Upper South Creek

Advanced Water Recycling Centre and Pipelines

Odour Management Plan

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Revisions and Distribution

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Revisions

Draft issues of this document shall be identified as Revision 01, 02, 03 etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential lettering commencing at Revision A. Revision numbers shall commence at Rev. A, B etc.

Date	Rev	Details Of Change	Section	Prepared By	Reviewed & Approved By
10/04/2025	01	Draft of internal review	All	R. Maxwell	A. Harrington
22/04/2025	02	Input following review from JHG and TJH OMC	All	P. Hoff S. Pinge A. Ranjbartoreh	A. Harrington
15/07/2025	03	Input following review from Sydney Water subject matter experts	All	J. González M. Ramage R. Maxwell	A. Harrington
29/07/2025	04	Update following consultation with the EPA	All	R. Maxwell	A. Harrington
02/09/2025	05	Update following consultation with DPHI	All	R. Maxwell	A. Harrington

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Glossary & Abbreviations

Abbreviations	Meaning
AWRC	Advanced Water Recycling Centre
ADWF	Average dry weather flow
ACU	Activated Carbon Unit
BTF	Biotrickling Filter
BYWRRF	Badu Yarragul Water Resource Recovery Facility
CoA	Minster's Conditions of Approval
CSSI	Critical State Significant Infrastructure
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Industry
EIS	Environmental Impact Statement
EPA	Environmental Protection Authority
EPL	Environmental Protection License
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ITC	Inspection Test Certificate
ITP	Inspection Test Plan
JHG	John Holland Group Pty Ltd
OEMP	Operational Environmental Management Plan
OMP	Odour Management Plan
OCF	Odour Control Facility
OU	Odour Unit
Project	Upper South Creek Advanced Water Recycling Centre and Pipelines Project
MBR	Membrane Bioreactor
MRAS	Membrane Return Activated Sludge
RO	Reverse Osmosis
SEARs	Secretary's Environmental Assessment Requirement
SOER	Specific Odour Emission Rate
SOPs	Standard Operating Procedures
SSI	State Significant Infrastructure
TJH OMC	Trility John Holland Operation and Maintenance Joint Venture
TOER	Total Odour Emissions Rate
WHS	Workplace health and safety
WWTP	Wastewater Treatment Plant
UMM	Updated Management Measure
USC	Upper South Creek

1 Introduction

1.1 Background and Project Description

The Badu Yarragul Water Resource Recovery Facility and Pipelines Project (the Project) has been constructed to support the population growth and economic development of the Western Sydney Aerotropolis Growth Area, South West Growth Area and the new Western Sydney International Airport. The Project provides wastewater services to Western Sydney to produce high-quality treated water for non-drinking reuse and for release to local waterways.

The Project consists of the following components, which are also provided in Figure 1-1.

- An Advanced Water Recycling Centre (AWRC) at the Badu Yarragul Water Resource Recovery Facility (BYWRRF) which collects wastewater from businesses and homes and treats it, producing high-quality treated water and biosolids for beneficial reuse.
- A green space area around the BYWRRF, adjacent to South Creek and Kemps Creek, to support the ongoing development of a green spine through Western Sydney.
- Drainage infrastructure from the BYWRRF to South Creek, which releases excess wastewater during significant wet weather events, estimated to occur about 3 – 14 days each year.
- A treated water pipeline from the BYWRRF to Nepean River at Wallacia Weir, which releases high-quality treated water to the river during normal weather conditions.
- A brine pipeline from the BYWRRF connecting into the Northern Georges River Submain (NGRS) at Lansdowne Reserve.
- A range of ancillary infrastructure.

The Project is being constructed in stages with Stage 1 consisting of building and operating the BYWRRF to treat a daily wastewater flow, known as the average dry weather flow (ADWF), of up to 35 megalitres per day (ML/day). It also includes the construction of the treated water pipeline and brine pipeline to cater for up to 70 ML/day flow coming through the BYWRRF (but only operating them to transport and release volumes produced by Stage 1). Stage 1 of the Project is being undertaken by John Holland Group (JHG) (on behalf of Sydney Water) and construction is expected to be completed in 2025, and handover to Trility John Holland Operation and Maintenance Joint Venture (TJH OMC) in June 2026 following commissioning.

Stage 2 of the Project consists of an expansion of BYWRRF to treat wastewater flows up to 70 ML/day. Sydney Water (SWC) will remain flexible on the size and timing of these future upgrades to accommodate changes in population projections over time. Future stages will be subject to further environmental assessment. Further detail on Project staging is provided in the Project Environmental Impact Statement (EIS).

This Odour Management Plan (OMP) is applicable to Stage 1 only, and will potentially require further updates following approval of Stage 2.

It is noted that the Project EIS stated that cogeneration engines would be installed to generate electricity from biogas production at the digestors in Stage 1. However, following further assessments during detailed design, it was determined that there will be insufficient quantity of biogas generated during lower flows in Stage 1 making cogeneration engines economically infeasible. As a result, a more efficient system consisting of biogas fuelled hot water heating system is being used to heat the digestors.

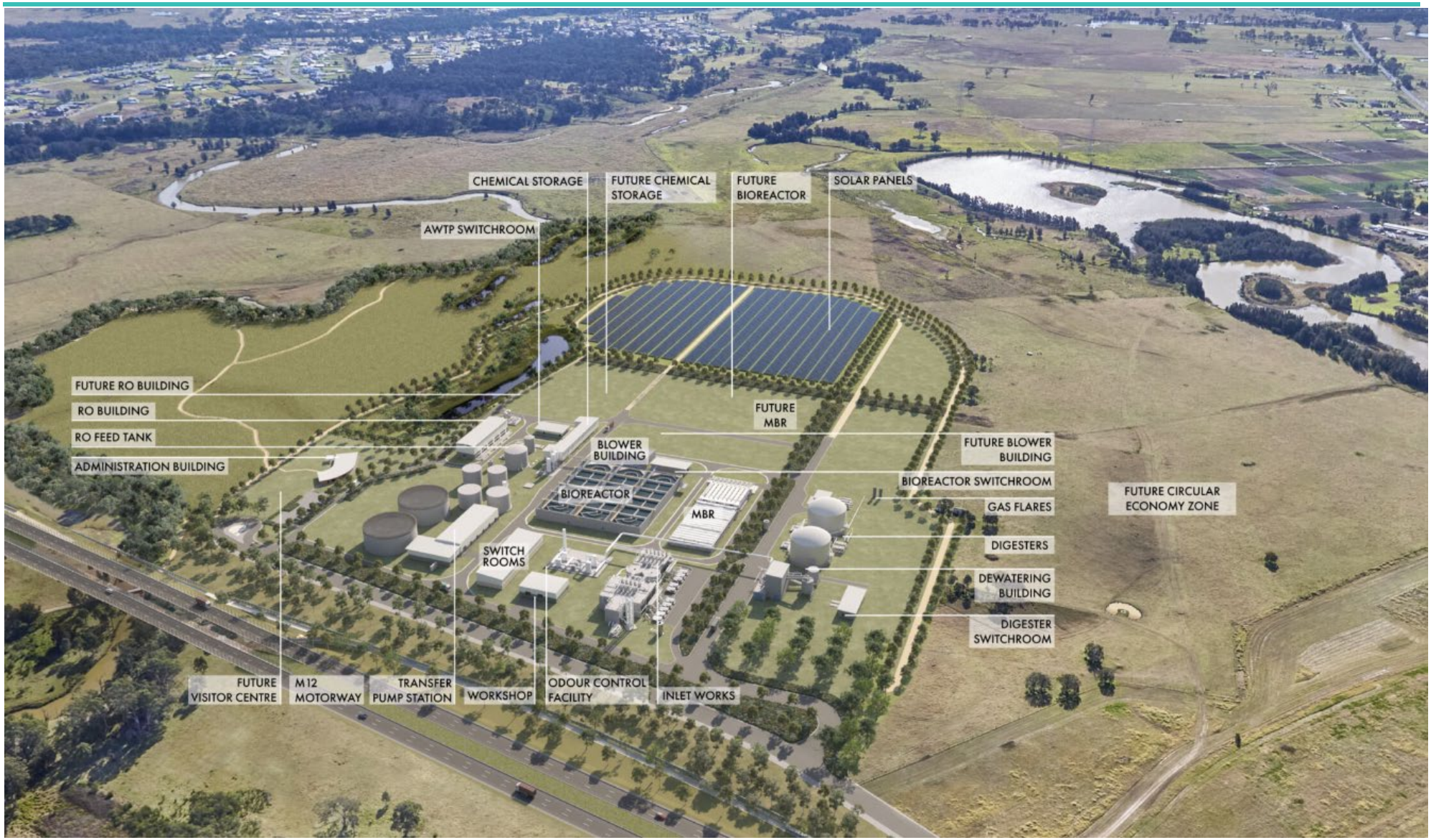

Figure 1-1 BYWRRF site arrangement and layout

1.2 Statutory Context

The Department of Planning, Housing and Industry (DPHI) issued the final Secretary's Environmental Assessment Requirements (SEARs) for the Project in January 2021. Sydney Water prepared an EIS responding to these requirements, which was on public exhibition on the major projects planning portal for 28 days from 21/10/2021 to 17/11/2021. During this time, due to its importance, the Project was declared to be State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) by the then Minister for Planning and Public Spaces on 9 November 2021. Sydney Water submitted an Amendment Report for the proposal on 11 March 2022. This report provided a description of amendments to the proposal that occurred since the exhibition of the EIS. The Amendment Report was on public exhibition on the major projects planning portal from 23 March 2022 to 05 April 2022.

On 28 November 2022, the DPHI approved the construction and operation of the Project (SSI 8609189), subject to the Minster's Conditions of Approval (CoA). Several modifications to Infrastructure Approval (SSI 8609189) have been issued including the following.

- Modification 1, dated 26/05/2023 – Removal of the environmental flows pipeline from the scope; and
- Modification 2, dated 10/10/2023 – Realignment of the treated water and brine pipelines, relocation of the treated water flow splitter structure/valve station and the use of underbore return lines during construction at various locations.
- Modification 3, dated 20/06/2025 – to vary the concentration limits for treated water releases to the Nepean River.

Following determination of the Project at a state level by the NSW Minister for Public Spaces, the Project was referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a decision about whether the Project was likely to have a significant impact on any Matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Project was determined to be a controlled action under the EPBC Act and the Project subsequently received EPBC Controlled Action Approval (EPBC 2020/8816) from DCCEEW on 17/02/2023. A variation to the EPBC Controlled Action Approval (EPBC 2020/8816) was approved by DCCEEW on 02/04/2024 which incorporated amendments included in Modification 1 and 2 only.

1.3 Scope of this OMP

This OMP outlines how the Project manages odour generation from the BYWRRF during operation in accordance with CoA E5, and E6 of the Infrastructure Approval (SSI 8609189), and Updated Management Measure (UMM) AQ03 of the Submissions Report. This OMP:

- Provides a description of Project.
- Details agency consultation details.
- Details OMP preparation, endorsement and approval information.
- Identifies legislation, guidelines, guidance documentation and external licenses, permits and approvals related to odour management required for the Project.
- Describes objectives, targets and performance indicators.
- Identifies the sources of odour from the BYWRRF and odour modelling results.
- Details the mitigation and management measures which have been or will be implemented to manage odour during operation of the BYWRRF.
- Describes the odour monitoring requirements including locations, methodologies, frequencies, duration and contingency measures should elevated odour readings be identified.
- Details the communications and complaints management strategy in relation to odour management.
- Details compliance, review and continuous improvement requirements of this OMP.

1.4 Relationship with Other Documents

This OMP should be read in conjunction with the following documents.

- EIS, Section 11.1 – Air Quality; and Appendix R– Air Quality Impact Assessment.

- BYWRRF Operational Environmental Management Plan (OEMP) which is currently under development.
- Upper South Creek – Design Report (AWRC-DJV-RPT-PRO-0000-0002), including the Odour Modelling Report (AWRC-DJV-MEM-MEC-5000-0001)
- Other relevant documents provided in Section 3.

1.5 Agency Consultation

In accordance with CoA E5 of the Infrastructure Approval (SSI-8609189), TJH OMC is required to consult with the following agencies in relation to this OMP.

- NSW Environmental Protection Authority (EPA)

Consultation with the EPA was undertaken throughout July 2025 with all comments being addressed within this OMP. In accordance with CoA A9, a Consultation Summary Report which summarises the consultation with the above agencies has been prepared and provided in Appendix A.

