SEDGMAN

Clarence Correctional Facility

Recycled Water Management Plan

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Sedgman Pty Limited
ABN 86 088 471 667

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Pollution Incidents	Contact should be made to the relevant agency as outlined (in order) below: • Call 000 if the incident presents an immediate threat to human health or property • Clarence Valley Council on 02 6643 0200 (after hours emergency contact 02 6626 6858) • NSW EPA Environment Line on 131 555 • NSW Health Public Health Unit on 1300 066 055 (for public health related impacts) • SafeWork NSW on 13 10 50 (for work health and safety impacts) • Fire and Rescue NSW on 1300 729 579 (for fire and emergency)
Environmental Information	• General: NSW EPA Environment Line on 131 555 • Injured or orphaned native wildlife: Wildlife Rescue on 1300 094 737
Bushfires, medical and other emergencies	000 (000 or 112 from a mobile phone)

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Terms and Abbreviations

ADWF	Average Dry Weather Flow
AGWR	Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) (EPHC et al, 2006)
AMT	in relation to NSW EPA's Accepted Modern Technology (AMT) criteria
ARA	appropriate regulatory authority
ATC	Acidic Texture-Contrast Soils
BNR	Biological Nutrient Reduction
BOD	Biochemical Oxygen Demand
CCP	Critical Control Points
CCP	Critical Control Points
CEC	Cation Exchange Capacity
CIP	Clean in Place (for MBR)
Council / CVC	Clarence Valley Council
EC	Electrical Conductivity
EPA	NSW Environment Protection Authority
EPL	Environmental Protection Licence
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or resulting in actual or potential loss or property damage exceeding $10,000 (which includes reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
MBR	Membrane BioRector
NCCC	Clarence Correctional Centre
O&M	Operation and Maintenance Manual
OH&S	Occupational, Health and Safety
PDCA	Plan-Do-Check-Act
PLC	Programmable Logic Controller
POEO Act	Protection of the Environment Operations Act 1997
PPE	Personal Protective Equipment – e.g. hard hats, safety glasses, steel toed boots
RAS	Return Activated Sludge
RWMP	Recycled Water Management Plan
SCADA	Supervisory control and data acquisition
SOPs	Standard Operating Procedures
STC	Sodic Texture-Contrast Soils
TN	Total Nitrogen
TP	Total Phosphorous
TSS	Total Suspended Solids
U&G	Uniform and Gradational Soils
UV	Ultraviolet (for disinfection)
WAS	Waste Activated Sludge
WWTP	Wastewater Treatment Plant

1 Introduction

1.1 Scope and Purpose

This Recycled Water Management Plan (RWMP) has been prepared in relation to the on-site sewerage scheme for the Clarence Correctional Centre (CCC), on Lot 26 DP751376 and Lot 1 DP 1190399, 313 Avenue Road Lavadia. It provides mitigation measures to avoid or minimise potential environmental impacts and to protect environmental values identified within the project site and receiving environments, as well as addressing the key human exposure risks.

The information contained in this RWMP has been prepared with reference to:

- Australian/New Zealand Standard AS/NZS ISO 14001:2004 - Environmental management systems - Requirements with guidance for use;
- AS/NZS ISO 31000:2009 - Risk management, Principles and guidelines;
- Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) (EPHC et al, 2006) (the AGWR); and
- Environmental Guidelines: Use of Effluent by Irrigation (DEC, 2004).

The RWMP is modelled on the AS/NZS ISO 14001 Plan-Do-Check-Act (PDCA) continual improvement model, as outlined in Figure 1-1, and designed for simple implementation, review and update.

