



Darling Quarter Development

Network Operator's
Infrastructure Operating Plan

Rev6

January 2022



Solutions & Technologies

DOCUMENT REVISION SUMMARY & DISTRIBUTION

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Revision Summary

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OWIP	29Apr11	Approval	Internal	R Harkness	K Shaw	
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3		Annual review				
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Distribution

Rev No	Issued To	Organisation	Position	Remarks / Restrictions
A	K Shaw	VWS	Strategic Mgr	Strategic Group only
0		IPART + Auditor		IPART and IPART Auditor
1		IPART		IPART
2				
3				
4	Various	IPART+Auditors+VWS	Various	IPART+Auditors+Operations
5	Various	IPART+Auditors+VWS	Various	IPART+Auditors+Operations
6	Various	IPART+Auditors+VWS	Various	IPART+Auditors+Operations

Note the only controlled copy is that electronic version located on VWS server.

1. Definitions

Whenever the following words and phrases are used in this document with initial capitals, they have the special meaning as set out in this Clause 1.

APPF - Australian Prime Property Fund

AGWR - Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) (2006)

BLL - Bovis Lend Lease Pty Ltd

EPA - NSW Environment Protection Agency

IOP or Plan - Infrastructure Operating Plan

JLL - Jones Lang LaSalle (NSW) Pty Limited

Licensee - Veolia Water Solutions and Technologies (Australia) Pty Ltd

LLFML - Lendlease Funds Management Limited (part of Lend Lease Global Funds Management Platform)

O&M – Operations and Maintenance

Regulation - Water Industry Competition Act (General) Regulation 2008; as amended time to time

RWTP - Darling Quarter Recycled Water Treatment Plant

SMA - Sewer Mining Agreement between Lend Lease Funds Management Limited (LLFML) and Sydney Water Corporation (SWC)

SWC - Sydney Water Corporation

TPs – Terminal Points (Customer's Connection Points)

VWS or **VWST** - Veolia Water Solutions and Technologies (Australia) Pty Ltd

WQP - Water Quality Plan

WIC Act – Water Industry Competition Act (WICA), New South Wales

2. Purpose

This Infrastructure Operating Plan (IOP) has been prepared by Veolia Water Solutions & Technologies Pty Ltd (VWS, VWST) for the Darling Walk Development (DW), 1-25 Harbour street Sydney NSW pursuant to VWS's obligation under its NSW Network Operator's Licence No. 10_008 granted by the Minister for Water under Section 10 of the Water Industry Competition Act 2006 (WICA) on 24 June 2010 and varied on 18th December 2016 for the following water industry infrastructure (the Infrastructure):

- *A treatment plant for non-potable water and other water infrastructure only used, or to be used, in connection with the treatment plant, where components of the treatment plant or other water infrastructure may be used for one or more of the following:*
 - *production of non-potable water;*
 - *treatment of non-potable water;*
 - *filtration of non-potable water;*
 - *storage of non-potable water; and*
 - *conveyance of non-potable water*
- *A reticulation network for non-potable water and other infrastructure only used, or to be used, in connection with the reticulation network, where components of the reticulation network or the other water infrastructure may be used for one or more of the following:*
 - *storage of non-potable water;*
 - *conveyance of non-potable water; and*
 - *treatment of non-potable water*

As per WIC Act, "water infrastructure" means any infrastructure that is, or is to be, used for the production, treatment, filtration, storage, conveyance or reticulation of water, but does not include (a) any pipe, fitting or apparatus that is situated downstream of a customer's connection point (TPs) to a water main, or (b) any pipe, fitting or apparatus that is situated upstream of a customer's connection point (TPs) to a stormwater drain.

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Under a contractual arrangement between VWS (the Licensee) and the owner of the asset, represented by Jones Lang LaSalle (NSW) Pty Limited (hereafter named "JLL"), customer's connection point (terminal point TPs) are the points after the recycled storage tanks in basement level B3 (As set out in Appendix 1 of this Plan).

Accordingly, consistent with the definitions and framework in WIC Act and VWS' licence, VWS operates and maintains the water infrastructure up to these customer terminal points (that covers the plant designed, installed and commissioned by VWS up to the TPs just beyond the recycled storage tanks) (sometimes termed "RWTP", "Treatment Infrastructure" within this Plan); while the reticulation system beyond those terminal points (i.e. the network of pipes, pumps, meters, valves originating from outlet of the terminal points beyond the recycled water storage tanks and carrying treated recycled water to the cooling towers, toilet cisterns and irrigation) are directly operated and maintained by JLL and are not part of the WICA licensed area.

The two product tanks (Storage Tanks #8010 and 8020) themselves up to these TPs are within the limits of 'Recycled Water System' and infrastructure, maintained and managed by VWS.

This Plan describes, and affirms the integrity of the design, construction, operation, servicing and maintenance of the water treatment infrastructure so far as VWS is concerned, as explained above and its ability to reliably and safely supply recycled water to VWS's sole customer (JLL).

3. Background

In February 2010 VWS was awarded a contract by Bovis Lend Lease Pty Ltd (ABN 97 000 098 162) (hereafter named "BLL") to design, supply, construct and commission a Recycled Water Treatment Plant (RWTP) to produce 166kL per day of recycled water, the design and construction of which is summarised in this Plan and includes the following summary components and unit processes:

- Receipt of sewage from the local Sydney Water Corporation (SWC) sewer main,
- Grease Removal and solids screening system including macerating pumps,
- Proprietary Moving Bed Bioreactor (MBBR) System,
- Proprietary Membrane Bioreactor (MBR) System,
- Reverse Osmosis,
- Ultra Violet Light (UV) and Chlorine Disinfection Systems, and
- Ancillary tanks, pumps, piping, electrics, instrumentation and controls

Pursuant to the WIC Act, VWS also obtained a Retail Supplier's Licence No 10_009R granted by the Minister of Water 24 June 2010 and varied on 21st December 2016.

4. The infrastructure construction

The Infrastructure described in Section 2 and elaborated upon in Section 3 is presented diagrammatically in Appendix 1 and comprises the following scope split by the developer (BLL) and the Licensee (VWS) during the design and build phase.

4.1 By Developer, BLL

BLL had sole responsibility for the design and construction of the following:

- Gravity sewerage infrastructure for sewage conveyance from the SWC 450mm vitreous clay sewer main under Harbour Street,
- The sewerage conveyance infrastructure to and including the waste collection sump and connections back to the main sewer,
- Odour Extraction system,
- The treated water storage tanks including outlet connections (to be operated and maintained by VWS), and
- The non-potable water piping infrastructure within the development precinct of Darling Quarters.

4.2 By the Licensee and Supplier VWS

VWS was responsible for the design and construction of the following Infrastructure under contract to BLL.

- WTP Feed pumps
- Grease removal and solids screening system,
- MBBR,
- MBR,
- Reverse Osmosis,
- UV and Chlorine (sodium hypochlorite) disinfection,
- Odour control, and
- Ancillary pumps, piping, electrics, instrumentation and controls.

5 Scope of this plan

5.1 Scope included

This plan (and its scope) relate to the Recycled Water Treatment Plant (RWTP) and has been prepared in accordance with the Water Industry Competition (General Regulation) 2008 (the Regulation), Schedule 1 (Conditions for Network operators' licences) Part 2 (Additional conditions for licences for Water infrastructure) section 6 (Infrastructure Operating Plans).

Accordingly, this Plan addresses the prescriptive requirements of the Regulation, VWS own certified Plan-Do-Check approach and the IPART audit guideline (latest revision) as follows, and which have been logically categorised as Planning, Implementation and Compliance:

Planning

This relates to submission of an infrastructure operating plan before commencing to operate water infrastructure commercially.

As the RWTP has been in operations and maintenance over 10 years by the date of this Revision, this obligation has been complied by VWS a long time ago.

Implementation

The licensee:

- (a) must ensure that its IOP is fully implemented and kept under regular review and, in particular, that all of its activities are carried out in accordance with that plan, and
- (b) must, if the Minister so directs, amend its IOP in accordance with the Minister's direction.

Compliance

If the Minister or IPART so demands, or if any significant change is made to its IOP, the licensee:

- (a) must provide the Minister or IPART with a report, prepared by an approved auditor in such manner and form as the Minister or IPART may direct:
 - i. as to the adequacy of the plan, and
 - ii. as to the condition of its infrastructure, having regard to the purpose for which it is licensed, or
- (b) must pay the Minister's or IPART's costs of conducting an investigation into the adequacy of the plan or the condition of its infrastructure.

In the preparation of current revision of this Plan, VWS has also taken due regard to IPART's Water Licensing Audit Guidelines (latest version) for the purpose of assuring all stakeholders that this Plan and its associated controlling actions have the resilience and integrity required under the Regulation.

