



Application for works approval

Part V Division 3 of the *Environmental Protection Act 1986*

Choose an item.	W6255/2019/1
Choose an item.	Golden River Developments (WA) Pty Ltd
ACN	161 466 146
DWER file number	DER2019/000295
Premises	Rivervale B Wastewater Pump Station 51 Seabiscuit Drive, Burswood Legal description - Part Lot 9104 on Deposited Plan 73845 Certificate of Title Volume 2813 Folio 635 As defined by the Premises maps in Appendix 1
Date of report	26/09/2019
Status of Report	Final

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1. Definitions

Key terms relevant to this decision report and their associated definitions are listed in Table 1.

Table 1: Definitions

Term	Definition
Applicant	Golden River Developments (WA) Pty Ltd
ACN	Australian Company Number
Asbestos	means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite and any mixture containing two or more of those.
ASS	Acid sulfate soils
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations.
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
Decision Report	refers to this document.
Delegated Officer	An officer delegated under section 20 of the EP Act.
Department	The department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
Emission	has the same meaning given to that term under the EP Act.
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
mAHD	means the elevation of the water table in metres to the Australian Height Datum (sea level is assigned a value of 0.000m on the Australian Height Datum) – metres Australian Height Datum (mAHD).
mBGL	means the elevation of the water table in metres in relation to local ground level - metres below ground level (mBGL)

Term	Definition
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the Premises to which this Decision Report applies, as specified at the front of this Decision Report
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
Works Approval Holder	means Golden River Developments (WA) Pty Ltd
WWPS	Wastewater pump station

2. Purpose and scope of assessment

An Application for a Works Approval (Application) was received from Golden River Developments (WA) Pty Ltd (the Applicant) to construct and operate a Category 85A sewage pumping facility on Part Lot 9104 Seabiscuit Drive, Burswood (the Premises).

This Decision Report presents an assessment of potential environmental and public health risks from emissions and discharges from the construction and operation of this Premises. As a result of this assessment, a Works Approval has been granted (Issued Works Approval).

3. Application details

The Application was received on 15 May 2019 from the Applicant for Prescribed Premises Category 85A (sewage pumping facility) to construct an underground wastewater pump station (WWPS) on behalf of the Water Corporation. The WWPS will facilitate the disposal of wastewater from the Transit Orientated Development (TOD) Precinct of the Belmont Park Racecourse Redevelopment (residential and commercial).

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
DWER Application Form dated 13 May 2019	15 May 2019
Works Approval Supporting Information – Belmont Park Wastewater Pump Station, Prepared for Golden River Developments (WA) Pty Ltd May 2019	

4. Background

The proposed WWPS is located approximately 450m from the Swan River on the east and western side of the Belmont peninsula (see Figure 2). In the event of a system failure, there is potential for discharge from the pumping station to enter the Swan River, therefore the WWPS is considered a Prescribed Premises under Category 85A of the EP Regulations as per Table 3 below.

The Applicant holds a 'Developer Constructed Works Scoping Agreement' with the Water Corporation for the Rivervale B WWPS (signed 19 September 2018) to construct the required water and wastewater infrastructure.

The Premises is located within an area that has been classified as 'Contaminated – Restricted use' under the *Contaminated Sites Act 2003* (CS Act), due to the presence of asbestos fibres in sub-surface soils at the site (see Section 5.5).

The Premises has not previously been licensed or registered as a Prescribed Premises under the EP Act.

No clearing is required to facilitate the construction of the WWPS.

The Premises may be operated under a registration upon completion of the construction. Table 3 outlines the classification of the premises in accordance with Schedule 1 of the *Environmental Protection Regulations 1987*.

Table 3: Classification of Premises and assessed design capacity

Category	Description	Assessed production or design capacity or throughput
Category 85A	Sewage pumping station: premises on which sewage is pumped (other than to or from septic tanks) and where a discharge of waste from the station may enter the Swan River or the Canning River.	Not applicable

5. Description of proposed activities

The overall footprint of the facility will comprise an above ground surface area of area of 450m² and an underground surface area of 675m², with minimal above-ground infrastructure required for the long-term operation. The underground WWPS will have an inlet level of reduced level (RL) ~3.3mAHD and an approximate depth of 9.9m below the proposed ground level (RL 4.25mAHD).

The proposed infrastructure and equipment for the WWPS are outlined in Table 4 below and the site layout is shown in Figure 1.

Table 4: Proposed infrastructure and equipment

Ref	Infrastructure	Site Layout Plan Reference
Prescribed Activity Category 85A		
1	<p>Type 40 WWPS consisting of:</p> <ul style="list-style-type: none"> • Inlet chamber • Wet well – <ul style="list-style-type: none"> ○ extending to approximately 9-10mbgl ○ will fill up to specific trigger levels allowing for 3-minute operating volumes (i.e. a maximum of five pump starts per hour in accordance with standard Water Corporation operation. • 2x Pumps – <ul style="list-style-type: none"> ○ Two pumps to ensure contingency if one fails. ○ The pumps are alternated automatically to prevent overuse. • Odour filters • Storage tanks • Pressure main (reference also 4 below) • Alarms – <ul style="list-style-type: none"> ○ There are multiple alarms in operation at all process steps to warn against potential system failure. ○ Alarms are set off remotely at the Water Corporation offices via primary communication links or satellite backup in the event of a power shortage. ○ Alarms are set off at the following process points: <ol style="list-style-type: none"> 1. If the first pump stops working 	Site Layout Plan – Figure 1

