected matters online search tool (DotE, 2014), and the DPI threatened species records viewer (DPI, 2013).

Literature reviewed included soil landscape mapping (Hazelton and Tille, 1990), broad-scale vegetation mapping (Tozer *et al.*, 2010) and previous reports for the site (Biosis Research, 2011 and ENSure, 2013b).

9.1.2 Field surveys

A number of ecology field surveys have been undertaken by ENSure as an input to the studies and reports prepared to assess the need and options for amplification of the Picton WRP. Two one day site surveys were undertaken by two ecologists on 26 June 2013 and 21 November 2013. The surveys covered the proposal site and surrounds, as well as potential sites for additional effluent management options.

Survey effort was concentrated in areas of native vegetation adjacent to the proposal site. Within these areas, flora species observed were recorded, and vegetation was mapped based on dominant canopy, shrub and groundcover species, soil and geology and topography. Vegetation types with the potential to be threatened ecological communities (including areas that were identified during the desktop review and initial site inspection) were assessed against the identification criteria for listed threatened ecological communities (critically endangered ecological communities (CEECs) and endangered ecological communities (EECs)). Vegetation and habitats were compared with descriptions provided in the OEH (2014b) and DotE (2014) threatened ecological community profiles.

Targeted surveys of threatened flora species focused on the areas of potential impact with suitable habitat for threatened species. These random meander transects were conducted on foot while ground-truthing vegetation mapping. Opportunistic observations of fauna species were recorded. Species were identified by sight, by call or by observation of scats, tracks or other traces.

9.2 Existing environment

9.2.1 Flora

Flora species and vegetation communities

A total of 43 flora species were recorded in the study area for this assessment (that is, the proposal site and surrounds). Of these, 25 are native species and 18 are introduced species. No threatened flora species were recorded or are likely to occur in the proposal site. As shown by Figure 9.1, the majority of the proposal would be located in highly modified areas near the existing WRP and along the access road leading to the Western Dam. Planted vegetation is located within and around the proposal site. Two patches of the Cumberland Shale/Sandstone Transition Forest EEC are located near the proposal site.

Flora species and vegetation observed are described below.

Cleared and planted areas

A band of planted vegetation, mostly consisting of trees and large shrubs, occurs around the boundaries of the existing WRP site. This planted vegetation does not constitute a native vegetation type. This band of vegetation, which varies in width from two to 40 metres, consists of single or double lines of plantings in the narrowest sections, and up to four lines at the widest. It is likely that all vegetation was planted around the same time, about 10 years ago. Most trees and shrubs are in good condition and form. The wattles have produced seeds, although capsules on eucalypts are scarce to absent.

Most of the species planted are indigenous to the area. These include: *Eucalyptus tereticornis* (Forest Red Gum), *E. punctata* (Grey Gum), *E. moluccana* (Grey Box), *E. crebra* (Narrow-leaved Ironbark), *E. paniculata* (Grey Ironbark), *Casuarina glauca* (Swamp Oak), *Acacia falcata* (Sickle Wattle), *A. decurrens* (Sydney Green Wattle), *A. floribunda* (White Sally Wattle), *Allocasuarina torulosa* (Forest Oak), *A. littoralis* (Black She-oak), *Melaleuca styphelioides* (Prickly-leaved Tea Tree) and *Baeckea linifolia* (Weeping Baeckea). Some specimens could not be definitely identified due to their young age and lack of fruit, but are likely to be *E. fibrosa* (Broad-leaved Ironbark) and *A. fimbriata* (Fringed Wattle).

Native grasses and forbs which may have self-recruited or may have already occurred in the adjacent paddocks include *Einadia hastata* (Berry Saltbush), *Bothriochloa macra* (Red Grass), *Dichondra repens* (Kidney Weed), *Microlaena stipoides* (Weeping Grass), *Chloris ventricosa* (Plump Windmill Grass) and *Hypericum gramineum* (Small St. John's Wort).

Weed species which have self-recruited include *Lycium ferocissimum* (African Boxthorn), *Cotoneaster pannosus*, *Eragrostis curvula* (African Lovegrass), *Bromus* sp., *Senecio madagascariensis* (Fireweed), *Cirsium vulgare* (Spear Thistle), *Verbena bonariensis* (Purpletop), *Plantago lanceolata* (Lambs Tongues), *Senna pendula* var. *glabra* and *Paspalum dilatatum* (Paspalum).



Figure 9.1
Vegetation types in the study area

Cumberland Shale/Sandstone Transition Forest

The main patch of Cumberland Shale/Sandstone Transition Forest is located about 60 m to the north-east of the proposal site, on the hill slopes east of the Western Dam. The other smaller patch is located about 10 metres from the south-eastern boundary of the proposal site.

This community is commensurate with the Cumberland Shale/Sandstone Transition Forest EEC listed under the TSC and EPBC Acts. This vegetation type is generally dominated by Grey Gum (*Eucalyptus punctata*) in association with Forest Red Gum (*Eucalyptus tereticornis*), Broad-leaved Ironbark (*Eucalyptus fibrosa*) and Narrow-leaved Ironbark (*Eucalyptus crebra*).

Weed species present within the Cumberland Shale/Sandstone Transition Forest include Small-leaved Privet (*Ligustrum sinense*), Broad-leaved Privet (*L. lucidum*), *Pyracantha fortuneana*, Lesser Periwinkle (*Vinca minor*), African Boxthorn (*Lycium ferocissimum*), Lantana (*Lantana camara*), *Asparagus* spp., Hen and Chickens (*Chlorophytum cymosum*) and Trad (*Tradescantia fluvialis*).

Noxious weeds

Four weed species listed as noxious for the Wollondilly LGA were recorded in the proposal site and surrounds (refer to Table 9.1).

Table 9.1 Noxious weeds recorded

Common name	Scientific name	Category	Action requirement
African Lovegrass	<i>Eragrostis curvula</i>	4	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.
Lantana	<i>Lantana camara</i>	4	
African Boxthorn	<i>Lycium ferocissimum</i>	4	
Bridal Creeper	<i>Asparagus asparagoides</i>	4	

9.2.2 Terrestrial fauna species and habitats

Fauna species

A total of 44 fauna species were recorded within the proposal site and nearby vegetated areas, including 33 bird species, four mammal species, three reptile species, three frog species and one invertebrate species. Bird species recorded included a range of common birds typical of rural landscapes as well as small woodland birds. Similarly, mammal, reptile and frog species are common and typical of these environments. Three introduced species were recorded: the Common Starling (*Sturnus vulgaris*), Rabbit (*Oryctolagus cuniculus*) and the Garden Snail (*Helix aspersa*).

Fauna habitats

The planted areas occur as small, isolated patches located within large cleared paddocks. The patches are limited in extent, are not complex, and would have only limited foraging value for common fauna such as birds and small lizards. Trees are young, with no hollows. Few shrubs are present. Species recorded included common woodland birds such as the White-winged triller (*Lalage sueurii*), Superb Fairy-wren (*Malurus cyaneus*), Australian Magpie (*Cracticus tibicen*) and Grey Fantail (*Rhipidura albiscapa*), a Short-beaked Echidna (*Tachyglossus aculeatus*) and Pale-flecked Garden Skink (*Lampropholis guichenoti*). No threatened or migratory species are likely to rely on habitats provided by planted trees.

Native vegetation in the nearby areas of Cumberland Shale/Sandstone Transition Forest contains good quality fauna habitats. Hollow-bearing trees, fallen timber and occasional termite mounds are

present. A variety of woodland bird species were recorded including the Eastern Spinebill (*Acanthorhynchus tenuirostris*), White-throated Treecreeper (*Cormobates leucophaea*) and Spotted Pardalote (*Pardalotus punctatus*). It is likely that a range of threatened fauna species would occur in the areas of Cumberland Shale/Sandstone Transition Forest (see below).

Threatened and migratory terrestrial fauna

A total of 31 threatened fauna species and three migratory species are considered likely to occur within the study area for this assessment (at least on occasion), based on the habitats present and the results of the database searches (refer to Appendix B).

It is likely that these threatened and migratory species would only occur in the areas of Cumberland Shale/Sandstone Transition Forest, and not within the planted areas. The Cumberland Plain Land Snail (*Meridolum corneovirens*), an endangered species listed under the TSC Act, is likely to occur in leaf litter within Cumberland Shale/Sandstone Transition Forest. In addition, threatened woodland birds and microbat species could roost and nest in hollow-bearing trees within Cumberland Shale/Sandstone Transition Forest.

No threatened aquatic fauna species are likely to occur within or immediately downstream of the study area for this assessment.

9.2.3 Ecological constraints assessment

Ecological constraints were identified and classified into three classes based on the conservation significance of the vegetation or habitat resource, and the potential for it to be avoided by construction activities. Constraints are listed in Table 9.2 and mapped in Figure 9.2.

Table 9.2 Ecological constraints and recommended mitigation

Constraints present	Constraint class	Recommended mitigation
Areas of cleared paddock, tracks and hard surfaces at the proposal site	Very low	None required.
Small area of planted trees near the proposal site	Low	Undertake pre-clearing surveys to check for nests or dreys.
Areas of Cumberland Shale/Sandstone Transition Forest	High	Avoid indirect impacts on adjacent native vegetation. Sediment controls should be in place during trenching. Vehicles should be free of weeds prior to work on site.

9.3 Impact assessment

9.3.1 Key potential impacts

Development of the proposal has taken into consideration the ecological constraints in the study area. Ecological constraints identified in early surveys would be avoided by locating proposal components in areas of very low and low constraint (refer to Figure 9.2). There would be no impact on areas of high constraint (Cumberland Shale/Sandstone Transition Forest).

