

the Woodman Point and Beenyup WWTPs, which is expected to significantly improve odour management.

The Woodman Point, Beenyup and Subiaco WWTPs were built in the 1960s and 1970s. They were all upgraded in the early 2000s.

The East Rockingham WWTP will be built using the latest odour management technology, which has improved significantly over the years. It will have an adequate odour buffer, with the nearest residential housing being more than 1km away. In normal operating circumstances, existing urban areas outside the East Rockingham WWTP's odour buffer will not be affected by odour.

Will residents living closest to the plant have any problems with noise issues?

Noise levels must meet regulatory requirements set by the *Environmental Protection (Noise) Regulations 1997*, and significant monitoring and management plans will be implemented to ensure that these requirements are met.

Noise modelling of the facility will be undertaken to ensure the requirements are met. The Water Corporation will conduct a post-construction noise audit to ensure the noise requirements are achieved.

What will be the visual impact of the plant?

The visual impact of the East Rockingham WWTP is expected to be minimal. It will be located well within the Rockingham Industrial Zone, which includes sections of designated parkland buffer. This includes a proposed 78 hectare site to the south of the proposed East Rockingham WWTP, which will accommodate Threatened Ecological Communities (TEC). The area for the TEC will form part of the odour buffer and will provide a screen to the plant for Hillman residents.

What will be the impact of the site clearing on native vegetation?

The proposed plant site and associated outlet pipeline will be designed and located to avoid areas of native vegetation where possible, particularly areas of high conservation value such as

Threatened Ecological Communities. Flora surveys conducted indicate there is no Declared Rare Flora or Priority Flora within the site or outlet corridor route.

Will the plant result in Acid Sulfate Soils?

According to field tests, the plant site and pipeline corridor are located within an area of 'no known risk' of Acid Sulfate Soils occurring within 3 metres of the surface. Therefore, no treatment of Potential Acid Sulfate Soils is likely to be required on site.

Will the plant have any impact on wetlands and groundwater?

There are no wetlands located within the plant site. There are seven wetlands located south east of the site, with the nearest about 200 metres away. None of these wetlands are protected by the *Environmental Protection (Swan Coastal Plains Lakes) Policy 1992*.

Chemical and physical properties of the water resources within the plant 'footprint' and along the pipeline outlet route will be monitored and environmental management strategies developed to reduce potential impacts to water resources.

Will the plant have any impact on indigenous cultural heritage?

No registered sites of Aboriginal significance have been identified within the proposed plant site and outlet pipeline route.

Will the water produced by the plant be recycled?

Water recycling is an essential part of the Water Corporation's strategy to manage the state's water resources efficiently.

The East Rockingham WWTP will be built using the latest treatment technologies, which will produce a high quality treated wastewater of an advanced secondary standard. This will enable the recycling of the treated water to industry within Rockingham. As well as helping local industry, this will assist the Water Corporation work towards its commitment to achieve a target of 30 per cent water recycling in Perth by 2030.

What recycling initiatives operate from the other major wastewater treatment plants in the Perth metropolitan area?

Water recycling in Perth has increased significantly in recent years, due mainly to the Kwinana Water Recycling Plant (KWRP), which is supplied with treated wastewater from the Woodman Point WWTP. KWRP supplies about 24 million litres a day of highly treated water to industries in the Kwinana industrial strip. KWRP has reduced demand for scheme and bore water by six million kilolitres a year, which is equivalent to about two per cent of Perth's total unrestricted scheme water use.

One of the options being considered as a future water source for Perth is groundwater replenishment using recycled water. Groundwater replenishment is a process where water from a wastewater treatment plant undergoes several stages of advanced water treatment, and is then added to groundwater.

At Beenyup WWTP from 2010 to 2012, the Water Corporation will run a trial to assess the treatment processes, test water quality and monitor any affects on the aquifer to ensure the safety of the public and the environment.

The Subiaco WWTP supplies the University of Western Australia's nearby sport's park (McGillivray Oval) with highly treated recycled water over summer to irrigate its 21 hectares of playing fields. This is Perth's first large-scale public recreation irrigation scheme using recycled water.

Can all the treated water produced by the plant be recycled?

Even with the Water Corporation's strong push to increase water recycling, ocean disposal of treated wastewater will always be necessary and this method has proved to be the best environmental option available.