1.6 OMP Preparation, Endorsement and Approval

Suitably qualified and experienced personnel have been involved in the preparation and review of this OMP and are representative of the teams involved in the commissioning, operation and maintenance of the facility and Sydney Water as the owners of the facility. A summary of key personnel is provided below:

- Per Hoff of John Holland Group is the Commissioning Manager.
- Ali Ranjbartoreh of TJH OMC is the Operations Contract Manager.
- Sonali Pinge of TJH OMC is the Senior Process Engineer / Team Leader.
- Mark Ramage of Sydney Water is the Production Manager and considered a subject matter expert in odour management.
- José González of Sydney Water is the Senior Specialist Process Control and considered a subject matter expert in odour management.

Following consultation with the EPA as detailed in Section 1.5, in accordance with CoA E5, the OMP will be provided to the Planning Secretary for information prior to the commencement of operation.

2 Objectives, Targets and Performance Indicators

2.1 Objectives

The objective of this OMP is to ensure that all avoidance, mitigation and management measures relevant to odour within the following documentation, are adopted and implemented.

- The EIS, particularly Chapter 11.1 – Air Quality and Appendix R of the EIS – Air Quality Impact Assessment.
- The Submissions Report and subsequent UMMs.
- Infrastructure Approval (SSI-8609189) and associated CoA.
- EPL 21800.
- Relevant Legislation and other requirements detailed in Section 3 of this OMP.
- BYWRRF design report (AWRC-DJV-RPT-PRO-0000-0002), including the Odour Modelling Report (AWRC-DJV-MEM-MEC-5000-0001). and relevant design drawings.

2.2 Targets

The following targets, or key performance indicators, have been established for the management of potential odour impacts during operation of the BYWRRF.

- Ensure full compliance with the legislative requirements, Project approvals, licenses/permits/approvals, guidelines, specifications and other relevant documentation provided in Section 2.1 and 3.
- Implement all relevant mitigation and management measures to minimise and manage the impacts from odour generated at the BYWRRF.
- As detailed in Section 2.3, air quality (odour) does not exceed 4 odour units (OU) as a 99th percentile beyond the boundary of the BYWRRF operational site over the course of a year.
- Implement the odour monitoring program provided in Section 6 of this OMP.
- Ensure that performance indicators and odour goals detailed in Section 2.3 are complied with.
- Minimise odour related complaints as much as practicable and implement the complaints management procedure provided in Section 8.

2.3 Odour Assessment Criteria

Odour assessment criteria are defined in the *Technical Framework: Assessment and management of odours from stationary sources in NSW* (DEC, 2006), to guide decisions about effective odour management and the potential to cause harm or unreasonably interfere with a community's quality of life.

When selecting the appropriate odour assessment criteria for a project, several factors should be considered including odour quality, intensity, frequency/timing/duration, population sensitivity, public expectation, source characteristics and potential health effects.

The Air Quality Impact Assessment conducted as part of the EIS Chapter 11.1 and Appendix R, confirms that appropriate odour assessment criteria to be implemented for the Project is 4 OU at the 99th percentile, as measured at the BYWRRF operational site boundary. This odour assessment criteria was deemed suitable due to there being no more than a population of 125 within the extent of the 2 OU contour as detailed in the EIS.

3 Environmental Requirements

3.1 Legislation and Guidance Documentation

The primary legislation, guidelines and specifications relevant to odour management are provided in Table 3-1.

Table 3-1 Legislation, guidelines and specifications relevant to odour management

Legislation	• *Protection of the Environment Operations Act 1997* • *Protection of the Environment Operations (Clean Air) Regulation 2010*
Guidelines and Specification	• *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2016) • *Technical Framework: Assessment and management of odours from stationary sources in NSW* (DEC, 2006). • *Technical Notes: Assessment and management of odours from stationary sources in NSW* (DEC, 2006). • *Sydney Water Upper South Creek AWRC Performance Specification* • *AWRC Design Report* (AWRC-DJV-RPT-PRO-0000-0002), including the Odour Modelling Report (AWRC-DJV-MEM-MEC-5000-0001). • *Sydney Water Technical specification – odour control unit, Version 6 ACP0004* • *Australian/New Zealand Standard: Stationary source emissions – Part 3: Determination of odour concentration by dynamic olfactometry* (AS/NZS4323.3:2001) • *Australian/New Zealand Standard: Stationary source emissions – Part 4: Area source sampling - Flux chamber technique* (AS/NZS4323.4:2009) • *Draft NSW Best Practice Odour Guideline* (DoP, 2010) • *Guide to conducting field odour surveys* (EPA, 2022)

3.2 Infrastructure Approval

Table 3-2 below provides a summary of the CoA relevant to odour management and where those items are addressed in this OMP.

Table 3-2 CoA from the Infrastructure Approval relevant to this OMP

CoA Reference	Condition Requirement	OMP Reference
A9	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertaken must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include: (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party; (c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations; (d) outline of the issues raised by the identified party and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 1.5
E5	Prior to the commencement of operation, the Proponent must prepare, implement and maintain an Odour Management Plan (OMP) for the BYWRRF. The OMP must be	This plan and Section 1.6 specifically

CoA Reference	Condition Requirement	OMP Reference
	prepared by a suitably qualified and experienced person(s) in consultation with the EPA and submitted to the Planning Secretary for information.	regarding consultation
E6	The OMP must describe measures to minimise odour impacts associated with operation and include, but not necessarily limited to: (a) objectives and targets;	Section 2
	(b) key performance indicators;	Section 2
	(c) identification of all sources of odour associated with the operation;	Section 4
	(d) a detailed description of odour mitigation methods and management practices;	Section 5
	(e) a detailed description of the methods used for monitoring the effectiveness of the odour mitigation methods and management practices;	Section 5, 6
	(f) location, frequency and duration of monitoring;	Section 6
	(g) details of proposed contingency measures should odour impacts occur;	Section 7
	(h) a communications strategy for handling potential odour complaints that includes recording, investigation, reporting and actioning; and	Section 8
	(i) system and performance review for continuous improvements.	Section 9

3.3 Updated Management Measures

Table 3-3 below provides a summary of the UMMs from the Submissions Report relevant to odour management and where those items are addressed in this OMP.

Table 3-3 UMMs from the Submissions Report relevant to this OMP

UMM Reference	Impact	Management Measure	OMP Reference
AQ03	Operational odour emissions	Manage odour complaints in accordance with Sydney Water's existing management system processes.	Section 5.3.3, 8

3.4 Environmental Protection License

Table 3-4 below provides a summary of the EPL conditions relevant to odour management and where those items are addressed in this OMP.

Table 3-4 Conditions from the EPL relevant to this OMP

EPL Reference	Condition	OMP Reference
	To be completed once operational EPL obtained.	

4 Sources of Odour

4.1 Odours at BYWRRF

During operations, BYWRRF will generate odour from the liquid and solid waste streams and associated treatment process. Specifically, the potential sources of odour from the BYWRRF site are detailed in Table 4-1 and indicatively shown in Figure 4-1.

Table 4-1 also includes the outcomes of a risk assessment for each odour source, following the implementation of controls as provided in this OMP, using criteria provided in Appendix B.

Table 4-1 Odour emission sources at BYWRRF

Source	Source Type	Description	Source of estimated odour emission rates and modelled parameters – Sourced from EIS, Appendix R, Table 9	Risk Score		
				Consequence	Likelihood	Risk (following mitigation)
Bioreactor – 3 bioreactor trains (oxidation ditches).	Diffuse	The bioreactor will receive preliminary treated wastewater (from the inlet works) and provide secondary treatment. The 3 bioreactor trains (oxidation ditches) are not enclosed and therefore provides a source of odour emissions. The odour emissions rate from the bioreactor is calculated to be 577 Total Odour Emissions Rate (TOER).	SOER: 0.5 is default value for this source from Sydney Water Odour Emissions Database (short sludge age plant). Concentration is back-calculated from the SOER based on a flux hood with 5 L/min air sample rate. Assumed value of 0.5 is conservative as the AWRC would be a long sludge age plant.	2	Likely	D
Membrane Bioreactor (MBR) – including the receival chamber, MBR aerobic tanks, Membrane Return Activated Sludge (MRAS) channel and flow splitter.	Diffuse	The MBR will receive secondary treated wastewater from the bioreactor and provide tertiary treatment. The anaerobic zone of the MBR is enclosed (foul air captured and treated at the Odour Control Facility) however the receival chamber, aerobic zone, MRAS channel and central splitter are expected to generate odour emissions at 79 TOER. While the flow splitter, anaerobic tanks and anaerobic outlet chamber is enclosed and captures foul air to be treated at the Odour Control Facility, there is still potential for foul air to emanate on occasions		2	Unlikely	E
Odour Control Facility (OCF) stack which captures and treats foul air from: • MBR - flow splitter, anaerobic tanks and anaerobic outlet chamber • Inlet works building including all channels, equipment, bins and foul water pump station. • Biosolids areas - dewatering area, conveyors, storage	Point	Foul air, inclusive of odour, will be captured from various treatment processes in the BYWRRF and treated via a centralised OCF consisting of a two-stage bio-trickling filter and activated carbon filter process. The OCF will treat foul air generated from the MBR, inlet works area and biosolids area. Following treatment, the Odour Control Unit stack is expected to release (point source) odour emissions at 8,056 TOER. There is also potential for foul air to emanate from the foul air ducts (main trunk and branch lines) on occasions.	Concentration: 500 OU is upper value for other sites that have an OCU with carbon polishing, or feature carbon as the main treatment stage. Examples include: • North Head WWTP: BTF with AC polishing. Samples taken 25/2/20. • PARPS Re-lift Station (Adelaide): BTF with AC polishing: Based on 4 samples taken 09/01/2019 • Merrimac STP – BTF with AC polishing: Based on 42 samples taken ~2008 Picton WRP: BTF with AC polishing. Based on 18 samples taken between 11/08/2005 – 08/08/2006Temp: 293K = 20C. This is approximately ambient temperature. In winter, the air will be warmer than ambient, as the wastewater arrives at the plant slightly above	2	Likely	D

Source	Source Type	Description	Source of estimated odour emission rates and modelled parameters – Sourced from EIS, Appendix R, Table 9	Risk Score		
				Consequence	Likelihood	Risk (following mitigation)
silo, pump station and truck out loading bay			ambient and the air will be warmer under odour control covers. Air flow: Air flow is based on the ventilation needs of covered processes and as per the design. Velocity: 15 m/s is a standard design velocity. The value is intended to be high enough to achieve good dispersion without unwanted phenomena (e.g. noise / whistling from stack, backpressure on fan, etc). Sealed and covered receival buildings address the risk of long receival times over long pumping length, especially in early development period.			
Inlet works building including all channels, equipment, bins and foul water pump station.	Diffuse	While the inlet works building including all channels, equipment, bins and foul water pump station is enclosed and captures foul air (via odour covers and ducts) to be treated at the OCF, there is still potential for foul air to emanate on occasions.	N/A	2	Possible	D
Biosolids areas - dewatering area, conveyors, storage silo, pump station and truck out loading bay	Diffuse	While the Biosolids areas including dewatering area, conveyors, storage silo and truck out loading bay is enclosed and captures foul air (via odour covers and ducts) to be treated at the Odour Control Facility, there is still potential for foul air to emanate on occasions.	Concentration: 1,680 OU based on measurement data from the Malabar plant. Air flow: Based on nominal wind velocity and assumed openings in the building.	2	Possible	D
Anaerobic digestors	Diffuse	While the anaerobic digestors are covered and capture any biogas generated, there is potential for minor fugitive emissions to emanate on occasions.	N/A	1	Unlikely	E
Odour from the breakpoint chlorination tank, treated water flow splitter and treated water tank.	Diffuse	Minor chlorine odour may emanate on occasions from the breakpoint chlorination tank, treated water flow splitter and treated water tank.	N/A	1	Unlikely	E
Discharge of partially treated wastewater during	Diffuse	Where wastewater inflows into BYWRRF are significantly increased during wet weather events, partially treated wastewater will be discharged into the outfall channel which	N/A	2	Likely	D