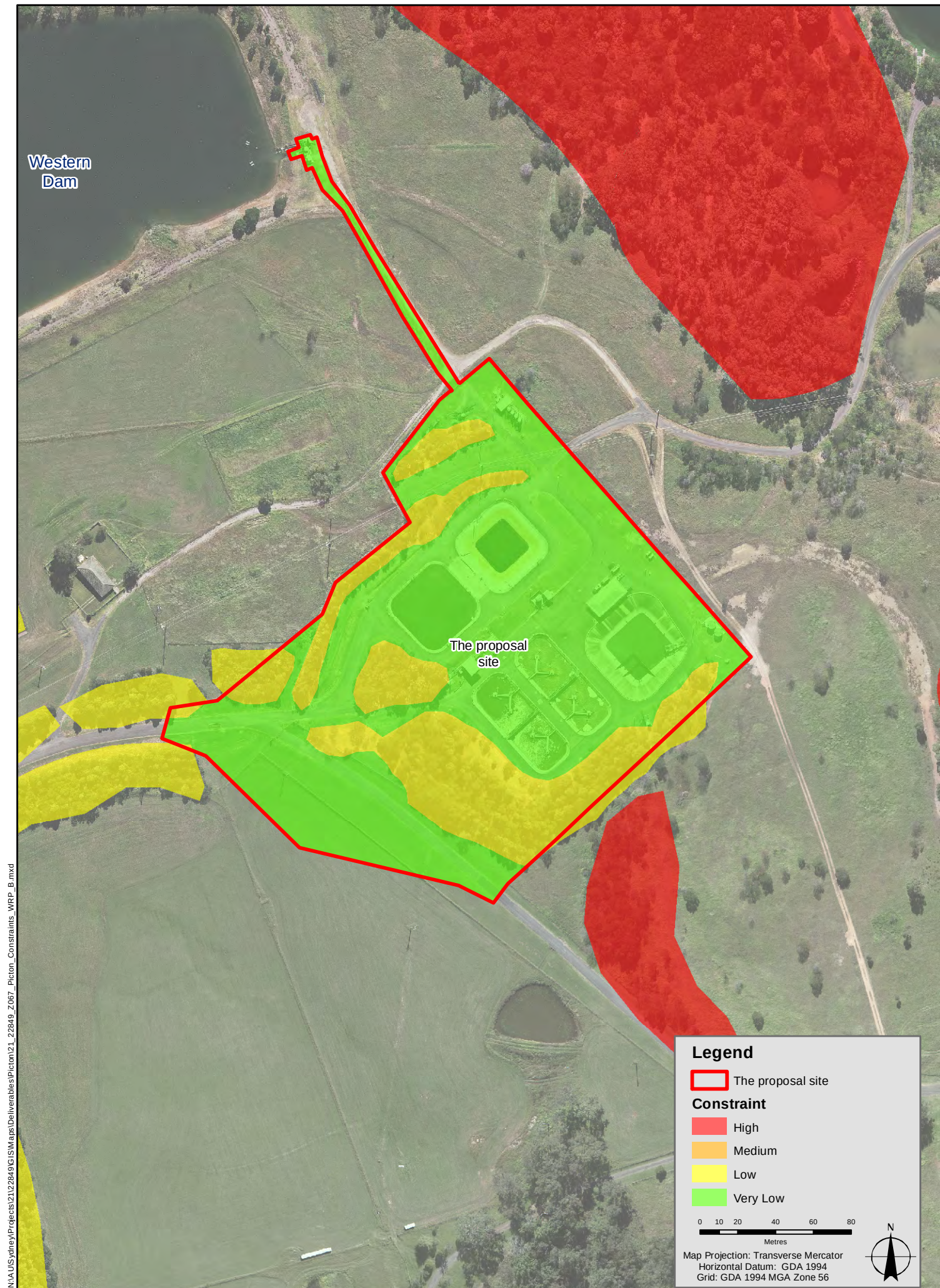


Figure 9.2
Ecological constraints

Construction

The key potential impacts of the proposal on flora and fauna would be:

- direct disturbance – removal of planted trees
- indirect impacts to vegetation and fauna habitats.

Operation

No operational impacts on flora and fauna are predicted.

9.3.2 Construction impacts

Direct impacts

As noted above, the proposal would be located in highly modified areas. No clearing of native vegetation would be required. Some planted trees would be removed, however this does not constitute removal of native vegetation. These trees would provide only minimal foraging and resting habitat for common fauna species.

No areas of habitat would be fragmented or isolated as a result of the proposal. Construction may result in the injury or mortality of small terrestrial fauna that could fall into excavation sites (including the trench for the pipeline to the Western Dam) if left open. These species are widespread and common and so the injury or mortality of individuals within a relatively small area of habitat is highly unlikely to affect an ecologically significant proportion of any local populations.

There would be no direct impacts on Cumberland Shale Sandstone Transition Forest.

Indirect impacts

Weed invasion

Weed species are already present at Picton Farm. There is a possibility that more invasive or otherwise damaging environmental weeds may be introduced or further spread during construction. Depending upon the weeds introduced, this could result in a decline in native vegetation and associated native fauna habitats.

Soil and water pollution

Uncontrolled erosion of topsoil from exposed soils and deposition into native vegetation and/or freshwater creeks can cause weed problems and stifle plant growth. This would be highly unlikely as a result of the implementation of the mitigation measures provided in section 8.3, and the distance between the proposal site and the nearest watercourses.

Noise pollution

Noise during construction can result in limited, temporary impacts on fauna using adjacent areas of habitat. Noise from the operation of the Picton WRP and vehicular movements is already present. Additional noise would be short-term and temporary, and is unlikely to significantly impact any fauna.

Introduction of pathogens

Soil-borne pathogens of native plants (for example, Myrtle Rust), or water-borne pathogens of frogs (*chytrid fungus*) can be spread via workers shoes, clothing and construction vehicles. Given that native vegetation would not be directly impacted during construction, the introduction of pathogens into surrounding areas is unlikely.

In summary, given the limited area that would be disturbed by construction, and the fact that no native vegetation communities would be removed, the potential for indirect impacts would be minor. Mitigation measures are proposed in section 9.4 to minimise the potential for indirect impacts on flora and fauna.

9.3.3 Summary of impacts on threatened biota and matters of national environmental significance

The proposal is located in a highly modified area. No native vegetation is present within or directly adjoining the proposal site. One threatened community listed under the TSC Act and EPBC Act occurs in the study area (Cumberland Shale/Sandstone Transition Forest). An assessment of significance for this community was prepared in accordance with the threatened species assessment guidelines (DEC and DPI, 2005) and is included in Appendix B. The assessment concludes that the proposal is unlikely to result in a significant impact on this community. Referral of the proposal to the Australian Government Minister for the Environment is not considered to be required.

No threatened flora or fauna species listed under relevant Acts were recorded in the study area. No migratory species listed under the EPBC Act were recorded. Given the limited fauna habitats and that the fact that the proposal would not directly impact native vegetation, no threatened flora or fauna species are likely to be impacted by the proposal.

A biodiversity offset is not considered necessary to compensate for the minor and localised residual impacts of the proposal on planted vegetation.

9.4 Mitigation measures

9.4.1 Construction

Vegetation and fauna habitat protection

- Pre-clearing surveys would be undertaken by a trained ecologist, to check for nests or possum dreys, prior to the removal of planted trees.
- No-go zones would be applied during construction to prevent access by construction personnel to adjacent areas of native vegetation. Temporary barriers or flagging would be erected around the perimeter of native vegetation where it adjoins or is close to construction areas. The barriers would be erected prior to construction activities commencing and would be maintained for the duration of construction works.
- Stockpiles would be restricted to existing cleared areas in areas of very low constraint and away from tree drip lines in accordance with *Australian Standard 4970-2009 Protection of trees on development sites*.

Fauna protection

- The pipeline trench sections would be covered (e.g. with boards) at the completion of construction each day to minimise the risk of injury or mortality to animals as a result of falling into the excavated trench line. Trenches would be checked each morning, prior to the commencement of construction, to salvage any fauna that have fallen in, and move them to a safe (and appropriate) nearby location.
- Protocols would be developed to deal with the removal of injured or dangerous animals.

Weed and disease management

- Treatment of weeds would commence as soon as is practicable prior to construction to reduce the biomass of weeds and weed propagules on site when construction commences.
- Construction vehicles would be washed prior to work on site to prevent the potential spread of weeds, Phytophthora and Myrtle Rust. Refer to the national best practice guidelines for Phytophthora (DEH, 2006) and the Myrtle Rust factsheet (DPI, 2011) for hygiene control.

9.4.2 Operation

Potential operational flora and fauna impacts will continue to be managed in accordance with the Picton PEMP. No additional mitigation measures are required.

10. Heritage

10.1 Overview

This section provides an assessment of the potential heritage impacts of the proposal. It considers the potential impacts on Aboriginal and non-Aboriginal heritage, and provides a summary of the results of the Aboriginal heritage assessment prepared by Kelleher Nightingale Consultants. A full copy of the assessment report is provided in Appendix C. The report also includes consideration of the potential impacts of one of the effluent management options. Those results are not considered further here, and would be incorporated into the future assessment of the effluent management system.

A description of the methodology used for the assessment is provided in section 1.3 of Appendix C.

10.2 Existing environment

10.2.1 Aboriginal heritage

The Aboriginal Heritage Information Management System database was searched on 3 November 2014 to identify whether any registered (known) Aboriginal sites or declared Aboriginal places are located in the study area. The results of the search indicated that 57 Aboriginal sites have been previously recorded within the study area for the assessment. None of these sites are located in the vicinity of the proposal site.

The level of disturbance in the majority of the study area limits the potential for intact Aboriginal heritage to be present. A site inspection was undertaken by Kelleher Nightingale on 5 July and 27 September 2013. During the site inspection, no potential sites were identified within or in the immediate vicinity of the proposal site.

10.2.2 Non-Aboriginal heritage

Searches of the following heritage registers were undertaken on 21 January 2014:

- State Heritage Register
- Section 170 Register
- Wollondilly Local Environment Plan
- World Heritage List
- Commonwealth Heritage List
- National Heritage List.

The following non-statutory databases were also checked:

- The Australian Heritage Database - Register of the National Estate
- Register of the National Trust.

The results of the searches indicated that there are no listed heritage items in the study area.

During the site inspection undertaken by Kelleher Nightingale, no potential sites were identified within or in the immediate vicinity of the proposal site.

10.3 Impact assessment

No actual or potential sites of Aboriginal or non-Aboriginal heritage significance were identified at or in the vicinity of the proposal site, and no impacts on heritage are predicted.

10.4 Mitigation measures

10.4.1 Construction

- If an object (or suspected object) of Aboriginal or non-Aboriginal heritage significance is discovered during the work, all work in that area would cease and Sydney Water's Project Manager must be notified immediately. The Project Manager would inform Sydney Water's Heritage Advisor (who will manage in accordance with Sydney Water's incident management protocol- SWEMS0009).

10.4.2 Operation

Potential operational heritage impacts will continue to be managed in accordance with the PEMP. No additional mitigation measures are required.

11. Air quality and odour

11.1 Overview

This section provides an assessment of the potential air quality impacts of the proposal. It considers the potential for odour impacts, as well as air quality impacts generally, and provides a summary of the findings of the odour assessment prepared by ENSure. A full copy of the odour assessment report is provided in Appendix D. A description of the methodology used for the assessment is provided in section 1.3 of Appendix D.