5.2 Scope not included

This Plan does not address the design, construction, operation, servicing or maintenance of the following; these are the responsibilities of others (namely Lend Lease Developments or their delegates):

- Sewage supply system to the RWTP sewage mining agreement SWC-LLFM (refer stakeholders),
- RWTP waste disposal system to sewer; trade waste agreement SWC-LLFM (refer stakeholders),
- Alternative sources of water supply systems; installed by BLL,
- Recycle water systems delivering water for use in cooling towers, toilet flushing or irrigation; installed by BLL, in other words all such infrastructure beyond the TPs
- Odour control system outside the boundaries of the RWTP; installed by BLL,
- Drinking water; installed by BLL.

6 Other conditions under Licence

Schedule A and B under Network Operator's Licence No 10_008 prescribes a comprehensive list of standard conditions which the Minister has determined to impose pursuant to section 13(1)(b) of the WIC Act 2006 as well as those obligations imposed by the Regulation.

▪

7 Other conditions under Regulation

In addition to this Plan the licensee (VWS) must meet all the stated conditions under Regulation, Schedule 1 Part 1 and to which VWS commits to meeting as applicable to its license requirements or unless directed otherwise by IPART or the Minister:

8 Codes of conduct

VWS commits to complying with any water industry code of conduct, marketing code of conduct and transfer code of conduct that may be applicable to its Network Operator's Licence.

Having said that, VWS notes that NSW Office of Water (NOW) had issued draft marketing and transfer codes during early 2011. VWS as License is not involved and nor does it anticipate in the foreseen future

to be involved in any marketing and transfer activities in relation to its licenses for Darling Quarters RWTP.

For further details, reference is made to Darling Quarters WQP latest revision Section titled Codes of Conduct.

9 Security Note

Regarding availability of information on the VWS website, this is restricted to information that does not jeopardise VWS intellectual property rights or indeed put the RWTP within Darling Quarter at risk with respect to security.

10 Relationship with other plans under Regulation

This Plan forms part of a suite of plans required under the Regulation as part of VWS's obligations as both a Network Operator (this requirement) and a Retail Supplier (not part of this Licence requirement) in relation to water industry infrastructure as follows.

Network Operator's (2 plans)

1. Infrastructure Operating Plan for water infrastructure (this Plan) pursuant to the Regulation Schedule 1, Part 2, Section 6 which describes the design, construction, operation and maintenance of the water infrastructure and its integrity,
2. Water Quality Plan (WQP) pursuant to the Regulation Schedule 1, Part 2, Section 7 which describes the non-potable water quality integrity of the water infrastructure having regard to defined guidelines (AGWR1), the purposes for which water is to be used and for which water is not used.

Retail Supplier's Licence (1 Plan)

3. Retail Supply Management Plan (RSMP) for water supply pursuant to the Regulation, Schedule 2 Part 2 (Additional conditions for licence for water supply) Section 8, (Retail Supply Management Plans) which describes the arrangements the licensee has made or proposes to make in relation to the events and circumstances that could adversely affect its ability to supply water, the probability of such occurrences and the measures taken to prevent or mitigate the effect of such circumstances and the arrangement for alternative water supplies.

11 Stakeholders

This Plan refers to stakeholders, namely those persons, entities and authorities that have an interest in the RWTP and its supply of water under licence. These stakeholders are listed below:

Stakeholder	Role
Australian Prime Property Fund (APPF) managed by Lend Lease Developments	Owner of the development, built infrastructure. Part of Lend Lease Global Investment Management Platform (LLFM).
VeoliaWater Solutions & Technologies (Australia) Pty Ltd (VWS, Veolia)	Operate and maintains the RWTP.
Jones Lang LaSalle (JLL)	Network Operator that treats sewage to produce recycled treated water
	Asset Management and Operations of the built infrastructure and VWS's Single Customer for receiving water; as an agent of Darling Walk Trust.
	(JLL works for Lend Lease Funds Management Limited (ACN 000 335 473) and is the trustee and responsible of the Darling Walk Trust (ABN 24 634 378 816))
Public and DQ resident community	Users of Recycled Water.
Minister for Lands and Water	

Department of Planning, Industry
and Environment (DPIE)

Independent Pricing and Regulatory
Tribunal (IPART)

WIC Act Licence Approver

Administers WIC Act, as necessary

Independent economic regulator for NSW. NSW Government Agency, but
operates independently. Administers and enforces the WIC Act.

NSW Ministry of Health

In relation to all Health incidents for Schemes operated under WICA Act.

EPA NSW

NSW Environment Protection Agency – for reporting any
environmental pollution incidents associated with operations and
maintenance of RWTP.

Energy and Water Ombudsman of
NSW (EWON)

Manages complaints (except for water pricing) which the Licensee
has not handled to the satisfaction of the complainant and has
referred the complainant to EWON.

City of Sydney Council

Local council authority.

Sydney Water Corporation (SWC)

Supplier of Raw Sewage and potable water when Infrastructure
off-line and receiver of waste discharge.

Interfacing Contractors

Development maintenance including cooling tower, toilet, irrigation,
landscape and associated interfacing services.

For current contact details of these Stakeholders – reference is made to Appendix 2 of WQP.

12 Planning

12.1 Planning requirements

The planning requirement of the Regulation, Schedule 1, Part 2, clause 6 (1) requires this Plan to indicate the arrangements that the licensee (VWS) has made, or proposes to make, in relation to:

- the design, construction, operation and maintenance of the infrastructure, including particulars as to the life-span of the infrastructure, the system redundancy built into the infrastructure and the arrangements for the renewal of the infrastructure, and
- the continued safe and reliable performance of the infrastructure, and
- the continuity of water supply, and
- alternative water supplies when the infrastructure is inoperable, and
- the maintenance, monitoring and reporting of standards of service.

VWS approach to design and construct integrity

VWS approaches the delivery of all its contracts in a planned and managed basis in order to meet its contractual, commercial and legal obligations under good corporate governance and risk management principles.

To this end VWS's contract execution approach and methodology for the project management, design, procurement, supply, construction, commissioning, operation, servicing and maintenance makes use of VWS's Business Management System (BMS) within Veolia Water Technologies Australia Intranet, certified by QMS Certification Services to the following standards:

- AS/NZS 4801: 2001 OHS Management Systems
- ISO 14001: 2015 Environmental Management Systems
- ISO 9001: 2015 Quality Management Systems
- ISO 45001: 2018 Occupational Health and Safety Management Systems

An over view of VWS BMS is detailed below:

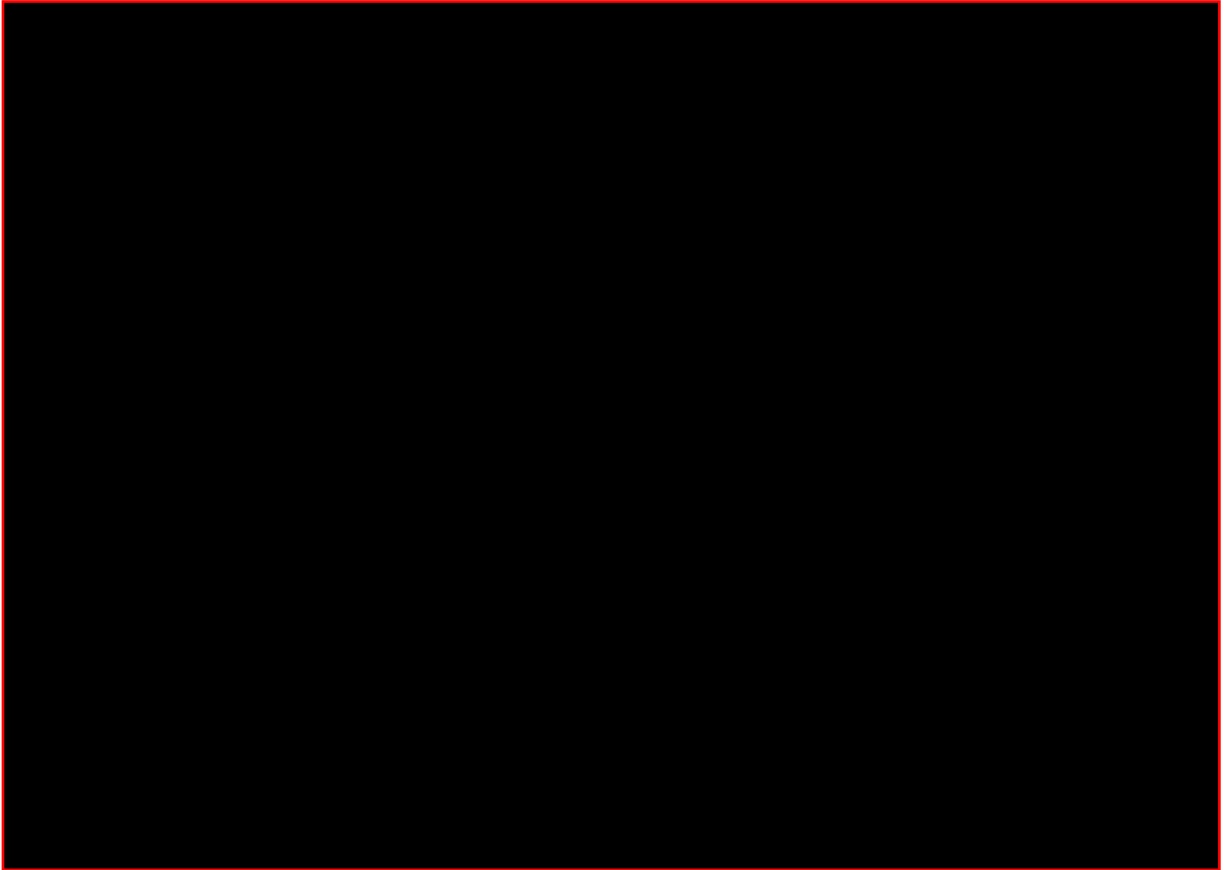
VWS' Business Management System (BMS) incorporates all systems and processes into one complete framework, enabling VWS to work as a single unit with unified objectives. BMS allows the management team to create one structure that helps to effectively and efficiently deliver the company's objectives. VWS systematically integrates safety, quality and environment into management and work practices at all levels through the creation and maintenance of required documentation to sustain an effective BMS.

