

Queanbeyan Sewage Treatment Plant Upgrade

Summary of Draft Environmental
Impact Statement >

Queanbeyan-Palerang Regional Council
December 2020 | Final



ARUP

Acknowledgment of Country

We pay our respect to the Traditional Custodians of the Queanbeyan-Palerang area on whose land we live and work. We acknowledge that these lands are Aboriginal lands and pay our respect and celebrate their ongoing cultural traditions and contributions to our surrounding region.

We also acknowledge the many other Aboriginal and Torres Strait Islander peoples from across Australia who have now made this area their home, and we pay respect and celebrate their cultures, diversity and contributions to the Queanbeyan-Palerang area and surrounding region.

Walan [water] is needed by all of us – plants, animals and people. Caring for our waterways is everyday work. Keeping pollution out of our waterways is a constant worry and activity for all of us. Wally Bell, Ngunawal elder, 2015

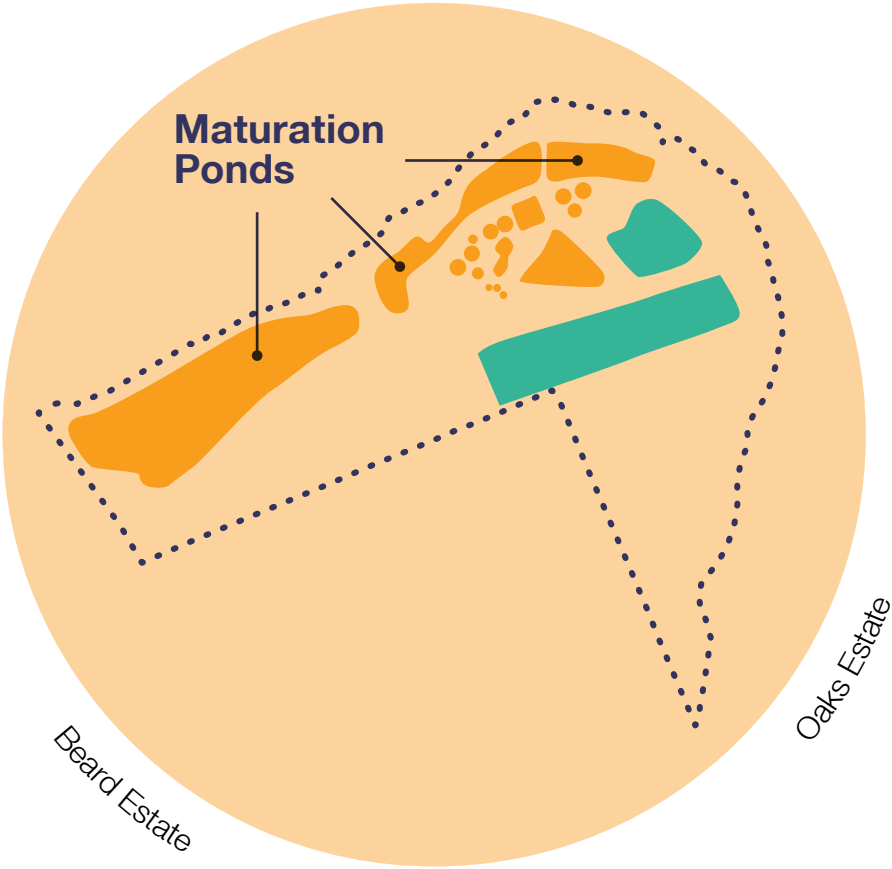
Queanbeyan-Palerang Regional Council (QPRC) is undertaking a necessary upgrade of the existing Queanbeyan Sewage Treatment Plant (QSTP).

The existing QSTP treats sewage from Queanbeyan before it is discharged into the Molonglo River. The project will replace the existing STP which is approaching the end of its functional life with a modern treatment facility that will improve treatment reliability.

The upgrade will provide additional capacity for growth and development in Queanbeyan and will enable QPRC to continue to meet its regulatory requirements.

The upgraded QSTP will be constructed on the existing site near Oaks Estate ACT, to the south east of the existing treatment plant.

This summary of the draft Environmental Impact Statement (EIS) has been prepared to describe the upgrade and provide an overview of the key potential environmental impacts that could occur as a result of its construction and operation.



Legend Subject site Existing QSTP structures Proposed new QSTP structures North

Did you know?



How do maturation ponds help with sewage treatment?