11.2 Existing environment

The EPA's air emissions website indicates that the dominant sources of emissions in the Picton area are cement, lime, plaster and concrete product manufacturing; residential wood heating; windblown dust; food product manufacturing and road, brake and tyre wear (www.epa.nsw.gov.au/air/airemissionsapp/airemissionswebtool).

The main potential odour sources at the existing Picton WRP are the:

- inlet works
- IDALs
- sludge lagoons
- de-sludging activities (occurs two to three times a year).

Sydney Water records indicate that between 2000 and 2014, nine complaints were received about odour from the Picton WRP. These complaints were in relation to:

- the decanting of the sludge lagoon for biosolids injection
- ageing of the sludge lagoon
- poor performance of the odour control unit.

The main sensitive receivers with respect to potential odour impacts are shown in Figure 11.1.

Odour levels from the existing operations of the Picton WRP were modelled and are shown in Figure 11.2.



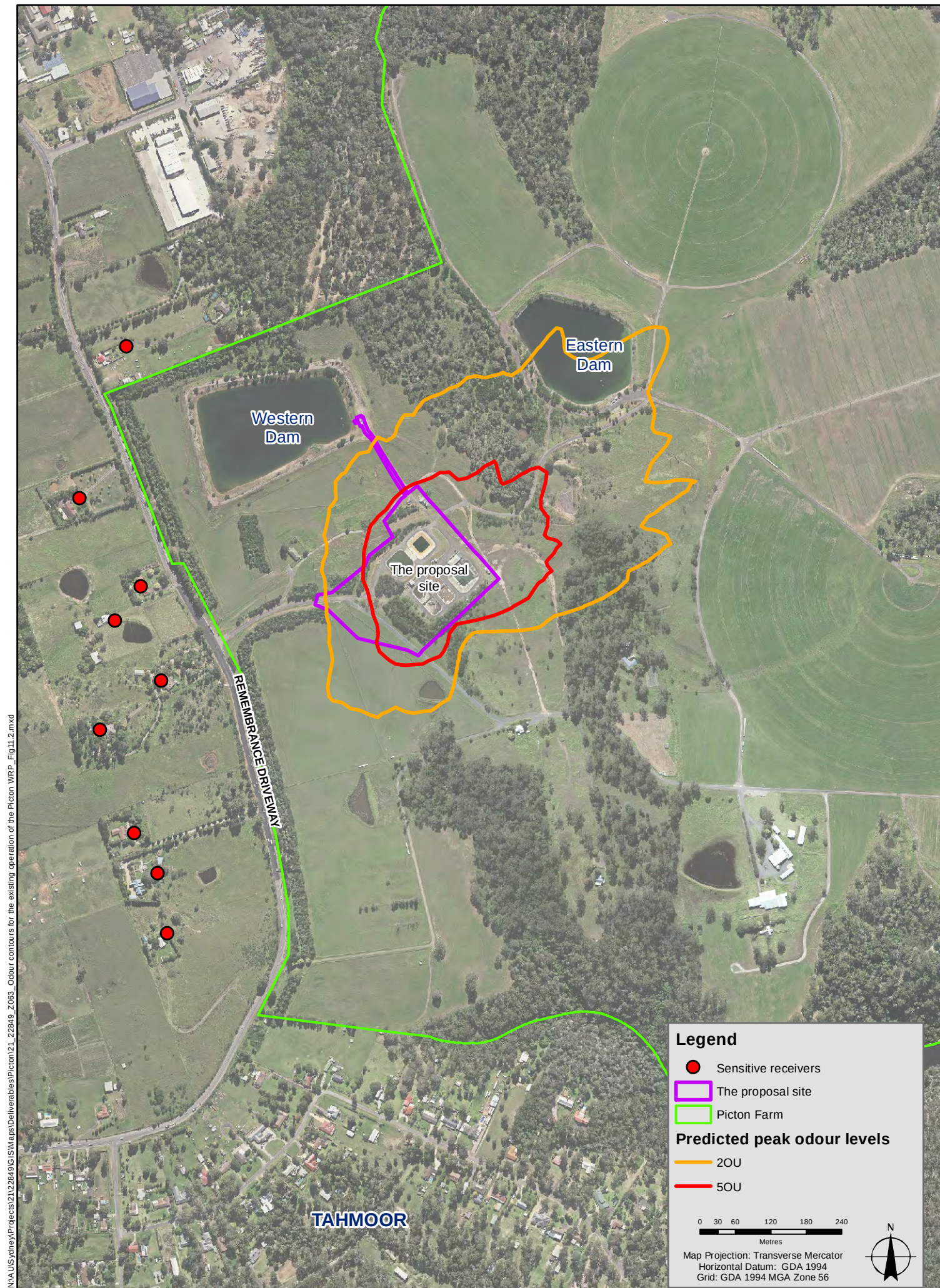


Figure 11.2
Odour contours for the existing operation of the Picton WRP

11.3 Odour assessment criteria

The Secretary's environmental assessment requirements specify that the odour assessment is to be undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC, 2005) (the Approved Methods) and the draft *NSW Best Practice Odour Guideline Sewerage systems including sewage treatment plants, water recycling facilities, sewage reticulation systems and sewer mining* (DoP, 2010) (the draft Best Practice Guidelines).

The Approved Methods provides impact assessment criteria for acceptable levels of odour, ranging from two to seven odour units (OU). The more stringent assessment criteria of two OU applies to densely populated urban areas, and the seven OU assessment criteria applies to sparsely populated rural areas. For the proposal, given the low density of surrounding receivers, performance against the five OU assessment criteria was assessed.

For expanding sewage treatment plants, the draft Best Practice Guidelines recommends adoption of the same specific odour criteria as that for a new plant. For a new plant, the draft Best Practice Guidelines states that 'the odour design criteria to be adopted ... is the achievement of a 2 OU odour assessment criteria at the boundary of the Industrial Zone or the Rural or SP2 lot(s)...'.

As the proposal is located in a rural zone, achievement of the two OU assessment criteria at the boundary of the rural lot (that is, the boundary of Picton Farm) was also considered. Sydney Water notes that this is a very stringent requirement. The Approved Methods recommend that this assessment criteria only be adopted for urban areas with a population equal to or greater than 2000 people.

11.4 Impact assessment

11.4.1 Construction

Air quality

The proposal would have the potential to impact on air quality as a result of:

- dust generated during ground disturbing activities - wind could suspend soil that has been excavated and/or stockpiled and this could cause minor localised increases in dust generation
- dust generated by vehicles travelling along unsealed roads
- exhaust emissions from machinery, equipment and vehicles used during construction.

Only limited excavation would be required to construct the proposal. Any air quality impacts that occur due to the generation of dust and exhaust emissions would be short term and temporary, and would be minimised by implementing the mitigation measures specified by section 11.5.1.

Odour

Odour emissions may arise as a result of the following activities:

- decommissioning the existing inlet works
- cleaning of any existing infrastructure such as the IDALs and the sludge lagoons
- commissioning new infrastructure.

The potential for significant odour impacts as a result of the above activities is considered to be unlikely. Any potential impacts would be short-term and temporary, and the impact is unlikely to extend beyond the immediate vicinity of the works.

11.4.2 Operation

The proposal has the potential to impact on the existing odour performance of the Picton WRP. The concept design process incorporated odour modelling and assessment to identify options to minimise the potential odour impacts of the proposal. As noted in section 6.3.3, the proposal incorporates features to minimise the potential for off-site odour impacts. These include the provision of a new odour control system and limiting the times that de-sludging can take place.

Odour impacts during both normal operations and operations during de-sludging were modelled. De-sludging is known to be the main odour generating activity at the Picton WRP, although it is only undertaken about two to three times a year. As such, both scenarios were assessed. The results of the assessment are summarised below.

Odour modelling and results

Dispersion modelling was undertaken to predict the maximum ground level odour concentrations resulting from operation of the amplified WRP. Dispersion modelling was undertaken using Ausplume version 6.0. Odour contour plots were prepared for predicted odour levels at the 99th percentile odour levels for all sources. The contours conservatively predict odour concentrations 1% of the time (or one hour in one hundred). The five OU and the two OU contours were plotted for both scenarios.

Predicted odour impacts from normal operation of the amplified WRP

The results indicate that during normal operation, both the two and five OU contours would be fully contained within the boundary of Picton Farm (refer to Figure 11.3). The modelling indicates that the five OU contour would be located about 70 metres closer to the nearest sensitive receivers on Remembrance Driveway (to the west) compared with the existing situation. No sensitive receivers are located within the two and five OU contours, and therefore odour impacts during normal operation are unlikely.

Predicted odour impacts from operation of the amplified WRP during de-sludging

The results indicate that during de-sludging activities, the five OU contour would be fully contained within the Picton Farm boundary. The two OU contour would fall slightly outside of the site boundary, within the road reserve of Remembrance Driveway (refer to Figure 11.4). However, odour impacts during de-sludging are unlikely for the following reasons:

- No sensitive receivers are located within the two or five OU contours.
- Where practicable, de-sludging would be limited to the day-time after 8am to avoid worst case meteorological conditions for odour dispersion. These conditions generally occur during the night and in the early morning.
- De-sludging is an occasional and temporary activity, with a typical duration of seven days. It may not occur during the worst case meteorological conditions that assist dispersion.

Overall, the modelling results predict that, during both normal operations and de-sludging, odour impacts at sensitive receivers are unlikely. The predicted odour levels at all sensitive receivers are below two OU for both scenarios. Odour is not expected to be noticeable at the nearest receivers. Mitigation measures are provided in section 11.5.2 to further reduce the potential for impacts.