Source	Source Type	Description	Source of estimated odour emission rates and modelled parameters – Sourced from EIS, Appendix R, Table 9	Risk Score		
				Consequence	Likelihood	Risk (following mitigation)
significant wet weather events.		flows into South Creek. These events are expected to occur between 3-14 days per year. Odour generation will vary depending on the size of the wet weather event and the subsequent level of treatment before discharge however is generally anticipated to be minor due to the following. • Wastewater inflows into BYWRRF during these events are expected to be heavily diluted with stormwater /rainwater which is entering the network. • Wastewater discharged into the outfall channel will be diluted with a shandy of treated water from the secondary, tertiary and advanced treatment stages. • Wastewater discharged into the outfall channel will be diluted with treated stormwater discharges from the onsite detention basin. • Further dilution will occur when the wastewater flows into South Creek which is expected to have increased flows during wet weather events. • There are no offsite sensitive receivers within 600m of the outfall channel. The Twins Creek residential area at Luddenham is located 1.5km downstream of the South Creek discharge point.				
Cogeneration engines	Point	Cogeneration engines may be installed in the future to generate electricity and provide digestor heating which is expected to release (point source) odour emissions at 2,463 TOER.	Concentration: 1589 OU: from North Head and as sampled in 2013. Temperature: From cogeneration unit at North Head. Air flow: From cogeneration unit at North Head. Based on a temperature of 699 K. Velocity: From cogeneration unit at North Head. Calculated from discharge air flow and stack diameter.	2	Likely	D

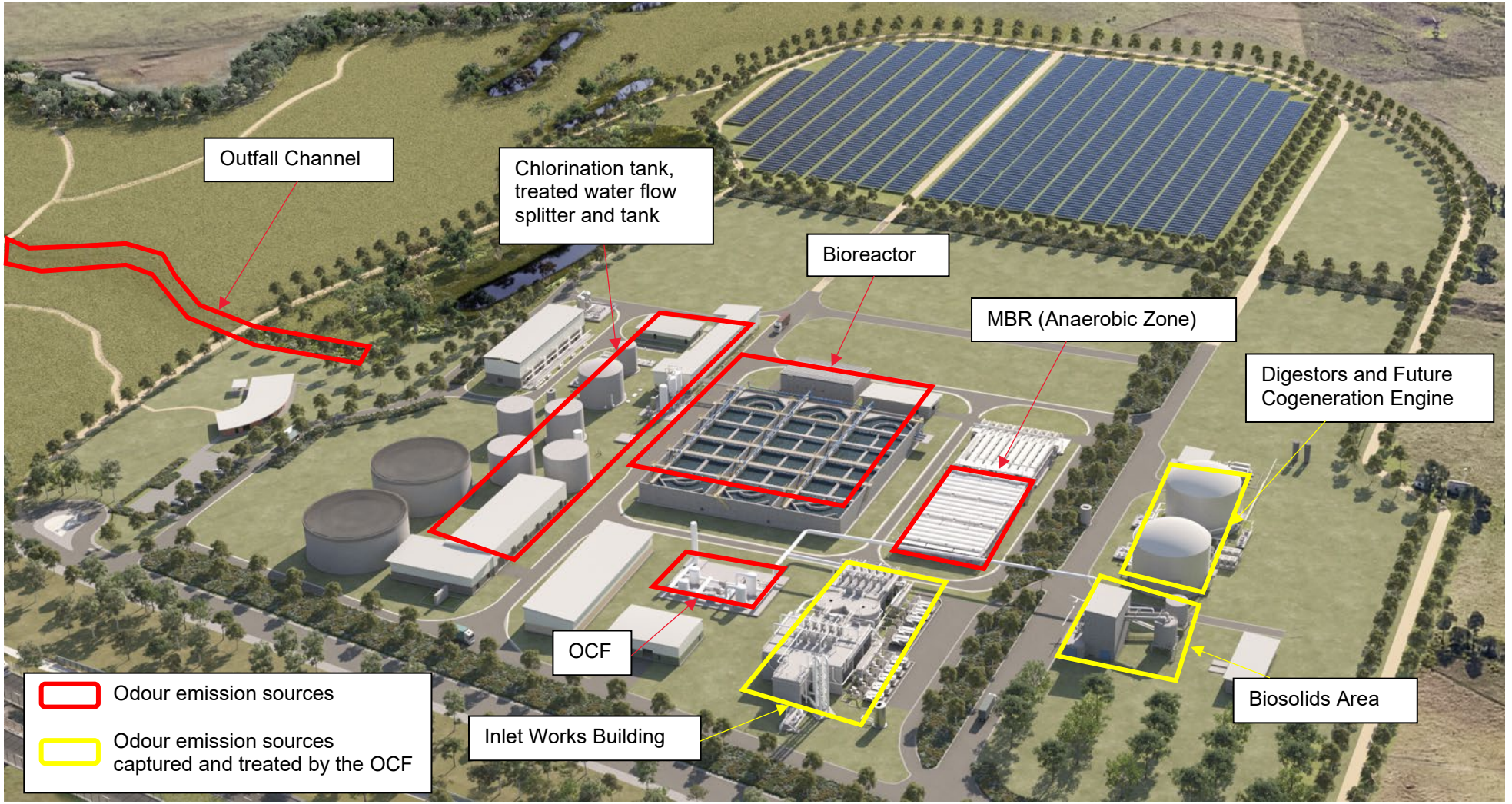

Figure 4-1 Location of odour emission sources

4.2 External Sources of Odour

External sources of odour within the vicinity of the BYWRRF site are listed below and provided in Figure 4-2.

- SUEZ Kemps Creek Resource Recovery Park which processes waste, about one kilometre to the southwest.
- Wholesale nursery, about 1.5 km to the south.
- Chicken broiler / layer farms to the south, northeast and east.
- Australian Native Landscapes which collect and manages Sydney Water's biosolids at the Badgerys Creek site located approximately 3 km to the south.

From a potential cumulative impact perspective, the ANL biosolids site has the potential to produce an odour similar to the BYWRRF. However, given the considerable distance between the two sites (3.4 km) and the limited odour impacts anticipated from BYWRRF, the overall cumulative impacts are expected to be minimal. Any potential cumulative impacts will be identified during monitoring as detailed in Section 6. The remaining industries/facilities do not generate odour that would be of a similar nature and smell to emissions from the BYWRRF so the potential for these to combine and cause cumulative impacts is minimal.

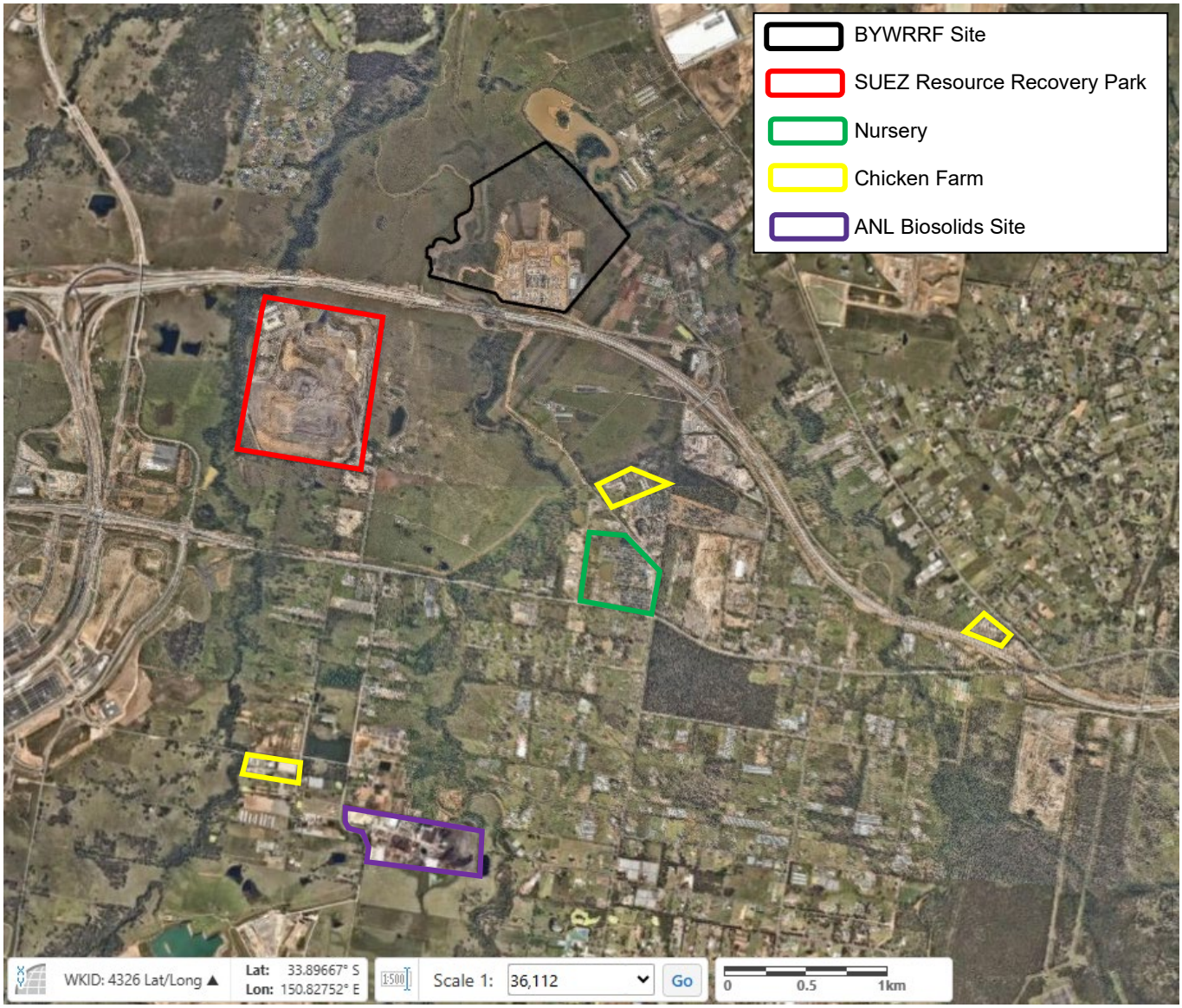

Figure 4-2 External sources of odour

4.3 Odour Modelling

Odour dispersion modelling was undertaken as part of the EIS and again during the design of the BYWRRF to calculate the odour emissions generated by BYWRRF and the potential impacts to the surrounding sensitive receivers. The CALPUFF computer-based air dispersion model was used to predict ground-level concentrations due to the identified emission sources at the BYWRRF. The model considers the potential for temporally and spatially varying flow fields due to influences of the locally complex terrain, non-uniform land use, and potential for stagnation conditions characterised by calm or very low wind speeds with variable wind directions. The model also incorporated CALMET meteorological models to simulate complex meteorological patterns that exist within the region.

The results of dispersion modelling for the BYWRRF are shown in Figure 4-3. The 2 OU and 4 OU 99th percentile contour lines are shown as a green dashed line and green solid line respectively. Neither the 4 OU contour line nor the 2 OU contour line extend beyond the site boundary or to any sensitive receptor location.

Given that neither the 2 OU nor 4 OU contours encroach on any sensitive receptor, there is likely some buffer should there be additional or unplanned odour emissions from BYWRRF.

Based on this, odour dispersion modelling demonstrates the BYWRRF is predicted to comply with the NSW EPA odour criteria (as detailed in Section 2.3) and is consistent with the *NSW Best Practice Odour Guideline*.