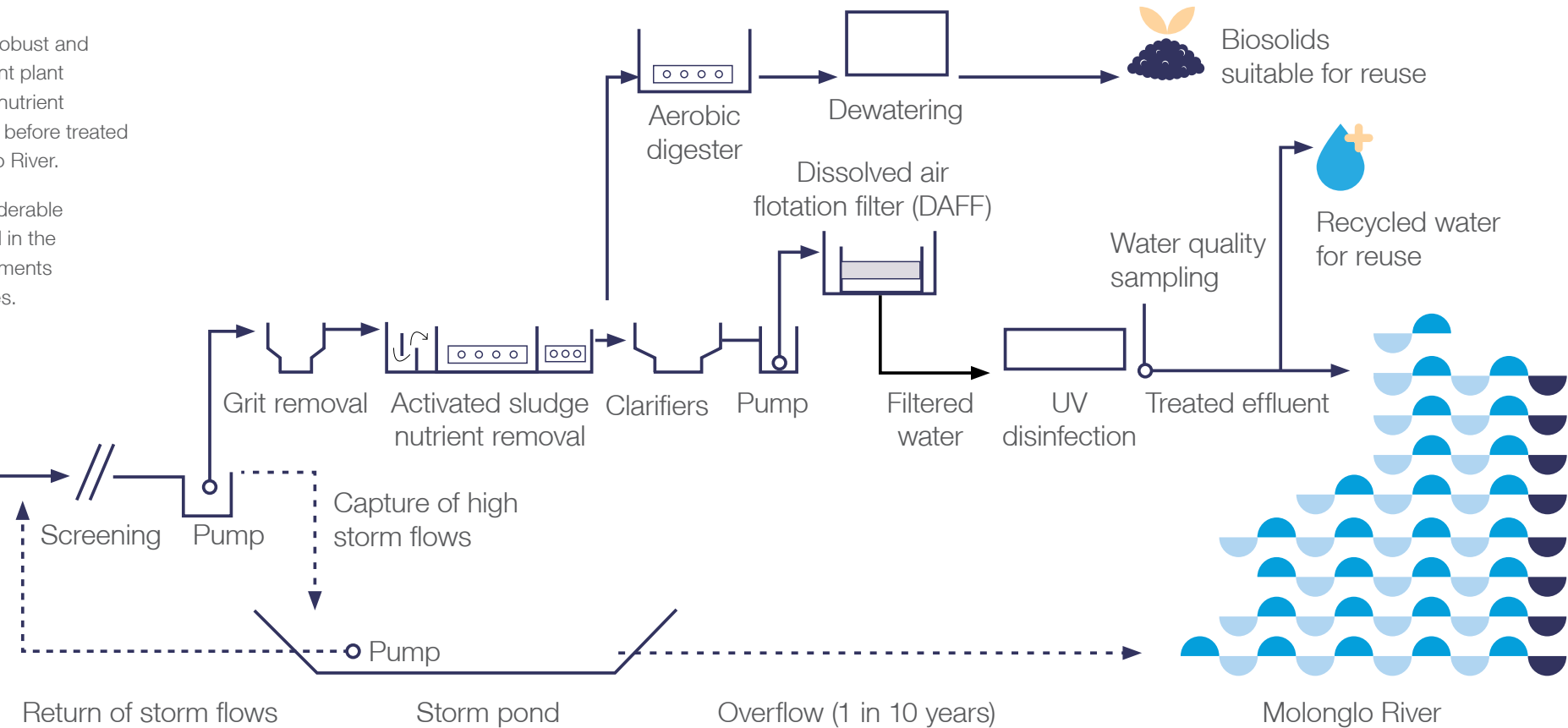
The maturation ponds form part of the current treatment process to reduce organic content and kill pathogens.

Water flows through the series of ponds over several days before being discharged into the river. During this time sediments are trapped in the ponds and pathogens are exposed to UV radiation (from the sun) and destroyed.

Treatment process of the upgraded QSTP

The upgrade uses well-established, robust and reliable technology. The new treatment plant includes screening and grit removal, nutrient removal, filtration and UV disinfection before treated effluent is discharged to the Molonglo River.

The upgraded STP would be a considerable improvement on the technology used in the current STP with associated improvements reliability and environmental outcomes.



Southern view of the new STP



How the planning process works

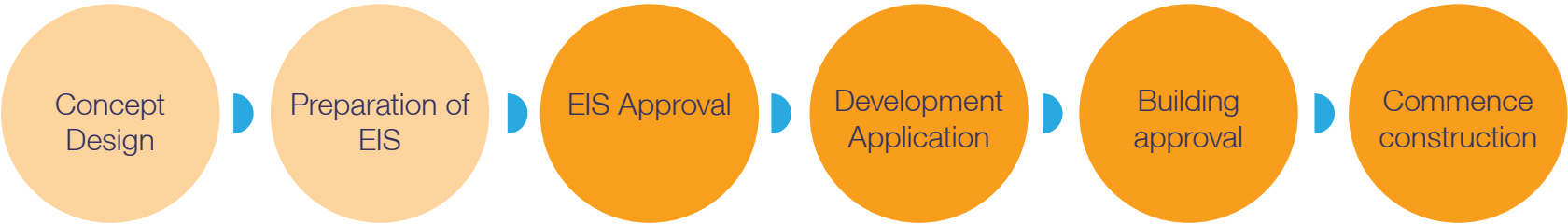
As the site of the upgrade is within the ACT, QPRC is required to following ACT Government planning legislation.

The approval is being sought under the ACT Government's *Planning and Development Act 2007*. The upgrade has to be assessed as an impact track development because it involves construction of a sewage treatment plant that will be less than one kilometre from the boundary of a residential block and will be able to treat more than 2500 equivalent population (EP) each day.

An impact track development requires an EIS to be prepared and approved prior to construction.

The land for development is Territory Land, which means the development will be assessed against the Territory Plan. Under the Territory Plan the land is zoned TSZ2 Services and NUZ4 River Corridor. A sewage treatment plant is a permitted use on this zoning, as it is considered a 'Major Utility Installation'.

Following approval of the EIS, a separate Development Application would be submitted for approval prior to construction commencing.



We are here

Why is it needed?