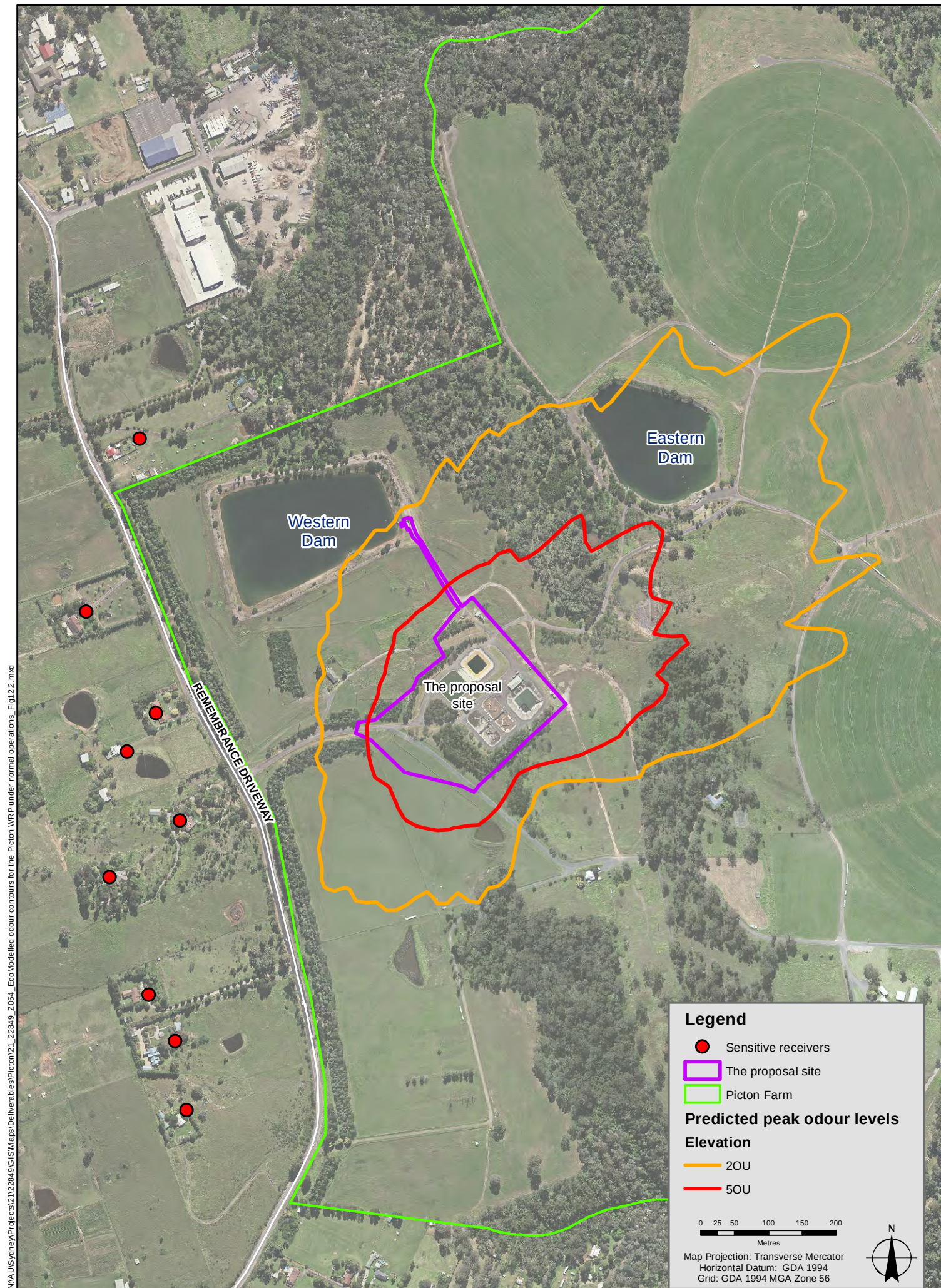


Figure 11.3
Odour contours for normal operation of the Picton WRP (as modified by the proposal)

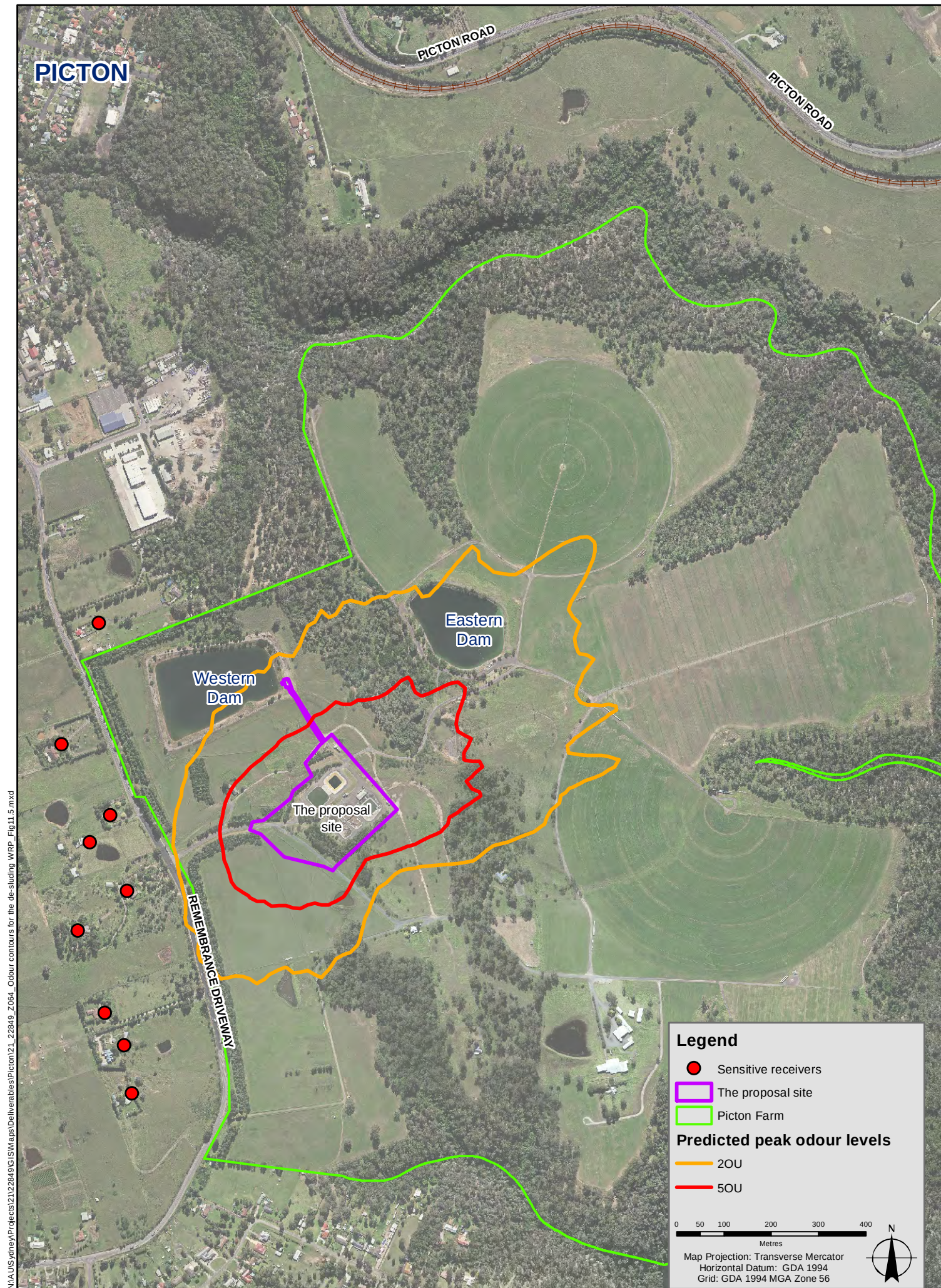


Figure 11.4
Odour contours for the Picton WRP (as modified by the proposal)
with de-sludging

11.5 Mitigation measures

11.5.1 Construction

Dust management

- Exposed surfaces would be dampened, covered or mulched in windy conditions.
- Stockpiles would be managed to minimise the generation of dust and wind erosion.
- Materials transported to and from the site would be covered.
- Sealed access roads would be used where they are available. Access points would be inspected to determine whether material is being transferred to the surrounding road network. Roads would be swept as required to control dust generation.
- All construction plant and machinery would be properly maintained and fitted with emission control devices complying with the Australian Design Standards.
- Machinery and vehicles would be turned off when not in use.
- Any dust complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.

Odour management

- Any odour complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.
- During commissioning, odour monitoring would be undertaken to monitor compliance with the odour assessment criteria.

11.5.2 Operation

- Wherever practicable, de-sludging would be limited to the day time after 8am and would be avoided during worst case meteorological conditions (winds from the north-east). It would be conducted in the shortest timeframe possible.
- Any odour complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure and the PIRMP for the Picton WRP.

12. Noise and vibration

12.1 Overview

This section provides an assessment of the potential noise and vibration impacts of the proposal. It provides a summary of the relevant sections of the noise and vibration impact assessment prepared by ENSure. A full copy of the assessment report is provided in Appendix E. A description of the methodology used for the assessment is provided in section 1.3 of Appendix E.

The noise and vibration assessment was undertaken with regard to:

- *Interim Construction Noise Guideline* (DECC, 2009)
- *Road Noise Policy* (DECCW, 2011)
- *Industrial Noise Policy* (EPA, 2000)
- *Assessing Vibration: a Technical Guideline* (DEC, 2006)
- *German Standard DIN 4150-3: 1999 Structural Vibration – Part 3: Effects of vibration on structures*
- *British Standard (BS) 6472 – 1992, Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz).*

12.2 Existing environment

12.2.1 Noise characteristics

The study area has generally low ambient noise levels, consistent with its rural nature and low density residential development. The dominant influence on ambient noise levels is road traffic and rural/residential activities.

The main potential source of noise impacts associated with the existing operation of the Picton WRP is the surface aeration equipment at the two IDALs. Existing noise levels from the WRP were modelled (based on the monitoring data obtained as outlined in section 12.2.3) and are shown in Figure 12.1.

12.2.2 Noise sensitive receivers

Noise sensitive receivers in the study area consist of rural residential properties (refer Figure 11.1) located on Remembrance Driveway. The nearest receiver (at 2290 Remembrance Driveway) is located about 320 metres from the proposal site. A full list of receivers is provided in section 2 of Appendix E.