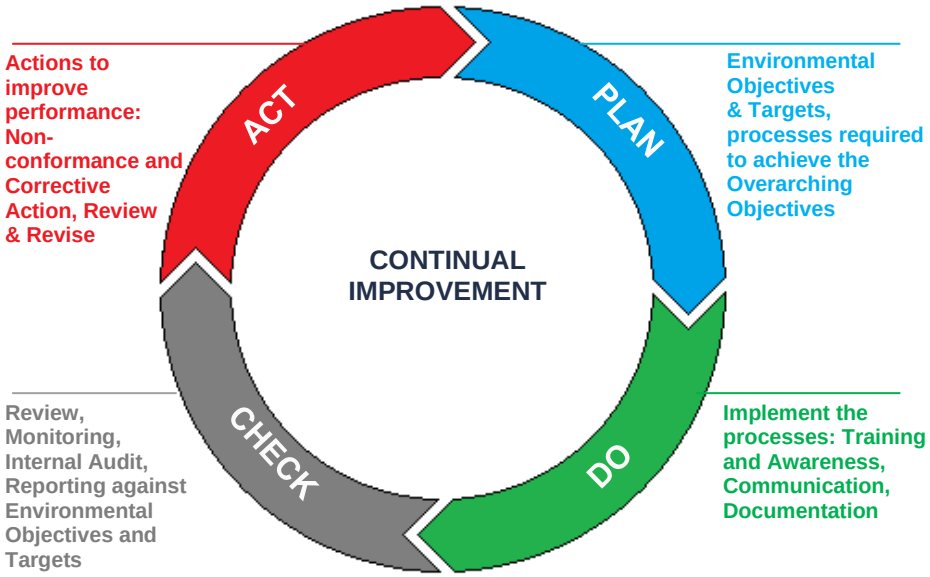


Figure 1-1. Continual Improvement Model

1.2 RWMP Framework

This RWMP has been divided into the following sections:

- RWMP manual: Sections 1 to 5 and Appendix A - including this section (introduction), policy, legislative framework, site and environmental setting, and scheme assessment;
- RWMP Implementation: Section 6 and Appendix B - the over-arching management regime for implementing the RWMP and the risk identification and assessment; Appendix A2 - the approval conditions;
- Recycled Water Management: Section 7 and Appendix C - specific measures for managing the system; Appendix D - monitoring program; Appendix E – corrective actions for responding to accidents or incidents where potential environmental impacts may occur;
- Forms: Appendix F; and
- System Information: Appendix G – relevant and detailed system information from the supplier (to be provided once available).

1.3 Relationship to the AGWR

This RWMP has been developed with reference to the AGWR, specifically the *Framework for Management of Recycled Water Quality and Use* (EPHC *et al*, 2006). This framework provides a structured risk-based approach to recycled water management and is broken down into 12 Elements. These are listed in Table 1-1.

Table 1-1. The AGWR Framework Elements and cross reference

AGWR Framework Element	Section Reference	Description
Element 1: Commitment to responsible use and management of recycled water quality	6.2 Appendix F 3 Appendix A2 6.1, 6.2 Appendix B 3, 6.2, 6.4 Appendix B 2	**Responsible use of recycled water** Procurement will include only reputable suppliers, with operators and other staff training and qualifications addressed in Section 6.2. **Regulatory and formal requirements** Relevant regulatory requirements are explored in Section 3, and the Legislation and Approvals Register in Appendix B. Appendix A2 contains the approval documentation. Responsibilities are detailed in Section 6.1, with training and qualifications addressed in Section 6.2. **Partnerships and engagement of stakeholders (including the public)** Relevant agencies are identified in Section 3 and the Legislation and Approvals Register in Appendix B. Communication with the community and management of complaints is detailed in Sections 6.2 and 6.4. The EIS approvals process allowed for public exhibition and agency assessment of the proposed scheme, which has now been completed (refer to Section 3). **Recycled water policy** A recycled water policy is included in Section 2.
Element 2: Assessment of the recycled water system	4 Appendix B	A risk assessment has been conducted, as detailed in Appendix B, including: • Identification of the system from source to end use • Hazard identification, critical control point and preventive measure identification • Formal risk assessment outcomes in a risk register. Information on the existing environment is provided in Section 4.
Element 3: Preventive measures for recycled water management	5.6, 6.2 Appendix B Appendix C Appendix D	Preventative measures, the identification and summary of Critical Control Points (CCPs), Quality Control Points (QCPs), critical limits and monitoring requirements are summarised in the Risk Assessment in Appendix B, with further detail provided in Appendix C (operational management), and Appendix D (monitoring). The recycled water quality targets are summarised in Section 5.6. Routine review of the RWMP and the system will ensure CCPs are clearly identified and controlled / managed, and all staff made aware of each, as noted in Section 6.2 and the Risk Assessment Register in Appendix B.