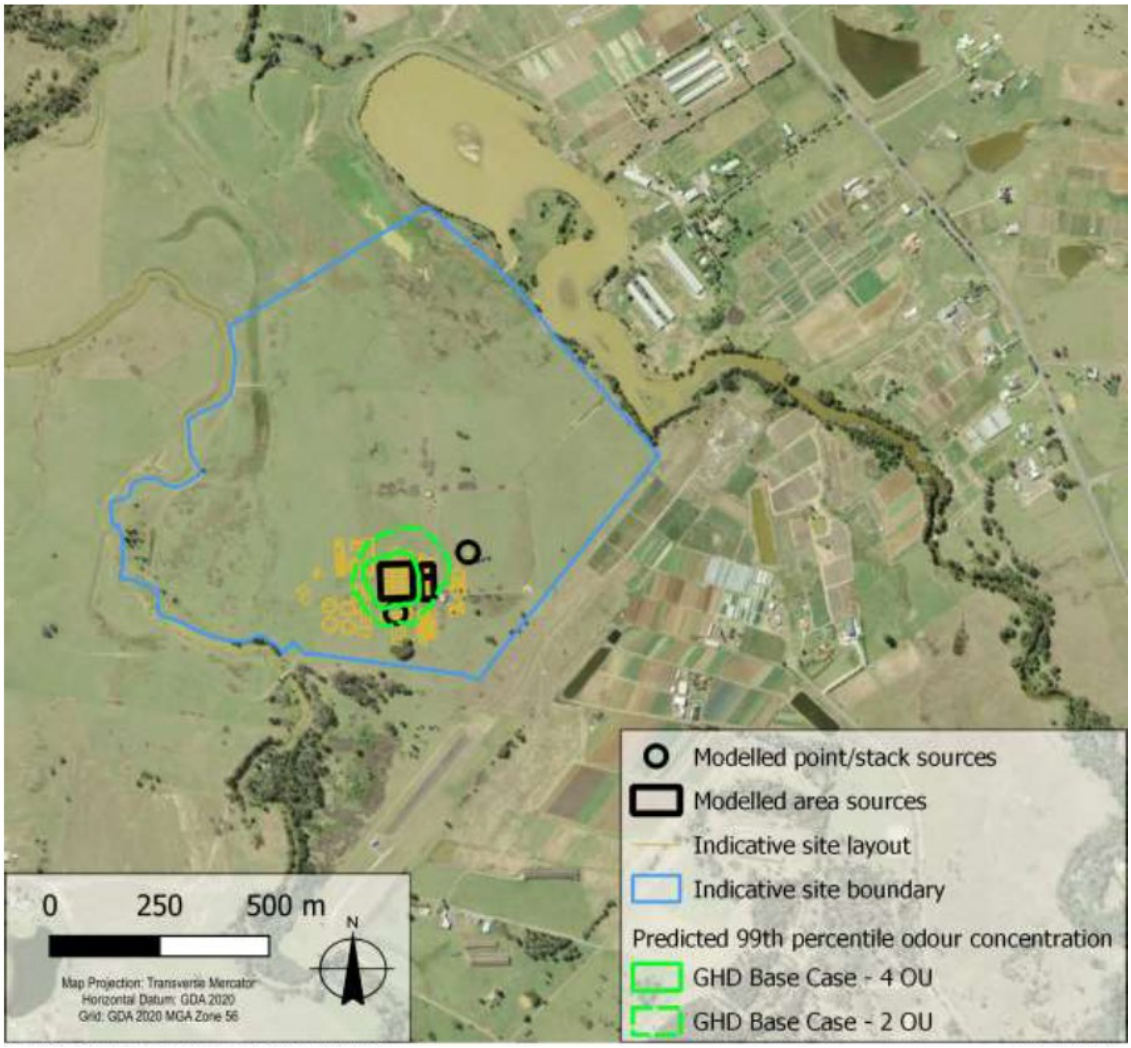

Figure 4-3 Odour dispersion modelling results for the BYWRRF. Source – WL17 – Odour Control – Odour Modelling Report (AWRC-DJV-MEM-MEC-5000-0001[02])

It is noted that the modelling incorporated emissions generated from the cogeneration engines which are not currently installed at BYWRRF. The installation of cogeneration engines may be installed at a later date once it becomes feasible.

4.4 Sensitive Receivers

Currently, the population within the vicinity of the BYWRRF site that could potentially be impacted by odour is less than 125. Figure 4-4 shows the location of the nearest sensitive receivers adjacent to the BYWRRF.

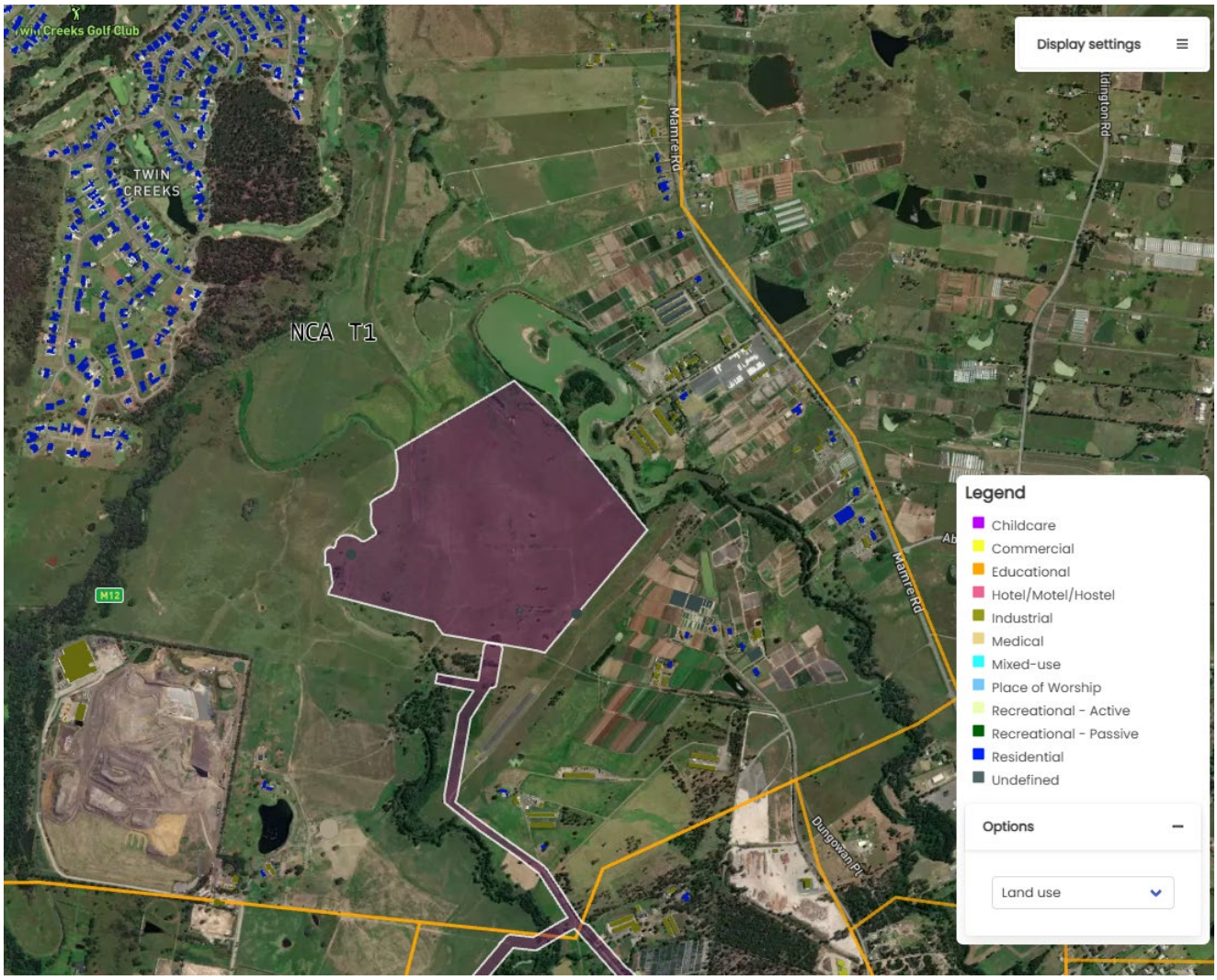

Figure 4-4 Sensitive receivers adjacent to the BYWRRF

5 Mitigation and Management Practices

5.1 Design

The BYWRRF has been designed to achieve the odour assessment criteria as detailed in Section 2.3 and 4.3. The following sections provide further detail on specific design elements which will manage odour at BYWRRF.

5.1.1 Odour Control and Ventilation

An odour control, ventilation and treatment system has been installed to limit odour emissions offsite and achieve odour assessment criteria provided in Section 2.3. The system includes the following two components.

Foul air collection system (covers and ducts)

The foul air collection system captures foul air generated at the locations throughout the BYWRRF as detailed in Table 5-1. These locations are generally considered the most likely to generate significant odour emissions.

Table 5-1 Foul air collection locations

Location	Air Extraction Rate
Inlet Works area including all chambers, channels, equipment, bins and foul water pump station.	25,000m^3/hour
Bioreactor Anaerobic Zones (part of the MBR structure) including the screened and de-gritted influent channel and flow splitter structure.	11,000m^3/hour
Biosolids area including the conveyors, storage silo, sludge dewatering equipment and truck outloading bay and water pumping station.	8,600m^3/hour when outloading building is offline, or 22,000m^3/hour when outloading building is online
TOTAL	**49,400 m^3/hour – 58,000m^3/hour**

Foul air generated at these locations is contained and collected within their respective structure through odour covers fitted with access hatches, inlet vents and outlet ducts. Foul air is extracted and directed to a centralised OCF for treatment through a network of foul air ductwork.

Further details on the foul air collection system for each location is provided in the Design Report (AWRC-DJV-RPT-PRO-0000-0002).

Odour Control Facility

Using two foul air extraction fans, the OCF receives foul air captured from the foul air collection system which is then treated using four two-stage bio-trickling filters (BTF), followed by three activated carbon units (ACU) before the fully treated air is released to the atmosphere via a 20 metre high discharge stack.

The foul air treatment apparatus has been designed to ensure treated exhaust air released into the environment does not exceed 500 OU which is in accordance with the Sydney Water *Technical specification – odour control unit ACP0004, Version 6.*

The design, arrangement and treatment standards within the OCF is consistent with best practice for odour management at wastewater treatment plants.

5.1.2 Covering of Anaerobic Zones

Odour modelling was undertaken during detailed design to determine the potential odour impacts if covers were not installed on the anaerobic zones of the Bioreactor (MBR structure), allowing odour to release into the environment. The modelling confirmed that under this scenario, odour levels would be approximately 4 times greater than those provided in the EIS with odour levels of 2 OU and 4 OU extending beyond the BYWRRF site boundary and intercepting with several sensitive receivers. Although this would generally comply with the *Technical Framework: Assessment and management of odours from stationary sources in NSW* (DEC, 2006) criteria for low population densities, the odour contours would be well above the 2OU goal in the *Draft NSW*

Best Practice Odour Guideline (DoP, 2010). Further, this would likely lead to an increased risk of odour impacts and complaints and sensitive receivers.

As a result, covers for the Bioreactor anaerobic zones (MBR Structure) have been incorporated into the design of the BYWRRF which contains and captures the foul air for extraction and treatment via the OCF.

5.1.3 Biogas Capture and Reuse

The BYWRRF consists of two anaerobic digestors which digest thickened waste activated sludge generated from Bioreactor treatment process. Biogas (methane, carbon dioxide, hydrogen sulfide etc.) is a by-product generated when the thickened sludge is digested by microorganisms. Biogas has the potential to cause odour emissions if not appropriately managed.

To prevent any odour emissions from biogas, the digestors at BYWRRF have an integrated membrane dome biogas storage to contain and capture biogas. The captured biogas is used to fuel a hot water heater system which will provide the required heating to the digestors. Any excess biogas not consumed by the hot water heaters will be flared off by the waste gas burners to prevent the excess gas escaping to the environment.

The EIS details that a cogeneration engine would be installed to utilise biogas and generate electricity. Although the cogeneration engine is not part of the current BYWRRF design, it has been allowed for in the odour modelling and will be located adjacent to the digestors as shown in Figure 4-1. The installation of cogeneration engines may be installed at a later date once it becomes feasible.

5.1.4 Other design elements

In addition to the previous sections, several other general odour management measures have been incorporated into the design which are summarised below.

- Foul Air is also extracted from the Solids Area Drainage Pump Station wet well head space to minimize release of odour from this drainage wet well. This is located to the East of the Anaerobic structure with a foul air branch line off the Anaerobic Zone main duct.
- The vent lines at the top of the various influent raw sewage inlet barometric loops are all directed to beneath the inlet works odour covers.
- The Administration Building and Mechanical Workshop sewage pump stations are proprietary units with sealed tanks to prevent release of odour.
- Bulk liquid storage for particularly odorous chemicals have water trap goose necks and a lute tank installed to trap vapours and minimise the release to the atmosphere.
- The Reverse Osmosis (RO) Feed Flow Splitter, RO Feed Tank, and Breakpoint Chlorination Tank are each fitted with small blowers which blow fresh are into the headspace these the tanks which assists with odour management. By continuously venting the headspace there is no build-up and concentration of the chlorine odour in the tanks which could otherwise be released as a concentrated plume with greater potential to reach adjacent sensitive receivers.