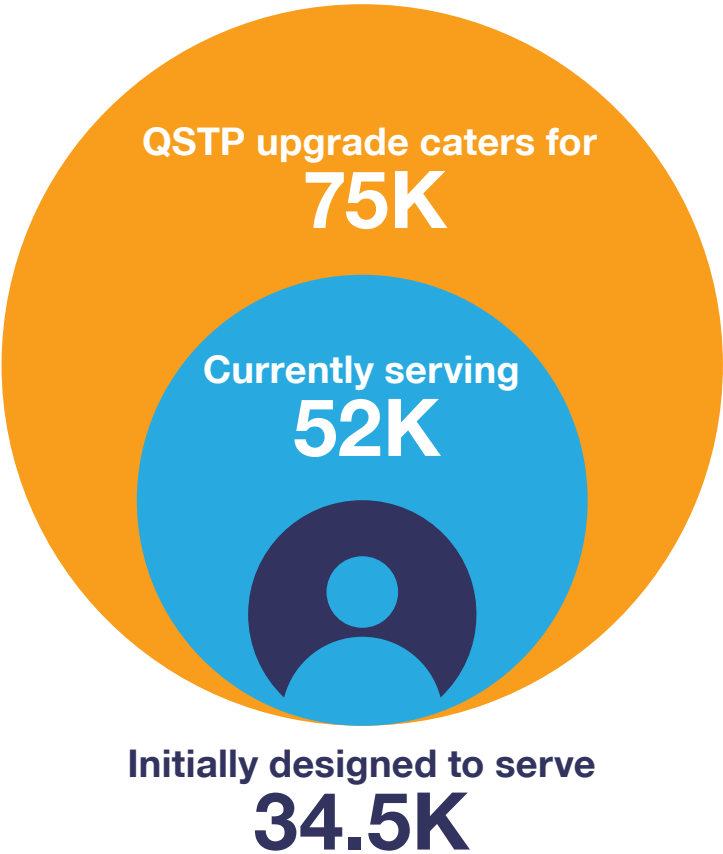
The existing QSTP was constructed in the mid-1930s and due to population growth in the area, it is no longer fit for purpose. Additionally, some of the existing equipment is obsolete and there are issues with maintenance of the existing plant.

While maintenance and works have been regularly undertaken on the QSTP, the plant receives flows that are greater than its capacity and operates with equipment that is now at the end of its service life and needs replacing.

While the QSTP is currently meeting effluent licence conditions, it is estimated that the existing plant has about three to five years of effective service life remaining before its condition or ability to meet pollutant load requirements presents a major asset risk to QPRC and the community.

QSTP servicing capacity
(Equivalent Population, EP)

Protecting public
health and the
environment for
future generations



What are the objectives?

The objective of the upgrade is to provide a robust, reliable and sustainable STP that protects public health and the environment for future generations.

The upgrade would deliver a sewage treatment solution that provides for both immediate service needs and plans for identified needs of the future.

The upgrade provides value for money, achieves targeted sustainability and public health outcomes, and would continue to meet regulatory requirements.

The STP upgrade has been designed to meet regulator and stakeholder requirements, and to achieve an Infrastructure Sustainability Council of Australia (ISCA) rating of 'Excellent'.



A robust and reliable sewage treatment solution protecting public health and the environment



Designed to achieve an ISCA rating of 'excellent'

QPRC is a member of ISCA which provides a rigorous, third-party verified rating tool to measure sustainability for infrastructure projects.

In line with QPRC's Sustainable Design Policy for Council Buildings, QPRC has committed to achieving an ISCA rating of 'Excellent' for both the design and construction phases of the QSTP upgrade.

QPRC has endorsed the following sustainability commitments for the project.



- **Identify the impacts of climate change** and implement adaptation measures into design
- **Reduce energy consumption** and investigate options for uptake of renewable energy
- **Optimise design** to reduce the use of materials and minimise their lifecycle impacts
- **Reduce waste** sent to landfill using a waste hierarchy and maximising rates of recycling
- Respect and value the natural habitat of the site by **maintaining its ecological value.**

- **Evaluate significant decisions** using environmental, social and economic criteria
- Ensure that the **heritage value** of the site is maintained
- **Work with stakeholders and the local community** to leave a positive legacy
- **Encourage local procurement** and evaluate suppliers and subcontractors using sustainability considerations
- **Monitor suppliers' sustainability performance** and manage non-compliance against their sustainability targets.

- **Minimise the facility's water use** and source from non-potable supplies where appropriate
- **Improve local receiving water environmental values** compared to the existing STP.

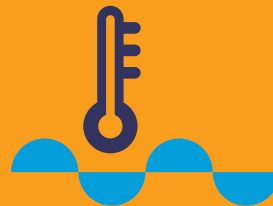
These aspirations, in conjunction with the detailed sustainability targets included in the project's Sustainability Management Plan, will optimise environmental, economic and social outcomes.

Benefits

Additional benefits of the upgrade include securing Queanbeyan's sewage treatment needs for future growth, and improved ability to control water quality discharged to the environment and to protect public health.

Improved:

- Odour and noise outcomes
- Treatment reliability
- Treatment of biosolids to a quality suitable for agricultural reuse
- Treatment of the waste screening
- Traffic access
- Protection of the plant against flooding
- Workplace health and safety
- Resilience to climate change.



The upgrade would provide a source of recycled water that could be used for applications such as dust suppression.

The upgrade would allow the plant to receive and treat waste from domestic septic tanks and aerated wastewater treatment systems.

Community consultation

QPRC has engaged with the community and stakeholders to inform the planning of the upgrade since 2011.

As part of the options development, project planning and preparation of the draft EIS, QPRC undertook consultation activities with a range of government and agency stakeholders. QPRC has also undertaken a series of community engagement activities prior to and during the preparation of the draft EIS.

Consultation activities undertaken to date include:

- Engagement sessions with NSW and ACT Government agencies
- Engagement with Representative Aboriginal Organisations
- Consultation and engagement activities with local environmental groups, including:
 - Queanbeyan Landcare
 - Molonglo Catchment Group
 - Lake Burley Griffin User Groups
 - Canberra Angler's Association
 - Canberra Ornithologists Group
 - Molonglo Conservation Group
 - Jerrabomberra Residents' Association
- Dedicated project web page
- Community letters and brochures.



Engaging the community since 2011

Consultation activities will continue as the upgrade progresses to detailed design and construction. Further discussion of the community and stakeholder involvement is detailed in the EIS.