BMS provides the overarching details to the system and its implementation across all VWS' operations in Australia and New Zealand region. BMS covers:

- Roles and responsibilities
- Management review and planning
- Control documents and records
- Training and competency
- Operational and process control
- Legal and other requirements
- Safety Standards
- Corrective and preventative action
- Continuous improvement
- Risk management
- Internal audit
- Communication and consultation
- Incident management and investigation
- Quality Management
- Management reporting
- Resources

12.1.1 Verification of design, construct, operate & maintain

- Design & construction



In order to maintain continuity of supply, customer can access townwater on his own, beyond the TPs of RWTP.

- Relative locations of major infrastructure are shown in Appendix 1 and 2
- Safe and reliable performance
 - Asset condition risk assessment is regularly reviewed.
 - Operations & maintenance manual is always available to the Operator and is regularly referred to.
- Continuity of supply including alternatives sources
 - Continuity of supply to the customer is guaranteed with townwater supply by customer themselves beyond the TPs of the RWTP, should for any reason whatsoever RWTP stops to supply recycled water to the customer.
- Standard of service
 - Appropriate management exists for implementing and monitoring the IOP

12.2 Water treatment infrastructure D&C, reliability, O&M & service

The sections below embrace the VWS approach.

12.2.1 Process description

The essential process steps of the design of the RWTP are described below and in the Process Flow Diagram in Appendix 1 as well as relevant pictures and P&IDs in Appendix 2 and 3. The process is continuous.



Electrical power switchgear and motor control centres are also provided in the plant rooms along with necessary process instrumentation, programmable logic controller (PLC) and supervised control and data acquisition (SCADA) system for process monitoring, control and recording.

Process Flow Block diagram, associated Piping and Instrument Diagrams (P&IDs) and general arrangement drawings are conveniently filed for easy reference.

As further detailed in WQP, in case of any breach of critical control point (CCPs), recycled water is stopped from getting supplied to the customer.

Notably, the R W T P may be shutdown at any time for maintenance or emergency or any other reason (such as CCP breach). Any such stoppage, however does not impact water supply to the Customer; as beyond the TPs of RWTP, customer has necessary system to provide potable water (townwater supply) for its cooling tower makeup, toilet flushing and irrigation in all such events.

12.2.2 Odour management

Odour management is the responsibility of JLL

In the event of an odour excursion leading to any complaint the RWTP would be shut down including ventilation to atmosphere and not brought back into service until the root cause had been determined and corrective measures put in place.

12.2.3 Design and engineering

During the design and build phase, good design principles were followed pursuant to VWS design procedure covering the main design phases (gates) ensuring that the project specifications and Safety in design were met. The flow of design preparation was generally as follows:

- Concept design
- Process engineering resulting Process Flow Diagram (PFD)
- Piping and Instrument Diagrams (P&IDs)
- Equipment and device schedules and specifications
- General Arrangement drawings (GAs)
- Civil Guidance drawings for third party civil consultants and contractors to BLL
- Piping arrangements
- Electrical drawings from single line diagrams through to detailed schematics
- Control specification
- PLC programming and SCADA development
- Issue for construction (IFC) documentation, and
- O&M manual preparation

As earlier stated in Section 11.1.1, original design and build has been modified by installing a chlorination control system after the recycled water storage tanks as well as removing any foreign water ingress to these storage tanks. In the event of a free chlorine CCP excursion, the system stops delivery of recycled water to the building.

12.2.4 Procurement

During the original design and build phase, the procurement process followed VWS procurement procedure except that prequalification of suppliers and the seeking of competitive pricing were generally waived for the major items of equipment and devices based on equipment being either nominated as Veolia proprietary or suppliers already on VWS approved supplier database.

During the recent modification with chlorination control system, similar process was followed. A collaborative approach was implemented by engaging the installation contractors who have been familiar with the building and customer and customer's consulting engineer was engaged to provide engineering validation of water supply beyond the TPs, whether from RWTP or by customer's town water supply.

12.2.5 Construction

Good construction principles and practice in accordance with VWS construction procedure were followed including the following, both during the original build as well as recent modification:

- Construction safety and environmental management
- Method and order of construction,
- Program from mobilisation to demobilisation,
- Organisation and position responsibilities
- Materials receiving, storage and issuing,
- Construction and installation execution following approved safe work method statements (SWMSs),
- Construction Quality and construction installation integrity

12.2.6 Commissioning and performance testing

Commissioning and testing were completed in accordance with WIC Act guidelines back in 2010-2011. Validation Plans have been submitted to IPART for their records at the time. As further detailed in WQP, VWS has re-verified specific details on certain validations of VWS' core technologies (MBR, Chlorination, UV system) by using relevant WaterVal™ protocols.

12.2.7 Asset register

The VWS equipment and device (valves and instruments) schedules serve as the project asset register. These were developed during the design and procurement stages of the D&C contract with BLL and were contained in the electronic files. These schedules included a list of all assets by tag number along with basic physical data, duty, including size, capacity and materials of construction.

The relative locations of major infrastructure were provided in the D&C contract drawings as general arrangement drawings and on the BLL Darling Quarter development plans.

As the RWTP has by now gone through many years of operation and minor changes in operations as well as more recent chlorination upgrade; updated asset registers are maintained for ready references of a VWS Operator.

12.2.8 Operational analysis

The aim of the operational analysis of the assets is to meet present and future needs. Outputs from the operational analysis include a schedule of required capital works for asset renewal, replacement and development. The RWTP is designed for 24-hour/day operation 365 days per year at 95% availability to produce 166kL per day of recycled water.

VWS and JLL collaborate on a regular basis; with regards to required capital works for asset renewal, replacement and development.

A full assessment of the risks and critical control points (CCPs) are addressed in the Water Quality Plan (WQP).

Operator operates the plant based on well established normal and emergency shutdown processes.; which take into account the recent upgrades and modifications.

12.2.9 System operating rules

The system operating rules aim at operating the RWTP in the most effective manner during normal and breakdown conditions. The RWTP is designed with a high level of automation; this means 24/7 on site operational and service support is not required. When conditions fall outside normal controlled operation, such condition gets alarmed to the operator assigned to remote monitor who can assess the alarmed situation and take applicable corrective action remotely. If the alarmed condition deteriorates, RWTP may be taken off-line or shutdown automatically; in which case recycle water supply will be stopped from RWTP end, and customer's own mains water supply will provide it the continuity of supply.

There are five control modes; these are described below.

Control is accessed using either the site located PLC and SCADA human-machine interface (HMI; namely computer, screen, keyboard and mouse) or remotely via PC in the possession of the assigned operator.

1. Shutdown Mode



the RWTP on site at the earliest possible time.