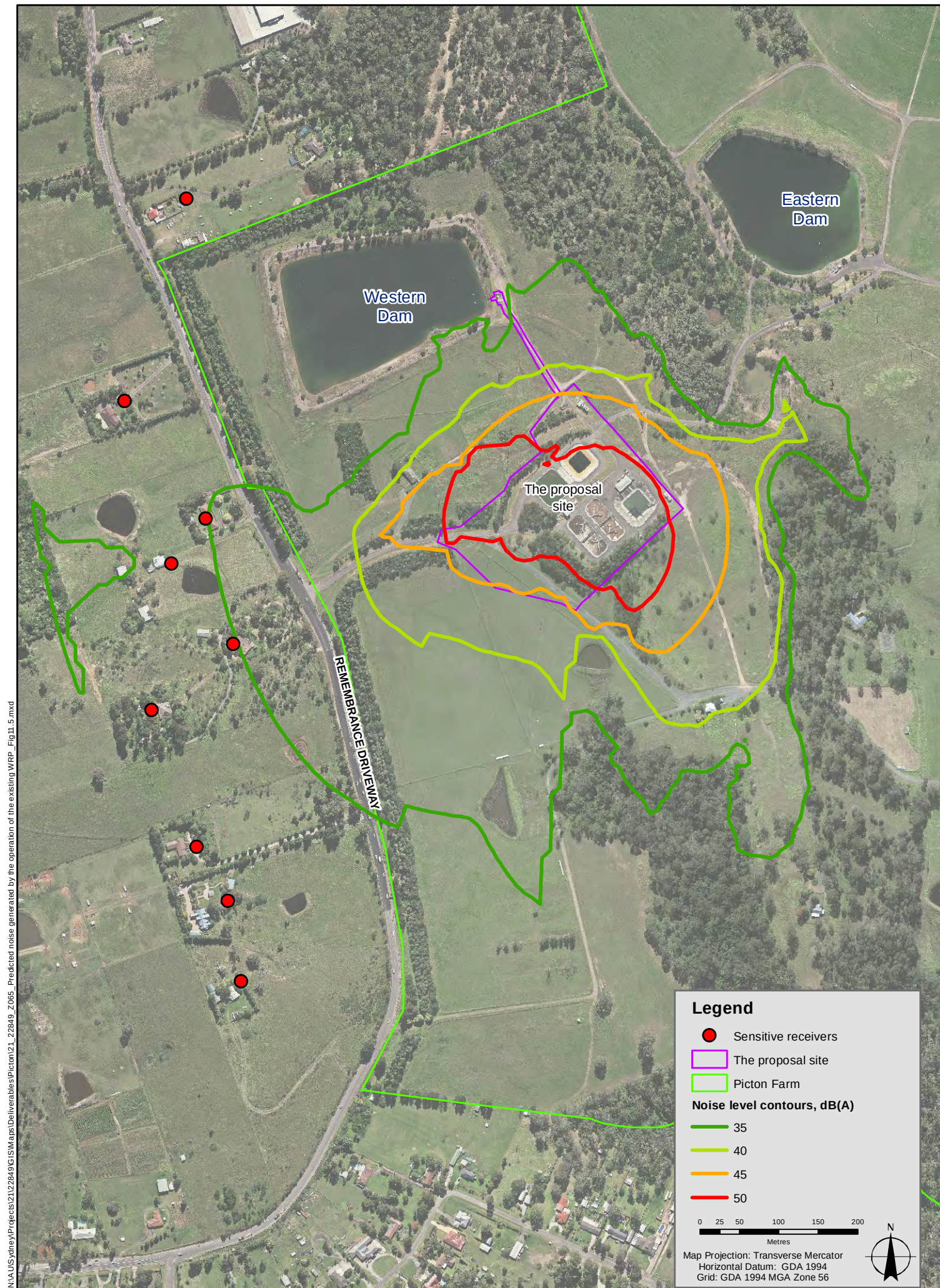


Figure 12.1
Predicted noise generated by the operation of the existing WRP

12.2.3 Noise monitoring

Noise monitoring was undertaken to measure the background noise environment in the vicinity of the proposal site, and provide a basis for the development of noise management levels. Noise monitoring was undertaken at two locations (refer Figure 11.1). These locations were considered to provide a good representation of the existing background noise environment in the vicinity of the proposal site:

- Location 1 provides a representation of existing background noise levels in a rural environment without noise contributions from the existing WRP, other industrial noise sources or road traffic.
- Location 2 includes noise from the existing WRP for operational noise model verification.

The 'rating background' noise level (also known as the rating background level) is the noise level used for assessment purposes. It is the overall background noise level representing each assessment period (day, evening and night). It is calculated in accordance with the *Industrial Noise Policy* (the INP), and is represented by the noise descriptor $L_{A90(\text{period})}$.

A summary of the rating background noise levels at the monitoring locations is provided in Table 12.1.

Table 12.1 Background noise monitoring results

ID	Location	Rating background level $L_{A90(\text{period})}$ (dB(A))		
		Day	Evening	Night
L1	1285 Menangle Park Road	35	33	32
L2	Picton WRP	42	39	36

12.3 Noise levels

12.3.1 Construction noise management levels

Proposal specific construction noise management levels were developed in accordance with the *Interim Construction Noise Guideline* (the ICNG). Standard hours are defined as:

- Monday to Friday: 7 am to 6 pm
- Saturday: 8 am to 1 pm
- No work on Sundays or public holidays.

For work during recommended standard hours:

- The 'noise affected level' represents the point above which there may be some community reaction to noise. The noise affected level was calculated by adding 10 dB(A) to the rating background level (from Table 12.1) at location 1.
- The 'highly noise affected level' represents the point above which there may be strong community reaction to noise. The ICNG specifies that the highly noise affected level is 75 dB(A)

For work outside of standard hours, the construction noise management level was calculated by adding five dB(A) to the rating background level at location 1, for each period.

The sleep disturbance criteria is calculated based on guidance provided by the *Road Noise Policy*.

The proposal specific construction noise management levels and sleep disturbance criteria are provided in Table 12.2.

Table 12.2 Proposal specific construction noise management levels

Receiver area	Work time	Period	RBL ¹ L _{A90(period)} (dB(A))	Noise affected construction noise management level L _{Aeq(15min)} (dB(A))	Highly noise affected construction noise management level L _{Aeq(15min)} (dB(A))	Sleep disturbance criteria L _{Amax} (dB(A))
Rural residential receivers near the proposal site	During standard recommended hours	Day (7 am to 6 pm Monday to Friday, 8 am to 1 pm Saturday)	35	45	75	-
	Outside standard recommended hours	Day (7 am to 8 am and 1 pm to 6 pm Saturday, 8 am to 6 pm Sunday and Public Holidays)	35	40	-	-
		Evening (6 pm to 10 pm Monday to Sunday & Public Holidays)	33	38	-	-
		Night (10 pm to 7 am, Monday to Saturday; 10 pm to 8 am Sunday & Public Holidays)	32	37	-	50 (internal)

Note:

1. RBL at Location 1 (L1) adopted (refer to Table 12.1).

12.3.1 Proposal specific operational noise levels

The INP and the EPL for the Picton Sewerage Scheme were reviewed to develop appropriate proposal specific noise levels for operation. The INP provides guidance on the assessment of operational noise impacts. Table 12.3 includes the relevant intrusiveness and amenity noise criteria for day, evening and night time periods under the INP. Intrusiveness criteria are calculated by adding 5 dB(A) to the rating background level. Amenity criteria are based on acceptable noise levels in a rural area.

The EPL for the Picton Sewerage System sets the following operational noise limits:

L6.1 Noise from the premises must not exceed:

- a) an L_{A10(15min)} noise emission criteria of 45 dB(A) (7 am to 6 pm); and*
- b) at all other times, an L_{A10(15min)} noise emission criteria of 35 dB(A).*

L6.2 Noise from the premises is to be measured at the nearest residence to determine compliance with this condition.

The EPL limits are also summarised in Table 12.3.

Proposal specific operational noise levels have been calculated for the day, evening and night time periods.

The INP requires that the more stringent (lowest) of the intrusive or amenity criteria be selected as the proposal specific operational noise level for each period. To be conservative, the lowest of the INP amenity criteria, INP intrusive criteria and the EPL noise limits (shown in Table 12.3) have been adopted.

Table 12.3 Proposal specific operational noise levels

Receiver area	Time period	RBL ¹ L _{A90(15min)} (dB(A))	Criteria (dB(A))			Proposal specific operational noise levels L _{Aeq(15min)} (dB(A))
			INP Amenity criteria L _{Aeq(period)}	INP Intrusive criteria L _{Aeq(15min)}	EPL noise limits L _{A10(15min)} ²	
Rural/ suburban residential receivers	Day	35	50	40	45	40
	Evening	33	45	38	35	35
	Night	32	40	37	35	35

Notes

1. RBL at Location 1 (L1) adopted (refer to Table 12.1)

2. The L_{A10(15min)} noise descriptor used in the EPL represents the noise level which will be exceeded 10% of the time. The INP uses the L_{Aeq(15min)} noise descriptor, which is the logarithmic average. The L_{A10(15min)} will almost always be greater than the L_{Aeq(15min)} value, and therefore the conservative assessment approach is to adopt the L_{Aeq(15min)} INP noise descriptor.

12.4 Impact assessment

12.4.1 Construction noise

Construction activities would cause a short-term increase in background noise levels. Full modelling results are provided in Tables 4-2 and 4-3 of Appendix E. Noise impacts associated with construction would be temporary and would normally occur during recommended standard construction hours. No exceedances of the 'highly noise affected' construction noise management level are predicted.

Without mitigation, some exceedances of the 'noise affected' construction noise management level are predicted at sensitive receivers within about 690 metres of the proposal site (depending on the equipment used). In accordance with the ICNG, Sydney Water would apply all feasible and reasonable work practices to minimise noise and inform potentially affected residents of the activities to be carried out, the expected noise impacts, and duration. These requirements are included in the mitigation measures listed in 12.5.1.

Night works

As noted in section 6.4.4, some aspects of the works may be required outside of standard hours. For out of hours work, it is predicted that noise levels would range from 40 to 45 dB(A) at the nearest residential receivers. Receivers within about 800 metres of the works may experience noise that exceeds the out of hours construction noise management level of 37 dB(A). The sleep disturbance criteria of 50 dB(A) L_{Amax} (internal) is not predicted to be exceeded.

If out of hours work is required, the noise mitigation measures provided in section 12.5.1 would be implemented to manage the potential for noise impacts.

12.4.2 Construction traffic noise

Relatively low levels of traffic would be generated during construction (refer section 6.4.3), and no significant noise impacts are predicted.

12.4.3 Construction vibration

The proposed works would not be sufficient to generate human comfort vibration impact at any sensitive receiver outside the proposal site. It is also unlikely that the proposed construction equipment would lead to structural vibration impacts.

12.4.4 Operation noise

Noise sources

The proposal has the potential to change the existing noise performance of the Picton WRP. The concept design process incorporated noise modelling and assessment to identify options to minimise potential noise impacts.

The main source of noise impacts associated with the existing operation of the Picton WRP is the surface aeration equipment at the two existing IDALs. The proposed IDALs would use diffused bubble aeration rather than surface aeration. Diffused bubble aeration does not produce significant noise levels and was not considered by the noise assessment. Aeration would be delivered to the new IDALs by blowers. The main potential source of noise at the amplified WRP would be the blowers. As noted in section 6.3.3, the concept design incorporates noise controls (at the blower building in particular), to minimise the potential for noise impacts.