Ref	Infrastructure	Site Layout Plan Reference
	<ol style="list-style-type: none"> 2. If the second pump stops working 3. If specific trigger levels with the wet well are reached following failure of both pumps. 4. If there has a system failure and wastewater is continuing to flow into the wet well and is overflowing back into the inlet chamber. 5. If the wet well and inlet chamber are full and the wastewater is beginning to flow into the emergency overflow tanks. 6. If the overflow tanks and reticulation network are half full. 7. If the overflow tanks are completely full and about to overflow to the environment. 	
2.	<p>Temporary/interim overflow drainage basin (TOD Precinct)</p> <ul style="list-style-type: none"> • An interim overflow path to the environment is proposed or the TOD precinct, with the ultimate overflow path to be installed at a later date as part of the wider Belmont Peninsula development, which is only indicative at this stage. • In an emergency, effluent will overflow from the system storage through a bubble up structure into a temporary drainage basin located west of the Saintry Entrance roundabout. • This overflow drainage basin provides a storage time of 2.52 hrs (140m³ capacity) when empty • Upon maximum capacity being reached, the overflow will continue along the flow path to an existing open channel which extends along the boundary of Precinct B adjacent to the Graham Farmer Freeway. <p>This existing open channel is connected to the Swan River at the western most point, providing a channel length of approximately 490m from the spillway to the river.</p>	
3.	<p>Ultimate overflow drainage basin –</p> <p>The proposed emergency overflow to the environment (Swan River) will be located on the western side of the development in Precinct 'B' where the Swan River 100-year water levels are lower (RL 2.57 mAHD including 0.9m sea level rise in 100 years). The storage time and volume associated with the ultimate emergency overflow is detailed in Table 6 (section 5.3).</p>	Sewer Reticulation Plan
4.	<p>Sewer Pressure Main Pipelines –</p> <p>Extending out of the site along Balbuk way</p>	Sewer Reticulation Plan

5.1 Construction

The Application initially indicated that works were proposed to commence in May 2020 and are expected to take 16 weeks to complete.

Construction of the WWPS wet well will likely be undertaken using caisson or sheet piling (up to 10m deep excavation), while the overflow tanks and chambers are expected to be open excavated.

Dewatering will likely be required for portions of the pressure main. An Acid Sulfate Soils and Dewatering Management Plan (ASSDMP) has been provided as part of the Application (see Section 6.2.3 and 6.3).

5.2 Commissioning

Commissioning is expected to occur in April 2021 and will occur prior to commencement of operation. There will be no wastewater discharges to the river during commissioning. Commissioning is expected to take 1-2 weeks.

Commissioning will involve tests being run on the pumps and pressure main as well as checking the alarm system, electrical works and access of equipment within the pump well.

5.3 Operation

The WWPS will be unmanned, however regular inspections will occur to ensure that the wastewater infrastructure is maintained in good working order and to rectify any issues as soon as reasonably possible.

Operation is proposed to commence in April 2021 with the operational life of the facility anticipated to be approximately 100 years.

The predicted wastewater inflow rates are outlined in Table 5

Table 5: Predicted wastewater inflow rates to the WWPS

	Initial TOD precinct	Ultimate Peninsula development
Average daily flow rate (L/s)	10.28	25.10
Peak daily flow rate (L/s)	15.42	37.65
Design pumping rate (L/s)	31.08	49.08

(Source: Table 4, Works Approval Supporting Information)

Wastewater from the TOD sewer network will flow through the inlet chamber into the wet well. Wastewater will be pumped out of the wet well and proceed through the pressure main extending out of the site along Balbuk Way and into the wider reticulated network.

In the event of a system failure (i.e. the emergency overflow storage capacity is reached), the effluent is proposed to overflow to the environment. As the TOD precinct is to be developed first, an interim overflow path to the environment is proposed for the TOD precinct with the ultimate overflow path to be installed at a later date as part of the wider Belmont Peninsula development, which is indicative only at this stage. The temporary and ultimate emergency overflow paths to the environment are as follows:

Temporary/interim overflow drainage basin (TOD Precinct):

- In an emergency, effluent will overflow from the system storage through a bubble-up structure into a temporary drainage basin located west of the Saintry entrance roundabout. This overflow drainage basin provides a storage time of 2.52 hours (approx. 140m³ capacity) when empty, as outlined into Table 6 below.

- Upon maximum capacity being reached, the overflow will continue along the flow path to an existing open channel which extends along the boundary of Precinct B adjacent to the Graham Farmer Freeway. This existing open channel is connected to the Swan River at the western most point, providing a channel length of approximately 490m from the spillway to the river.

Ultimate overflow drainage basin:

- The proposed ultimate emergency overflow to environment (Swan River) will be located on the western side of the development in Precinct 'B' where the Swan River 100-year water levels are lower (RL 2.57 mAHD including 0.9m sea level rise in 100 years). The storage time and volume associated with the ultimate emergency overflow is outlined in Table 6.