AGWR Framework Element	Section Reference	Description
Element 4: Operational procedures and process control	Appendix C Appendix D Appendix E	Preventative measures are detailed in Appendix C (operational management), and Appendix D (monitoring). Contingency response is detailed in Appendix E. The Operation and Maintenance Manual (O&M) and supporting procedures detail specific operational management, monitoring, maintenance and calibration of the plant and equipment, which support the implementation of this RWMP.
Element 5: Verification of recycled water quality and environmental performance	Appendix D	A monitoring program has been provided in Appendix D. No external third parties are to be supplied under this RWMP. If third party supply is to be undertaken, this RWMP will require updating.
Element 6: Management of incidents and emergencies	6 Appendix E	A contingency plan has been developed, as shown in Appendix E, with contacts at the front of this document. Communication, reporting, reporting and training outlined in Section 6.
Element 7: Operator, contractor and end user awareness and training	6.2, 6.5	Training and operator awareness is described in Section 6.2, with records management in Section 6.5.
Element 8: Community involvement and awareness	6.2	Communication is described in Section 6.2. The Project was subject to public review under the Stage 1 and Stage 2 EIS process, including public consultation.
Element 9: Validation, research and development	6.6, 7.2.1 Appendix D	A validation and verification monitoring program is summarised in Section7.2.1 7.2, with more detail provided in Appendix D. Ongoing system validation is to be determined through regular review and system audits outlined in Section 6.6 and Appendix D. Research and development is represented by the commitment in this RWMP to continual improvement, with opportunities for improvement to be assessed with each system review / audit (Section 6.6).
Element 10: Documentation and reporting	6.4, 6.5, 6.7	Documentation and record keeping measures are outlined in Section 6.5. Complaints and incident management measures including records management is described in Sections 6.4 and 6.7. Reporting is described in Sections 6.5 and 6.7.
Element 11: Evaluation and audit	6.6	Review and evaluation is described in Section 6.6.
Element 12: Review and continuous improvement	6.6	Review and evaluation is described in Section 6.6.

1.4 Limitations

This plan does not address Occupational, Health and Safety (OH&S) issues. All site works are to be undertaken in accordance with an appropriate OH&S system and procedures.

2 Recycled Water Policy

Serco Business

serco

Recycled Water Policy

Wherever we work we must make sure that we maintain a safe, healthy and sustainable working environment and promote a positive culture in which we continually improve our performance.

Serco supports and promotes the responsible use of recycled water and the application of a management approach that consistently meets the National Guidelines on Water Recycling, as well as recycled water user and regulatory requirements.
To achieve this, we will:

- ensure that protection of public and environmental health is recognised as being of paramount importance;
- maintain communication and partnerships with all relevant agencies involved in management of water resources, including waters that can be recycled;
- engage appropriate scientific expertise in developing recycled water schemes;
- recognise the importance of community participation in decision-making processes and the need to ensure that community expectations are met;
- manage recycled water quality at all points along the delivery chain from source to the recycled water user;
- use a risk-based approach in which potential threats to water quality are identified and controlled;
- integrate the needs and expectations of our users of recycled water, communities and other stakeholders, regulators and employees into planning processes;
- establish regular monitoring of control measures and recycled water quality and establish effective reporting mechanisms to provide relevant and timely information, and promote confidence in the recycled water supply and its management;
- develop appropriate contingency planning and incident-response capability;
- participate in and support appropriate research and development activities to ensure continuous improvement and continued understanding of recycled water issues and performance;
- contribute to the development of industry regulations and guidelines, and other standards relevant to public health and the water cycle; and
- continually improve our practices by assessing performance against corporate commitments and stakeholder expectations.

Serco will implement and maintain recycled water management systems consistent with the National Guidelines on Water Recycling to effectively manage the risks to public and environmental health.
All managers and employees involved in the supply of recycled water are responsible for understanding, implementing, maintaining and continuously improving the recycled water management system. Membership and participation in professional associations dealing with management and use of recycled water is encouraged.

Glen Scholes
General Manager
Clarence Correctional Centre

Serco Australia Pty Limited ACN 003 677 352
Registered office: Level 23, 60 Margaret Street, Sydney NSW 2000, Australia

2.1 Objectives and Targets

The objectives and targets adopted for the scheme are summarised in Table 2-1.