2. Maintenance Lockout Mode

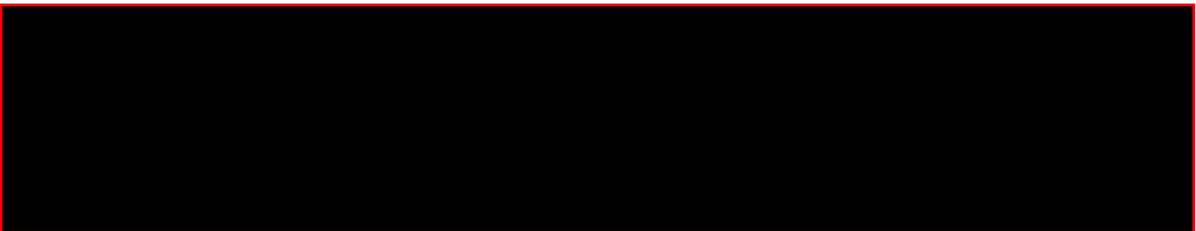
This mode is provided so that all equipment and instruments can be isolated for safe maintenance or inspection without the risk of machinery starting accidentally.

Any inspection or maintenance shall only be carried out in accordance with pre-prepared safe work method statements / SOP's or via VWS permit to work procedures, including all necessary hazard identification, risk assessment and controls put in place accordingly.

3. Ready to Run Mode



4. Pause Mode



5. Run Mode



12.2.10 Performance requirements of assets

Performance requirements of each item of equipment, device and operational component of the RWTP operating 24/7 and 95% availability are as follows (computed from 2010).

- MBBR media 20 years
- MBR membranes 5 years
- RO membranes 3 years
- Pumps 10 years
- Blowers 10 years
- Monitoring Chlorine probes 5 years
- Valves 5 years
- Other Monitoring probes 10 years
- UV Lamps 12 months

Operator monitors all the above and refurbishes or replaces any of the above, in discussion with the asset owner..

12.3 Continued safe and reliable performance

12.3.1 Performance criteria

The safe operation of the treatment infrastructure in terms of public health is addressed in the Water Quality Plan (WQP).

Safety in design was addressed at the design stage by way of meeting Australian standards and conducting a formal HAZOP study. The prime design bases for the design of the water infrastructure are set out below.

Raw sewage quality

Based on grab sample analysis of the sewer undertaken by BLL in May 2009 combined with knowledge that there are no significant industrial contributors to the raw sewage catchment area, VWS has based its design for raw sewage quality being typical municipal sewage as follows. Detailed analyses over time (diurnal data) are contained in the WQP and the electronic files.

Raw sewage

Parameter	Units	Value or Range
Oil & Grease	mg/L	42
Ammonia NH3-N	mg/L	45
BOD5	mg/L	200
pH		[6-8]
SS	mg/L	190
TN	mg/L	50
TP	mg/L	10
TDS	mg/L	550

Recycled Water Parameters

The Customer's recycled water design and performance parameters are as follows:

Parameter	Units	Value or Range
BOD ₅	mg/L	< 5
Suspended Solids	mg/L	< 5
pH		6.0-9.0
Turbidity	NTU	<0.3 after MBR
E.Coli	cfu/100mL	< 10
Coliphages	pfu/100mL	< 1
Clostridia	Cfu/100mL	< 1
Validated Virus reductions	log reduction	6.5
Validated Cryptosporidium reductions	log reduction	5
Validated Giardia reductions	log reduction	5

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TDS	mg/L	<100
Residual Chlorine	mg/L	0.2 - 2.0

12.3.2 Level and standard of service for the assets

Level of service

The level and standard of service provided by VWS to its customer JLL are summarised below.

- **Meetings and reporting**
 - Meet with and report to applicable stakeholders required under contract and Regulation.
- **Site Operations**
 - Operate and monitor the plant 24/7 in accordance with the RWTP O&M procedures and performance criteria
- **Service support**
 - Carry out specialty servicing to ensure optimal plant performance
- **Maintenance**
 - Perform all necessary plant maintenance in accordance with manufacturers' instructions, as detailed in the O&M manual and in collaboration with the Customer (especially for high value replacements)
- **Spare Parts and Consumables**
 - Supply all necessary spare parts and consumables for operation of the RWTP as agreed; excluding RO and MBR membrane replacement which shall be in accordance with actual need of RWTP and collaborative approach between the Customer and VWS.
- **Chemicals**
 - Supply all necessary chemicals to operate the plant
- **Water testing**
 - All necessary water testing to achieve performance parameters and regulatory compliance
- **Licensing**
 - Maintain plant performance to meet or exceed all licensing requirements
 - Reporting in accordance with regulation

Standard of service

The standard of performance will be measurable by key performance indicators (KPIs) tabled below.

Standard of service key performance indicators

KPI	Min/Max target	Method of Assessment
Safety	No lost time injuries	Number of lost time injuries reported
Environment	No environmental incidents	Number of incidents reported
Service Delivery	Phone response within 4 hours of contact by JLL representative	Contact with VWS personnel
Reclaimed Water Quality	Samples taken as per specification requirements	Independent water analysis
System Performance	95% availability over a 365 day period. Availability is based on stoppages for routine maintenance and plant modifications. Emergency stoppages are excluded from this guarantee.	Review of hours run counter
Critical control points: MBR filtrate turbidity RO permeate conductivity UV status Chlorine residual value	Refer service agreement & WQP	Refer service agreement & WQP
Maintenance Mechanical Electrical & controls Instrumentation	All work detailed in the Service agreement will be carried out in accordance with the maintenance log.	Review of SCADA performance

The probability of the occurrence of any event or circumstance that could adversely affect the level and standard of service has been addressed in the Retail Supply Management Plan (RSMP)

Documenting performance and reporting

VWS performance will be reported internally and to the Customer and IPART as below:

- Detailed Operational performance data and maintenance logs as downloaded from the RWTP SCADA system will be made available upon request.
- Annually in accordance with the Regulation and IPART Reporting Manual requirements for Network Operators (and Retail Suppliers)

A schedule of non-compliant results will be maintained by VWS and submitted as part of the annual report to IPART. This schedule will include various reporting compliance requirements (as revised by IPART time to time), such as:

- List of any obligations breached, including a brief description of each obligation,
- Date and duration of non-compliance,
- Nature and extent of any non-compliant result including a list of whom have been affected,
- Results of any monitoring
- Reasons for non-compliance, and
- Any remedial action required and actual or anticipated date of full compliance

12.3.3 Asset condition and risk assessment

Criticality qualifications

This section qualifies asset condition, criticality and assessment in relation to VWS scope of work under contract for both the design and construction of the RWTP with BLL and its operation, service and maintenance with JLL.

Firstly, it is recognised that the RWTP in itself is not to be considered as critical to the operations and daily workings of the Darling Quarter Development. While VWS has been contracted to operate and maintain the RWTP, which shall treat raw sewage to produce 166kL/day of recycle water 365 days per year at 95% availability for delivery to the Customer, the Darling Quarter Development can fully function if indeed the RWTP were not to be in service at all; namely mains potable water would be used by the customer from its own infrastructure, in place of recycled water.

This means that the availability of the RWTP has critical contractual significance but does not have critical significance under Legislation.

Secondly, the RWTP design does not include any equipment or device redundancy, which would provide additional assurance regarding RWTP availability. VWS design and supply after installation and commissioning has been well operated and maintained and has well served its contractual performance requirements and availability obligations.

The criticality of the RWTP and its individual component assets are now be addressed in context.

Asset condition

At the time of preparation of this Plan update, which must be reviewed regularly by VWS or as otherwise directed by the Minister, all RW TP assets are functioning; fit for purpose. Currently discussions are ongoing between VWS and JLL for upcoming large value repair and replacements (such as MBBR and RO Membranes).

Asset criticality

As the RWTP includes no redundancy of equipment or devices for operation, it may be generally stated that each item of equipment and device is critical to the operation and performance of the RWTP to meet its obligation to supply recycled water under contract and Licence.

In context with the RWTP within its battery limits, asset criticality is related to those items of equipment and their ancillaries associated with the RWTP process critical control points (CCP) or barriers. These are addressed in detail in the Water Quality Plan (WQP) and summarised below noting at each barrier the log reduction of hazards is reduced stage wise to meet contractual requirements for recycled water.



Further detailed information on CCPs is available in WQP under Clause 12.5.1 (Recycled Water Quality Monitoring) – a table which shows CPPs, hazards related to each, critical limits and how they are monitored and what corrective actions are to be taken is available therein.

The VWS-JLL operations, service and maintenance agreement focuses on ensuring these critical assets and their ancillaries are properly operated, serviced and maintained.

Asset assessment

As the assets have aged over time, VWS has accumulated operation, service and maintenance data corresponding to each item of all plant, equipment and devices to date and discussions are regularly held with JLL regarding risk assessment related to the condition and criticality of each over short, medium and long term.