Table 6: Predicted system overflow storage time under ultimate peak flow conditions

System component	Initial TOD precinct	Ultimate Peninsula development
Overflow storage time (hrs)	5.1	3.0
Total overflow storage volume (m ³) (i.e. system storage + storage tank volumes)	284.04	406.04
Additional storage time (hrs) in empty overflow drainage basin (initial TOD precinct only)	2.52	N/A
Additional storage volume (m ³) in empty overflow drainage basin (initial TOD precinct only)	140.00	N/A

(Source: Table 5, Works Approval Supporting Information)

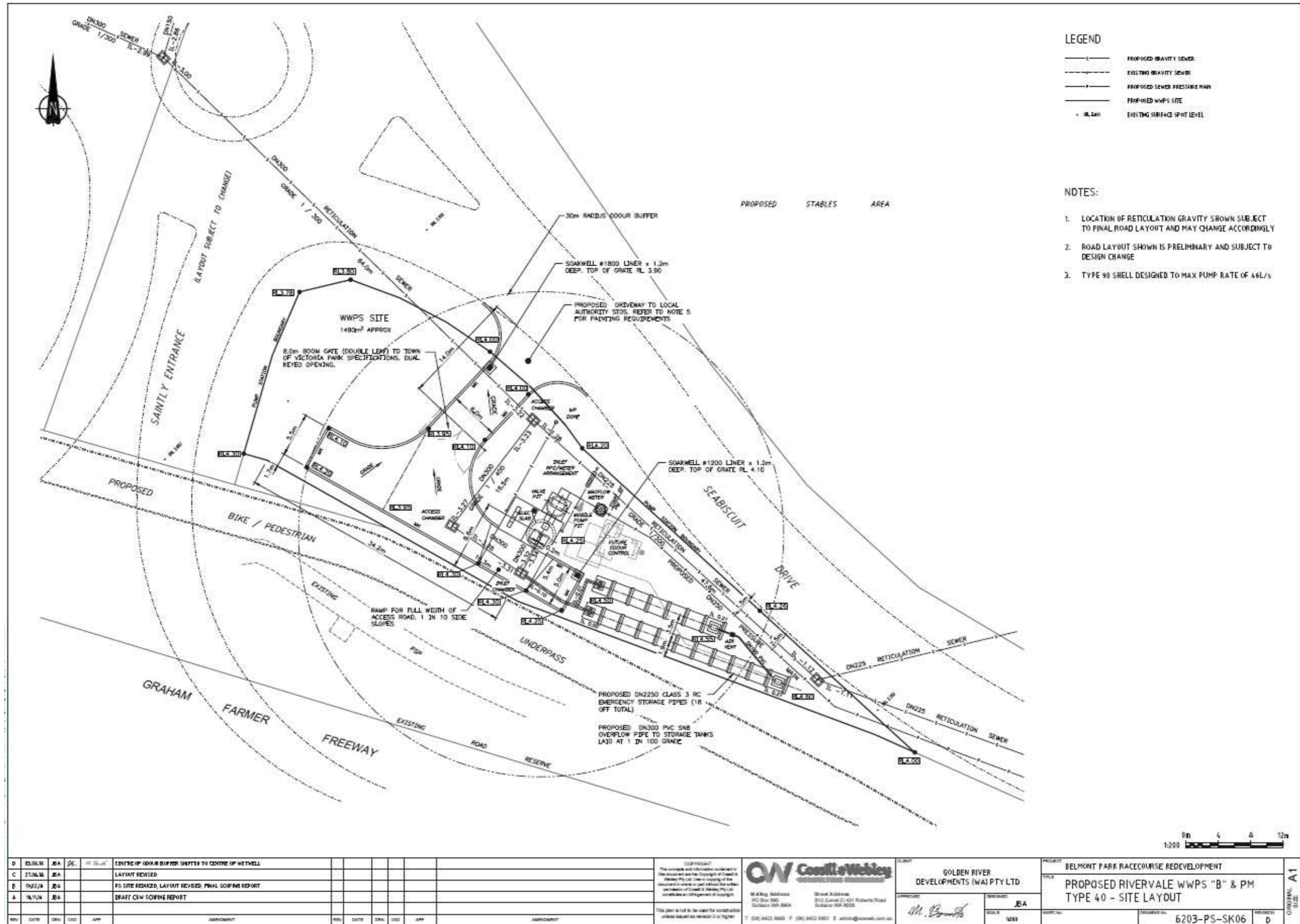


Figure 1: Site Layout Plan

5.4 Legislative context and other approvals

Approvals relevant to the Premises are outlined in the Table 7 below.

Table 7: Summary of emissions and Applicant controls

Legislation	Number	Approval
<i>Planning and Development Act 2005</i>	WAPC 155402	<p>The site is zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Special Use' under the Town of Victoria Park Town Planning Scheme No.1 (TPS No.1) as part of the Belmont Park Racecourse Redevelopment Site.</p> <p>Development was approved by the Western Australian Planning Commission (WAPC) in subdivision application number 155402 on 23 October 2017.</p> <p>Condition 18 relates to acid sulfate soils (ASS) and states:</p> <p><i>"An acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan shall be submitted to and approved by the Department of Water and Environmental Regulation before any subdivision works or development are commenced. Where an acid sulphate soils management plan is required to be submitted, all subdivision works shall be carried out in accordance with the approved management plan".</i></p>

5.5 Contaminated sites

The site was classified as 'Contaminated – restricted use' under the CS Act on 21 December 2017. The site was classified based on the presence of asbestos fibres in subsurface soils at the site. The Detailed Site Investigation (DSI) confirmed that the asbestos fibres were limited to the fly ash materials that had been historically deposited at the site from the former East Perth Power Station. Asbestos fibres were not found to be present in any other fill types encountered at the site.

