

# **Decision Document**

### Environmental Protection Act 1986, Part V

**Proponent: Water Corporation** 

Licence: L5950/1991/11

Registered office: 629 Newcastle Street

LEEDERVILLE WA 6902

ACN: n/a

Premises address: Mandurah No 1 Wastewater Treatment Plant

2 Corsican Place and 500 Gordon Road

PARKLANDS WA 6180

Being Lot 109 on Plan 73737 and Lot 500 on Plan 44788 as depicted in

Schedule 1.

**Issue date:** Thursday, 22 October 2015

Commencement date: Sunday, 1 November 2015

**Expiry date:** Saturday, 31 October 2020

#### **Decision**

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by: Cassie Bell

Licensing Officer

Decision Document authorised by: Ruth Dowd

**Delegated Officer** 

Environmental Protection Act 1986 Decision Document: L5950/1991/11 File Number: DEC14811

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# 1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

## 2 Administrative summary

Administrative details				
Application type	Works Approval New Licence Licence amendment Works Approval amend Licence reissue	ment		
Activities that cause the premises to become	Category number(s)	Assessed design capacity		
prescribed premises	54 Sewage Facility	12 000 m <sup>3</sup> /day		
Application verified	Date: 20/08/2015			
Application fee paid	Date: 14/09/2015			
Works Approval has been complied with	Yes No No	N/A		
Compliance Certificate received	Yes No No	N/A⊠		
Commercial-in-confidence claim	Yes□ No⊠			
Commercial-in-confidence claim outcome				
Is the proposal a Major Resource Project?	Yes□ No⊠			
Was the proposal referred to the Environmental	Re	eferral decision No:		
Protection Authority (EPA) under Part IV of the	Yes□ No⊠ <sub>Ma</sub>	anaged under Part V		
Environmental Protection Act 1986?	As	sessed under Part IV		

Is the proposal subject to Ministerial Conditions?	Yes□	No⊠	Ministerial statement No: EPA Report No:	
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i> )?	Reissue of under the currently if is on site if	only. Premi RIWI Act; involve the and is alre	er consulted Yes  No  ises belongs to a groundwater area however operations do not a taking of water. A production bore ady licenced with DoW; however is water is no longer required.	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes⊠ No□  • Environmental Protection Swan Coastal Plain Lakes Policy 1992				
Is the Premises subject to any EPP requirements? Yes No  • The SCP policy applies to lakes in the SCP area of standing water greater than 1000m². The premises activities do not directly discharge to/alter/impact any such lakes.				

# 3 Executive summary of proposal and assessment

The Mandurah No. 1 (Gordon Road) Wastewater Treatment Plant (the WWTP) is located in Parklands, approximately 75 km south of Perth and close to the industrial area in Greenfields east of Mandurah.

#### Social receptors

Directly south of the plant on the other side of Gordon Rd is a Greyhound racetrack. Directly west of the plant is the main train line to Perth, on the west side of the train tracks is the Meadow Springs Public High School. Directly north of the WWTP is the Mandurah waste transfer station. Directly east of the plant is remnant bushland and large residential bush blocks. The closest residential home is 200m southeast of the WWTP.

#### **Environment**

The soil beneath the site is described as Spearwood S1a Phase. This soil system consists of dune ridges with slopes up to 15% and with limestone outcrops. The soil itself can be described as shallow to moderately deep siliceous yellow- brown sands.

The main functioning part of the site is cleared of native vegetation.

The groundwater at the site is generally within 3m of the ground surface. During the 2014/15 reporting period, groundwater levels measured in bores was between 0.4m and 2m below ground level. Beneath the site is superficial swan aquifer, which is underlain by the Leederville aquifer, which is in turn underlain by the Catamarra Coal Measures.

There are 19 threatened species and 8 migratory species which occur within 1km of the site. There are no threatened ecological communities known within 5km of the WWTP. The Premises is within 10



km of the Peel-Yalgorup system, a (RAMSAR) wetland of international importance (EPBC Act protected matters search, 2015).

There are no known Indigenous or European heritage sites within the Premises.

#### **Process**

The WWTP treats wastewater to a secondary standard and consists of grit and screenings removal facilities, three oxidation ditches, four clarifiers and an odour control facility. Treated wastewater is disposed of through a series of infiltration lagoons. Biosolid material is mechanically dewatered through onsite centrifuges and sent off-site for disposal or composting.