12.3.4 Operation and maintenance arrangements

Operations & Maintenance Arrangements

This Plan makes reference to the VWS water treatment infrastructure operation and maintenance (O&M) arrangements. Such processes and documents contain sufficient information to address the complexity, criticality, condition and age of the plant. These documents support the O&M work that VWS provides to JLL and covers preventative maintenance and servicing as well as breakdowns and trouble shooting.

RWTP capital works

The infrastructure investment/capital works requirements identified in this Plan are based on sound strategic service planning including:

- Required levels of service noting future growth in customer base or demand and
- Security of supply and service provisions noting:
 - Security of supply of raw sewage is the responsibility of the owner in its sewer mining agreement with SWC and upon which VWS relies,
 - The RWTP is operated serviced and maintained by VWS pursuant to an agreement between

VWS and JLL,

- JLL is responsible for alternative sources of supply of mains water in the event the RWTP is not operational or not operating to full capacity,
- Emergency response and business continuity are managed pursuant to the companion plan Retail Supply Management Plan.

Whole of life cycle cost evaluation

Whole of life cycle cost evaluation for the RWTP is not a requirement of VWS in the VWS scope of work between JLL and VWS

Future life cycle expenditure

VWS was originally awarded a design and construct (D&C) and commission contract by BLL for the RWTP including a 12-month warranty/defects liability period; following which VWS has been operating and maintaining the RWTP.

Assignment of responsibilities

The assignment of responsibility to appropriate management and staff is tabled below.

Function	VWS Responsible Person	Title
VWS Services	Craig Hancock	Operations Manager-East Coast
VWS Regulatory / Compliance	Subrat Kar	Senior Contracts Manager
WHSEQ	Filbert Hidayat	WHSEQ & Compliance Systems Manager
O&M	Service team representative	Service Engineer / Operator
▪ Operation	Thomas Fougne/Claudio Kohn	
▪ Service		
▪ Maintenance		

13 Implementation

This section affirms that the licensee (VWS):

- Will ensure that its infrastructure operating plan is fully implemented and kept under regular review and, in particular, that all of its activities are carried out in accordance with that plan, and
- If the Minister so directs, will amend its retail supply management plan in accordance with the Minister's direction.

13.1 Implementation

This Plan will be implemented by VWS on the day VWS executes operation, service and maintenance agreement of the RWTP with JLL and before the RWTP enter into commercial production.

Prior to commercial operation of the RWTP and in a timely manner as applicable to each stakeholder VWS had issued this plan of the time.

In the case of those VWS personnel responsible for implementing and administering this Plan, VWS continues to ensure that those responsible are made fully aware of the obligations required under this Plan and implement these accordingly.

This Plan is implemented at the same time, and in concert with the following companion plans:

- Water Quality Plan, and
- Retail Supply Management Plan

13.2 Amendments

Amendments to this Plan may be categorised as VWS improvements or those directed by the Minister.

In addition this Plan may be amended as may be necessary following outcomes of site inspections and audit findings by VWS, JLL, or any other authorised stakeholder. Attention is drawn to section 8 preceding: Regarding availability of information on the VWS website, this will be restricted to information that does not jeopardise VWS intellectual property rights or indeed put the RWTP within Darling Quarter at risk with respect to security

14 Compliance

This section affirms that if the Minister or IPART so demands, or if any significant change is made to its infrastructure operating plan, the licensee:

- (a) must provide the Minister or IPART with a report, prepared by an approved auditor in such manner and form as the Minister or IPART may direct:
 - (i) as to the adequacy of the plan, and
 - (ii) as to the condition of its infrastructure, having regard to the purpose for which it is licensed, or
- (b) must pay the Minister's or IPART's costs of conducting an investigation into the adequacy of the plan or the condition of its infrastructure.

14.1 IPART audit

This Plan may be audited by IPART or its representative at any time pursuant to IPART's Audit Guideline Water Licence Audits, Water — Guidelines, latest version at the date of this update or as amended and accessible from IPART Website, whichever is later.

14.2 Internal audit

All VWS personnel must perform their duties lawfully and in accordance with VWS BMS. Even so, all VWS business activities, products and services, including performing our core and support processes, carry a measure of risk.

VWS has a defined way of doing business to eliminate risk or mitigate risk to a level acceptable to the company. The procedures and approaches for this are contained in VWS' BMS documentation; namely, BMS procedures include the applicable risk management tools and the level of checking and verification required to properly conduct our business.

This is largely achieved by the auditing process, for which there are three levels:

- Level 1 - third party BMS certification and third party financial accounting compliance audits,
- Level 2 - internal audits by VWS own auditors or consultants it engages on its own,
- Level 3 - audits of VWS by its customers or others; alternatively of its suppliers by VWS.

14.3 Audit outcomes

For IPART audits, following the submission of the final audit report, VWS may be required to take action to manage the audit outcomes. As prescribed in the IPART Audit Guidelines IPART will discuss the process for addressing any issues and the actions that the licensee proposes to take in response to the audit findings on a case-by-case basis.

For VWS internal audits, VWS will take immediate applicable corrective action to any non-conformance, observation of opportunity for improvement followed by review and investigation as necessary to determine cause and then put in place preventative actions to avert any reoccurrence of the non-conformance.