Treated water from the East Rockingham WWTP will be discharged to the ocean through the Sepia Depression Ocean Outlet Landline, which extends 4km offshore from Point Peron.

Is ocean disposal of treated water safe for people and the environment?

More than 12 consecutive years of independent scientific research by the Water Corporation's Perth Long-term Ocean Outlet Monitoring (PLOOM) program shows that discharging treated wastewater to the ocean is environmentally sustainable and is not harming Perth's beaches or the marine environment.

The PLOOM program comprises a mix of monitoring to meet regulatory conditions and investigative studies. It includes measurement of treated water characteristics and associated nutrient loads; intensive summer and seasonal water quality surveys; modelling and surveys of contaminants and pathogens in the marine environment; and measurement of the marine environment's response to treated water discharges.

Will the Sepia Depression Ocean Outlet Landline (SDOOL) need to be upgraded to accommodate the extra treated water produced by the plant?

The SDOOL pipeline was constructed in 1983 and sections of the pipe have been upgraded and repaired over the years to ensure it continues to operate safely and efficiently.

The Water Corporation plans to partially duplicate the SDOOL pipeline in stages by 2015, primarily to provide an extra, high level of protection to sensitive environmental areas along the pipeline route. The SDOOL pipeline runs through Rockingham to Point Peron WWTP and passes near the northern environs of Lake Richmond. Lake Richmond is a heritage-listed environmental area and home to a critically endangered ecological community of thrombolites.

Improving the safety and reliability of the SDOOL pipeline by duplicating it is a high priority for the Water Corporation. In addition, a new section of pipeline will be built from the East Rockingham WWTP to SDOOL to convey excess treated wastewater to the Point Peron ocean outlet.

East Rockingham Wastewater Treatment Plant questions and answers



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ISBN 174 043 5263 September 2009

Printed on environmentally friendly paper

East Rockingham wastewater treatment plant questions and answers

Why is a new wastewater treatment plant needed in Perth's South West Metropolitan Corridor?

The Rockingham and Kwinana regions are among the fastest growing in Western Australia. The Rockingham area has a population of 72,000 and a projected population growth of 27.7 per cent to reach 99,600 by the year 2011, while Kwinana's population is 23,100 with a projected population growth of 24 per cent to reach 30,400 by 2011.

In the early 1980s, the Water Corporation identified the need for a wastewater treatment plant to service the planned residential growth in Perth's South West Metropolitan Corridor.

During the early 1990s, the Water Corporation embarked on the 'Wastewater 2040 Strategy for the Perth Region', to establish a broad direction for wastewater treatment and effluent disposal through to the year 2040 for metropolitan Perth and Mandurah. As part of that project, the need for a wastewater treatment plant at East Rockingham was identified.

Where will the East Rockingham Wastewater Treatment Plant (WWTP) be located?

In 1996, the Water Corporation reached an 'in principle' agreement with LandCorp to locate a wastewater treatment

plant in the East Rockingham area. LandCorp identified a site area within the Rockingham Industrial Zone (Industrial Precinct 14 - IP14), which was reserved as 'Public Purposes' under the Metropolitan Region Planning Scheme.

The Water Corporation proposes to locate its East Rockingham WWTP on a 31 hectare site within the Rockingham Industrial Zone, between Mandurah and Patterson roads. Access to the plant will be off Mandurah Road on Chesterfield Road. The site is owned by the Water Corporation.

Why was this site selected?

Finding a suitable location for a wastewater treatment plant in the Perth metropolitan area is not easy because of economic, social and environmental constraints, as well as a general scarcity of land.

The Water Corporation considers that site it has identified for the East Rockingham WWTP fulfils the key selection criteria. It is located in an appropriately-zoned industrial precinct within the Rockingham Industrial Zone, it is central to the south west metropolitan wastewater catchment and it is close to the existing Sepia Depression Ocean Outlet Landline, which extends 4km offshore from Point Peron.

The location is also a plus in terms of the Water Corporation's goal to recycle increasing volumes of treated water to industry.

Why not build it closer to the ocean within the Rockingham Industrial Zone and further away from homes and businesses at Hillman?

The proposed location for the East Rockingham WWTP is sufficiently close to the ocean and the Sepia Depression Ocean Outlet Landline to allow treated wastewater flow by gravity into the ocean, which significantly lessens electricity use and reduces greenhouse gas emissions.