Several pumps would also operate on site. However, operation of the pumps would not contribute to the overall noise levels from the site. Therefore, pump noise was not included in the modelling.

Potential impacts

The potential impacts of the amplified WRP (incorporating the noise controls outlined in section 6.3.3) were considered by the noise assessment. To assess performance against the proposal specific operational noise levels, noise modelling was undertaken for the operation of the amplified WRP. The noise assessment assumed that up to two blowers would be operational at any given time. Predicted noise impacts are shown in Figure 12.2.

The results of the modelling indicate that there would be a slight improvement in noise levels compared to the existing situation. The noise generated by the amplified WRP would be below 35 dB(A) at sensitive receivers, and would therefore not exceed the proposal specific operational noise levels (provided in Table 12.3).

The results indicate that:

- noise from the proposed blower building would not significantly increase noise emissions from the site
- the blower building would shield some receivers to the west of the proposal site, providing a slight reduction in noise levels compared to the existing situation.
- sleep disturbance impacts are not expected at any residential receivers, as the noise levels would be continuous in nature and well below the sleep disturbance criteria.

During commissioning, noise monitoring would be undertaken to assess performance against the proposal specific operational noise levels and EPL noise criteria.

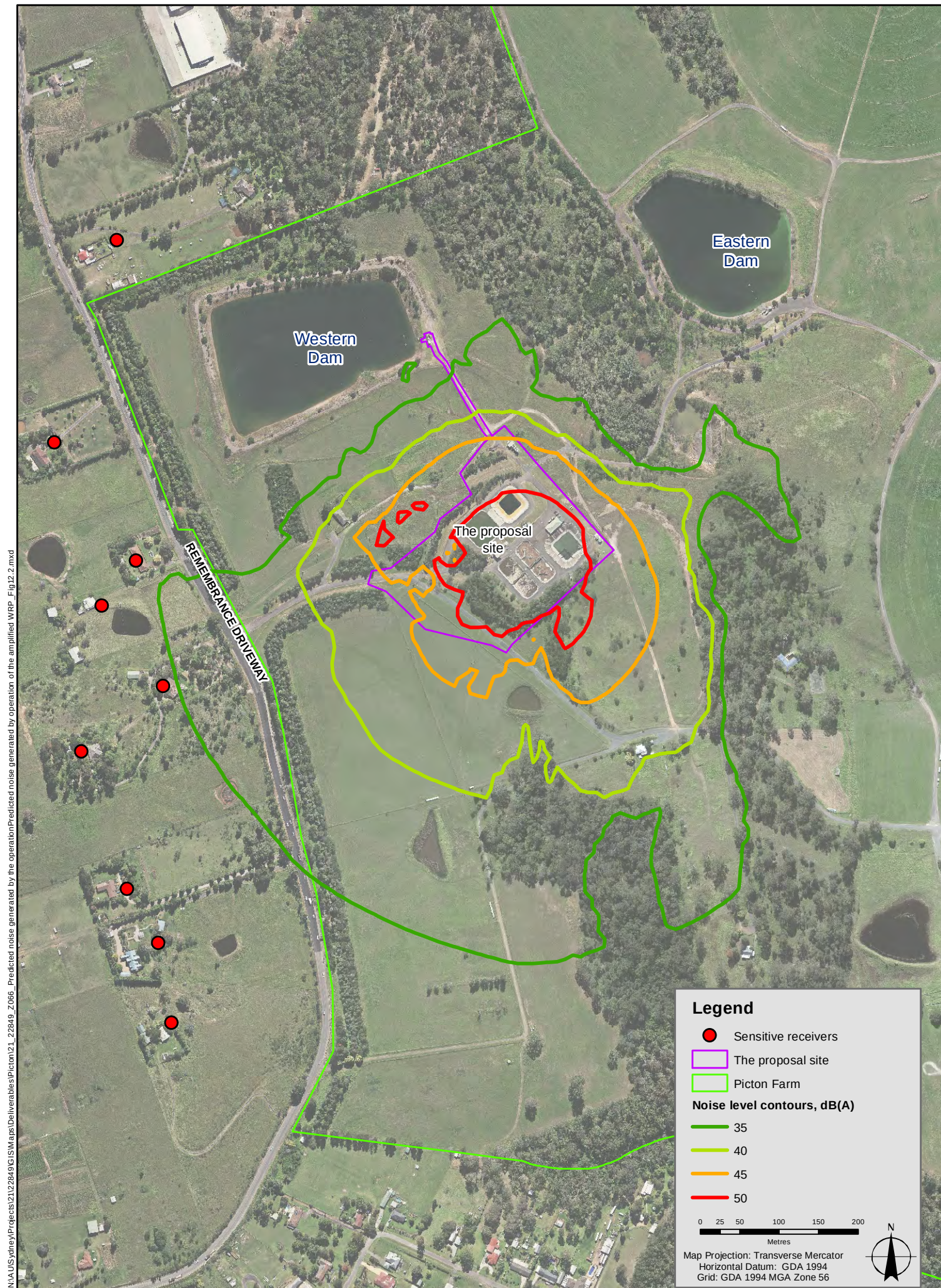


Figure 12.2
Predicted noise generated by operation of the amplified WRP

12.4.5 Operation vibration

No significant operation vibration sources are associated with the proposal, therefore no operational vibration impacts at sensitive receivers are predicted.

12.5 Mitigation measures

12.5.1 Construction

Construction noise

- All feasible and reasonable noise mitigation measures would be implemented during construction in accordance with *AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites* and the *Interim Construction Noise Guideline* (DECC, 2009).
- Construction would be undertaken in accordance with the Sydney Water Noise Management Procedure (SWEMS0056) and Noise Management Code of Behaviour (SWEMS0056.01).
- Inductions for work crews would include specific noise issues and mitigation measures required.
- Property owners/occupiers would be informed in advance of construction, and a contact phone number for any complaints or concerns would be provided.
- A community information telephone line would be established and maintained during construction. Any complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.
- The use of truck engine brakes would be minimised when trucks enter or leave the proposal site.
- During commissioning, a single period of noise monitoring would be undertaken to assess performance against the proposal specific operational noise levels and EPL noise limits.

Night work

- For night work:
 - the contractor's environmental representative would assess the need for additional mitigation measures such as noise monitoring, noise barriers, and notification of affected landholders
 - where possible, activities likely to generate the highest levels of noise would be scheduled to occur at the beginning of the shift (prior to 10pm) to minimise the potential for sleep disturbance
 - all workers would be briefed on the need to minimise noise as a result of their activities.

Vibration

- Vibration levels would not exceed those recommended in the standard, *DIN 4150-3 1999: Structural Vibration – Part 3: Effects of vibration on structures*. Construction activities would be conducted in accordance with the limits of German Standard *DIN 4150: Part 3 – 1999-02 – Effects of Vibration on Structures*.

12.5.2 Operation

- Noise and vibration complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.

13. Traffic, transport and access

13.1 Existing environment

The road and transport network in the study area is shown in Figure 1.1 and is described in section 2.2. The proposal site is accessed via a driveway off the Picton Farm access road which connects with Remembrance Driveway.

Remembrance Driveway is a classified road which runs from Camden in the north to Yanderra in the south. At Yanderra, Remembrance Driveway connects to the Hume Highway, the main arterial road between Sydney and Melbourne. Remembrance Driveway passes through a number of towns/villages including Picton, Tahmoor and Bargo.

Traffic data was collected for Remembrance Driveway near the proposal site by AAJV (AAJV, 2014). The results are provided in Table 13.1.

Table 13.1 Remembrance Driveway traffic data (July 2014)

Collection point	Average weekday traffic volume (two way, per day)	7 day average traffic volume (two way, per day)	Average speed (km/h)	
			Northbound	Southbound
Remembrance Driveway (north of Picton WRP, Picton)	10,635	9,819	76.1	75.3

13.2 Impact assessment

13.2.1 Construction

Information regarding the proposed arrangements in terms of construction site access, parking and estimated vehicle movements is provided in section 6.4.3.

Construction would generate heavy vehicle movements associated with the transportation of construction machinery, equipment and materials to and from the proposal site. Light vehicle movements would be associated with employees and smaller deliveries.

Construction vehicle movements would result in a temporary increase in traffic along Remembrance Driveway (up 52 movements). Overall traffic impacts would be minimal as a result of the low levels of traffic generation compared to the existing traffic volumes on Remembrance Driveway (less than 0.5%).

13.2.2 Operation

There would be a very small increase in traffic during operation associated with additional chemical deliveries, biosolid applications and maintenance activities. Given the existing traffic volumes on Remembrance Driveway any impacts from the additional traffic would be negligible.

13.3 Mitigation measures

13.3.1 Construction

- As part of the induction process, all construction staff would be advised about access to the proposal site from Remembrance Driveway, speed limits on Remembrance Driveway and internal Picton Farm and WRP roads, nearby school zones and parking locations.
- If required, a traffic control plan would be prepared in consultation with the relevant traffic authority/s and in accordance with the requirements of Roads and Maritime Services' manual *Traffic control at worksites* (version 4) (Roads and Traffic Authority, 2010).

13.3.2 Operation

No mitigation measures are required.

14. Land use, social and visual environment

14.1 Existing environment

14.1.1 Land use

The study area is located in a semi-rural environment, which consists mainly of a mix of rural, rural residential and infrastructure land uses.

The proposal site consists of land used for infrastructure purposes (the Picton WRP) and unused land within Picton Farm.

14.1.2 Social

Rural residential dwellings are located to the north, west and south of the proposal site. The nearest residence to the proposal site is located about 320 metres to the west, on the western side of Remembrance Driveway. The potentially sensitive receivers for the purposes of the noise and odour assessments are shown in Figure 11.1.

14.1.3 Visual

The proposal site is located within a rural area. Key visual features include the existing built facilities at the Picton WRP; farm facilities; planted crops; the western and eastern dams; vegetated areas; and associated infrastructure including power, roads, access tracks and hardstand areas.

As a result of existing vegetation around the proposal site, the Picton WRP is not visible to residences or people travelling along Remembrance Driveway.

14.2 Impact assessment

14.2.1 Construction

Land use

Construction would involve work within the existing Picton WRP and within unused areas of Picton Farm that are not suitable for irrigation. The proposal is consistent with the current use of the proposal site, and work would be arranged to minimise any operational impacts on the Picton WRP and Picton Farm.

Community amenity impacts

Potential impacts, including air quality/odour, noise, traffic and access, are assessed in sections 11 to 13. Those sections also contain mitigation measures to minimise the potential for impacts.