5.2 Commissioning

The Odour Control Facility will be commissioned and its BTF process units will be seeded and ACUs will be online prior to initial process cutover and introduction of influent raw sewage to the BYWRRF. This will ensure foul air is being extracted and treated at all times – including from the very first moment of raw sewage introduction into the BYWRRF. Also, in the early stages of BYWRRF operation only 1x of the 3x Bioreactors will be online and so not all design foul air will be available, To maximise the available foul air (as 'food' for the biomass within the ACF BTF units), initially only 3 of the 4 BTF units will be seeded and process started. Minimisation of unnecessary dilution air from process streams which do not have foul air will be done by adjusting the air balancing of foul air extraction.

The OCF is equipped with three (3) online Hydrogen Sulphide analysers to monitor foul air contamination level. These will be commissioned, calibrated and online (monitoring via SCADA control system) from the first moment of Inlet Works and OCF process start-up.

During process start-up commissioning team (supported by TJH OMC operators) will be monitoring and inspecting all covers and duct areas and assessing smell and potential for odour release.

Realtime online monitoring of operation and performance of the foul air extraction fan(s) will be carried out throughout this period to ensure correct negative pressure beneath the odour covers is maintained and correct foul air flows at each extraction point (and within branch and main ducts) are maintained.

During the formal performance test of the OCF, online monitoring will be supported by collection of physical gas samples and analysis by NATA accredited third party.

As part of commissioning, prior to process start-up, covers and duct vendor shall successfully complete set-up and testing of the fresh air inlet dampers (used to set required negative pressure under the covers), perform smoke testing (used to validate sealing integrity) and air balancing (set-up of foul air dampers across entire system to ensure required foul air flows).

All commissioning works is managed by execution of the commissioning workpack and supporting Inspection Test Plan (ITP) and Inspection Test Certificate (ITC):

- USCP-JHG-PLN-COC-0002 Odour Control Facility – Commissioning Workpack
- AWRC-JHG-IT-COC-0001 Odour Control Facility – Commissioning ITP
- AWRC-JHG-IT-COC-0041 Odour Covers and Ducts – Commissioning ITP
- AWRC-JHG-IT-COC-0034 AWRC Integrated Commissioning ITP
- AWRC-JHG-IT-COC-0036 AWRC Performance Testing ITP

5.3 Operations

5.3.1 Standard Operating Procedures

Jointly with TJH OMC, a series of Standard Operating Procedures (SOPs) have been developed for operation of the BYWRRF. Amongst these include OCF specific operational procedures, including but not limited to:

- USCP-JHG-PRO-COC-0026 SOP - OCF - Foul Air Extraction (ducts and covers)
- USCP-JHG-PRO-COC-0027 SOP - OCF - Biotrickling Filters
- USCP-JHG-PRO-COC-0028 SOP - OCF - Removal & Loading of BTF Media
- USCP-JHG-PRO-COC-0029 SOP - OCF - Foul Air Fans
- USCP-JHG-PRO-COC-0030 SOP - OCF - Activated Carbon Units
- USCP-JHG-PRO-COC-0031 SOP - OCF - Removal & Loading of ACU Media
- USCP-JHG-PRO-COC-0032 SOP - OCF - Nutrient Storage and Unloading
- USCP-JHG-PRO-COC-0033 SOP - OCF - Irrigation (Nutrient Solution (Single Pass))
- USCP-JHG-PRO-COC-0034 SOP - OCF - Irrigation (Recirculation Solution (Multi-Pass))
- USCP-JHG-PRO-COC-0035 SOP - OCF - Blowdown P/Station
- USCP-JHG-PRO-COC-0139 SOP - Process and Equipment Monitoring (liquid stream - OCF)
- USCP-JHG-PRO-COC-0144 SOP - Online Analyser Calibration

5.3.2 Maintenance, Failures and Breakdowns

The Odour Control Facility is designed to be able to have maintenance performed whilst the process remains operational and continuing to extract and treat foul air.

Each of the four BTFs and the three ACUs can be isolated and taken offline individually whilst maintaining operation of the remaining units. The Foul Air extraction fans are provided in Duty and Standby assets for the same reason.

Ten dedicated Maintenance Plans for the BYWRRF are in place which collectively set-out all planned preventative maintenance activities required to be performed for every individual asset on the BYWRRF. These maintenance plans are uploaded into the asset management system (MAXIMO) from where maintenance instructions are issued and performed by TJH OMC (and/or manufacturers/suppliers).

Amongst these include a plan dedicated to the maintenance of the Odour Control Facility (USCP-JHG-PLN-COC-0029 Maintenance Plan - Odour Control Facility).

5.3.3 General Management Measures

The general odour management measures provided in Table 5-2 will be implemented during operation of the BYWRRF.

Table 5-2 General odour management measures

Ref.	Requirement	Responsibility	Timing	Reference
OM01	All site personnel will undergo induction training which include the relevant odour management measures as detailed in this OMP.	TJH OMC HSE Manager	Prior to personnel commencing work	Best practice
OM02	Ongoing training and awareness will be provided to relevant personnel in relation to odour management, including the proactive identification of any odour issues.	TJH OMC HSE Manager TJH OMC Site Manager	Periodically during operation	Best practice
OM03	Conduct programs to educate staff about work practices that can help to minimise odour, and about the physical and psychological impacts of odour on neighbours.	TJH OMC HSE Manager TJH OMC Communications and Stakeholder Manager	Periodically during operation	Technical Framework Section 5.4
OM04	Establish management programs that provide incentives for employees to minimise incidences of poor environmental performance in relation to odour management.	TJH OMC HSE Manager TJH OMC Site Manager	During operation	Technical Framework Section 5.4
OM05	Weather conditions will be monitored to identify conditions which may contribute to odour related issues e.g. wind direction, strength, atmospheric inversions etc.	TJH OMC HSE Manager TJH OMC Site Manager	During operation	Best practice
OM06	All relevant SOPs will be implemented to ensure odour managing components of the BYWRRF are functioning as per design. See Section 5.3.1 for further details.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice
OM07	All maintenance, repairs, testing and inspections are to be undertaken in accordance with the SOPs and/or manufacturer manuals/guidelines to ensure odour managing components of the BYWRRF are operating efficiently and as per design.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice
OM08	All plant, equipment and machinery which handle odour generating material will be cleaned at appropriate frequencies to minimise inadvertent odours.	TJH OMC Site Manager TJH OMC Operators	As required during operation	Best practice
OM09	Odour monitoring will be undertaken in accordance with the Odour Monitoring Program as detailed in Section 6.	TJH OMC HSE Manager	During operation – See Section 6.	CoA E6
OM10	All general waste generated at BYWRRF will be placed in appropriately labelled waste receptables with covers on them. Regular servicing of the waste receptables is to be undertaken to minimise any odour issues.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice
OM11	Community and complaints management will be managed in accordance with Section 8.	TJH OMC HSE Manager	During operation	CoA E6

Ref.	Requirement	Responsibility	Timing	Reference
		TJH OMC Communications and Stakeholder Manager		
OM12	The loadout of biosolids will be undertaken between 7am and 3pm each day (predominantly week days), unless modelling or other appropriate assessment confirms that it will not result in odour impacts above the odour assessment criteria detailed in Section 2.3.	TJH OMC Site Manager TJH OMC Operators	During operation	EIS Section 11.1.6
OM13	During biosolid loadout operations onto trucks, the out loading building roller doors will be closed to ensure foul air is extracted to the OCF.	TJH OMC Site Manager TJH OMC Operators	During operation	Design Report Section 16.1
OM14	Trucks which are transported biosolids out of the BYWRRF are to have their loads covered to minimise any odour and air quality issues while in transit.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice
OM15	Where reasonable and feasible, for activities which may generate significant odour issues, conduct these during the least sensitive time of day or under the most favourable weather conditions.	TJH OMC Site Manager TJH OMC Operators	During operation	Technical Framework Section 5.4
OM16	Where a number of odour generating processes or activities are occurring onsite, schedule them so they occur separately rather than concurrently where possible.	TJH OMC Site Manager TJH OMC Operators	During operation	Technical Framework Section 5.4
OM17	Design maintenance programs to minimise the risk of incidents or accidents and the emission of puffs or incidental/accidental emissions.	TJH OMC Site Manager TJH OMC Operators	During operation	Technical Framework Section 5.4
OM18	Maintain the vegetation (trees, shrubs etc.) on the BYWRRF operational boundary in accordance with the Urban Design and Landscape Plan to assist with dispersion of any potential odour.	TJH OMC Site Manager TJH OMC HSE Manager	During operation	Technical Framework Section 5.5
OM19	Clean up any spillage of odour generating material as soon as reasonably practicable e.g. biosolids, sludge, chemicals etc.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice
OM20	A monitoring system (SCADA system) will be installed which detects any faults or operational anomalies which then alerts the relevant personnel.	TJH OMC Site Manager TJH OMC Operators	During operation	Best practice

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6 Odour Monitoring Program

This section contains the Odour Monitoring Program to be implemented during the operation of the BYWRRF site in accordance with CoA E6. Odour monitoring which will be undertaken are categorised as follows.

- Commissioning odour monitoring
- Quarterly odour monitoring
- Odour complaint monitoring
- Hydrogen sulphide monitoring

6.1 Commissioning Odour Monitoring

Commissioning odour monitoring will be undertaken in accordance with Table 6-1.

Table 6-1 Commissioning odour monitoring requirements and information

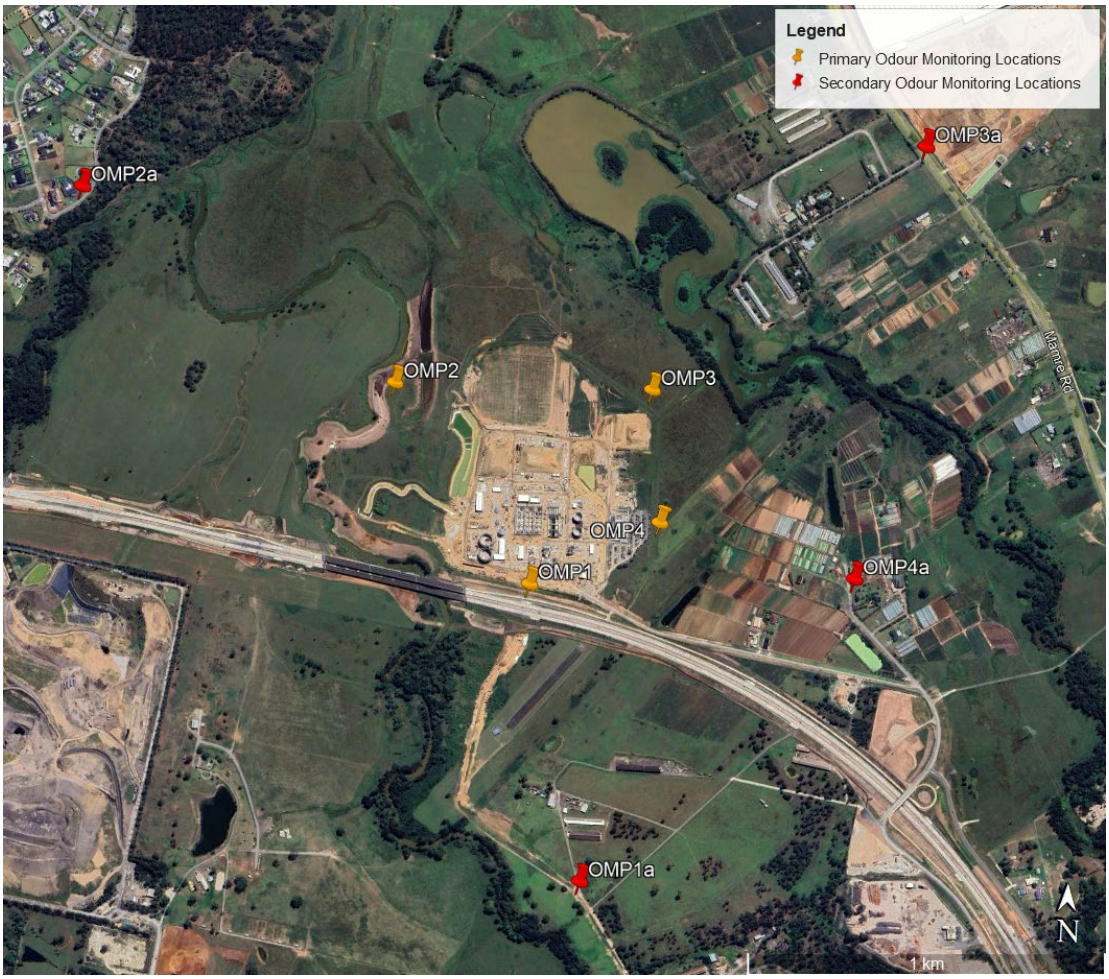
Monitoring Type	Commissioning odour monitoring
Description	Commissioning odour monitoring will be undertaken to confirm the relevant odour control mitigation and management measures, as described in Section 5 of this plan, are effectively managing odour. The monitoring will also confirm whether measured odour levels are consistent with the modelling undertaken in Section 4.3 and the odour assessment criteria are being complied with. Monitoring will effectively map the extent and severity of the odour plumes in and around the BYWRRF operational site.
Frequency and duration	The first odour monitoring event will occur immediately following the completion of commissioning of the BYWRRF (when odour is generated). Odour monitoring is to be timed when wind is blowing towards the potential sensitive receivers where possible.
Conducted by	Specialist air quality/odour consultant or suitably competent and experienced personnel in accordance with AS 4323.3:2001 and AS4323.4:2009.
Monitoring Equipment	Nasal Ranger, or other suitable monitoring equipment/technique as recommended by the specialist odour/air quality consultant. Equipment to be calibrated in accordance with AS 4323.3:2001.
Monitoring Parameters	Odour levels should be consistent with the 2 OU and 4 OU contours as provided Figure 4-3. When using alternative monitoring techniques (see 'Monitoring equipment' section of this table), different parameters may apply.
Methodology reference	*Australian/New Zealand Standard: Stationary source emissions – Part 3: Determination of odour concentration by dynamic olfactometry* (AS/NZS4323.3:2001) *Australian/New Zealand Standard: Stationary source emissions – Part 4: Area source sampling - Flux chamber technique* (AS/NZS4323.4:2009)
Monitoring Location	Various odour monitoring locations within and external to the BYWRRF operational site will be monitored to effectively map the extent of the odour plume. Locations may include: • Adjacent to BYWRRF odour sources • At various locations within the BYWRRF operational site • External locations including at properties located on Clifton Avenue and Mamre Road to the east, Twin Creeks residential estate to the north-west, properties located south of the M12, and any other areas deemed appropriate by the specialist odour/air quality consultant.