During the 2014/15 reporting period, the Mandurah No. 1 WWTP was operating at approximately 82% capacity, with the average daily inflow at 9.8ML/day. Treated effluent is discharged to the three infiltration ponds on the Premises. The Water Corporation entered into a 10 year agreement with the City of Mandurah in 2008 to provide annual reuse water for public open space irrigation. The City of Mandurah obtains water via abstraction from bores off the premises. During the 2014/15 reporting period, the City of Mandurah was supplied with 95.72 ML of reuse water in this manner.

During the 2014/15 reporting period, a total of 8,633.4 tonnes of dewatered sludge was removed from the Mandurah No.1 WWTP centrifuges and transported to Amazon, Brookton and Williamson for composting. The Premises has four sludge-drying beds which were historically used for the temporary storage of sludge prior to disposal; however these are no longer in operation which dewatered sludge being transported directly off-site.

This Licence is the successor to licence L5950/1991/10 and continues to authorise the operations at the Premises. The reissue of the licence has not involved a re-assessment of the environmental risk of all operations on the Premises; however the licence has been updated to the current licence format which has inherently resulted in numerous changes to the licence condition wording and structure. Some administrative changes and corrections have been made to the conditions, as well as some revision of the monitoring conditions. Where any change to the intent of conditions has occurred, justification is provided in the Decision Table below.



### 4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TAB	DECISION TABLE				
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents		
Interpretation	L1.1.1 – 1.1.5	Conditions 1.1.1 – 1.1.5 have been added to the licence as part of the reissue, to ensure that terminology used within the licence is referenced to the appropriate definitions where applicable, that any reference to a standard or guideline is to the most current version of that standard or guideline and that emissions not authorised through the licence comply with the provisions of the <i>Environmental Protection Act</i> 1986.			
General conditions	L1.2.1	Condition 1.2.1 has been added to the licence as part of the reissue to ensure that all pollution control and monitoring equipment is maintained such that it is operational and fit for purpose.			
Premises operation	L1.3.1 – 1.3.3	Conditions 1.3.1 – 1.3.3 have been included on the licence, based from the previous licence L5950/1991/10 conditions 6, 16 and 15(iii) respectively, for the management of wastewater storage and treatment areas on the premises, the disposal of biosolids/sludge and the temporary storage of biosolids/sludge.  Condition 1.3.1 differs from the format of the previous condition 6 as follows:  - "no surface discharge of wastewater" has been removed as this contradicts the authorised disposal method of infiltration and is not required in addition to the other condition parts (relating to overtopping and seepage/leakages);  - Reference to extreme rainfall events removed and overtopping conditions simplified such that overtopping shall not occur from the sludge drying beds, wastewater treatment vessels or infiltration ponds (an extreme rainfall event may be argued as a defence under the <i>Environmental Protection Act 1986</i> );  - Vegetation is required to be controlled on sludge holding ponds only. Vegetation growth will not occur on/in other wastewater treatment vessels and infiltration ponds are designed to infiltrate, thus vegetation growth has no direct impact in	Environmental Protection Act 1986; "Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to licence renewal submitted to DER 21/08/2015)		



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		terms of pollution.  Condition 1.3.2 differs from the previous condition 16 such that the reference to the WA Biosolids guidelines has been updated.  Condition 1.3.3 has been included on the licence, despite a request from the Licensee to have it removed due to sludge no longer being stored on the premises as part of normal operations. The condition has been retained to enable the Licensee to store sludge, should the situation arise, given the existence of suitable approved drying beds for this purpose. The retention of the condition does not cause compliance issues for the Licensee.		
Emissions general	L2.1.1	Limits have been set on the licence (see Emissions to land section below) and therefore Condition 2.1.1 regarding recording and investigation of exceedances of limits has been included.		
Emissions to land including monitoring	L2.2.1 – 2.2.2 L3.2.1	Operation Emission Description Emission: Discharge of all treated wastewater to sandy soils via point source infiltration ponds. Impact: Potential contamination of the local soil within close proximity to the infiltration ponds and of shallow groundwater in this location with nutrients, sediment, bacteria and heavy metals. The discharge to shallow groundwater may have secondary impacts via shallow subsurface flows into nearby surface water bodies, such as algal proliferation within water and weed proliferation in riparian zones and along surface drainage lines due to nutrient loads. The infiltration ponds are just 850m southeast of the closest perennial lake, 1.5km northwest of the large Goegrup Lake, and 2km east of the WA coast. The 2014/2015 AER reported the discharge of and average 6.1mg/L and 60 kg/day of total nitrogen (TN) and 5.3mg/L and 53 kg/day of total phosphorus (TP), and readings from groundwater bores of up to 17mg/L TN and 0.08mg/L TP. There are potential public health impacts from exposure to bacteria should treated wastewater make its way to nearby surface water bodies. The average E.coli result for the discharge during the 2014/2015 period was 20,175 CFU/100mL. The hydrological loading to the groundwater (3,582,020 KL discharged in 2014/2015 period) may alter the hydrology of the area and result in groundwater mounding (groundwater levels in	"Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to licence renewal submitted to DER 21/08/2015)	



Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		monitoring bores were as shallow as 0.4m in the 2014/2015 period).  Controls: The licensee has an agreement with the City of Mandurah, who extracts groundwater from bores off-site for re-use (irrigation), which will result in an indirect recovery of some contaminants discharged and transfer to another location where they can be utilised. In the 2014/2015 period, the City of Mandurah abstracted 95.82 ML of water for this purpose (out of the total 3582 ML reported as discharged to infiltration bays). The infiltration of water through the sand will result in the reduction of some contaminants before reaching the groundwater and most (if not all) total suspended solids via filtration. Biochemical oxygen demand will not transfer to groundwater. TN levels in the treated wastewater are maintained lower than the licence limit of 10mg/L, and are significantly lower than the levels being exhibited in the groundwater monitoring, indicating there are likely to be numerous external influences on groundwater quality in the area. TDS levels are also tenfold lower in treated wastewater discharged than groundwater monitoring results.	
		Risk Assessment Consequence: Moderate Likelihood: Possible Risk Rating: Moderate	
		Regulatory Controls Conditions 2.2.1 and 2.2.2 were included on the licence to continue to authorise the discharge of treated wastewater to the infiltration ponds, as per conditions 8 and 13 of the previous version of the licence, respectively. Condition 2.2.2 differs from the original condition 13 in that the limits for BOD and TSS have been removed as they are parameters that do not transfer to groundwater via infiltration. It is understood that these limits were kept on the licence when it was reissued in 2010 for their use in measuring the efficiency and performance of the treatment process; however this can be achieved through the existing monitoring of treated wastewater quality. It is noted that the Licensee requested the removal of the TN limit also based it being inconsistent with other licensed sites; however the limit has been retained at this stage to continue	



DECISION TAE	DECISION TABLE				
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		to ensure that the TN levels discharged are not higher than the already elevated levels present in the groundwater, and therefore help to manage cumulative impacts on groundwater.  Condition 3.2.1 has been included on the licence for the monitoring of treated wastewater quality, as based on condition 7 of the previous version of the licence. It is noted that the allowance for the Licensee to calculate TDS from EC has not been retained in this version of the licence due to this giving a less accurate reading. It is also noted that the Licensee had previously requested an amendment to condition 8 of the former licence to allow the use of inflow volume measurements as a proxy for outflow measurements. This has been allowed for in condition 3.2.1 as the use of inflow data is more conservative and the use of this data in calculation has no bearing on the environmental risk of the premises.  See the Ambient quality monitoring section below for other related conditions.			
		Residual Risk Consequence: Moderate Likelihood: Possible Risk Rating: Moderate			
Odour	n/a	Odour emissions have not been assessed as part of this licence reissue. DER intends to undertake a more detailed review of the licence in the next 12 months to determine whether odour controls at the premises are appropriate. At the current time it is considered that odour emissions can be regulated under the general provisions of the <i>Environmental Protection Act 1986</i> in the meantime.	Environmental Protection Act 1986.		
Monitoring general	L3.1.1 – 3.1.3	Condition 3.1.1 has been included on the licence to set the standards for monitoring undertaken (Australian standards, NATA accreditation), as there are monitoring conditions set for the treated wastewater discharge. This condition replaces the general monitoring requirements conditions of the previous licence. It is noted that the Licensee requested that the requirement for analysis to be done by a NATA accredited laboratory be removed; however this is DER's the expected requirement to achieve quality assurance on results and has therefore been retained at this time. Condition 3.1.2 has been included to specify the frequency of monthly monitoring (at least 15 days apart) and quarterly monitoring (at least 45 days apart) to ensure that	"Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to		