Eastern grey kangaroos, Queanbeyan © Getty Images

Tharwa River © Elizabeth Jakimow

Superb Parrot © Getty Images

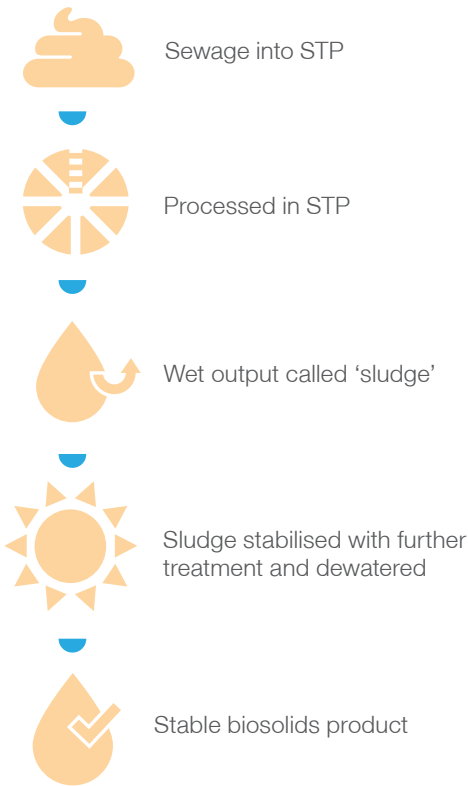
Lake Burley Griffin © Getty Images

Waste



- Currently the organic byproduct (biosolids) are stored in stockpiles on site
- During construction existing biosolids will be reused on site (for example, in landscaping)
- Future biosolids would be of a quality that would allow reuse options such as agriculture, forestry or soil and site rehabilitation if the market is available
- Initially, new biosolids would be transported to the Woodlawn bioreactor facility which produces clean electricity from biogas.

Sewage treatment process



Contamination



Detailed investigations and studies of the existing site have been undertaken with regards to the potential contamination of the site.

Results of the assessment indicated the presence of contaminants including:

- Asbestos,
- Per- and polyfluoroalkyl substances (PFAS)
- Heavy metals.

This is consistent with the long history of industrial use of the site as a sewage treatment plant and is not anticipated to pose an unacceptable ecological or human health risk.

Water Quality



A rigorous assessment of water quality has been undertaken to inform the EIS.

The river conditions upstream and downstream of the existing QSTP demonstrate that the treated output does not have a negative impact on the Molonglo River.

The water quality of the discharge from the upgrade would be the same or better than the existing QSTP and in accordance with the licence conditions.

The upgrade has been designed to mitigate infrastructure failure and minimise the impact of any failure on the Molonglo River. The upgrade will be constructed above the 1 in 100 year flood zone and includes contingencies such as controlled bypasses for re-treatment.

Detailed, long-term water quality monitoring will be undertaken to safeguard the environment against any negative water quality changes.



- Legend
- Subject site
 - Water features
 - Water quality monitoring locations

Lake Burley Griffin

During high rainfall events partially treated sewage can be discharged into the Molonglo River, which eventually flows downstream to Lake Burley Griffin.

This discharge may include pollutants that can contribute to blue-green algae growth which has historically closed Lake Burley Griffin to recreational users.

Whilst the existing QSTP is one potential contributor in a whole catchment, some events that have related in lake closure have been traced back to the existing QSTP.

The upgrade has removed the need for maturation ponds. The maturation ponds are built within the 1 in 100 year flood zone. During flood events, the ponds have discharged partially treated sewage into the Molonglo River.

Removal of the maturation ponds means:

- There will be less risk of partially treated sewage leaking and causing algae blooms
- The lake will be less likely to close as a result of discharge from the upgrade

The release of fully treated effluent can have a positive effect on the receiving waters:

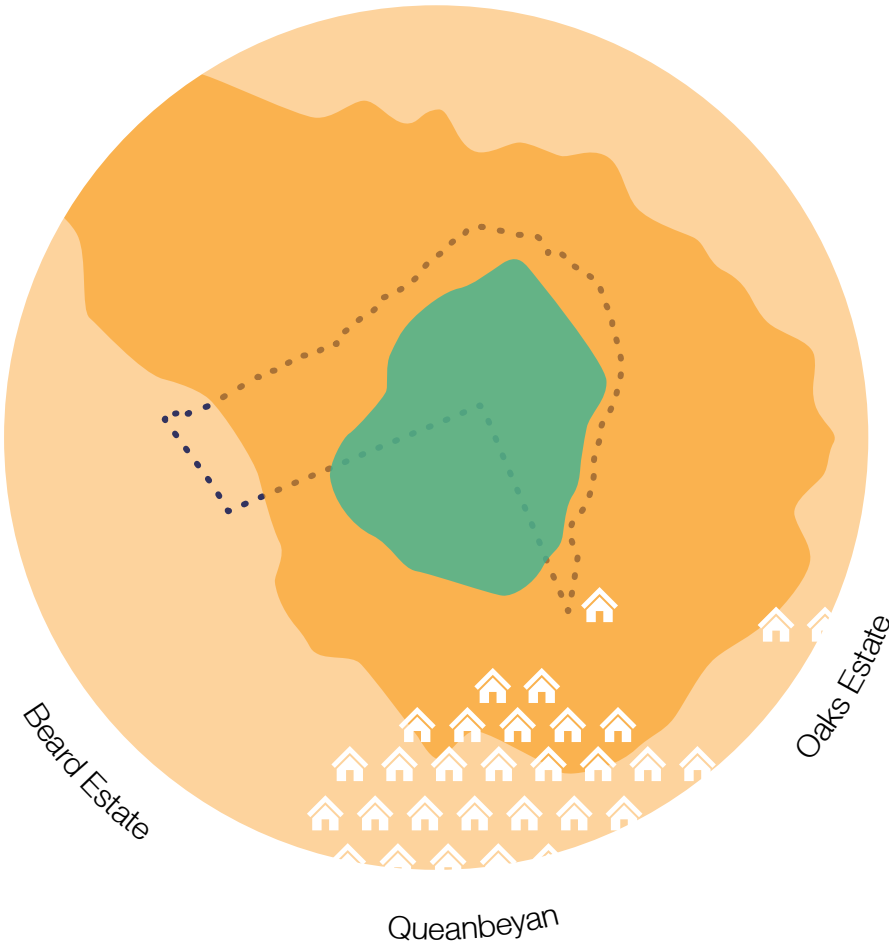
- Contribution to water flow in Molonglo River and downstream into Lake Burley Griffin. Due to the upstream construction of Googong Dam, QSTP is one of a few consistent flowing water sources to the river and Lake during dry weather.