6.2 Quarterly Odour Monitoring

Quarterly odour monitoring will be undertaken in accordance with Table 6-2.

Table 6-2 Quarterly odour monitoring requirements and information

<table>
<tr><td>Monitoring Type</td><td>Quarterly odour monitoring</td></tr>
<tr><td>Description</td><td>Quarterly odour monitoring will be undertaken to confirm effectiveness of the odour control mitigation and management measures, as described in Section 5 of this plan, are effectively managing odour. These monitoring will assist to proactively identify potential odour issues prior to impacting sensitive receivers. The monitoring will also identify any trends or medium/long term patterns with regards to odour management.</td></tr>
<tr><td>Frequency and duration</td><td>Following commissioning and handover to TJH OMC, odour monitoring will be undertaken quarterly (every 3 months) during the operation of the BYWRRF. Odour monitoring is to be timed when wind is blowing towards the potential sensitive receivers where possible. Following 12 months of quarterly odour monitoring, this frequency may be reduced based on the odour related performance, complaints received and general odour risk.</td></tr>
<tr><td>Conducted by</td><td>Quarterly odour monitoring will be undertaken by a suitably competent and experienced person in accordance with AS4323.3:2001 and AS4323.4:2009.</td></tr>
<tr><td>Monitoring Equipment</td><td>Nasal Ranger, or other suitable monitoring equipment/technique as recommended by the specialist odour/air quality consultant. Equipment to be calibrated in accordance with AS 4323.3:2001.</td></tr>
<tr><td>Monitoring Parameters</td><td>Odour should not exceed 4 OU at the BYWRRF operational boundary monitoring locations (OMP1, 2, 3 and 4). When using alternative monitoring techniques (see ‘Monitoring equipment’ section of this table), different parameters may apply.</td></tr>
<tr><td>Methodology reference</td><td>Australian/New Zealand Standard: Stationary source emissions – Part 3: Determination of odour concentration by dynamic olfactometry (AS/NZS4323.3:2001)
Australian/New Zealand Standard: Stationary source emissions – Part 4: Area source sampling - Flux chamber technique (AS/NZS4323.4:2009)</td></tr>
<tr><td>Monitoring Location</td><td>Monitoring will be undertaken at the following locations. Should odour levels be above >4 OU at the primary odour monitoring points (BYWRRF operational site boundary), additional monitoring will be undertaken at the secondary odour monitoring point. For each monitoring event, only those locations downwind of the prevailing wind direction will be sampled. For example, during a westerly wind, monitoring point OMP3 and OMP4 would be suitable for sampling. The exact location of monitoring points may be varied depending on access, wind conditions or any other relevant reason.
<table>
<tr><th>Monitoring Point</th><th>Type</th><th>Location</th><th>Coordinates</th></tr>
<tr><td>OMP1</td><td>Primary</td><td>Located on the BYWRRF operational site boundary between the BYWRRF and M12 motorway.</td><td>Lat – -33.860913°
Long – 150.773443°</td></tr>
<tr><td>OMP1a</td><td>Secondary</td><td>Located at the end of the unnamed access track which runs past Andreasons Nursery approximately 1km south of the BYWRRF site.</td><td>Lat – -33.868286°
Long – 150.775338°</td></tr>
<tr><td>OMP2</td><td>Primary</td><td>Located on the BYWRRF operational site boundary at South Creek approximately 500m west of the bioreactor/MBR.</td><td>Lat – -33.856029°
Long – 150.769139°</td></tr>
<tr><td>OMP2a</td><td>Secondary</td><td>Located on Ganton Way approximately 1.4km from the BYWRRF site.</td><td>Lat – -33.851463°
Long – 150.759489°</td></tr>
<tr><td>OMP3</td><td>Primary</td><td>Located on the BYWRRF operational site boundary approximately 300m north-east of the bioreactor/MBR and digestors.</td><td>Lat – -33.855935°
Long – 150.776880°</td></tr>
<tr><td>OMP3a</td><td>Secondary</td><td>Located on Mamre road approximately 1.1km north-east of the BYWRRF site.</td><td>Lat – -33.849567°
Long – 150.784793°</td></tr>
<tr><td>OMP4</td><td>Primary</td><td>Approximately 200m east of the digesters and outloading building.</td><td>Lat – -33.859242°
Long – 150.777280°</td></tr>
<tr><td>OMP4a</td><td>Secondary</td><td>Located at the end of Clifton Avenue approximately 800m east of the BYWRRF site</td><td>Lat – -33.860440°
Long – 150.783204°</td></tr>
</table></td></tr>
</table>



6.3 Complaint Monitoring

Odour monitoring in response to complaints will be undertaken in accordance with Table 6-3.

Table 6-3 Complaint odour monitoring requirements and information

Monitoring Type	Odour complaint monitoring
Description	Odour monitoring may be undertaken by TJH OMC following receipt of an odour related complaint. The aim of the monitoring will be to determine whether the source of the odour is from BYWRRF, and if it, to determine the extent and severity of the odour which will provide guidance for any management responses.
Frequency and duration	Odour monitoring will be undertaken as soon as possible following a complaint, ideally within 24 hours.
Conducted by	Odour monitoring will be undertaken by BYWRRF site personnel who are trained or suitably qualified and experienced in accordance with AS4323.2.2001. Depending on the circumstances and severity of odour, specialist air quality/odour consultants may also undertake the monitoring.
Monitoring Equipment	No specific monitoring equipment is required for complaint monitoring. However, for more significant odour impacts/complaints, specific monitoring equipment may be required e.g. nasal ranger.
Monitoring Parameters	Monitoring parameters and processes are provided in the *Guide to conducting field odour surveys* (EPA, 2022) noting that the intent of this monitoring is to characterise the odour and identify the source. Where odour is detected and the source is confirmed to be from the BYWRRF, monitoring should be undertaken in accordance with Section 6.2 to confirm odour parameters are not being exceeded.
Methodology reference	Odour complaint monitoring will generally be undertaken in accordance with the *Guide to conducting field odour surveys* (EPA, 2022). This may include a rapid screening survey, 10-minute assessment and/or 360-degree survey.
Monitoring Location	Odour monitoring will be undertaken where the complainant allegedly detected the odour and then extended throughout the area to detect the plume extent and severity. Further details are provided in the *Guide to conducting field odour surveys* (EPA, 2022). Where odour monitoring requires access to private land, discussions with Sydney Water will be undertaken to obtain the approval to enter private lands. Where approval to enter private property cannot be obtained, odour monitoring will be restricted to publicly accessible areas.

6.4 Hydrogen Sulphide Monitoring

Continuous hydrogen sulphide monitoring will be undertaken at the OCF in accordance with Table 6-4.

Table 6-4 Hydrogen sulphide monitoring at the OCF

Monitoring Type	Continuous hydrogen sulphide monitoring at the OCF
Description	The OCF is equipped with three (3) online Hydrogen Sulphide analysers at the OCF inlet air, downstream of the biotrickling filter process system and downstream of the activated carbon unit process system. Hydrogen sulphide concentration data is monitored, recorded and trended in the AWRC SCADA control system. The analysers will be commissioned, calibrated and online from the first moment of Inlet Works and OCF process start-up. The purpose of this system is to continuously assess the operational efficiency of the OCF at treating foul air to prevent any odour issues.
Frequency and duration	Hydrogen sulphide monitoring will be continuous at all times during operation of the OCF.
Conducted by	Monitoring, maintenance and repairs of the SCADA control system and components of the OCF will be undertaken by appropriately trained and qualified TJH OMC operators and technicians.
Monitoring Equipment	Three (3) hydrogen sulphide analysers will be used as detailed below. • Draeger Online H2S Analyser – OCF Inlet Air • Acrulog Online H2S Analyser – Downstream of Biotrickling Filter process system (first process stream • Honeywell Chemcassette Online Ultra Low Level H2S Analyser – Downstream of Activated Carbon Unit process system (second process stream) Hydrogen sulphide concentration data is monitored, recorded and trended in the AWRC SCADA control system.
Monitoring Parameters	In accordance with Section 3.1.2.2 of the SWC Specification ACP0004, hydrogen sulphide concentrations at the outlet of the OCU should not exceed 0.05ppm$_v$.
Methodology reference	SWC Specification ACP0004 sets out requirements for the design, construction and qualitative performance of the OCF. ECC S406 sets out the design envelope for OCF.
Monitoring Location	Monitoring of sulphide monitoring will occur directly at the OCF. Where there are significant and multiple or reoccurring exceedances, additional odour monitoring as per methods and locations detailed in Section 6.2 (quarterly monitoring) may be required to determine whether there are any potential odour issues which could impact sensitive receivers.

7 Contingency Measures

TJH OMC is responsible for ensuring that odour generated by the BYWRRF site and subsequent impacts to sensitive receivers is minimised as much as possible and in accordance with this OMP. Table 7-1 provides contingency measures to be implemented following the occurrence of an odour related event/trigger.

Table 7-1 Contingency measures following an odour event/trigger

Event/Trigger	Contingency Measure

Commissioning and/or quarterly odour monitoring (Section 6) identifies that odour levels are above 4OU at the BYWRRF operational site boundary.
 	
Large number of confirmed complaints that are not a short term or a one-off event
	• Conduct an investigation to determine the cause of the odour exceedance/complaint. This may include:
	  ○ Inspection and targeted monitoring to identify the source of the odour causing the exceedance.
	  ○ Once the source is identified, determine the reason for the exceedance e.g. not being operated properly/as per the SOP, maintenance/repairs required, design related issue.
	  ○ Determine whether the exceedance is caused by a short term or one-off event which would be expected to occur <1% of the year e.g. significant rain event causing overflow.
	  ○ Implement measures to rectify the issue.
	  ○ Where rectification measures cannot be implemented promptly/easily (redesign or significant upgrades required), ensure adequate consultation and updates are provided to any stakeholders e.g. sensitive receivers, complainants, EPA etc.
	• Where odour levels are above 4 OU at the secondary monitoring locations, the investigation is to be expedited and immediate actions to reduce odour to be implemented where feasible.
	• Manage the complaints in accordance with the communication and complaints strategy as detailed in Section 8.
	• Where deemed necessary, further odour assessments and/or monitoring may be required by specialised air quality/odour specialists.
	• Conduct a review of this OMP to determine whether all mitigation and management measures are being implemented in full.
	• Investigate any alternative odour management measures which could be implemented e.g. odour neutralisers.
	• Implement any actions or additional measures as recommended by the air quality/odour specialist.