Whilst the asbestos impact is not expected to prevent the proposed development, the previous investigations concluded that soils at the site required remediation to ensure that the site is suitable for the proposed land use, and to minimise the potential human health risk during construction works. A Remediation Action Plan (RAP) has therefore been prepared to identify the measures to be undertaken during remediation of the site and document the validation requirements to ensure the site does not pose an unacceptable risk to human health.

The RAP was referred to DWER's Contaminated Sites Branch as part of this assessment to determine the suitability of the plan for the management of asbestos impacted soils during site works for the proposed WWPS. DWER's Contaminated Sites Branch advised that the RAP has been reviewed by an Auditor approved under the CS Act who provided interim Auditor's advice to the Applicant's consultant on 25 February 2019 and 5 March 2019.

The RAP along with the interim Auditor's advice was also provided to the Department of Health (DoH) for comment as part of this assessment. The DoH advised that the RAP is satisfactory and recommends that the Auditor should attend the site during asbestos remediation works.

Based on the DoH advice, remediation actions specified in the RAP are considered appropriate for the management of asbestos fibres during the excavation and disposal of fly ash materials. The RAP has been approved by the Auditor and the DoH for the proposed excavation and offsite

disposal of asbestos impacted soils.

6. Emission sources, receptors and pathways

6.1 Emissions

The potential for emissions to impact on sensitive receptors has been assessed in accordance with the Department's Risk Framework. The key emissions during Premises construction which have been considered in this report are dust, noise, asbestos fibre emissions and impacts from the exposure of acid sulfate soils from earthworks and equipment installation activities and vehicle movements.

The Applicant has proposed measures to assist in controlling these emissions, where necessary. The control measures are outlined in Section 6.3 below and have been considered when undertaking the risk assessment detailed in Section 7.

Following completion and compliance with this works approval, a Prescribed Premises Category 85A registration under Part V of the EP Act will be required to authorise emissions associated with the operation of the Premises i.e. sewage pumping facility activities. A risk assessment for the operational phase has been included in this Decision Report. The key emissions considered during Premises operation are noise, odour and wastewater discharges in the event of an emergency overflow event.

6.2 Environmental Siting

6.2.1 Potential receptors and environmental aspects

Risk is assessed as a combination of emission sources, the proximity and sensitivity of receptors to those emission sources and any pathways that can allow the emission to reach and potentially harm the receptor. Table 8 below provides a summary of human and environmental receptors in proximity to the Premises which have a potential to be impacted from site activities, and the risk assessment in Section 7 considers these receptors in the context of emissions and potential pathways.

Table 8: Distance to receptors

Human receptors	Distance from activity or prescribed premises
Residential Premises	Closest residents located approximately 680m south-east and 1.2km north-west of Premises boundary.
Graham Farmer Freeway	Approximately 70m west of Premises boundary.
Perth Stadium Station	Approximately 160m west of Premises boundary.
Optus Stadium	Approximately 340m west of Premises boundary.
Environmental receptors	Distance from activity / prescribed premises
Swan River	The Swan River, identified as a Conservation Category Wetland located approximately 450m east and 500m west of the Premises boundary.
Artificial Lake (Belmont Park Racecourse)	Multiple use wetland located approximately 100m north of the Premises boundary.

Underlying groundwater	<p>Depth to groundwater across the site is in the vicinity of 1.23 mBGL with the thickness of the immediate underlying aquifer (the Superficial Swan) in the order of 26m.</p> <p>The inferred groundwater contours indicate groundwater in the vicinity of the site is generally moving in a north-easterly direction towards the Swan River..</p>
Bush Forever: Regional open space or proposed regional open space	Approximately 750m north-east of the Premises boundary.
Environmental aspects	Distance from activity / prescribed premises
Acid Sulfate Soils (ASS) risk	DWER's GIS mapping Acid Sulfate Soils Risk Map – Swan Coastal Plain indicates the area is of a high to moderate risk of ASS (see Section 6.2.3).
Contaminated – Restricted Use	The site is classified as 'Contaminated – restricted use' under the CS Act. The site was classified based on the presence of asbestos fibres in subsurface – refer to Section 5.5 for further detail.
Public Drinking Water Source Areas	The site is not located within a Public Drinking Water Source Area
Proclaimed groundwater area	Located in the Perth Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act)