Table 2-1. Objectives and Targets

Objectives	Targets
Minimise the potential for environmental harm, public health and amenity impacts	No recycled water non-compliances at user end points No complaints No incidents of environmental harm (or potential environmental harm)
Achieve compliance with relevant legislation and the conditions of development approvals	Zero non-compliance events Audits and reviews show full compliance with conditions of approvals and licences Scheme review shows objectives of the recycled water policy are being met
Ensure the system runs sustainably in the long term	Treated water meets discharge criteria No deterioration of irrigation area soils

3 Legislative Framework

3.1 Statutory Framework

The key piece of environmental regulation in NSW is the *Protection of the Environment Operations Act 1997* (NSW) (POEO Act), administered by the NSW Environment Protection Authority (EPA). It is intended to achieve the protection, restoration and enhancement of the quality of the NSW environment.

Schedule 1 to the Act lists 'scheduled' activities considered to have potentially significant environmental impacts and which require an Environmental Protection Licence (EPL). An EPL is required for both construction and operation of a scheduled activity and can be issued to regulate water pollution for activities not in the schedule.

Sewage treatment is a scheduled activity, listed as:

36 Sewage treatment… if it has a processing capacity that exceeds:

a. 2,500 persons equivalent, as determined in accordance with guidelines established by an EPA Gazettal notice, or

b. 750 kilolitres per day,

whichever is the greater.

As noted in Section 5.5.2, the scheme does not trigger these thresholds. A voluntary EPL can be adopted, or an EPL may be required to regulate environmental discharges, such as discharges to water. At this time, no EPL is required for the Project.

The POEO Act specifically regulates material harm to the environment, defined in s147. The Act also includes a requirement to notify of pollution incidents causing or threatening material harm (s148), with substantial fines observed for failing to notify pollution incidents.

The POEO Act makes the following key definitions:

- ‘Material harm to the environment’ is actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or resulting in actual or potential loss or property damage exceeding $10,000 (which includes reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
- A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.

Under the POEO Act, the following people have a duty to notify a pollution incident occurring in the course of an activity that causes or threatens material harm to the environment:

- the person carrying on the activity;
- an employee or agent carrying on the activity;
- an employer carrying on the activity; and
- the occupier of the premises where the incident occurs.

Notification must be given immediately, i.e. promptly and without delay, after the person becomes aware of the incident.

Given that the scheme does not trigger and EPL, and a voluntary EPL has not been proposed, the scheme requires a S68 approval to construct / install, and an approval to operate under the *Local Government Act 1993* (NSW).

The POEO Act and other relevant Acts, regulations and legislative instruments are listed in the Legislation and Approvals Register in Appendix B.

3.2 Approvals

The key approvals for the Project are listed in the Legislation and Approvals Register in Appendix B, with the relevant approval conditions provided in Appendix A2.

3.3 Relevant Agencies

Agencies relevant to this RWMP along with contact details are provided in the Legislation and Approvals Register in Appendix B.

4 Site and Environmental Setting

4.1 Site Context

The site context is summarised in Table 4-1.