Confirmed complaints related to a short term or a one-off event which would be expected to occur <1% of the year e.g. significant rain event causing overflow.	• Manage the complaints in accordance with the communication and complaints strategy as detailed in Section 8 • Undertake odour monitoring in accordance with Section 6. • Conduct an investigation to determine the cause of the odour complaint. If the results of the investigations and monitoring demonstrate that the event was a one-off or short-term event that is unlikely to occur again, consider closing out. • Consider implementing additional reasonable and feasible measures to minimise odour complaints/impacts from these one-off or short term events.

8 Communications and Complaints Management

TJH OMC has established a Communications and Complaints Management Strategy TRILITY-COM-MP-002 which will be implemented throughout operation of the BYWRRF. This section provides a summary of the communication and complaints management process in relation to odour management.

Inquiries and complaints regarding BYWRRF will be received via the following.

- Toll free 24/7 Phone – 1800 064 127
- Email – uppersouthcreek@sydneywater.com.au
- Website – https://www.sydneywater.com.au/water-the-environment/what-we-are-doing/projects-in-your-area/uppersouthcreek-advanced-water-recycling-centre.html
- In-person – 28 Badu Mura Grove, Kemps Creek, NSW, 2178
- Post – PO Box 160, Kemps Creek NSW 2178

The above BYWRRF contact details will be disseminated throughout the community via the following methods.

- Community notifications which are distributed in accordance with the Communications and Complaints Management Strategy
- Signage at the entry to the BYWRRF site
- Sydney Water Project website
- Social media
- Any other relevant means of distribution

8.1 Record the complaint

All complaints received by TJH OMC will be recorded and the following information will be sought from the complainant.

- Personal information of the complainant – ideally their name and contact details (complaints made without personal information will still be recorded and investigated)
- Nature of complaint
- Time of complaint
- Location of complaint (to the nearest cross street, if complainant prefers not to give their exact location)
- Description of odour (character and strength), if odour complaint
- How long the odour has been present, if odour complaint
- Wind direction and other pertinent meteorological information (e.g. raining, fog, hot, wind strength), if odour complaint.

Once the complaint has been recorded the complainant will be provided with a reference number and advised of the response timeframe. In circumstances where complaints can be resolved at the point of contact, a record will be taken and the complainant will be provided with the reference number of their complaint.

The complaint will be recorded on the Complaints Register.

8.2 Investigate, assess and determine action

Once a complaint has been received and the details recorded, the complaint will be investigated and an assessment made:

- Complaint information is forwarded to the appointed personnel at the time of complaint for the matter to investigated.
- For odour complaints, attendance at reported site of complaint in order to confirm the nature of odour and its source in accordance with Section 6.3. This will include the following.
    - Confirmation of character and strength of odour

    - Identification of direction of odour
    - If not possible to attend (i.e. no location given, Workplace health and safety (WHS) requirements) the complaint is still to be investigated as per the following steps of this procedure.
- Cross-reference complaint against activities at the BYWRRF at the time of complaint and one hour preceding the complaint.
- Cross-reference complaint against meteorological conditions, including wind direction and strength at time of complaint and one hour preceding the complaint.
- On the basis of the data gathered during the preceding stages, make an assessment of cause of the complaint.
- Determine if corrective action is required and any contingency measures pending implementation as detailed in Section 7.
- Implement contingency measures and corrective action, where required.

Once the complaint has been assessed, a formal response will be provided to the complainant, if they requested one. Should the complainant be dissatisfied with the outcome of the complaint, details of other complaint options will be provided and their dissatisfaction with the outcome will be recorded.

8.3 Report the complaint

Records of odour complaints will be provided to the EPA in accordance with the EPL, and be made available to DPHI upon request. Complaints records will also be included in the EPL annual return, which is a publicly available document.

9 Compliance Management, Review and Continuous Improvement

9.1 Roles and Responsibilities

The roles and responsibilities of relevant personnel in relation to odour management are provided in Table 9-1.

Table 9-1 Roles and responsibilities

Role	Responsibility
JHG Design Manager	• Ensure that the BYWRRF is designed to appropriately manage odour to achieve odour assessment criteria.
JHG Commissioning Manager	• Ensure all SOPs, operation and maintenance manuals are developed to incorporate odour management aspects and to ensure relevant treatment processes are operating as designed and/or as per manufacturer guidelines. • Conduct commissioning testing to ensure odour control design elements are functioning as designed.
TJH OMC Site Manager	• Overall responsibility to ensure the BYWRRF is operating in accordance with the SOPs, and operation and maintenance manuals to manage odour impacts. • Overall responsibility to ensure full implementation of this OMP and subsequent compliance with the EPL. • Provide adequate resources to monitor, investigate and implement odour related issues.
TJH OMC Health, Safety and Environment Manager	• Conduct odour monitoring or engage air quality/odour specialists to undertake odour monitoring as detailed in Section 6. • Periodically site reviews/audits to confirm compliance with this OMP. • Review and update this OMP as required. • Day to day communications with the EPA. • Assist with the delivery of training, inductions, toolboxes and general odour management awareness throughout the site. • Investigate odour complaints.
TJH OMC Communications and Stakeholder Manager	• Manage odour related complaints in accordance with Section 8. • Liaise with complainants. • Promptly provide notify relevant personnel of any community complaints in relation to odour.
TJH OMC Operators	• Undertake all works in accordance with the relevant SOPs, and operation and maintenance manuals to manage odour impacts. • Proactively identify and report issues with treatment processes, plant, equipment and or machinery which may cause odour related issues. • Assist the TJH OMC Health, Safety and Environment Manager with the investigation of any odour complaints, or increases in odour levels.
All personnel	• Attend site inductions and participate in toolboxes, pre-starts and other relevant training as required in relation to odour management. • Report any unusual or significantly increased odours identified throughout the site. • Ensure implementation of this OMP in daily work practices.

9.2 Training

All employees and contractors working at BYWRRF will undergo a site induction in which initial training on environmental issues including odour management will be undertaken. The induction training will address elements related to odour air quality including:

- Potential sources of odours specific at BYWRRF
- Sensitive receivers in proximity to the work area
- Procedures when unusual or significant increases in odour are detected
- Mitigation measures to be implemented manage potential odours.

Targeted training and awareness in the form of toolbox talks or specific training will also be provided to personnel with a key role in the management of potential impacts to odour. Personnel involved in the odour monitoring activities described in Section 6 will undergo specific training in accordance with AS/NZS4323.3:2001 and AS/NZS4323.4:2009 where applicable.

9.3 Reporting

The following reporting will be undertaken during operation of the BYWRRF.

- An annual monitoring report will be prepared which summarises the results of the quarterly commissioning odour monitoring will be prepared and will include the following.
    - Scope of work, including locations, date and time of the monitoring.
    - Details of the staff undertaking the monitoring and their training/calibration certification.
    - Atmospheric data on the day of monitoring (including temperature and humidity).
    - Information on the works taking place on-site during the monitoring event.
    - Results of the monitoring works and comparison to previous results (if relevant).
    - Any conclusions or recommendations around ongoing management of odour on the site during Project works.
- Records of odour complaints will be provided to the EPA in accordance with the EPL, and be made available to DPHI upon request. Complaints records will also be included in the EPL annual return, which is a publicly available document.

9.4 Review and Improvement

9.4.1 Continuous Improvement

Continuous improvement of this OMP will be achieved by the ongoing evaluation of environmental management performance against objectives, targets and odour assessment criteria for the purpose of identifying opportunities for improvement.

The continuous improvement process is designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement, and
- Make comparisons with objectives, targets and odour assessment criteria.

9.4.2 OMP Update and Amendment

The OMP will undergo an annual review and be updated where necessary.

Appendix A – Consultation Summary Report

Upper South Creek

Advanced Water Recycling Centre and Pipelines

CoA A9 Consultation Summary Report
Odour Management Plan

Revision: 02

Revisions and Distribution

Distribution

There are no restrictions on the distribution or circulation of this document within John Holland.

	Uncontrolled Copy
Authorised By: Date:	Richard Ioffrida (Project Director) 20/08/2025

Revisions

Draft issues of this document shall be identified as Revision 01, 02, 03 etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential number commencing at Revision A. Revision numbers shall commence at Rev. A, B etc.

Date	Rev	Remarks	Section	Prepared By	Reviewed By & Approved By
29/07/2024	01	Summary of consultation for the Odour Management Plan	All	Ryan Maxwell	Alyce Harrington
20/08/2025	02	Update following review by DPHI	All	Ryan Maxwell	Alyce Harrington

Table of Contents

1 Introduction

1.1 Background

The Badu Yarragul Water Resource Recovery Facility and Pipelines Project (the Project) has been constructed to support the population growth and economic development of the Western Sydney Aerotropolis Growth Area, South West Growth Area and the new Western Sydney International Airport. The Project provides wastewater services to Western Sydney to produce high-quality treated water for non-drinking reuse and for release to local waterways.

The Project consists of the following components.

- An Advanced Water Recycling Centre (AWRC) at the Badu Yarragul Water Resource Recovery Facility (BYWRRF) which collects wastewater from businesses and homes and treats it, producing high-quality treated water and biosolids for beneficial reuse.
- A green space area around the BYWRRF, adjacent to South Creek and Kemps Creek, to support the ongoing development of a green spine through Western Sydney.
- Drainage infrastructure from the BYWRRF to South Creek, which releases excess wastewater during significant wet weather events, estimated to occur about 3 – 14 days each year.
- A treated water pipeline from the BYWRRF to Nepean River at Wallacia Weir, which releases high-quality treated water to the river during normal weather conditions.
- A brine pipeline from the BYWRRF connecting into the Northern Georges River Submain (NGRS) at Lansdowne Reserve.
- A range of ancillary infrastructure.

The Project is being constructed in stages with Stage 1 consisting of building and operating the BYWRRF to treat a daily wastewater flow, known as the average dry weather flow (ADWF), of up to 35 megalitres per day (ML/day). It also includes the construction of the treated water pipeline and brine pipeline to cater for up to 70 ML/day flow coming through the BYWRRF (but only operating them to transport and release volumes produced by Stage 1). Stage 1 of the Project is being undertaken by John Holland Group (JHG) (on behalf of Sydney Water) and construction is expected to be completed in 2025, and handover to Trility John Holland Operation and Maintenance Joint Venture (TJH OMC) in June 2026 following commissioning.

Stage 2 of the Project consists of an expansion of BYWRRF to treat wastewater flows up to 70 ML/day. Sydney Water (SWC) will remain flexible on the size and timing of these future upgrades to accommodate changes in population projections over time. Future stages will be subject to further environmental assessment. Further detail on Project staging is provided in the Project Environmental Impact Statement (EIS).

The Odour Management Plan (OMP), to which this consultation summary report applies, is applicable to Stage 1 only, and will potentially require further updates following approval of Stage 2.

1.2 Purpose of this Consultation Summary Report

This Consultation Summary Report has been prepared to meet the requirements of the CSSI approval, in particular Condition of Approval (CoA) A9. CoA A9 outlines the requirements for undertaking and documenting consultation undertaken during the preparation of approval documents, monitoring programs of other documentation required under relevant CoA for those documents. This Consultation Summary Report has been prepared to consolidate the consultation undertaken during the preparation of the OMP as required by CoA E5 and E6, and Updated Management Measure (UMM) #AQ03. See Table 1-1 for further consultation details.

Table 1-1 Consultation Requirements

Reference	Document Name	Consultation Requirement
E5	Odour Management Plan	NSW Environmental Protection Authority (EPA)

1.3 CoA Compliance

This section details the compliance of this Consultation Summary Report with the relevant CoA as applicable to consultation required to be undertaken during the development of the OMP.

Table 1-2 lists the applicable CoA, where and how they have been addressed in this Consultation Summary Report.