Odour



- Currently, odour emissions may be impacting residential and industrial properties
- The main sources of odour are being removed and replaced with upgraded equipment, resulting in a reduction in odour emissions.



Legend

- Subject site
- Modelled maximum extent of significant odour impact (upgrade STP)
- Modelled maximum extent of significant odour impact (current STP)
- 🏠 Residential



Flooding

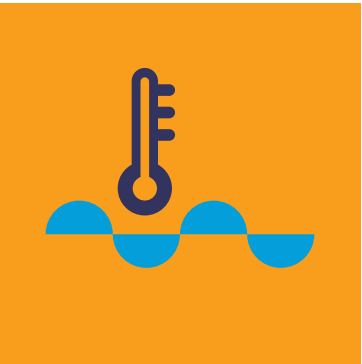
The existing site has historically had issues with flooding, including in the failure of maturation pond embankments, and the release of partially treated effluent into the Molonglo River. The maturation ponds and other areas of the treatment process are located within the 1 in 100 year flood zone.

After the upgrade is constructed, the maturation ponds would be decommissioned and the area remediated to extend the [riparian zone](#) along the bank of the Molonglo River.

The upgrade has been designed to have all major structures, buildings and roads outside the 1 in 100 year flood zone.

As an allowance for climate change, the top of the water treatment process and mechanical and electrical equipment have been design above the 1 in 200 year flood zone.

The majority of the treatment plant facilities are located above the 1 in 500 year flood zone.



Annual Exceedance Probability (AEP)

Expresses the likelihood of a flood of a given size or larger occurring in a given year. AEP is expressed as a percentage (%).

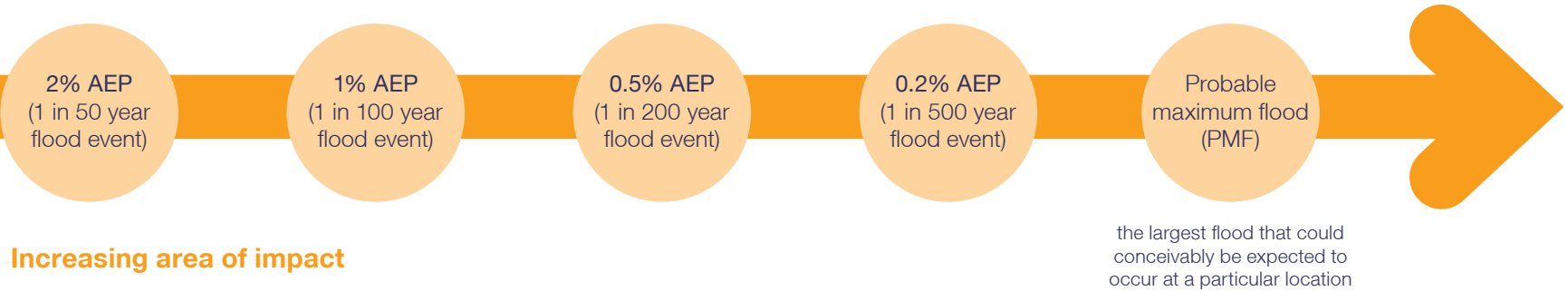
If a flood has an AEP of 1%, it has a one in 100 likelihood of occurring in any given year.

Bushfire

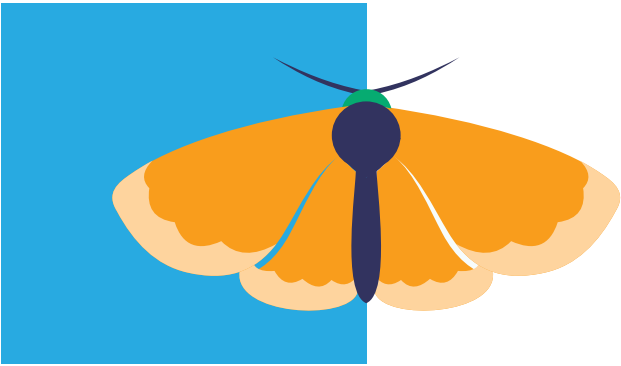


A Bushfire Protection Assessment was undertaken as much of the site is located in a bushfire prone area

The Bushfire Protection Assessment identified that an Asset Protection Zone should be established around the upgrade. This would consist of a 20m buffer on the north, east and south and a 40m buffer on the west around the new facility. The buffer area would be managed with regular mowing to keep grass short and reduce fire hazard risk.