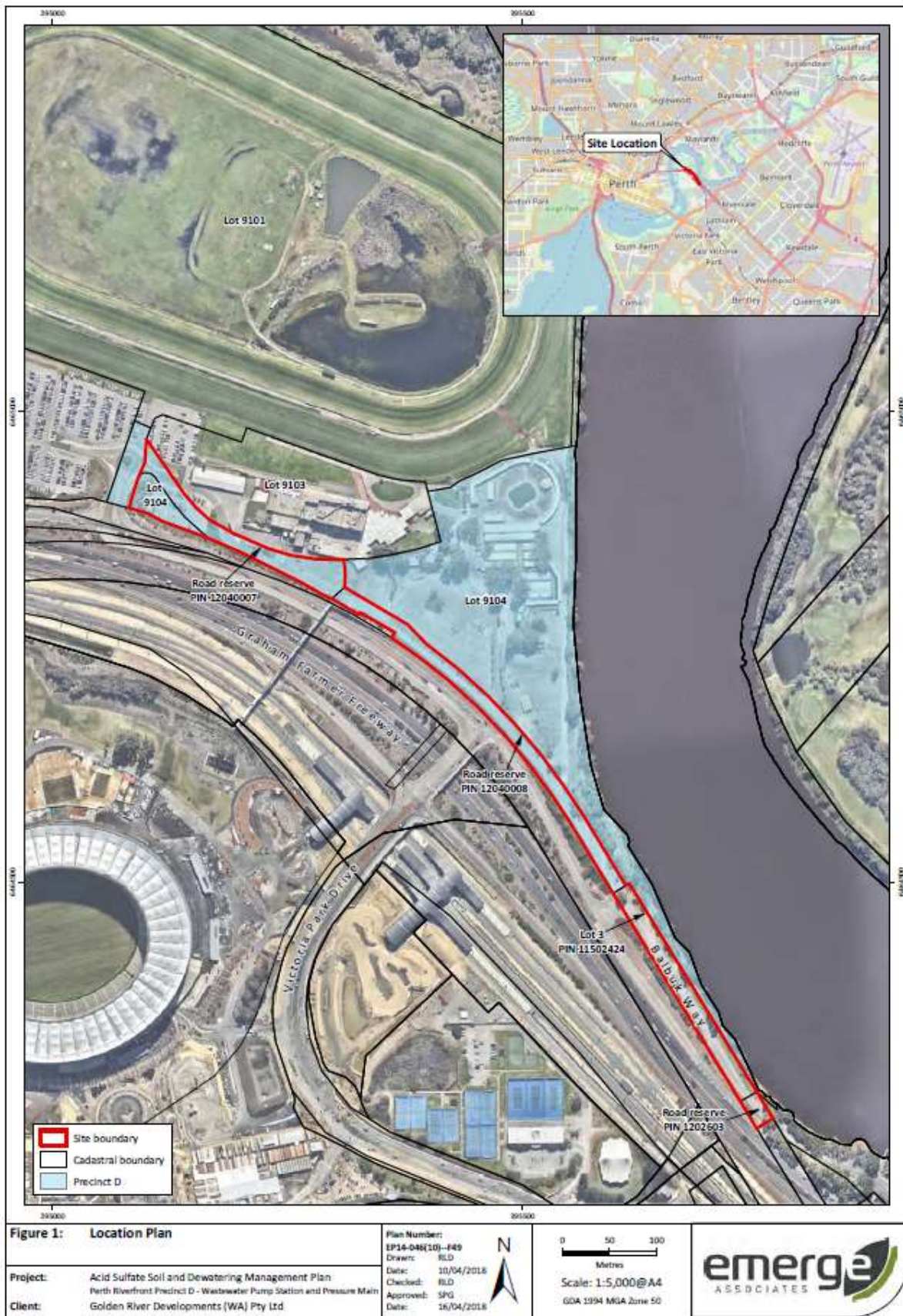


Figure 2: Location plan and project boundary

6.2.2 Geology, hydrogeology and hydrology

Topography

The broader Belmont peninsula site is located on low-lying peninsular formed within a large meander of the Swan River. There are locally elevated areas formed by artificial flood levy/dredge bunds around the river margins to the north and west of the site, reaching up to 4mAHD. The Racecourse Precinct is situated higher, ranging between 2.5 and 4mAHD.

The topography of the site is relatively flat with a ground elevation approximately 2.0mAHD (M.P. Rogers and Associates 2017).

Soils and geology

The Premises is located on the Swan Coastal plain, within the central portion of the Perth Basin.

Regional soil geology mapping indicates that the entire site and surrounding land in all directions is likely to comprises of clayey silt, described as yellow/brown to strong brown, mottled, soft, with variable clay content and of alluvial origin.

Swan River Alluvium (SRA) is present within the eastern portion of the site due to the location within a river floodplain area. Data gathered through previous investigations in the area indicates that the natural soil profile present within the site is the Guildford Formation which comprises firm to stiff clay and medium dense to dense sands.

Recent soil investigations (Emerge Associates 2011 and Emerge 2015) within the wider Belmont peninsula area indicate that there has been imported filling beginning in the late 1800s for the racecourse. A summary of the fill types identified is as follows:

- Early fill: placed in the eastern and central areas of the development area in the late 1800s, the origin of this fill is unknown. Early fill is not known to be present within the project site.
- Dredged fill: generated by dredging the Swan River to the north of the development areas. Dredged fill is not known to be present within the project site.
- Fly ash/cinders fill: Believed to have been placed in an uncontrolled fashion and allowed to consolidate circa 1950s to 1980s. Fly ash is the main fill type present within the project site, and is known to contain asbestos fibres and is the reason for the current classification of the site under the CS Act. Fly ash has been encountered to maximum depths of 4.5 mBGL within the site although typically limited to 2.0mBGL or less. Within the site, the fly ash is present as largely fly ash material but also fly ash mixed with a sandy matrix.
- Uncontrolled fill containing construction and demolition (C&D) material: placed in the southwest corner of the development area in the mid-1980's. The uncontrolled fill across the development area contains various C&D material such as concrete, steel, bricks, timber and asbestos containing materials (ACM) and has been encountered to maximum depths of 2.45mBGL. Minor amounts of shallow uncontrolled fill were identified within the site during the DSI (Emerge 2015), however the contaminant concentrations were below all adopted assessment levels and there was determined to be no risk to the environment or human health.

Groundwater

The Perth Groundwater atlas indicates the depth to groundwater across the site is in the vicinity of 1.0mBGL, with the thickness of the immediate underlying aquifer (the Superficial Swan) in the order of 26m. The superficial groundwater is anticipated to be present within the Swan River Alluvium (SRA) and Guildford Formation soil units.