Table 1-2 CoA relevant to consultation summary report

CoA ID	CoA Detail	How and where Addressed
A9	Where the terms of this approval require consultation to be undertaken, evidence of the consultation undertaken must be submitted to the Planning Secretary and ER (as relevant) with the corresponding documentation. The evidence must include:	This document (Consultation Summary Report)
A9	a. documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	Section 2 and Appendices of Consultation Summary Report
A9	b. a log of the dates of engagement of attempted engagement with the identified party;	Section 2 and Appendices of Consultation Summary Report
A9	c. documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations.	Section 2 and Appendices of Consultation Summary Report
A9	d. outline of the issues raised by the identified party and how they have been addressed	Section 2
A9	e. a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed	Section 2
E5	Prior to the commencement of operation, the Proponent must prepare, implement and maintain an Odour Management Plan (OMP) for the BYWRRF. The OMP must be prepared by a suitably qualified and experienced person(s) in consultation with the EPA and submitted to the Planning Secretary for information.	Section 2 and Appendices of Consultation Summary Report
E6	The OMP must describe measures to minimise odour impacts associated with operation and include, but not necessarily limited to: (a) objectives and targets; (b) key performance indicators; (c) identification of all sources of odour associated with the operation; (d) a detailed description of odour mitigation methods and management practices; (e) a detailed description of the methods used for monitoring the effectiveness of the odour mitigation methods and management practices; (f) location, frequency and duration of monitoring; (g) details of proposed contingency measures should odour impacts occur; (h) a communications strategy for handling potential odour complaints that includes recording, investigation, reporting and actioning; and (i) system and performance review for continuous improvements.	Refer to the OMP

1.4 Consultation Process

Consultation with the EPA was undertaken using formal correspondence (emails).

2 Stakeholder and Agency Consultation

This Section of the Consultation Summary Report provides detail of consultation undertaken with the EPA in the preparation of the OMP. It contains:

A consultation log that identifies:

- Consultation dates (actual and attempted)
- Form of consultation
- Whether responses and / or comments were received
- Summary of the issues raised, including how they have been addressed

Documentary evidence of all the correspondence received and sent through the consultation phase is contained in the Appendices at the end of this Report.

2.1 EPA

Consultation with the EPA commenced on 15 July 2025 and concluded on 29 July 2025.

Table 2-1 below includes the details of engagement between the EPA and John Holland regarding the OMP.

Table 2-2 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 1 of this report.

Table 2-1 Engagement log – EPA

#	Date	Correspondence		From	Recipient
		Form/Type	Purpose		
1	15/07/2025	Email	Issuing of the OMP and request for review and comments.	Ryan Maxwell Alyce Harrington (cc'd)	Fabiana Quinton
2	24/07/2025	Email	Response from the EPA with one minor comment.	Laura Ansted Fabiana Quinton (cc'd)	Ryan Maxwell Alyce Harrington (cc'd)
3	29/07/2025	Email	Provided updated OMP which addressed the one minor comment from the EPA.	Ryan Maxwell Alyce Harrington (cc'd)	Laura Ansted Fabiana Quinton (cc'd)
4	29/07/2025	Email	EPA confirmed that no further consultation with the EPA is required.	Laura Ansted Fabiana Quinton (cc'd)	Ryan Maxwell Alyce Harrington (cc'd)

Table 2-2 below summarises the consultation comments received from the EPA.

Table 2-2 Summary of issues – EPA

Document Section, CoA/REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Various however focussing on Section 5	JHG may wish to consider reducing the volume of background information to help make the focus more on commissioning and operational management of odour. For example, detailing the nearest sensitive receivers is helpful operationally but detailing the site selection process is probably not necessary.	29/07/225	• Removed Section 5.1.1 Site Selection. Figure 5-1 which shows the location of sensitive receivers has been relocated into Section 4. As you mentioned, this figure is useful for operational staff to understand where the sensitive receivers are located in relation to the BYWRRF. • Figure 5-2 has been removed so focus is maintained on commissioning and operational odour management.

Appendix 1 – EPA

Outlook

RE: Upper South Creek (SSI 8609189) - Odour Management Plan consultation

From Laura Ansted <Laura.Ansted@epa.nsw.gov.au>
Date Tue 2025-07-29 13:16
To Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Cc Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>; Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>

Hi Ryan,

Apologies for missing your phone call earlier and thanks for providing an updated copy of this document for our records.

Our role is more to set environmental objectives rather than be involved in developing strategies and management plans (i.e. we won't endorse or approve those plans). Our comment in this case is just being helpful for your consideration more than anything else - no need to confirm we are satisfied with the response.

If you have any questions please let me know.

Kind regards,

Laura
Laura Ansted *She/Her*
Senior Operations Officer
Regulatory Operations – South-West Sydney & Illawarra
NSW Environment Protection Authority
D 02 9995 6812 | www.epa.nsw.gov.au

Join us on our mission to protect tomorrow together.

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

I work on Burramattagal Country of the Dharug Nation.

Report pollution and environmental incidents 131 555 or +61 2 9995 5555

From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, 29 July 2025 11:47 AM
To: Laura Ansted <Laura.Ansted@epa.nsw.gov.au>
Cc: Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>; Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: Re: Upper South Creek (SSI 8609189) - Odour Management Plan consultation

Hi Laura,

Thank you for reviewing the OMP. I have updated the OMP to focus more on commissioning and operational management of odour - please see the

attached. In the summary, the main changes include the following.

- Removed Section 5.1.1 Site Selection. Figure 5-1 which shows the location of sensitive receivers has been relocated into Section 4. As you mentioned, this figure is useful for operational staff to understand where the sensitive receivers are located in relation to the BYWRRF.
- Figure 5-2 has been removed so focus is maintained on commissioning and operational odour management.

Can you please review the updated OMP and confirm that your comments have been adequately addressed?

Thanks,

Ryan Maxwell
Environment, Planning and Approvals
Upper South Creek (Tue, Wed)
Inland Rail - I2S (Thu, Fri)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

From: Laura Ansted <Laura.Ansted@epa.nsw.gov.au>
Sent: Thursday, July 24, 2025 3:05 PM
To: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Cc: Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>; Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: RE: Upper South Creek (SSI 8609189) - Odour Management Plan consultation

Good afternoon Ryan,

Our only minor comment in relation to this consultation request is as follows:

- JHG may wish to consider reducing the volume of background information to help make the focus more on commissioning and operational management of odour. For example, detailing the nearest sensitive receivers is helpful operationally but detailing the site selection process is probably not necessary.

If you have any questions, please let me know.

Regards,

Laura
Laura Ansted *She/Her*
Senior Operations Officer
Regulatory Operations – South-West Sydney & Illawarra
NSW Environment Protection Authority
D 02 9995 6812 | www.epa.nsw.gov.au

Join us on our mission to
protect tomorrow together.

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

I work on Burramattagal Country of the Dharug Nation.

Report pollution and environmental incidents 131 555 or +61 2 9995 5555

From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, 15 July 2025 3:36 PM
To: Fabiana Quinton <Fabiana.Quinton@epa.nsw.gov.au>
Cc: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: Re: Upper South Creek (SSI 8609189) - Odour Management Plan consultation

Hi Fabiana,

Apologies - I forgot to attach the OMP in my previous email. Please see the attached.

Thanks,

Ryan Maxwell
Environment, Planning and Approvals
Upper South Creek (Tue, Wed)

Inland Rail - I2S (Thu, Fri)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049
E. Ryan.maxwell2@jhg.com.au

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From: Ryan Maxwell-JHG <Ryan.Maxwell2@jhg.com.au>
Sent: Tuesday, July 15, 2025 13:57
To: Fabiana Quinton <fabiana.quinton@epa.nsw.gov.au>
Cc: Alyce Harrington-JHG <Alyce.Harrington@jhg.com.au>
Subject: Upper South Creek (SSI 8609189) - Odour Management Plan consultation

Hi Fabiana,

I just tried calling and left you a voicemail.

Please see the attached draft Odour Management Plan (OMP) which has been prepared for the Badu Yarragul Water Resource Recovery Facility (BYWRRF) (currently referred to as AWRC) in accordance with CoA E5 and E6 of the Infrastructure Approval (SSI 8609189). The OMP details measures which have been and will be implemented to minimise odour impacts during operation of the BYWRRF.

In accordance with CoA E5, John Holland is required to prepare this OMP in consultation with the EPA and therefore requests that you provide any comments or feedback regarding the OMP by 1 August 2025.

In the meantime, if wish to discuss this further, please don't hesitate to contact me.

Regards,

Ryan Maxwell

Environment, Planning and Approvals

Upper South Creek (Tue, Wed)

Inland Rail - I2S (Thu, Fri)

JOHN HOLLAND

Level 3, 65 Pirrama Road, Pyrmont NSW
M. +61 404 675 049

E. Ryan.maxwell2@jhg.com.au

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Appendix B – Risk Assessment Criteria

Consequence

CONSEQUENCE - RISK					
RATING	**1**	**2**	**3**	**4**	**5**
Environment & Natural Resources	* Low severity environmental impact(s) or impact on natural resources availability that are promptly reversible and affected area is within the site boundary	* Nuisance or low severity environmental impact(s) or impact on natural resources availability that are promptly reversible and affected area is outside the site boundary	* Moderate severity environmental impact(s) or impact on natural resources availability where the affected area is within the site boundary	Moderate severity environmental impact(s) or impact on natural resources availability where the affected area is outside the site boundary	High severity environmental impact(s) or impact on natural resources availability at local scale significance
Reputation / Community / Media	* Public concern restricted to local complaints * Lack of contribution to the community	* Minor, adverse local public or media attention and complaints * Employees warned only * Minor change in community amenity values	* Attention from media and/ or heightened concern by local community * Stakeholder action will disrupt planned project activities * Disciplinary action may be taken * Temporary reduced community access to services or employment	* Significant adverse national media / public / NGO attention * Considerable and prolonged adverse community impact and dissatisfaction publicity expressed * Stakeholder action will delay achievement of major elements of the Project * Permanently reduced community access to services or employment	* Serious public or media outcry with international coverage * Significant adverse community impact & condemnation * Stakeholder action will prevent achievement of the project objectives * Reduced cohesion of community
Governance / Legal / Regulatory	* Very minor technical breach of regulation or policy or code of ethics. No fine / penalty	* Minor legal issues, non-compliances and breaches of regulation, policy or code of ethics * Enforceable Undertaking	* Moderate breach of regulation, policy or code with investigation or report to authority * Moderate legal proceedings initiated * Several Improvement Notices	* Significant breach of regulation, policy or code with fine or other regulatory action. Significant litigation / legal action * Shut down of part of a project due to regulatory breach * Prohibition Notice	* Major breach of regulation, policy or code with fine * Major litigation * Major investigation by regulatory body * Prosecution / Accreditation loss
Management Impact	* Impact of event absorbed through normal activity	* Will require some local management attention over several days	* Significant event that can be managed with careful attention, will take some project managers much time for several weeks * Local operation of contingency plan	* Major event that requires the implementation of crisis and contingency plans at a project level, regional area or support function (DRP) * Will require the involvement of senior managers and will take up the time of project managers for several weeks	* Critical event or disaster with significant impact on John Holland that requires considerable senior management time to handle over several months * Full implementation of an John Holland's crisis management plan for days to weeks
Workplace Health and Safety	* First aid injury, and/or * Minor safe working issues	* Medical treatment, and/or * Moderate safe working breach likely to impact on operations	* Serious medical / hospital treatment resulting in need alternate working or resulting in lost time injury, and/or * Significant safe working breach with actual impact on operations	* Serious or permanent Injury, and/or * Significant safe working beach with immediate impact on operations on one or more worksites	* 1 or more fatalities, and/or * Major breach of safe working with immediate and extensive impact on one or more worksites

Likelihood

PROBABILITY OR CHANCE	QUALITATIVE ASSESSMENT	RECURRENCE TIMEFRAME
≥ 90%	Almost certain to occur during the project / contract life	Less than "Monthly"
51% to 89%	Considered likely to occur during the project / contract life	"Monthly" to "Yearly"
30% to 50%	Considered a possible occurrence during the project / contract life	Between 2 and 5 years
5% to 29%	Considered unlikely to occur during the project / contract life	Between 5 and 20 years
< 5%	Considered a rare occurrence to happen during the project / contract life	Greater than every 20 years

Risk Matrix

		CONSEQUENCE				
	RATING	1	2	3	4	5
LIKELIHOOD	ALMOST CERTAIN	D	C	B	A	A
	LIKELY	D	D	C	B	A
	POSSIBLE	E	D	C	C	B
	UNLIKELY	E	E	D	C	B
	RARE / REMOTE	E	E	D	D	C