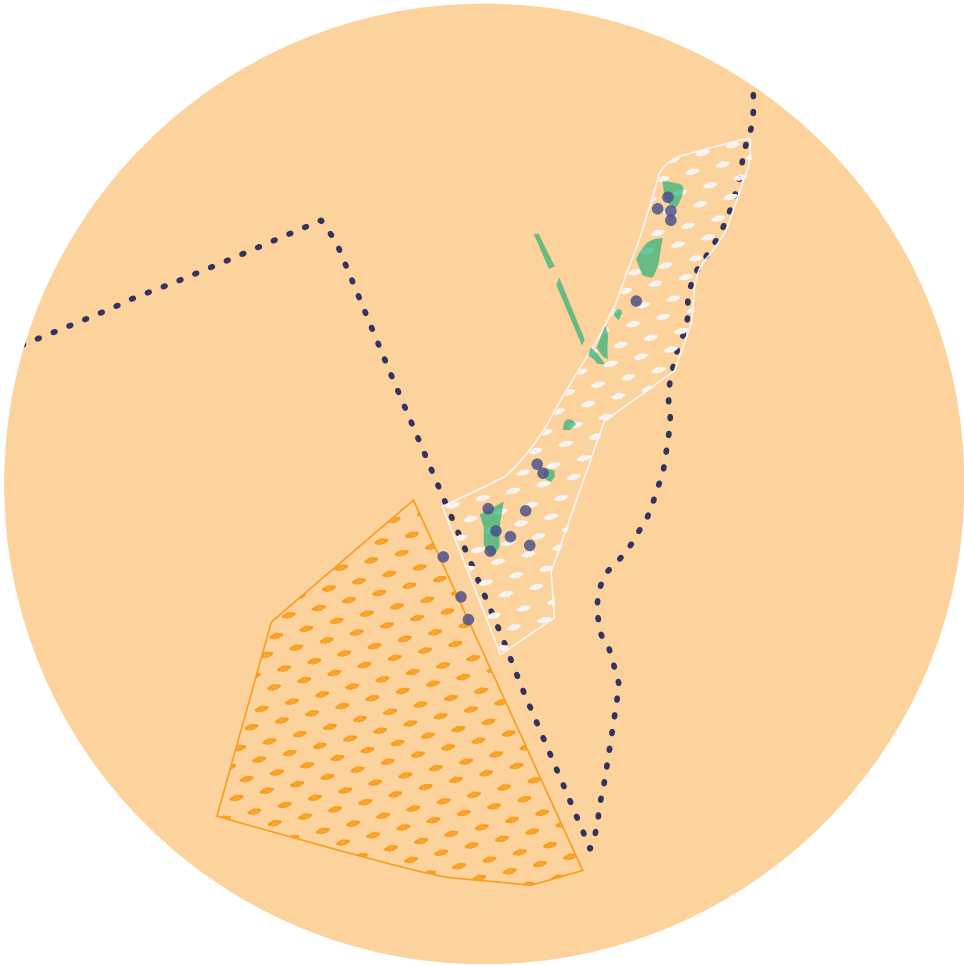
Biodiversity – Golden Sun Moth



Golden Sun Moths are a critically endangered native Australian insect which are known to be in the area.

Surveys were undertaken across the whole site to identify any Golden Sun Moth or their habitat. A few moths were identified on site and are likely to be linked to a known population of Golden Sun Moth on the next property.

The upgrade has been designed to avoid the identified areas of habitat. An exclusion zone would be established during construction to protect the area. A pipeline is proposed to be bored beneath the exclusion zone, however the works would not alter the land surface and would not result in an impact to the area of Golden Sun Moth habitat.



Legend

.....

Subject site

Sightings

●

Golden Sun Moth sightings

■

Golden Sun Moth habitat

■

Golden Sun Moth exclusion zone

■

Known Golden Sun Moth habitat (ACT map)

Biodiversity – Maturation Pond Rehabilitation



The maturation ponds would not be required for operation of the upgrade as their functionality is being replaced with a more efficient system, and they would be decommissioned. This would involve weed control to prevent the spread of exotic pests and weeds, and then removal of water from the ponds.

These ponds provide limited habitat to some native bird species, particularly waterbirds. However, the habitat is low quality better habitat is present at the adjacent Molonglo River and associated riparian vegetation.

Revegetation works at the pond sites, including the creation of good quality habitat, would greatly improve the condition of the riparian zone along this section of the Molonglo River.

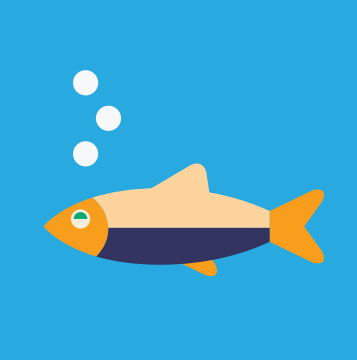
Did you know?



What is a riparian zone?

A riparian zone is an area along the river edge that often consists of lots of vegetation.

Riparian zones are important to help filter pollutants, reduce erosion and maintain stable river corridors.



Heritage

Aboriginal Heritage

- The Queanbeyan area (particularly the Molonglo and Queanbeyan Rivers) has been recognised as a significant Aboriginal pathway through the land
- Anecdotally, it has been suggested that suggest that a cottage of Jimmy Clements (King Billy) was located on the site, however, no information on its history, location or physical composition were recorded with the heritage nomination
- Most of the study area has low Aboriginal archaeological potential except the south-western corner which has been largely undeveloped. This area has potential for archaeological deposits and will be marked as an exclusion zone during construction.

Non-Aboriginal Heritage

- Evidence of European settlement at the site includes clearing and ploughing from the 1820s
- In the 1840s, the area was being used for sheep grazing, rearing cattle and cropping
- The QSTP became operational in 1938
- Aerial photographs from 1955 show the maturation ponds had not been built and there were still rural properties surrounding the STP. Since then, nearly all of the former residences have also been demolished, with the exception of a brick building/cottage associated with ‘Mountain Road Cottage and Stable’
- The remnant brick building associated with ‘Mountain Road Cottage and Stable’ would be retained during construction.