Table 4-1: Site Context

<table>
<tr><th>Item</th><th>Details</th></tr>
<tr><td>Lot and plan</td><td>Lot 26 on DP751376 and Lot 1 on DP1190399</td></tr>
<tr><td>Street address</td><td>313 Avenue Road, Lavadia</td></tr>
<tr><td>Local government area</td><td>Clarence Valley</td></tr>
<tr><td>Site zoning</td><td>RU2 – Rural Landscape</td></tr>
<tr><td>Site area</td><td>195ha</td></tr>
<tr><td>Surrounding land uses</td><td>The Project Site is bounded by Avenue Road (also recognised as Golden Mile Road) to the east, and Old Six Mile Lane to the south. Avenue Road connects to the Pacific Highway via Eight Mile Lane to the south and Old Six Mile Lane connects to the Pacific Highway to the west.
The Grafton bypass portion of the upgraded Pacific Highway project (by Roads and Maritime Services) will, in addition to the reconfigured Old Six Mile Lane, form the southern boundary of the site once completed in approximately 2019. As part of that project, Avenue Road will pass over the Pacific Highway and the intersection of Avenue Road and Old Six Mile Road will be upgraded to improve local access, without direct connection to the highway.</td></tr>
<tr><td>Water Supply</td><td>Town supply</td></tr>
<tr><td>Sewerage</td><td>On-site sewerage scheme, including production and use of treated recycled water</td></tr>
<tr><td>Sensitive receptors</td><td>The area immediately surrounding the Project Site is rural farming land with some rural residential lots and the proposed Pacific Highway bypass running along the southern boundary. A total of 13 residential properties are located near to the Project Site as shown in Figure 4-1, with distances from the proposed WWTP and site boundary as follows:
<table>
<tr><th rowspan="2">#</th><th rowspan="2">Type</th><th colspan="2">Distance</th></tr>
<tr><th>From WWTP and WWS[1]</th><th>From site boundary</th></tr>
<tr><td>1</td><td>Rural Residential</td><td>1.8km from WWTP</td><td>0.2km N</td></tr>
<tr><td>2</td><td>Rural Residential</td><td>1.9km from WWTP</td><td>0.3km N</td></tr>
<tr><td>3</td><td>Rural Residential</td><td>1.6km from WWTP</td><td>0.1km N</td></tr>
<tr><td>4</td><td>Rural Residential</td><td>1.5km from WWS</td><td>1.0km ESE</td></tr>
<tr><td>5</td><td>Rural Residential</td><td>1.9km from WWS</td><td>1.3km SE</td></tr>
<tr><td>6</td><td>Rural Residential</td><td>0.8km from WWS</td><td>0.2km S</td></tr>
<tr><td>7</td><td>Rural Residential</td><td>1.1km from WWS</td><td>0.4km S</td></tr>
<tr><td>8</td><td>Rural Residential</td><td>1.3km from WWS</td><td>0.5km SW</td></tr>
<tr><td>9</td><td>Rural Residential</td><td>1.9km from WWS</td><td>1.2km WSW</td></tr>
<tr><td>10</td><td>Rural Residential</td><td>1.3km from WWS</td><td>0.6km S</td></tr>
<tr><td>11</td><td>Rural Residential</td><td>1.6km from WWS</td><td>1.1km WSW</td></tr>
<tr><td>12</td><td>Rural Residential</td><td>1.7km from WWS</td><td>1.2km WSW</td></tr>
<tr><td>13</td><td>Rural Residential</td><td>1.7km from WWS</td><td>1.4km WSW</td></tr>
</table></td></tr>
</table>

Figure 4-1. Location of Potentially Sensitive Receptors

4.2 Site Characteristics

A summary of the key site characteristics is shown in Table 4-2

Table 4-2: Site Characteristics

Item	Details
Topography and slope	Site levels range from RL 32 to RL 11 with maximum natural slopes of approximately 10%
Waterways and drainage	The majority of the site drains to six natural watercourses which are generally dry on the site. Three of these watercourses drain to the west and three drain to the east. For the broadacre irrigation areas, the southernmost irrigation area is situated along the ridgeline or east of the WWTP, and as such any run-on is minimal. The smaller central irrigation area is located downslope of an approximately 70m run and would require some form of contouring banks to divert run-on waters around the area. The northernmost irrigation area is situated generally upslope or on grade along its boundaries, and therefore is subject to minimal run-on. Flow concentration points are minimal in the three designated broadacre irrigation areas.
Soils and geology	Soils on the site have been mapped as one of three types: • Acidic Texture-Contrast Soils (ATC): Texture-contrast soils with strongly acidic B horizons (pH <5.5) (Kurosols) - 83 ha (42%) • Uniform and Gradational Soils (U&G): Uniform or gradational soils with structured B horizons, sodic and acidic (Dermosols/Vertosols) - 105 ha (55%) • Sodic Texture-Contrast Soils (STC): Texture-contrast soils with sodic subsoils that are not strongly acidic (Sodosols) - 6 ha (3%). Only the first two soil types are to be irrigated under the recycled water scheme. These are characterised by silty clay loam or light clay over medium-heavy clays, and both moderately to imperfectly drained, moderately structured soils (note the STC texture is similar, but with a higher permeability subsoil layer). Overall, the key limitations were identified as: • Moderate limitation for landform (concave slopes and foot slopes) on the Uniform and Gradational Soils Mapping Unit; • High limitations for soil category and permeability, and moderate limitation for drainage - the medium to heavy clay subsoils (at 200 - 350mm deep) result in soils described as moderately to imperfectly drained, with low saturated hydraulic conductivity; • Moderate limitations for sodic soils identified for acidic texture contrast and uniform and gradational soils, and dispersivity identified in subsoils across all three soil units; and • Moderate limitations for pH (marginally low) and Cation Exchange Capacity (CEC) (low in Acidic Texture Contrast soils, and marginally low in Uniform and Gradational Soils). The key constraints are related to dispersivity / sodicity, and to soil drainage (medium to heavy subsoils). More marginal limitations were identified for marginally low pH and a sub-optimal CEC (the ability to retain nutrients for plant growth). These will require care in irrigation scheduling, including low application rates, and may need soil amelioration during operations.
Flooding	The project site is located outside the probable maximum flood extent determined by the Clarence River Flood Study 2013 and therefore has no risk of flooding
Vegetation	Consists primarily of grassed areas previously used for grazing of cattle. Some natural wooded areas exist along the south west boundaries. Areas for irrigation will occur in largely pre-cleared areas of the site.