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Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		monthly samples are representative of different months.  Condition 3.1.3 has been included to ensure monitoring equipment used on the premises is calibrated in accordance with the manufacturers' specifications.	licence renewal submitted to DER 21/08/2015)
Monitoring of inputs and outputs	L3.3.1	Condition 3.4.1 has been included on the licence for the monitoring of raw wastewater inflows to the wastewater treatment plant in m³/day. This is to formalise the monitoring and reporting of the throughput into the plant for comparison with the design capacity of the plant (12,000m³/day) and is a new requirement which was not on the previous version of the licence. The condition also requires the monitoring of volumes transferred to infiltration ponds. As mentioned in the Emissions to land including monitoring section above, the Licensee does not have a meter on wastewater being discharged to the infiltration ponds; and as such condition 3.4.1 allows this to be calculated from the inflow data.	"Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to licence renewal submitted to DER 21/08/2015)
Ambient quality monitoring	L3.4.1	<ul> <li>Condition 3.4.1 has been included on the licence for the monitoring of groundwater. This is based on condition 10 of the previous licence; however differs as follows:</li> <li>The addition of E coli to the suite of monitoring requirements. This is a relevant contaminant for monitoring given the shallow groundwater at the site (0.4 – 2.0 m), E. coli levels in the discharge (&gt;20 000 CFU/100mL), close proximity of receptors and ability for E. coli to survive in groundwater;</li> <li>The addition of nitrate + nitrite nitrogen and ammonium nitrogen to the monitoring suite. These are relevant contaminants for the detection and assessment of nutrient pollution in terms of whether it is recent or historic.</li> <li>There is currently a lack of detailed information on the current and potential impact the discharge and the above changes to the monitoring may help facilitate a more detailed riskassessment of the discharge. DER intends to undertake a more detailed assessment of environmental risk to groundwater in the next 12 months. If this review identifies potential unacceptable risks to public health or the environment, DER may make amendments to the licence to address the risk/s.</li> </ul>	"Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to licence renewal submitted to DER 21/08/2015)
Records	L4.1.1 – 4.1.4	Condition 4.1.1 and 4.1.2 have been included on the licence setting general requirements relating to the maintenance and access of records kept and the need for	



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Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		a copy of the licence to be available to staff at the Premises at all times. These were not requirements on the old version of the licence, with exception to condition 4 which required records of complaints to be made available on request.  Condition 4.1.3 has been included on the licence for the Annual Audit Compliance report, and is equivalent to condition 5 of the previous licence.  Condition 4.1.4 has been included on the licence for the recording of complaints received about the premises and is a summarised version of condition 3 from the previous version of the licence due to no complaints being received by DER over the past few years.	
Reporting	L4.2.1 – 4.2.2	Conditions 4.2.1 and 4.2.2 have been included on the licence for the submission of an Annual Environmental Report, which effectively replaces condition 1 of the previous licence. It is noted that the requirement to assess monitoring data has been changed slightly from the previous version of the licence such that monitoring data is to be assessed and compared against all available monitoring data for the Premises (i.e. more than 3 years). This is to enable ongoing assessment of the impact of the operations from a wider context.	
Notification	L4.3.1	Condition 4.3.1 has been included on the licence to set notification requirements outside of the annual reporting. The condition requires the notification of any breaches of licence limits, a new notification requirement that was not on the previous licence version.  The condition also requires the notification prior to taking any equipment offline which may result in odour, which is to effectively replace the notification requirements on condition 15 of the previous licence. It is noted that the Licensee requested that the notification requirements in condition 15 of the licence be removed on the basis that the existing operational controls on site are sufficient in dealing with emissions; however the revised condition does specify that the notification is only required where works are being undertaken that may increase odour.	"Mandurah No. 1 (Gordon Rd) Wastewater Treatment Plant Licence Renewal 2015" (Water Corporation supporting documentation to licence renewal submitted to DER 21/08/2015)
Licence Duration	n/a	A duration of 5 years is recommended for the reissued licence. The potential maximum 20 year licence duration is not considered appropriate in this case as there is a need for a review of environmental risk and as such the licence duration is set at 5 years, with the recommendation that the licence be reviewed and amended within 2 years of	,



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		the issue date.		