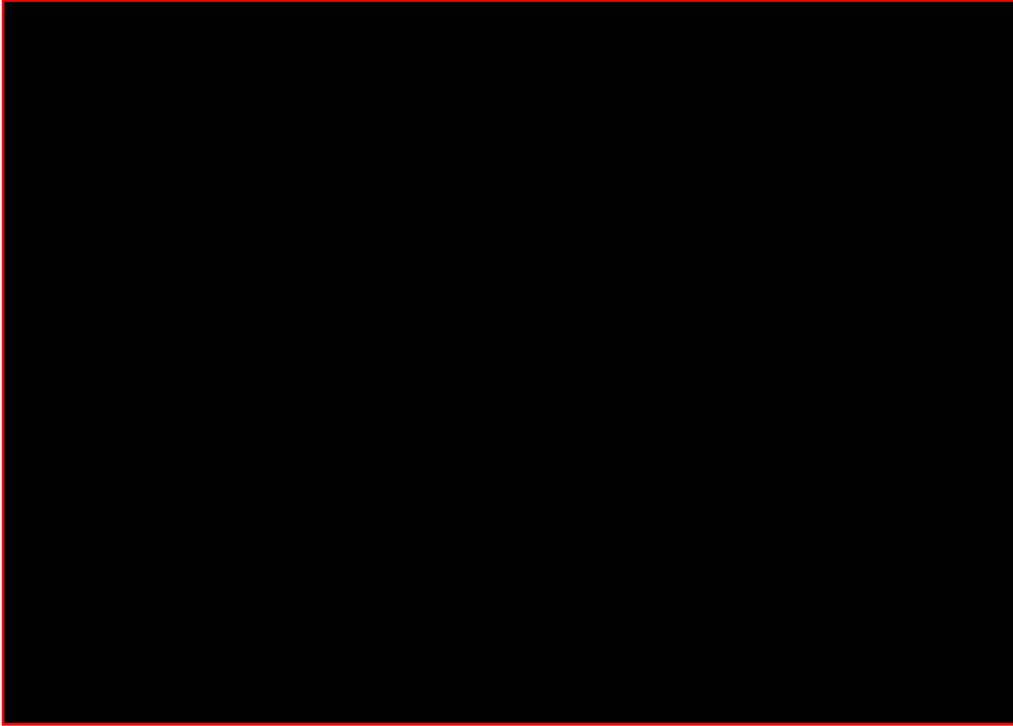
APPENDICES

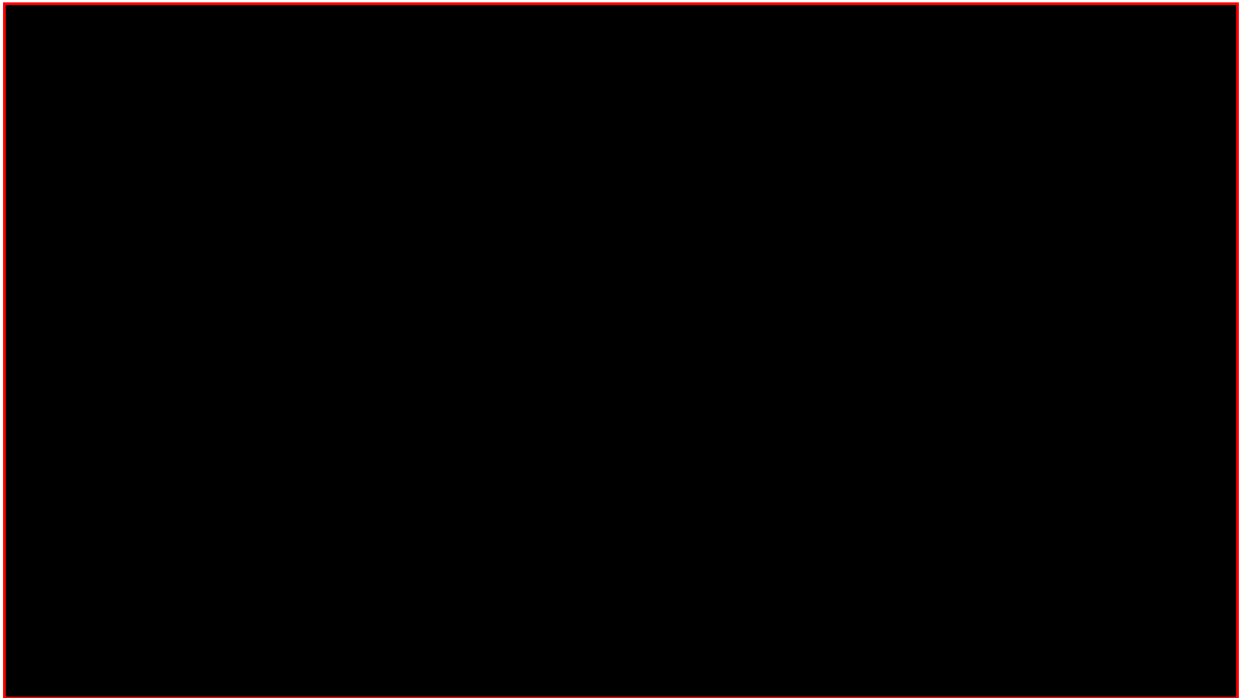
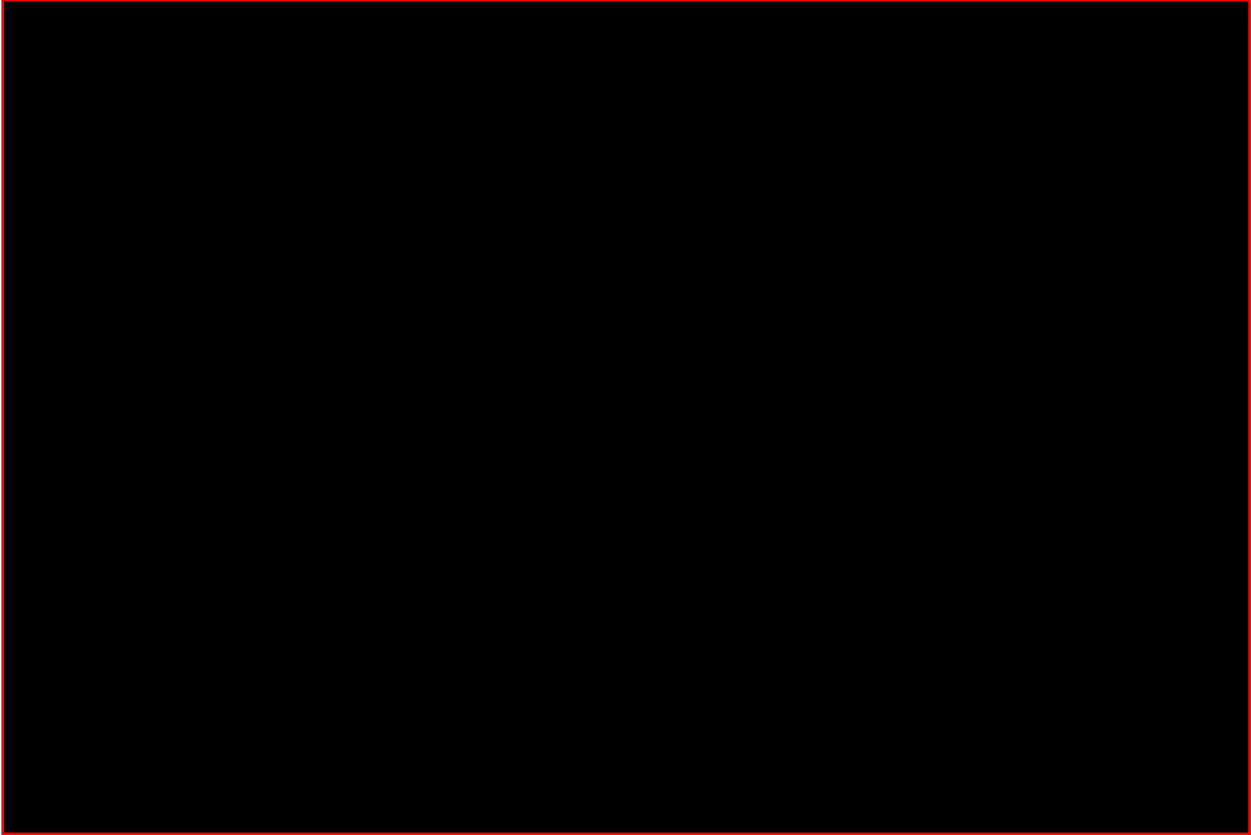
Attached

The following appendices form part of this document proper

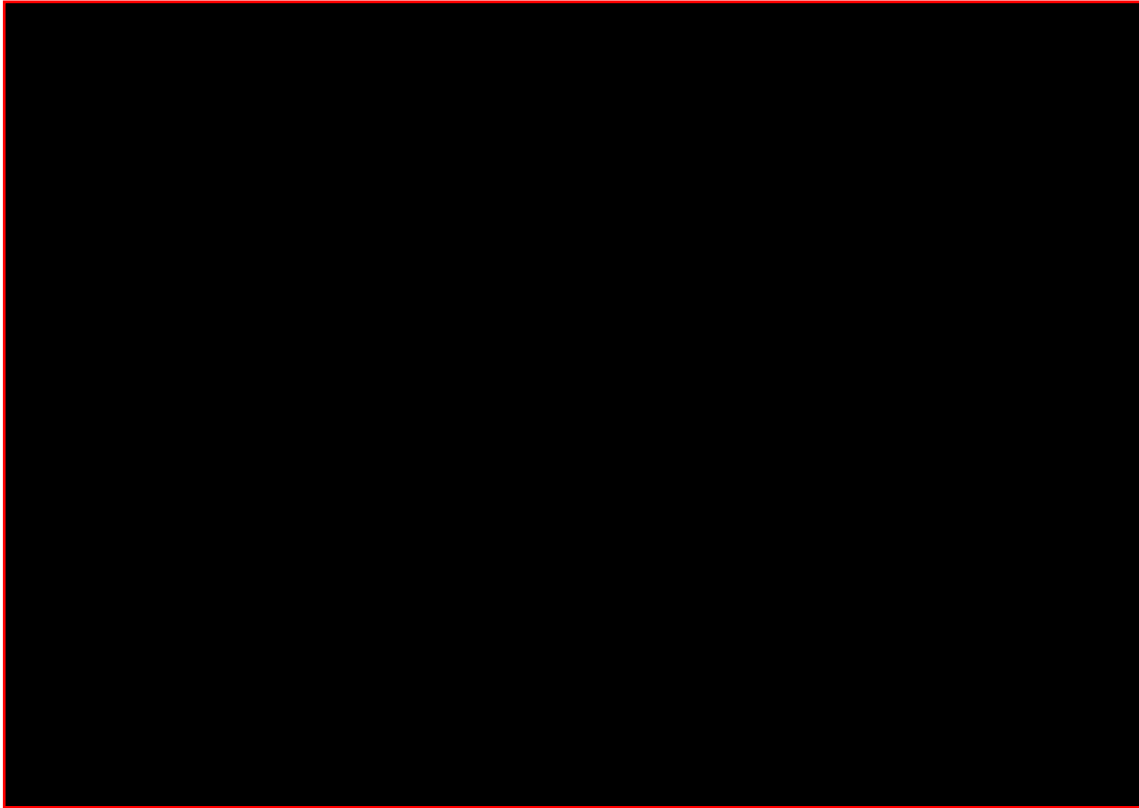
Appendix 1	RWTP Process flow diagram
Appendix 2	3D pictorials of the RWTP
Appendix 3	Location drawings and original as-builts
Appendix 4	Responsibilities in relation to the use of recycled water at Darling Quarter