5 Scheme Assessment

The scheme assessment has been outlined in the Risk Assessment Register in Appendix B. The below sections summarise the findings and outcomes of that assessment, as well as providing a summary of the overall scheme.

5.1 Source Water

The source water for the scheme is the recycled water produced by the on-site WWTP, with wastewater sourced from the following:

Fixtures supplied by treated recycled water

- Toilets used by staff, visitors and inmates;
- The facility laundry and washing machines in residential and cottage accommodation;
- Washdown water, used to washout bins and bin areas, directed to sewer;
- Fire water systems, where water from testing of fixtures is directed to sewer (very minor amount); and
- Facility irrigation, where valve flushing is directed to sewer (very minor amount – may instead be broadcast across irrigation areas).

Fixtures supplied by potable water

- Showers and sinks/taps used by staff, visitors and inmates;
- The facility kitchen and kitchenettes, via grease traps; and
- Site industries.

5.2 Uses and Users of Recycled Water

Two types of uses / users of recycled water have been identified for the site – intentional uses (planned reuse) and unintentional uses (accidental or intentional misuse). The end uses/users are summarised below under the appropriate heading:

Intentional Uses/Users – Dual Reticulation Scheme

- Toilet flushing;
- Washing machines;
- Facility laundry;
- Washdown water;
- Fire water and testing; and
- Facility irrigation, as well as irrigation valve flushing.

Intentional Uses/Users – from wet weather storage (not dual reticulation system)

- Broadscale irrigation on-site.

Unintentional Uses/Users

- Cross connections;
- Contact with fire water (fire or testing);
- Contact or access to irrigation areas while irrigating;
- Livestock access to irrigation areas; and

- Intentional misuse – drinking, hosing down persons, contact with toilet water, plumbing system (such as washing machine hosing).

5.3 Risk Assessment

A hazard identification and risk assessment is provided in Appendix B.

5.4 Treatment Requirements

Based on the end uses/users, the source water and other requirements outlined in Appendix B, the following treatment has been adopted at the WWTP:

- Advanced treatment, including secondary, membrane filtration, chlorine and UV disinfection; and
- Log reduction requirements of ≥6.5 for Viruses, ≥5.1 for Protozoa, and ≥5.3 for Bacteria.

5.5 Scheme Description

5.5.1 Overview

The sewerage system on the site allows for collection, treatment and total on-site reuse via a 600kL/day Membrane Bioreactor style Wastewater Treatment Plant to suit the 1700 bed Correctional Facility. This allows for the projected sewage generation + 20% additional loading and with a buffer to avoid overloading the plant.

All effluent produced by the WWTP will be to a high-end use standard (triple-barrier disinfection), suitable for dual reticulation, toilet flushing, washing machines, unrestricted irrigation, wash down water and fire fighting as outlined in the AGWR (EPHC *et al*, 2006).

Recycled water production in excess of the facility's re-use requirement is irrigated across the designated broadscale irrigation areas, comprising a 20ha irrigation area close to the treatment plant, with an additional 22.5ha set aside as reserve irrigation area, for wet weather or other rare events, where no facility reuse can be undertaken. Irrigation on broadacre areas will generally be via a Travelling Irrigator system, a capital and maintenance efficient system, easily expandable to cater for differential loads.

5.5.2 WWTP Capacity and EP

The anticipated load reporting to the WWTP is ~470kL/day. To allow for potential uncertainty a 600kL/day plant has been adopted, providing for a buffer between actual flows and the fully utilised capacity of the plant.

Adopting an EP ratio of 1.4EP/inmate equates to a plant required capacity of **2380EP**.

5.5.3 WWTP Process Description

Given the high quality of recycled water required from the plant, a Membrane BioRector (MBR) style plant has been adopted. This process utilises a suspended growth bioreactor containing an 'activated sludge' with solids separation through ultrafiltration membranes rather than a conventional clarifier.