Visual

The main potential for visual impacts would be experienced by those working in or visiting the Picton WRP or Picton Farm. Temporary visual impacts may occur as a result of ground disturbance; the presence of work areas; positioning of equipment and materials within the work area; removal of planted trees; and any stockpile and compound sites.

Disturbed areas would be restored to their pre-existing condition (as far as practicable) once construction is completed. However, restoration involving growth of vegetation may take a short period to establish.

Overall, the potential visual impacts of construction activities are considered to be negligible as the works would not be visible from residences or Remembrance Driveway.

14.2.2 Operation

Land use

The proposal would involve use of land within the existing boundary of the Picton WRP and unused land within the Picton Farm. The use of Picton Farm would not be impacted, as these areas are not used for irrigation or farm management purposes.

Social issues

Increasing the capacity of the Picton WRP would ensure that the WRP continues to adequately service the community and industrial customers. It would also enable the WRP to service future urban growth around the villages of Picton, Tahmoor and Thirlmere.

As outlined in section 6.3, the proposal incorporates design features to minimise the potential for off-site amenity impacts, particularly noise and odour impacts. Potential impacts, including air quality/odour, noise, and traffic impacts, are assessed in sections 11 to 13 respectively. No significant impacts were identified.

Visual

The potential visual impacts associated with the proposal would be minor and localised, as the new infrastructure would be located within the existing WRP and Farm boundary. Overall, the potential visual impacts are considered to be negligible, as the new infrastructure would not be visible from residences or Remembrance Driveway. Although the proposal would involve the removal of planted trees, it would not increase the visibility of the Picton WRP.

14.3 Mitigation measures

14.3.1 Construction

- A community liaison plan would be developed and implemented during construction to keep the community informed.
- Existing screening vegetation would be retained wherever possible.
- All disturbed land would be restored as close as possible to the pre-existing condition.
- Construction sites would be maintained in a clean and tidy condition at all times.

14.3.2 Operation

No additional mitigation measures are required.

15. Waste management

15.1 Impact assessment

In accordance with the POEO Act, it is an offence to, without lawful authority, wilfully or negligently dispose of waste in a manner which harms or is likely to harm the environment. The requirements of the POEO Act would be met during construction and operation of the proposal.

15.1.1 Construction

The proposal has the potential to generate the following wastes:

- surplus materials used during site establishment such as safety fencing and barriers, which may include plastics and metal
- general construction waste such as excess concrete, spoil, redundant pieces of pipe/fittings, broken bricks, timber, paper, plastic and metal
- domestic waste including food scraps, aluminium cans, glass bottles, plastic and paper containers, and putrescible waste generated by site construction personnel
- wastewater generated from the compound sites.

Minimal waste would be generated by construction. Spoil generated by excavation activities would be re-used on site wherever possible.

Waste produced would be managed in accordance with the waste management hierarchy. This provides that waste avoidance is a priority, followed by reuse and recycling/reprocessing, with disposal as a last resort. With the implementation of the mitigation measures provided in section 15.2.1, construction waste is unlikely to have a significant impact on the environment.

15.1.2 Operation

As new customers connect to the Picton Sewerage Scheme and wastewater flows to the Picton WRP increase, the proposal would result in an increase in the volume of effluent, grit and screenings and biosolids produced by the WRP.

The additional effluent would be managed by the effluent management system, as described in section 2.3.3. Based on current ADWF forecasts, the capacity of the existing effluent management system may be exceeded between July 2015 and February 2016. As noted in section 6.5.2, Sydney Water is developing short and long term options to manage this forecast increase.

The additional grit and screenings collected at the inlet works would be disposed to collection bins. It is estimated that monthly collections would be required for off-site disposal.

The additional biosolids produced by the WRP would continue to be managed in accordance with current practices. The ongoing application of biosolids would be undertaken in accordance with the EPL and the NSW Biosolids Guidelines. Further information is provided in section 8.2.2.

15.2 Mitigation measures

15.2.1 Construction

- Waste would be managed in accordance with the waste management hierarchy.

- Any waste unable to be reused or recycled would be classified and disposed of in accordance with the EPA's *Waste Classification Guidelines* (DECCW, 2009).
- Waste would be placed in skip bins positioned within the site compound.
- Documents and records of the transport and fates of all materials removed from the site would be kept as proof of correct disposal and for environmental audit purposes.

15.2.2 Operation

The additional waste generated during operation would continue to be managed in accordance with the existing environmental management procedures, including the Picton Farm Biosolids Application REF, the PEMP, the Picton Operations Interface Protocol and the Picton Recycled Water Quality Management. No additional mitigation measures are required.

16. Hazards and human health

16.1 Impact assessment

16.1.1 Construction

During construction, small volumes of fuels and chemicals may be stored on work sites for use by machinery and equipment. There is the potential for these substances to spill into the surrounding environment during refuelling activities, transport and delivery. There is also the potential for limited amounts of dust to be generated. These impacts would be managed by implementing the mitigation measures provided in sections 11.5 and 16.2.

Construction has the potential to impact on existing services and facilities, which can create a risk for employees. Provided that the location of services is confirmed prior to construction, and services are avoided during construction, potential impacts are unlikely.

Construction work sites would be strictly supervised and maintained to ensure that the general public is not exposed to any potential safety risks associated with the proposal.

16.1.2 Operation

Operation of the Picton WRP involves the storage of chemicals used in the treatment process, including alum, citric acid and sodium hypochlorite. These chemicals would continue to be stored in bunded and sealed areas to minimise the potential for impacts on the surrounding environment.

The proposed CDU, which would use either hydrochloric or citric acid, would result in an increase in the amount of chemicals stored on site. Whilst the potential for spills exist during operation, these chemicals would be stored in bunded and sealed areas to minimise potential impacts on the surrounding environment. The size of storage tanks would be determined during detailed design. All chemicals would be stored, transported and handled in accordance with relevant Australian Standards and guidelines.

As wastewater flows to the Picton WRP increase, the volume of effluent, grit and screenings and biosolids produced by the WRP will increase. No operational impacts to human health are predicted as:

- The proposal would be designed to ensure that the effluent produced by the amplified WRP continues to meet the effluent concentration limits specified by the EPL.
- The proposal includes operational improvements to improve the current treatment process and overall reliability of the Picton WRP.
- The proposal would be operated in accordance with Sydney Water's standard operating arrangements (listed in Table 2.2) and the EPL for the Picton Sewerage Scheme.

16.2 Mitigation measures

16.2.1 Construction

- Risk assessments would be undertaken by the Contractor prior to construction to identify and manage safety risks for all works.
- A project safety plan would be prepared outlining how occupational health and safety issues are to be managed. The plan would consider project specific occupational health and safety issues and outline appropriate management controls. It would comply with the NSW

Government's *Work Health and Safety Management Systems and Auditing Guidelines* (5th edition, 2013).

- All contractors, sub-contractors and visitors would be required to comply with the requirements of the project safety plan.

16.2.2 Operation

Risks and human health would continue to be managed in accordance with the existing environmental management procedures, including the Operations Interface Protocol and the Picton Recycled Water Quality Management Plan. No additional mitigation measures are required.

17. Environmental management and commitments

17.1 Overview

This section summarises the approach to environmental management of the proposal. It includes the approach to design refinements during future stages of the design process (section 17.2); and an outline of the approach to environmental management during construction and operation (sections 17.3 and 17.4). The draft statement of commitments is provided in section 17.5.

17.2 Approach to design refinements

The design of the proposal as described in this modification EA would be further progressed during the future design phases. It is noted that the proposal design is conceptual at this stage, and the description provided in this modification EA does not preclude minor refinements during future design stages. Sydney Water's approach to managing design refinements is summarised in section 6.6.

17.3 Construction environmental management plan

The delivery contractor would prepare a CEMP before construction commences. The CEMP would cover the construction and commissioning phases and be in accordance with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004) and *SWEMS0026.01 Preparation of a Construction EMP Procedure*. The CEMP would also incorporate the final statement of commitments. Sydney Water would approve the CEMP before construction begins. All construction staff would be inducted into the proposal and this would outline the CEMP requirements and any sensitive environmental issues and incident management.

Environmental work method statements would be prepared for higher risk construction activities. They would describe the methods and mitigation measures to be adopted to mitigate potential adverse environmental impacts during construction and would include maps showing sensitive areas and the locations of environmental controls. Sub-contractors would be required to adhere to these environmental work method statements.

17.4 Operation environmental management and monitoring

Once operational, the proposal would be operated as part of the Picton Sewerage Scheme. Sydney Water would review and amend (as required) the existing management and monitoring framework (outlined in section 2.3.4) to incorporate changes resulting from the proposal.

17.5 Draft statement of commitments

Sydney Water commits to implementing the mitigation measures provided in sections 8 to 16. These measures are consolidated into Table 17.1 which forms the statement of commitments for the proposal.

Table 17.1 Draft statement of commitments

Issue	Commitment
Construction	
Soils and water quality	
Sedimentation and erosion controls	Sediment and erosion controls would be installed around work sites in accordance with <i>Managing Urban Stormwater, Soils and Construction, Volume 1 and 2</i> (Landcom, 2004 and DECCW, 2006). Controls would be inspected at least weekly and immediately after rainfall to ensure their effectiveness over the duration of construction. Any damage to erosion and sediment controls would be rectified immediately.
	Work would cease immediately in the event that any areas of actual or suspected contamination are identified prior to or during work. These areas would not be disturbed and would be cordoned off as if they were a safety risk. The contractor's environmental representative would be contacted for advice.
	Work would cease during heavy rainfall events when there is a risk of sediment loss off site or ground disturbance due to waterlogged conditions.
	Equipment, plant and materials would be placed in designated lay-down areas where they are least likely to cause erosion or damage to vegetation.
	Following completion of work, land disturbed as a result of construction would be restored to its pre-existing conditions.
Water quality and incident management	All chemicals and fuels would be stored in sealed vessels within watertight bunded areas, away from designated stormwater or drainage lines. Bunded areas for chemical storage would have impervious floors and have the capacity to retain 110% of the total volume of all liquids stored therein. The relevant Material Safety Data Sheets would also be kept on-site.
	Refuelling, fuel decanting and vehicle maintenance work would take place within work compounds where practicable. If refuelling at the proposal site is necessary, it would be undertaken away from stormwater drains, the Western Dam or adjacent native vegetation, and spill kits would be available.
	A functioning spill kit would be kept at the construction site/s and site office/s at all times. Any contaminated material would be disposed of at an approved waste facility.
	The Contractor's incident management plan would include a contingency plan and emergency procedures for dealing with chemical/fuel spills and flooding.
	Should groundwater be encountered during construction activities, appropriate management measures would be implemented to minimise the risk of polluting surface water. This may include measures such as water testing, dewatering, temporary water storage and treatment facilities.
Flora and fauna	
Vegetation and fauna habitat protection	Pre-clearing surveys would be undertaken by a trained ecologist, to check for nests or possum dreys, prior to the removal of planted trees.
	No-go zones would be applied during construction to prevent access by construction personnel to adjacent areas of native vegetation. Temporary barriers or flagging would be erected around the perimeter of native vegetation where it adjoins or is close to construction areas. The barriers would be erected prior to construction activities commencing and would be maintained for the duration of construction works.
	Stockpiles would be restricted to existing cleared areas in areas of very low constraint . and away from tree drip lines in accordance with <i>Australian Standard 4970-2009 Protection of trees on development sites</i> .
Fauna protection	The pipeline trench sections would be covered (e.g. with boards) at the completion of construction each day to minimise the risk of injury or mortality to animals as a result of falling into the excavated trench line. Trenches would be checked each morning, prior to the commencement of construction, to salvage any fauna that have fallen in, and