Appendix 1: RWTP Process Flow Diagram

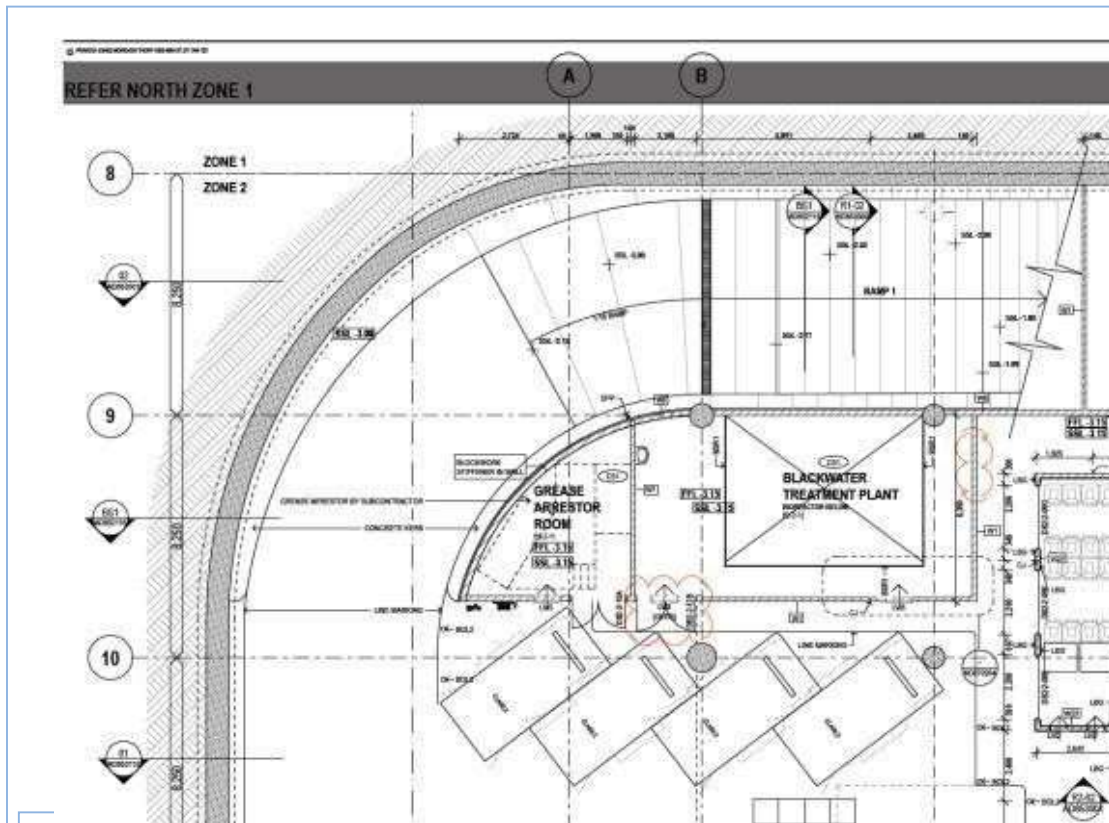


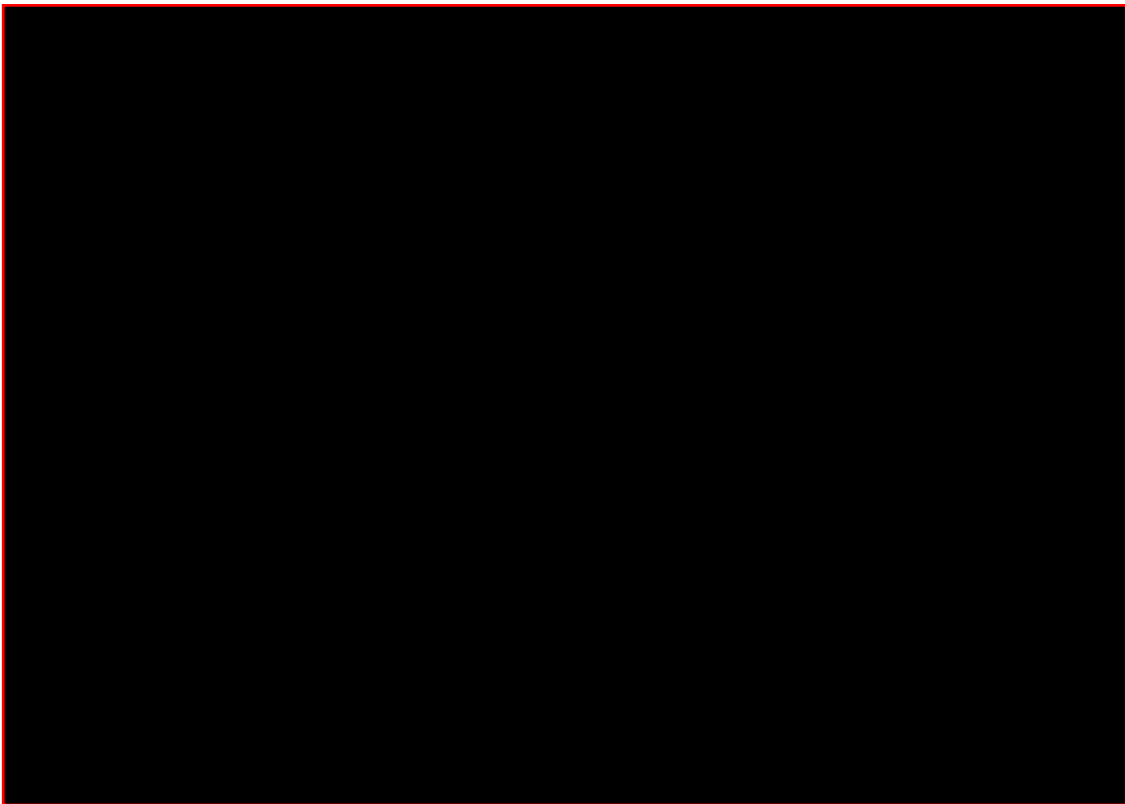
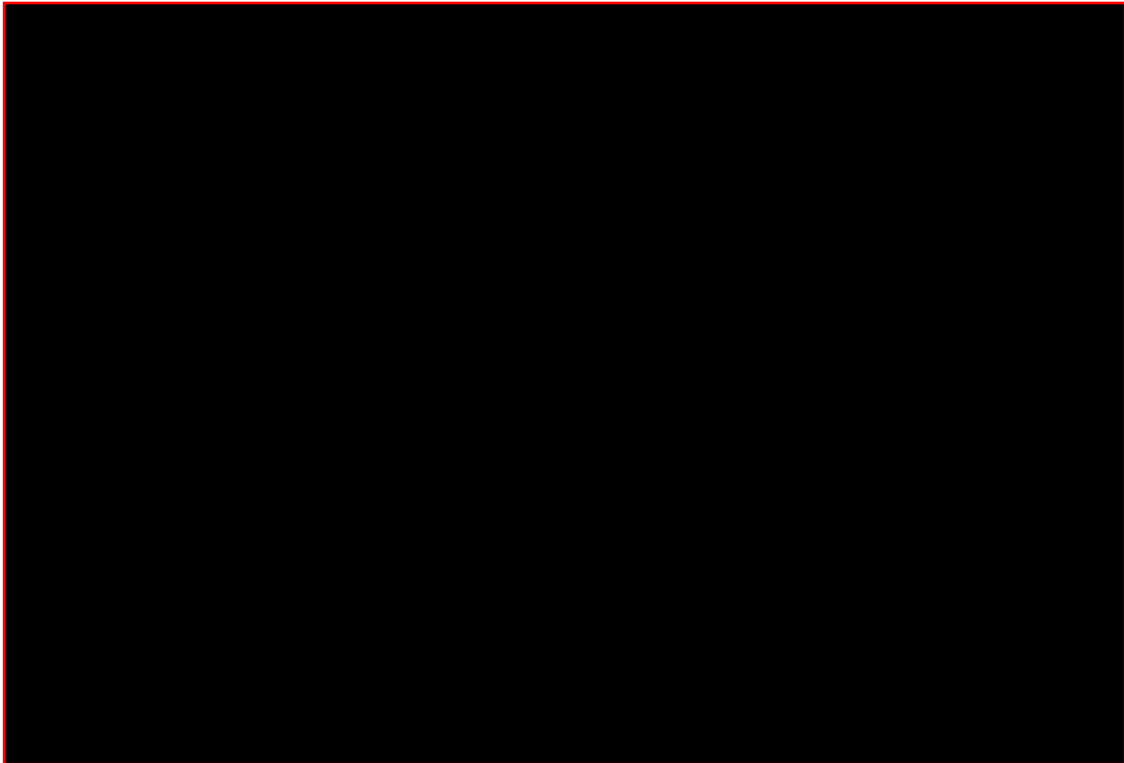