Depth to water measurements collected during the Detailed Site Investigation (Emerge 2015) found that groundwater beneath the site is present at a depth of approximately 1.28mBGL.

Dewatering will likely be required for the construction of the WWPS and is likely to be required for portions of the pressure main.

6.2.3 Acid Sulfate Soils

An ASS investigation was completed by Emerge Associates in May 2018 to address the condition in the WAPC approval relating to ASS. The investigation determined that there were no acidic soils within the site that require treatment or management during the construction works required for the WWPS, however groundwater was determined to be potentially susceptible to acidification and likely to require neutralisation treatment during dewatering.

An Acid Sulfate Soils and Dewatering Management Plan (ASSDMP) has been prepared by the Applicant. The ASSDMP was approved by DWER's Contaminated Sites Branch on 24 July 2018.

6.3 Applicant controls

The Applicant has proposed the following management measures/controls as part of the Application:

Table 9: Summary of emissions and applicant controls

Emission	Source	Proposed controls
Noise	<u>Construction</u> Earthworks Vehicle movements <u>Commissioning</u> Commissioning of the WWPS <u>Operation</u> Operation of the WWPS	<u>Construction</u> Construction activities will be managed in accordance with the <i>Environmental Protection (Noise) Regulations 1997</i> (Noise Regulations) and in particular, Regulation 13 for construction sites. Accordingly, the following will be followed during construction: <ul style="list-style-type: none"> Construction activities will be undertaken between 7am to 5pm Monday to Saturday, no after-hours construction works will be undertaken. Construction activities will be carried out in accordance with control of environmental noise practices set out in Section 6 of Australian Standard 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites. The equipment used on the Premises will be the quietest that is reasonably available. <u>Commissioning and operation</u> The Application states that noise is not anticipated to be any greater than that produced by vehicles currently utilising the road network. All operations will be managed in accordance with the Noise Regulations.
Dust	<u>Construction</u> Earthworks Vehicle movements <u>Commissioning and operation</u> Dust emissions are	<u>Construction</u> A Dust Management Plan (DMP) has been prepared. Key controls include: <ul style="list-style-type: none"> All construction staff will be inducted in dust control measures and instructed on management actions required under the Project Construction Environmental Management Plan.

Emission	Source	Proposed controls
	not anticipated during commissioning and operation	<ul style="list-style-type: none"> • Water cart available onsite full time to suppress dust from roads, stockpiles and construction activities. • Fencing the site prior to commencement of any works to reduce potential dust migration. • Reduce dust generation from concrete cutting or grinding using water to suppress dust or using a vacuum system to capture dust. • Reduce dust levels generated on roads and exposed soil surfaces with the use of a water cart or application of hydro-mulch or similar for long term exposed areas. • Roads and access paths shall be maintained to reduce the build-up of dirt and dust. • Investigate the use of alternative equipment or methodology to reduce the generation of dust. <p><u>Commissioning and operation</u></p> <p>N/A</p>
Asbestos fibres	<p><u>Construction</u></p> <p>Earthworks</p> <p><u>Commissioning and operation</u></p> <p>Asbestos fibre emissions are not anticipated during commissioning and operation</p>	<p><u>Construction</u></p> <p>A Remediation Action Plan (RAP) has been developed in accordance with Condition 13 of the WAPC approval as the proposed construction works for the WWPS will extend into buried fly ash deposits onsite. The RAP has been reviewed by DWER's Contaminated Sites Branch and was referred to the Department of Health for review/comment. Taking into consideration advice from the Department of Health, the remediation actions specified in the RAP are considered appropriate for management of asbestos fibres during the excavation and disposal of fly ash materials.</p> <p>The RAP has been approved by the Auditor and DoH for the proposed excavation and offsite disposal of asbestos impacted soils.</p> <p><u>Commissioning and operation</u></p> <p>N/A</p>
Disturbance of ASS releasing toxic metals and arsenic, and potentially hydrogen sulphide gas emissions	<p><u>Construction</u></p> <p>Dewatering and earthworks</p> <p><u>Commissioning and operation</u></p> <p>ASS disturbance is not anticipated during commissioning and operation</p>	<p><u>Construction</u></p> <p>Whilst an ASS investigation determined that there were no acidic soils within the site that require treatment or management during the construction works required for the WWPS. Groundwater was determined to be potentially susceptible and likely to require neutralisation treatment during dewatering.</p> <p>An Acid Sulfate Soils and Dewatering Management Plan (ASSDMP) has been prepared and was approved by DWER's Contaminated Sites branch on 24th July 2018.</p> <p>Key controls of the ASSDMP include:</p> <ul style="list-style-type: none"> • Neutralisation treatment of soils requiring