Issue	Commitment
	move them to a safe (and appropriate) nearby location.
	Protocols would be developed to deal with the removal of injured or dangerous animals.
Weed and disease management	Treatment of weeds would commence as soon as is practicable prior to construction to reduce the biomass of weeds and weed propagules on site when construction commences.
	Construction vehicles would be washed prior to work on site to prevent the potential spread of weeds, Phytophthora and Myrtle Rust Refer to the national best practice guidelines for Phytophthora (DEH, 2006) and the Myrtle Rust factsheet (DPI, 2011) for hygiene control.
Heritage	
	If an object (or suspected object) of Aboriginal or non-Aboriginal heritage significance is discovered during the work, all work in that area would cease and Sydney Water's Project Manager must be notified immediately. The Project Manager would inform Sydney Water's Heritage Advisor (who will manage in accordance with Sydney Water's incident management protocol- SWEMS0009).
Air quality and odour	
Dust management	Exposed surfaces would be dampened, covered or mulched in windy conditions.
	Stockpiles would be managed to minimise the generation of dust and wind erosion.
	Materials transported to and from the site would be covered.
	Sealed access roads would be used where they are available. Access points would be inspected to determine whether material is being transferred to the surrounding road network. Roads would be swept as required to control dust generation.
	All construction plant and machinery would be properly maintained and fitted with emission control devices complying with the Australian Design Standards.
	Machinery and vehicles would be turned off when not in use.
	Any dust complaints would be investigated as soon as possible in accordance with the existing Sydney Water customer complaint policy and procedure.
Odour management	Any odour complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.
	During commissioning, odour monitoring would be undertaken to monitor compliance with the odour assessment criteria.
Noise and vibration	
Construction noise	All feasible and reasonable noise mitigation measures would be implemented during construction in accordance with AS 2436-2010 <i>Guide to noise and vibration control on construction, demolition and maintenance sites</i> and the <i>Interim Construction Noise Guideline</i> (DECC, 2009).
	Construction would be undertaken in accordance with the Sydney Water Noise Management Procedure (SWEMS0056) and Noise Management Code of Behaviour (SWEMS0056.01).
	Inductions for work crews would include specific noise issues and mitigation measures required.
	Property owners/occupiers would be informed in advance of construction, and a contact phone number for any complaints or concerns would be provided.
	A community information telephone line would be established and maintained during construction. Any complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.
	The use of truck engine brakes would be minimised when trucks enter or leave the proposal site.

Issue	Commitment
	During commissioning, a single period of noise monitoring would be undertaken to assess performance against the proposal specific operational noise levels and EPL noise limits.
Night work	For night work: - the contractor's environmental representative would assess the need for additional mitigation measures such as noise monitoring, noise barriers, and notification of affected landholders - where possible, activities likely to generate the highest levels of noise would be scheduled to occur at the beginning of the shift (prior to 10pm) to minimise the potential for sleep disturbance - all workers would be briefed on the need to minimise noise as a result of their activities.
Vibration	Vibration levels would not exceed those recommended in the standard, <i>DIN 4150-3 1999: Structural Vibration – Part 3: Effects of vibration on structures</i> . Construction activities would be conducted in accordance with the limits of German Standard <i>DIN 4150: Part 3 – 1999-02 – Effects of Vibration on Structures</i> .
Traffic and transport	
	As part of the induction process, all construction staff would be advised about access to the proposal site from Remembrance Driveway, speed limits on Remembrance Driveway and internal Picton Farm and WRP roads, nearby school zones and parking locations.
	If required, a traffic control plan would be prepared in consultation with the relevant traffic authority/s and in accordance with the requirements of Roads and Maritime Services' manual <i>Traffic control at worksites</i> (version 4) (Roads and Traffic Authority, 2010).
Social and visual environment	
Community information	A community liaison plan would be developed and implemented during construction to keep the community informed.
Visual impacts	Existing screening vegetation would be retained wherever possible.
	All disturbed land would be restored as close as possible to the pre-existing condition.
	Construction sites would be maintained in a clean and tidy condition at all times.
Waste management	
	Waste would be managed in accordance with the waste management hierarchy.
	Any waste unable to be reused or recycled would be classified and disposed of in accordance with the EPA's <i>Waste Classification Guidelines</i> (DECCW, 2009).
	Waste would be placed in skip bins positioned within the site compound.
	Documents and records of the transport and fates of all materials removed from the site would be kept as proof of correct disposal and for environmental audit purposes.
Hazards and human health	
	Risk assessments would be undertaken by the Contractor prior to construction to identify and manage safety risks for all works.
	A project safety plan would be prepared outlining how occupational health and safety issues are to be managed. The plan would consider project specific occupational health and safety issues and outline appropriate management controls. It would comply with the NSW Government's <i>Work Health and Safety Management Systems and Auditing Guidelines</i> (5th edition, 2013).
	All contractors, sub-contractors and visitors would be required to comply with the requirements of the project safety plan.

Issue	Commitment
Operation	
Odour	Wherever practicable, de-sludging would be limited to the day time after 8am and would be avoided during worst case meteorological conditions (winds from the north-east). It would be conducted in the shortest timeframe possible. Any odour complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure and the PIRMP for the Picton WRP.
Noise and vibration	Noise and vibration complaints would be managed in accordance with Sydney Water's Customer Complaint Procedure.

18. Justification and conclusion

18.1 Justification for the proposed modification

The need for the proposal is driven by the following:

- the transfer of residential flows from the Bargo and Buxton wastewater scheme
- connection of Inghams Enterprises' turkey processing facility
- future connection of the Wollondilly Abattoir
- urban growth around the villages of Picton, Tahmoor and Thirlmere.

The Picton Sewerage Scheme was commissioned in 2000 to serve the towns of Picton, Tahmoor and Thirlmere. Since that time, the service area and surrounding areas have been the subject of increased growth pressures. Sydney Water recognised that detailed planning was required to determine the new wastewater infrastructure needed to service future demands.

The existing capacity of the Picton WRP (2.6 ML/day) cannot accommodate the projected increases in ADWF. To manage the projected increase in flows, Sydney Water proposes to increase the capacity of the WRP to 4 ML/day. This would provide capacity until between 2023 and 2027, depending on the level of growth and new connections to the WRP.

The proposal was developed as an outcome of an extensive range of studies, investigations and evaluations of potential options. These studies, listed in section 5.2, have provided an in-depth review of the existing operation, the need for amplification, and the options available to respond to existing and future needs. In summary, the proposal is justified because it:

- responds to a recognised need
- would enable the Picton WRP to service new connections and future urban growth in Picton, Tahmoor and Thirlmere
- would be located within the existing boundary of the Picton WRP and Picton Farm
- is consistent with the objects of the EP&A Act (see section 18.2).

18.2 Consistency with the objects of the EP&A Act

Table 18.1 identifies the objects of the EP&A Act and their relevance to the proposal.

Table 18.1 Consistency with the objects of the EP&A Act

Objective	Comment
(a)(i) to encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment	The proposal responds to an identified need for amplification of the Picton WRP. The design and mitigation measures have been based on consideration of the natural and artificial resources of the study area.
(a)(ii) to encourage the promotion and co-ordination of the orderly and economic use and development of land	Wastewater infrastructure forms a key part of the infrastructure necessary to support development of land. The proposal would ensure that the Picton WRP continues to meet the needs of the community.
(a)(iii) to encourage the protection, provision and co-ordination of communication and utility services	The proposal is providing a utility service.

Objective	Comment
(a)(iv) to encourage the provision of land for public purposes	The proposal is for a public purpose.
(a)(v) to encourage the provision and co-ordination of community services and facilities	The proposal would improve community services and facilities.
(a)(vi) to encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats	The proposal has been designed to minimise impacts to the environment. Potential impacts have been identified and mitigation measures have been proposed to encourage the protection of the environment.
(vii) to encourage ecologically sustainable development	The potential environmental impacts of the proposal have been assessed. No significant impacts have been identified
(viii) to encourage the provision and maintenance of affordable housing	Not relevant to the proposal.
(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State	Not relevant to the proposal.
(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment	The design and implementation of the proposal has involved, and will continue to involve, consultation with key stakeholders as outlined in section 4.

18.3 Conclusion to the environmental assessment

Sydney Water is proposing to amplify the Picton WRP. This modification EA supports the application to modify the existing approval for the WRP under Section 75W of the EP&A Act.

This modification EA has assessed the potential impacts of the proposal in accordance with the Secretary's environmental assessment requirements.

The assessment identifies that construction impacts would be relatively minor and short term, and would be minimised by the implementation of the mitigation measures. The proposal has been designed to minimise the potential for impacts as far as practicable. The majority of the proposal site has been subject to past disturbance as a result of the construction and operation of the Picton WRP and Picton Farm.

The potential adverse impacts associated with the operation of the proposal are considered to be minor and able to be adequately managed. The proposal is unlikely to have a significant impact on the environment.

The concept design for the proposal incorporates measures and design features to minimise the potential for off-site odour and noise impacts. To ensure that operational impacts are minimised, the proposal has been, and would continue to be, designed to comply with the effluent concentration limits specified by the EPL for the Picton Sewerage Scheme.

The proposal would benefit future generations as it would ensure that the Picton WRP continues to adequately service the community.

The modification EA demonstrates that potential impacts would be adequately mitigated and the proposal is consistent with the objectives of relevant environmental legislation.

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