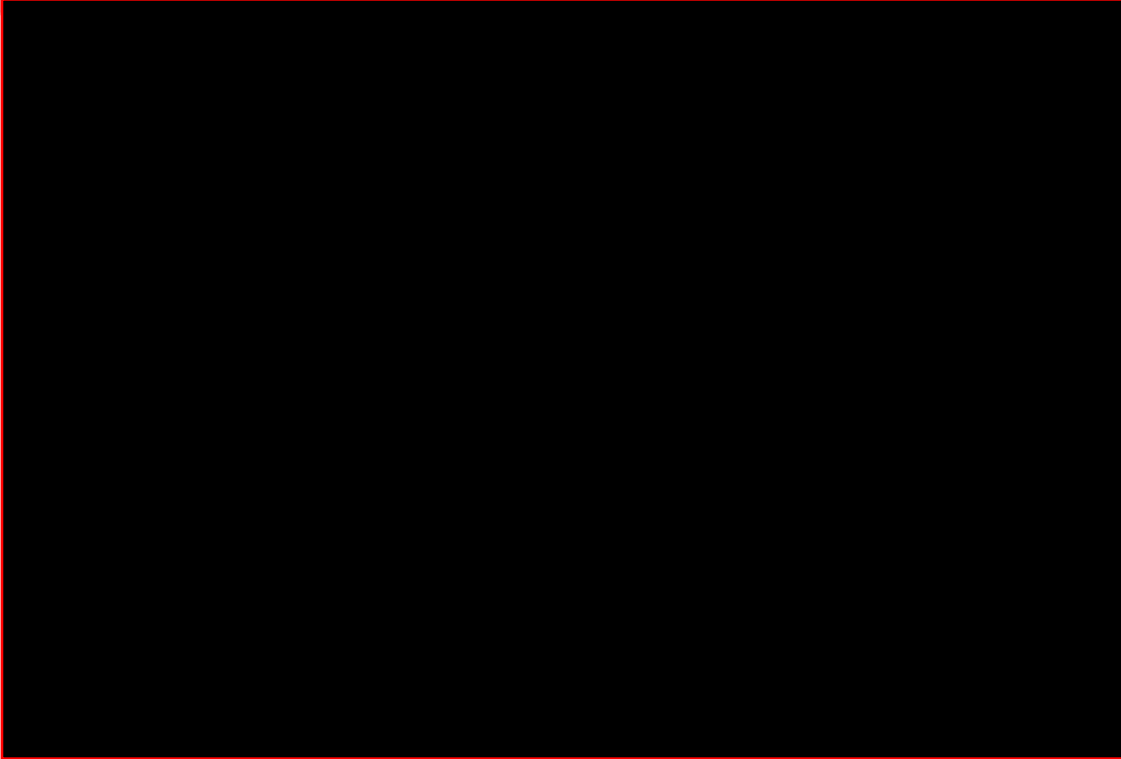
Appendix 2: 3-D Pictorials



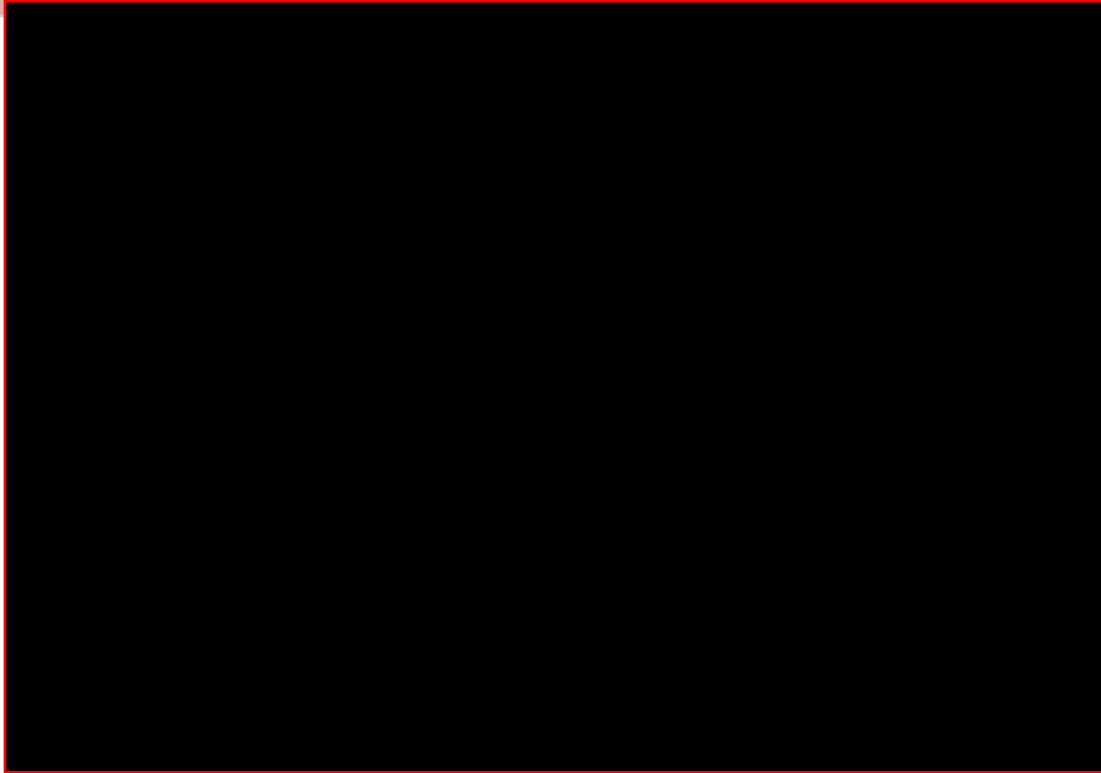
Appendix 3: Location drawings within DQ complex (on Harbour Street)







In case of any inconsistency between these P&IDs and the drawings / process flow diagrams in Appendix 1, such as due to Chlorination Upgrade in 2021, the latter prevails over the former.



Appendix 4: Responsibilities in relation to the use of recycled water at Darling Quarter

The responsibilities of the Building Manager (BM; JLL) in relation to the use of recycled water supplied by VWS at the Darling Quarter Development are as follows:

▪ **Definition**

The following reticulation systems designed and built by the Developer (Bovis Lend Lease; BLL) commencing at the RWTP battery limits are together termed the Recycled Water Systems (RWS):

- toilet flushing system,
- garden irrigation system
- cooling tower make-up system

▪ **Scope**

Included by BM

- The BM shall be responsible for the operation, care and maintenance of the RWS commencing at the termination point with the RWTP
- The BM shall also be responsible for the management of the Owner's Sewage Mining Licence with SWC and Trade Waste Licence with SWC associated with the RWTP

Not included by BM

- VWS shall be responsible for the operation and maintenance of the RWTP within the battery limits of the RWTP in accordance with its O&M contract with JLL.

▪ **Restricted use**

The BM shall ensure recycled water shall be used for the following purposes only and none other:

- toilet flushing,
- garden irrigation, and
- cooling tower make-up

▪ **Operation and Maintenance of the RWS:**

- The BM shall prepare a full and complete Operations and Maintenance Manual containing a section relating to the occupational health and safety hazards in the use of Recycled Water (see below).
- The BM shall train all its employees and subcontractors in the safe operation and maintenance of the RWS.
- The RWS shall be maintained in accordance with the BM's detailed O&M manual including manufacturer's instructions
- The BM shall maintain accurate maintenance records as required by its own management systems and industry expectations.
- The maintenance of the RWS including piping, valves, irrigation nozzles and sign posting shall be in accordance with "Sydney Water's Recycled Water Areas Plumbing Guidelines published by Sydney Water Corporation document SW256 02/09 which also requires conformance with
 - The NSW Code of Practice Plumbing and Drainage,
 - AS/NZS 3500:2003, Plumbing & Drainage set as applicable to treated water; as amended from time to time.
 - AS1319 – 1994 Safety Signs for the occupational environment
- Specifically, the RWS shall have no cross connections with any potable water systems.
- Cooling tower maintenance by the BM shall be in accordance with the following and any referenced standards and codes therein:
 - NSW Code of Practice for the control of Legionnaires Disease (Cooling Tower Systems) 2nd Edition,
 - AS/NZS 3666.2: 2011, Operation & Maintenance, and
 - AS/NZS 3666.3: 2011, Performance based maintenance of cooling water systems

▪ **Health and Safety obligations of the BM**

BM employees and third parties that come into contact with treated water shall:

- Always wash hands immediately after being in contact with treated water. If splashed in the eyes, wash immediately with clean water. Avoid any unnecessary contact with treated water.
- Ensure hands are washed before and after using the toilet and before eating, drinking or smoking and at the end of the day. Never eat, drink or smoke while using reclaimed water.
- Report any skin rashes, and illness such as fever, nausea, vomiting or diarrhoea to their supervisor who will ensure proper follow up corrective action.
- Cover any wounds with a waterproof dressing to prevent contact with treated water
- JLL to notify immediately in the event of a cross connection, or potential threat to public health, failure to notify immediately will cause VWS considerable harm and amount to a substantial breach by JLL of the Agreement