Emission	Source	Proposed controls
		<p>management.</p> <ul style="list-style-type: none"> • Treatment of dewatering effluent as required and retention within settlement ponds. • Infiltration of dewatering effluent where possible or re-use as construction water. • Monitoring of groundwater during all stages of dewatering. <p><u>Commissioning and operation</u></p> <p>N/A</p>
Odour	<p><u>Construction</u></p> <p>No odour emissions anticipated during construction</p> <p><u>Commissioning</u></p> <p>Commissioning of the WWPS</p> <p><u>Operation</u></p> <p>Operation of the WWPS</p>	<p><u>Construction</u></p> <p>N/A</p> <p><u>Commissioning and operation</u></p> <p>Wastewater in the facility will be located within a contained underground system with odour filters connected to the wet well vent.</p> <p>The facility including odour filters will be regularly maintained during operation.</p>
Wastewater discharges to surface water (in event of an emergency discharge)	<p><u>Construction and commissioning</u></p> <p>No wastewater discharges anticipated during construction and commissioning</p> <p><u>Operation</u></p> <p>WWPS malfunction resulting in wastewater discharged via the emergency overflow path</p>	<p><u>Construction and commissioning</u></p> <p>N/A</p> <p><u>Operation</u></p> <p>There are multiple alarms in operation at all process steps to warn against potential system failures. These alarms are set off remotely at the Water Corporation offices via primary communication links or satellite backup in the event of a power shortage. Temporary equipment can also be brought to site and easily connected to operate the pump station temporarily until normal operation is restored.</p> <p>In the event of a complete system failure that cannot be repaired within the overflow storage capacity time (i.e. the overflow storage capacity is reached), the effluent is proposed to overflow to the environment. As the TOD Precinct is to be developed first, a temporary emergency overflow solution is required prior to the ultimate peninsula development. The temporary and ultimate emergency overflow paths to the environment are as follows:</p> <ul style="list-style-type: none"> • Temporary (TOD Precinct) – in an emergency effluent will overflow from the system storage through a bubble up structure into a temporary drainage basin located west of the Saintly Entrance roundabout. This overflow drainage basin provides a storage time of 2.52 hours (140m³ capacity) when empty. Upon maximum capacity being reached, the overflow will continue along the flow path to an

Emission	Source	Proposed controls
		<p>existing open channel which extends along the boundary of Precinct B adjacent to the Graham Farmer Freeway. This existing open channel is connected to the Swan River at the western most point, providing a channel length of approximately 490m from the spillway to the river.</p> <ul style="list-style-type: none"> • Ultimate – the proposed emergency overflow to environment (Swan River) will be located on the western side of the development in Precinct 'B' where the Swan River 100-year water levels are lower (RL 2.56 mAHD including 0.9 m sea level rise in 100 years).

7. Risk assessment

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 10 and 11 below. Risk ratings have been assessed for each key emission source and take into account potential source-pathway-receptor linkages. The mitigation measures / controls proposed by the Applicant have been considered in determining the risk rating. Emissions during construction and operation have been assessed separately to allow clear delineation of activity phases.

The works approval that accompanies this report authorises construction and commissioning of the infrastructure only. A registration is required to operate the premises.

The conditions in the issued Works Approval, as outlined in Table 10 and 11, have been determined in accordance with the *Guidance Statement: Setting Conditions*.

7.1 Risk assessment – construction and commissioning

Table 10: Identification of emissions, pathway and receptors during construction and commissioning

Risk Event					Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	Potential emissions	Potential receptors	Pathway and Impact	Applicant controls					
<p>Construction, mobilisation and positioning of WWPS including:</p> <ul style="list-style-type: none"> • Earthworks and dewatering • Vehicle and equipment movements • Installation of equipment 	Dust	Residential premises 680m south-east Perth Stadium Station 160m west Optus Stadium 340m west	Dust transported by air (wind dispersion) to sensitive receptors resulting in potential health and amenity impacts	A Dust Management Plan has been prepared (see Table 9)	Minor	Rare	Low	Amenity impacts from dust emissions are considered unlikely given the distance to residential receptors and transient nature of Perth Stadium Station/Optus Stadium. The controls proposed in the Dust Management Plan are appropriate to manage potential dust emissions from the Premises.	N/A – no additional controls required. <i>The Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA) apply as do the general provisions of the Environmental Protection Act 1986.</i>
	Asbestos fibres from flyash materials that were historically deposited at the site		Asbestos fibres disturbed during earthworks transported by air (wind dispersion) to sensitive receptors resulting in health impacts	A Remediation Action Plan has been prepared (see Table 9)	Severe	Unlikely	High	Asbestos fibres may be appropriately managed in accordance with the RAP as required under the CS Act.	<u>Works Approval</u> – Condition 6 has been included in the Works Approval to ensure that excavation and remediation works are undertaken in accordance with the approved RAP.
	Noise		Noise transmitted through air to sensitive receptors resulting in potential amenity impacts	Refer to Table 9	Minor	Rare	Low	Noise from construction works are unlikely to generate noise that would exceed the assigned noise levels given the distance and transient nature of sensitive receptors.	N/A - <i>The Environmental Protection (Noise) Regulations 1997 (Noise Regulations) apply.</i>
	Disturbance of ASS through earthworks releasing toxic metals and arsenic, and potentially hydrogen sulphide gas emissions	Groundwater located approximately 1.23mbgl Multiple Use wetland located approximately 100m north	Toxic metals and arsenic transmitted through land, air and waters resulting in potential acidification of groundwater, wetlands and waterways and health and amenity impacts of people at the nearest residence	Refer to Table 9	N/A	N/A	N/A	Managed under the ASSDMP in accordance with Western Australian Planning Commission approval 155402.	N/A – no additional controls required.
	Dewatering resulting in exposure of ASS or PASS	Swan River located approximately 450m east Residential premises 680m south-east Perth Stadium Station 160m west Optus Stadium 340m west	Groundwater drawdown resulting from dewatering in areas underlain by ASS has the potential to cause sulphide minerals in the soil to oxidise and leach acidity, arsenic metals and nutrients into groundwater. This may lead to groundwater becoming unsuitable for irrigation or other uses.	Refer to Table 7	N/A	N/A	N/A	As above, managed under the ASSDMP in accordance with WAPC approval 155402.	N/A – no additional controls required.
Commissioning of WWPS infrastructure	Noise	Residential premises 680m south-east Perth Stadium	Noise transmitted through air to sensitive receptors resulting in potential amenity impacts	Refer to Table 9	Minor	Rare	Low	Amenity impacts from noise during commissioning are not expected given the distance and transient nature of sensitive receptors.	<i>The Environmental Protection (Noise) Regulations 1997 (Noise Regulations) apply.</i>