Importantly, this site is more than 1km away from the nearest residential area at Hillman. This is sufficient land to allow for a defined odour buffer, which will protect residential amenity and support compatible land uses within its boundary.

Acquiring land very close to the ocean is difficult to justify as it is highly valued by the community and Government because of its development potential.

Were other sites considered for a wastewater treatment plant to service the South West Metropolitan Corridor?

A lot of research and analysis underpins this proposed location at East Rockingham. The search for an appropriate site goes back more than 20 years. In 1988, the Water Corporation acquired land at Day Road, East Rockingham, for a wastewater treatment plant site. Subsequently, the site was deemed unsuitable due to the establishment of an adjacent caravan park within the odour footprint.

Locating a wastewater treatment plant north of Anketell Road, and possibly north of Hope Valley Road, was investigated. However, these locations did not satisfy the key criteria. The area is remote from the centre of the wastewater catchment and would require additional pumping stations and pipelines to transfer raw wastewater about 5km-7km north to the alternative site for treatment and then transfer treated wastewater south for discharge to the Sepia Depression Ocean Outfall Landline. These works will lead to higher energy use generating greenhouse gas emissions, and require additional capital and operating expenditures. This option was considered less sustainable.

The Water Corporation conducted a thorough study that looked at various potential sites for the wastewater treatment plant and one of the options was to locate it at Pinjarra. However, this would place the plant about 30km from the source of the wastewater and would require the pumping of 160,000 million litres of wastewater over this distance every day. This option was discounted as it was the most expensive and it had the greatest environmental impact in terms of greenhouse gas emissions.

The other more viable options were to locate it within the Kwinana/East Rockingham area. These options included

- All wastewater flows to the proposed East Rockingham WWTP area and decommission the Kwinana WWTP.

- Part wastewater flows to proposed East Rockingham WWTP and Kwinana WWTP.
- All wastewater flows to Kwinana WWTP.

The Water Corporation evaluated these options against a range of environmental, social and financial criteria and concluded that the most sustainable option was to locate a new wastewater treatment plant somewhere in East Rockingham, with part flows to Kwinana WWTP.

Why can't Point Peron and Kwinana WWTPs be upgraded?

The Point Peron WWTP (20 million litres of wastewater a day) currently provides wastewater services to parts of the existing southern metropolitan area. The option to expand this facility to service the growing southern metropolitan area was considered. However, the most sustainable option was to build a purpose-built wastewater treatment plant at East Rockingham and maintain the Kwinana WWTP, which was recently upgraded to treat 12 million litres of wastewater a day.

The Point Peron WWTP is only a primary treatment process, which limits the quality of the treated wastewater. Also, it is located on a small part of the environmentally sensitive Shoalwater Islands Marine Park and there is ongoing community pressure for this facility to be removed so the area can be further developed for tourism and community recreation.

Construction of the East Rockingham WWTP will enable the decommissioning of the Point Peron WWTP by 2015.

What is the timing for the East Rockingham WWTP?

The proposed East Rockingham WWTP is scheduled for completion by 2015. Subject to obtaining the necessary environmental approvals. Construction is due to start around 2014.

How much will the East Rockingham WWTP cost?

A preliminary cost estimate for the construction of the East Rockingham WWTP is around \$250 million. This includes the construction of the WWTP, the effluent pump station and pressure main to the Sepia Depression Ocean Outlet Landline.

What will be the capacity of the East Rockingham WWTP and how does this compare with other major WWTPs in the metropolitan area?

Initially the plant will be built to treat 40 million litres of wastewater a day. Projected growth in the South West Metropolitan Corridor indicates that 25 million litres of

wastewater a day will require treatment at the East Rockingham WWTP by 2015. This will increase to 40 million litres a day by 2027 and to 80 million litres a day by 2040. The plant's ultimate capacity may increase to treat 160 million litres of wastewater a day by 2070. This will depend on urban development areas and densities.

At its ultimate capacity, the East Rockingham WWTP will provide a wastewater service for about 800,000 people, or the equivalent flows from industrial and commercial premises.