40,000 years
one of the oldest
living cultures

1820s
European
settlement

1840s
land used for
farming

1890s
Jimmy Clements
lived in the area

1938
QSTP became
operational

1955
Aerial photographs
show maturation
ponds

Did you know?



Who is King Billy?

Jimmy Clements, or ‘King Billy’ was a member of the Wiradjuri group and a local resident of Queanbeyan in the late 19th century.

He was particularly known for presenting the first recorded Aboriginal protest at Old Parliament House during its opening on 9 May 1917.

Health

A Health Impact Assessment (HIA) has been prepared for the upgrade. The HIA is primarily concerned with impacts on community health. The HIA considers human health from the perspective of environmental exposure to chemicals in the built and natural environments, and various factors such as physical health, mental wellbeing, and social, cultural and economic factors.

The HIA identified there would be an improvement to air quality, odour, noise, wastewater quality, biosolids management and reuse, and site contamination (groundwater).

Health benefits were identified for the provision of wastewater services to the community, reduction of potential impacts to surrounding properties through construction of the new plant, and population benefits attributed to construction of the upgrade.

Based on public health information available, the HIA reports that the population in the areas surrounding the site are not more vulnerable or susceptible to health-related impacts compared to the general population in NSW and Australia.

Did you know?



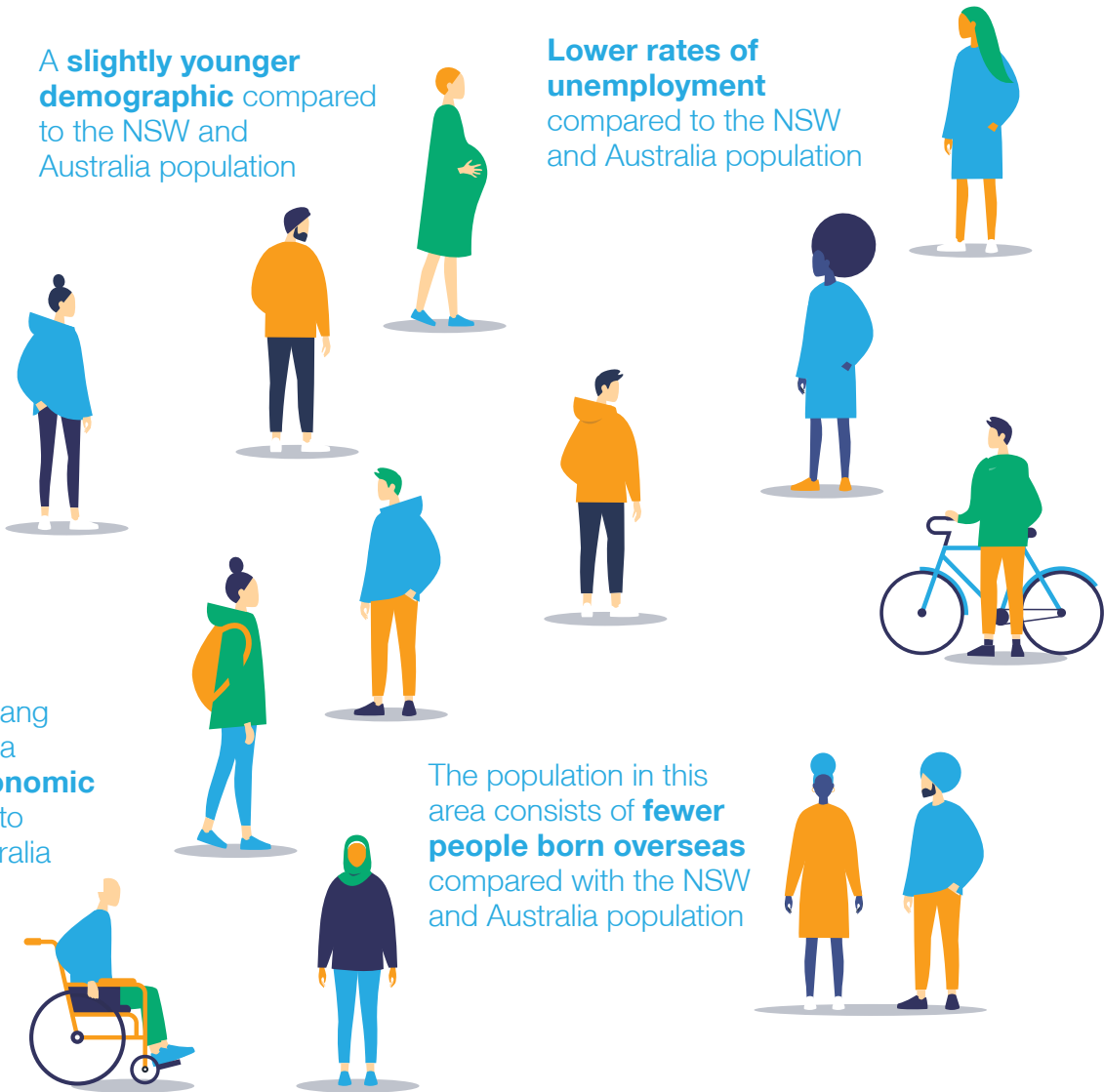
Queanbeyan community profile

Queanbeyan-Palerang LGA and ACT has a **higher socio-economic status** compared to the NSW and Australia

A **slightly younger demographic** compared to the NSW and Australia population

Lower rates of unemployment compared to the NSW and Australia population

The population in this area consists of **fewer people born overseas** compared with the NSW and Australia population