Risk Event					Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	Potential emissions	Potential receptors	Pathway and Impact	Applicant controls					
	Odour	Station 160m west Optus Stadium 340m west	Odour transported by air (wind dispersion) to sensitive receptors resulting in potential amenity impacts	Refer to Table 9	Minor	Rare	Low	Amenity impacts from odour during commissioning are not expected given that wastewater is located within a contained system and considering the distance and transient nature of sensitive receptors.	<u>Works Approval</u> – Conditions 1-4 (Table 2) have been included in the Works Approval requiring specified infrastructure and equipment
	Overflow wastewater discharges to land and/or waters	Groundwater located approximately 1.23mbgl Swan River located approximately 450m east	Wastewater discharged via emergency overflow resulting in impacts on surface and ground water quality and ecosystem health Potential public health and amenity impacts	No overflow discharges will occur during commissioning of infrastructure.	N/A	N/A	N/A	No overflow discharges will occur during commissioning of infrastructure.	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

8.2 Risk assessment – operation

Table 11: Identification of emissions, pathway and receptors during full operation

Risk Event					Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	Potential emissions	Potential receptors	Pathway and Impact	Applicant controls					
Operation of the WWPS	Noise	Residential premises 680m south-east Perth Stadium Station 160m west Optus Stadium 340m west	Noise transmitted through air to sensitive receptors resulting in potential amenity impacts	The Application states that no noise emissions are likely to be produced that will affect the amenity of nearby sensitive uses. All operations will be managed in accordance with the Noise Regulations.	Minor	Rare	Low	Noise from construction works are unlikely to generate noise that would exceed the assigned noise levels. Amenity impacts from noise during operations are also considered unlikely given the distance and transient nature of sensitive receptors.	<u>Works Approval</u> – Conditions 1-4 (Table 2) have been included in the Works Approval requiring specified infrastructure and equipment <u>Registration</u> – N/A The <i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i> apply as do the general provisions of the <i>Environmental Protection Act 1986</i> .
	Odour		Odour from sewage/wastewater transmitted through air to sensitive receptors resulting in potential amenity impacts	Wastewater in the facility will be located within a contained system underground with odour filters connected to the wet well (vent pipe). The facility including odour filters will be regularly maintained during operation.	Minor	Rare	Low	Amenity impacts from odour during commissioning are not expected given that wastewater is located within a contained system and considering the distance and transient nature of sensitive receptors	<u>Works Approval</u> – Conditions 1-4 (Table 2) have been included in the Works Approval requiring specified infrastructure and equipment <u>Registration</u> – N/A General provisions of the <i>Environmental Protection Act 1986</i> apply.

Risk Event					Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls (refer to conditions of the granted instrument)
Source/Activities	Potential emissions	Potential receptors	Pathway and Impact	Applicant controls					
	Overflow wastewater discharges to land and/or waters	Groundwater located approximately 1.23mbgl Swan River located approximately 450m east	Wastewater discharged in the event of an emergency overflow via the emergency overflow path (temporary or ultimate) after emergency overflow storage has reached capacity. Untreated sewage effluent has the potential to impact surface water bodies, primarily as a result of the high nutrient levels (but also through pathogens in the water column) and can cause a threat to ecosystem health. Overflow wastewater emissions may result in reduced water quality, impacts on ecosystems including potential impacts to threatened or priority flora and fauna and potential public health and amenity impacts.	Overflow storage, emergency flow path storage, multiple alarms (Emergency overflow to environment (in an emergency event following system failure))	Moderate	Rare	Medium	Taking into consideration the infrastructure and management controls in place, particularly the quantity of emergency storage available and continuous monitoring, wastewater emissions may only occur in exceptional circumstances.	<u>Works Approval</u> – Conditions 1-4 (Table 2) have been included in the Works Approval requiring specified infrastructure and equipment <u>Registration</u> – N/A <i>The Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA) apply as do the general provisions of the Environmental Protection Act 1986.</i>

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

8. Consultation

Table 12: Summary of consultation

Method	Comments received	DWER response
Application advertised on DWER website (01/07/2019)	No comments received	N/A
Local Government Authority advised of proposal (01/07/2019)	No comments received	N/A
Applicant referred draft documents (04/09/2019)	Applicant clarified commencement dates for works, commissioning and operation as well as the duration of the works approval.	The Works Approval and Decision Report were revised to reflect the revised dates and duration.

9. Conclusion

Based on the assessment in this decision report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

A/SENIOR MANAGER WASTE INDUSTRIES REGULATORY SERVICES

An officer delegated by the CEO under section 20 of the EP Act

Appendix 1: Key documents

Document title	Availability
Works Approval application form and supporting information (May, 2019)	DWER records (A1788863)
Applicant comments and additional information received 12 September 2019	DWER records (A1825805)
DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	accessed at www.dwer.wa.gov.au
DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	
DER, February 2017 <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	
DER, June 2019. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	