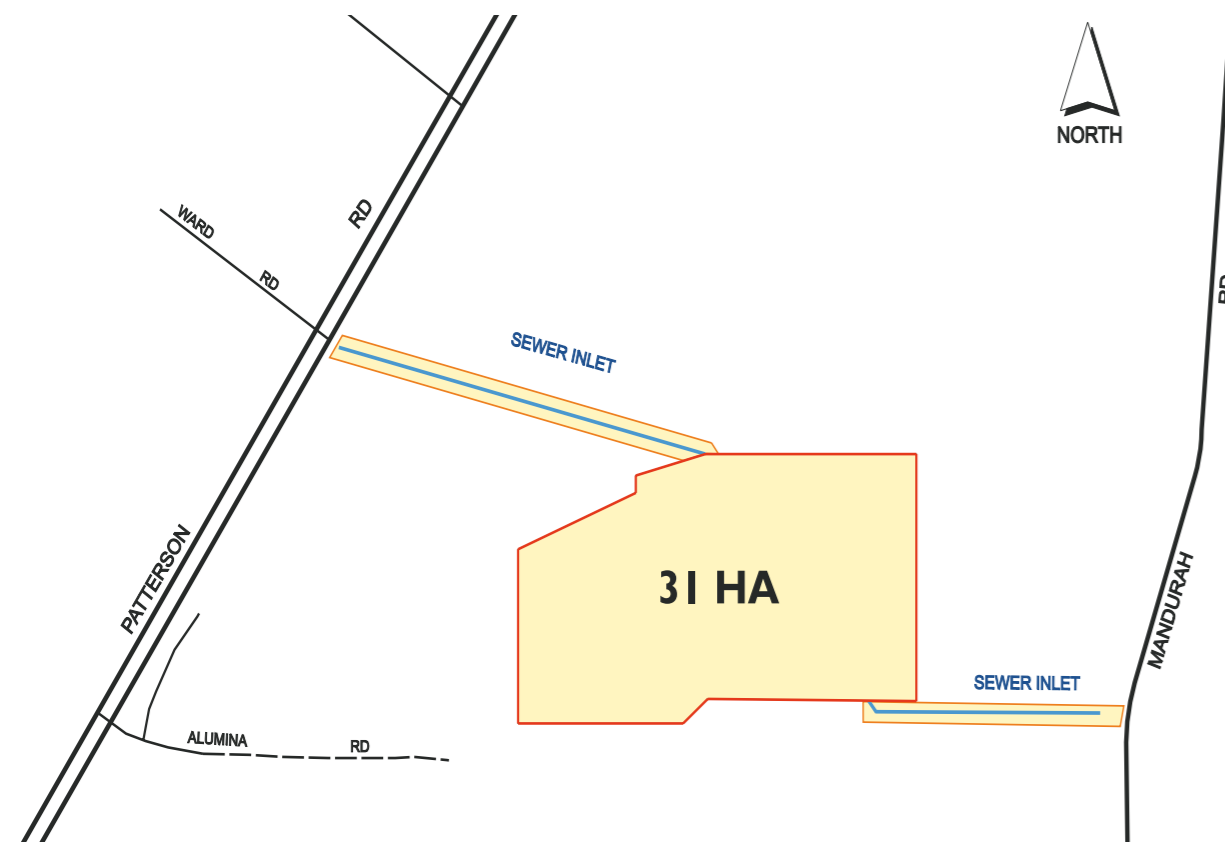
There are three other major wastewater treatment plants in the Perth metropolitan area. The Woodman Point WWTP to the south of Perth treats 160 million litres of wastewater a day; the Subiaco WWTP to the west of Perth treats 60 million litres of wastewater a day; and the Beenyup WWTP to the north of Perth treats 120 million litres of wastewater a day.

The Water Corporation is building a new wastewater treatment plant further north of Perth at Alkimos. It is scheduled to be operational by 2010 and will have an ultimate capacity of 160 million litres of wastewater a day.

Can the Water Corporation guarantee that there will be no odour problems from the East Rockingham WWTP?

Wastewater treatment plants, by the very nature of the service that they provide, have the potential for odour emissions. However, with proper odour controls and an adequate odour buffer, odours can be managed to not impact on neighbours.

There have been no odour complaints from the Subiaco WWTP for a number of years. Also, the Water Corporation will spend more than \$150 million on odour improvement technology at



An artist's impression of the East Rockingham WWTP.