Summary of key findings and benefits of the project

Legend

1 in 100 years flood

Subject site

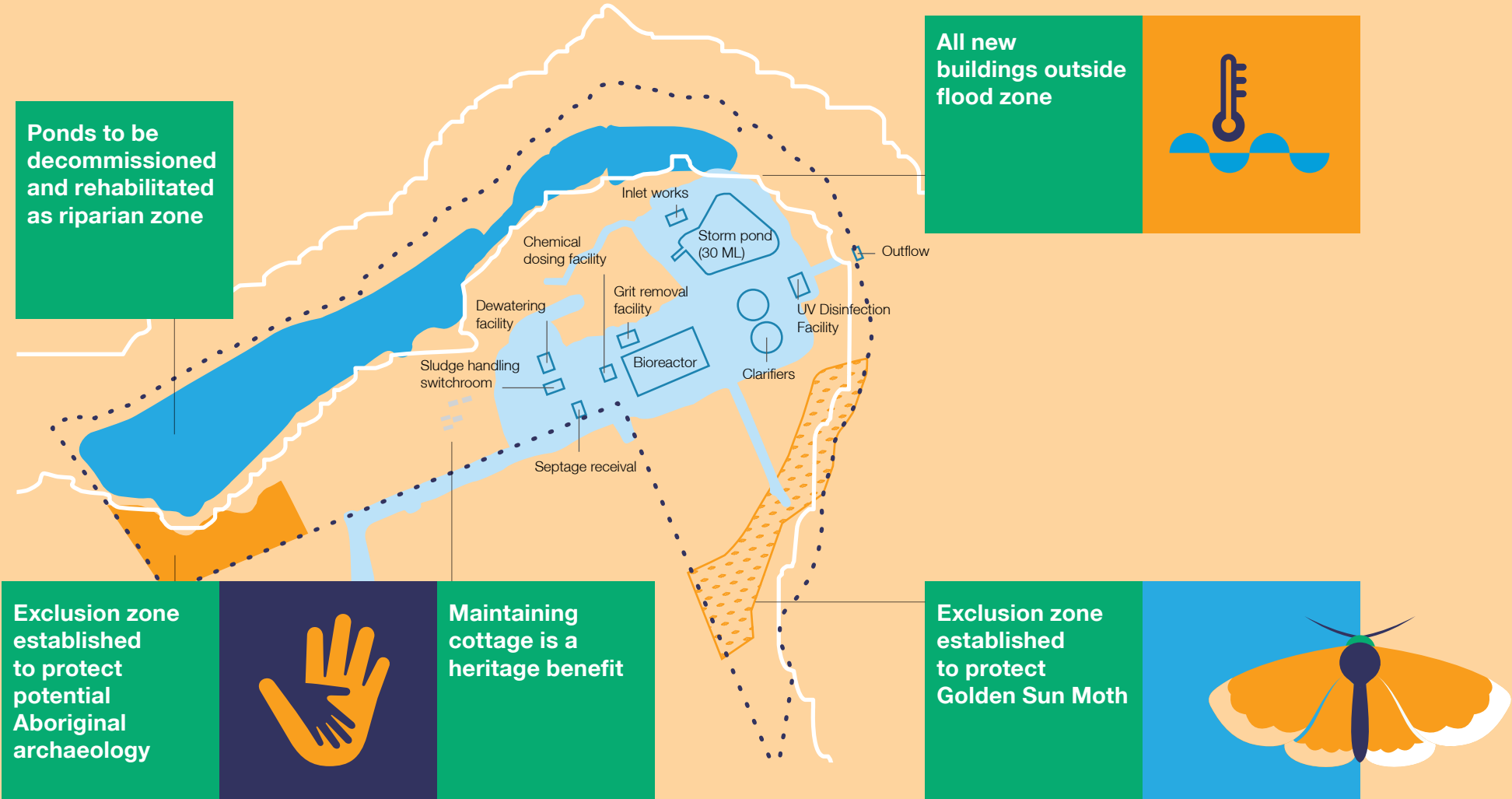
Proposed key features

Construction area

Maturation pond decommissioning

Golden Sun Moth exclusion zone

Potential Archeological Deposit (PAD) exclusion zone



Key findings of the draft EIS

The following environmental issues were also considered during the preparation of the draft EIS, but were not considered to present key environmental issues associated with the upgrade:

Planning and land status	Section 5.1
Traffic and transport	Section 5.2
Utilities	Section 5.3
Materials and waste	Section 5.4
Asbestos	Section 5.5
Soils and geology	Section 5.6
Contamination	Section 5.7
Water quality and hydrology	Section 5.8
Climate change	Section 5.9
Air quality	Section 5.10
Odour	Section 5.11
Health	Section 5.12
Socio-economic	Section 5.13
Noise	Section 5.14
Hazard and risk	Section 5.15
Bushfire	Section 5.16
Biodiversity	Section 5.17
Heritage	Section 5.18
Entity requirements	Section 5.19.

How would the impacts be managed?

A suite of management and mitigation measures are proposed to be implemented to reduce potential adverse impacts of the upgrade. These measures would be incorporated into the final design process, the construction environmental management plan and operation environmental management plans and systems as relevant.

Provided the measures and commitments specified in the draft EIS are applied and effectively implemented during the design, construction and operational phases, the identified environmental impacts are considered to be acceptable and manageable.



Next steps

We welcome your feedback on the draft EIS. To help us analyse your feedback, we would appreciate clear written submissions that indicate which chapter is being addressed.

You can make a formal submission through the [Environment Planning and Sustainable Development Directorate website](#)



Submissions can be made online, by email, by snail mail and in person.



An aerial photograph showing a large wastewater treatment plant in the foreground, featuring several circular aeration tanks and rectangular clarifiers. The plant is situated next to a body of water. In the background, a dense residential area with many houses and streets is visible. The text is overlaid on the left side of the image.

Our team is proud to be working with QPRC to deliver this important infrastructure that will reliably serve the Queanbeyan community and protect our waterways for generations to come.

Dr David Perry, Design Project Manager, Hunter H2O