## 5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
21/09/2015	Application advertised in West Australian (or other relevant newspaper)		
29/09/2015	Proponent sent a copy of draft instrument	Clarification that the City of Mandurah takes water from bores off-site (re-use is not direct)  Request for removal of E. coli,	This was a misunderstanding from the previous reporting of this activity as "re-use", implying the City of Mandurah obtain the treated wastewater directly from Water Corporation. This has now been corrected in the premises summary of the licence and decision document.  The requirement to monitor the transfer to the City of Mandurah has also been removed from tables 3.2.1 and 3.3.1 of the licence. Instead, a row in table 4.2.1 has been included to simply request the reporting of volumes abstracted by the City of Mandurah to be provided in the AER so that this information can still be considered in assessing the quality and standing water levels of the groundwater reported in the AER.  The parameters have been retained on the licence as
		ammonium nitrogen and nitrate- nitrite nitrogen from groundwater monitoring, due to the City of Mandurah's monitoring.	per the justification in the Decision table. Water Corporation's licence with DER currently allows them to discharge treated wastewater to land, by infiltration to groundwater. The City of Mandurah's monitoring relates to a licence held with Department of Water to abstract water and is not a substitute for Water Corporations obligation to monitor the environmental impact of their discharges.
		Request for the removal of the improvement condition IR1, on the basis that Water Corporation have revised their original request for monitoring bores to be reduced	The improvement condition has been removed and the Production Bore added back on to the monitoring program. It is noted that there is still a need for a more detailed review of the risk to groundwater and the suitability of the monitoring network. The licence, activities on site and monitoring have not been



Date	Event	Comments received/Notes	How comments were taken into consideration
			reviewed for a number of years while the discharge of large quantities of treated wastewater to land has continued. DER will be reviewing the current activities and assessing the risks to groundwater, and if this review identifies potential unacceptable risks to public health or the environment, DER may make amendments to the licence in future to address this.
		Request for 61 calendar days on AER condition to be changed to 63 calendar days to line up with a 1 September due date	Changed as requested.
		Request for clarification that comparison of monitoring results from 3 years will satisfy the new reporting condition that requires comparison with all previous monitoring data	The intent of this change was not to allow the comparison of only three years of data in the AER, as given the length of time the site has been operating it is considered that three years is not long enough for long-term trends to be visible. The condition wording has been retained and DER expects that comparison with all available data will be presented in the AER.
		Request for clarification whether the AER requires assessment against limits no longer on the licence (i.e. previous versions)	Condition 4.2.2 does not specify that the licensee must report against limits in previous versions or licences issued under the EP Act during the reporting period, hence this is not required.
		Request for removal of N1 form for breach limits, as it has been removed from other Water Corporation licences	An alternative reporting structure or process has not been provided in support of asking for this to be removed. It is understood that DER and Water Corporation have come to agreement previously that all forms with exception to N1 can be excluded from licences.  The requirement to use N1 has been retained.
		Request for sludge drying bed condition change to "excessive vegetation is prevented" or "as far as practicable" instead of "vegetation is prevented"	This condition was carried over from the previous version of the licence. The suggested wording is too ambiguous to be incorporated due to resulting lack of enforceability. It is considered that the condition requires vegetation to be prevented, and a regular and consistent vegetation control programme should be able to achieve this.

Date	Event	Comments received/Notes	How comments were taken into consideration	
		Averaging period for sampling to be amended to include both spot sampling and composite sampling	The condition has been retained as previously worded on this basis.  It is noted that the licensee is required under condition 3.1.1 to comply with Australian standards (including holding times) in conducting their sampling. Composite sampling over a period or 24 hours is	
			likely to result in these holding times being exceeded, given the nature of parameters being tested and the majority of them having a <i>maximum</i> recommended holding times of 24 hours refrigerated prior to lab analysis occurs.  The condition has been retained as written in the	
			draft. Composite sampling can continue to be used in the licensee's internal monitoring program; however it cannot be allowed for samples required under the DER licence due to the resulting non-compliance with condition 3.1.1.	
		Request addition of detail into premises summary to include other processes such as grit and screenings removal facilities and odour control	Additional detail has been added to the premises summary in the licence and decision document as requested.	



# 6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

### **Table 1: Emissions Risk Matrix**

Likelihood	Consequence					
	Insignificant	Minor	Moderate	Major	Severe	
Almost Certain	Moderate	High	High	Extreme	Extreme	
Likely	Moderate	Moderate	High	High	Extreme	
Possible	Low	Moderate	Moderate	High	Extreme	
Unlikely	Low	Moderate	Moderate	Moderate	High	
Rare	Low	Low	Moderate	Moderate	High	