The activated sludge process is based on the growth of microorganisms, which consume and breakdown components of the sludge, and form particles that clump together. These are allowed to settle to the bottom of the tank, leaving a relatively clear liquid. The ultrafiltration membranes allow for separation of water and solids, leaving a relatively clear liquor suitable for high quality reuse after further disinfection.

The sytem incorporates a triple barrier disinfection system including the MBR membranes, Ultravoilet (UV) and chlorine disinfection to ensure a constant high quality of recycled water.

The process train is summarised in Figure 5-1, and operates as follows:

- Inlet works: influent enters the plant via an inlet manifold allowing for sewage to be diverted to the emergency storage lagoon, in case the plant is offline. Coarse screening is employed to screen out foreign material >6mm, to ensure that material that can be present in correctional facility waste streams do not damage the plant[1]. A flow balancing tank and pumping is utilised to provide regulated flow into the plant, via a fine screen to screen out material >1.5mm. The emergency storage is pumped back to the plant for treatment as soon as practicable;
- Biological treatment: takes place through a series of aerobic, anaerobic and anoxic zones, allowing for biological breakdown of solids and organic matter, and nutrient removal. There are two separate but identical bioreactors operating in parallel;
- Biological Nutrient Reduction (BNR) is the preferred method of nutrient reduction, and the key method available for nitrogen removal. Nitrogen removal involves ammonification (organic nitrogen to ammonia in anaerobic processes), nitrification (ammonia to nitrates in aerobic conditions) and denitrification (nitrates to N_2 off-gassing in anoxic conditions). While some phosphorous reduction might be achieved through BNR process, additional alum (aluminium sulfate) will be utilised to provide removal as required;
- The liquid within the treatment tanks is returned as Return Activated Sludge (RAS) to a RAS well before return to the MBR splitter box, with a quantity drawn off as Waste Activated Sludge (WAS) to a WAS storage tank, prior to further stabilisation, treatment and disposal. The rates of these are controlled to obtain optimum internal recycling of activated sludge and wastewater, and sludge age (the average time sludge remains in the system, controlled by ‘wasting’ as WAS);
- Provision for sodium hydroxide (caustic) dosing has been provided to control the pH of the biological process;
- Membrane bioreactor: the MBR tank is aerated to provide aerobic treatment and mixing before being drawn through the ultrafiltration membranes. Air scour systems and backpulsing are incorporated to minimise membrane fouling and avoid blockage, with regular cleaning using Clean in Place (CIP) methods;
- The membrane system utilises hollow fibre membranes, with the membranes located in a separate plant (sidestream process), or for flat sheets potentially a casket lowered into the MBR bioreactor tank. Water is drawn through the membranes, and continuous pressure monitoring undertaken to determine when backwashing and/or cleaning is required;
- The membranes are of a sufficiently low pore size to remove bacteria and viruses, resulting generally in very clear filtrate, and providing the first of the three barrier disinfection system;
- Disinfection: the water is passed through UV treatment, providing the second barrier of the disinfection system, before being delivered to a chlorine contact pipe for further disinfection. The correct Ct ratio is applied (chlorine concentration and time) to provide for adequate disinfection; and
- Recycled water storage: treated, disinfected recycled water is then passed to the recycled water storage tank, for use in the facility, or bypasses the tank (if full) into the wet weather storage lagoon
- Reuse and Disposal: treated recycled water is drawn from the recycled water storage for reuse in the facility in dual reticulation. Excess recycled water is pumped to broadscale irrigation areas for disposal. Excess recycled water delivered to the wet weather storage lagoon is returned to the plant, treated and added into the recycled water stream for reuse or irrigation disposal.

The plant is fitted with a range of control and online monitoring equipment, including:

- Critical control point monitoring:

[1] This may include bulky items such as pillow cases, sheets, mop heads and other material placed into the sewer system by inmates

  - online turbidity meter to ensure turbidity is maintained sufficiently low to achieve good disinfection rates;
  - online UV Transmittance (UVT), UV Intensity (UVI) and flow to ensure effective UV disinfection doses
  - Online chlorine and pH measurements in the chlorine contact pipe, to ensure effective chlorine contact-time (Ct).
- Process / Quality Control point monitoring:
  - Dissolved Oxygen and pH monitoring of bioreactors
  - Chlorine residual

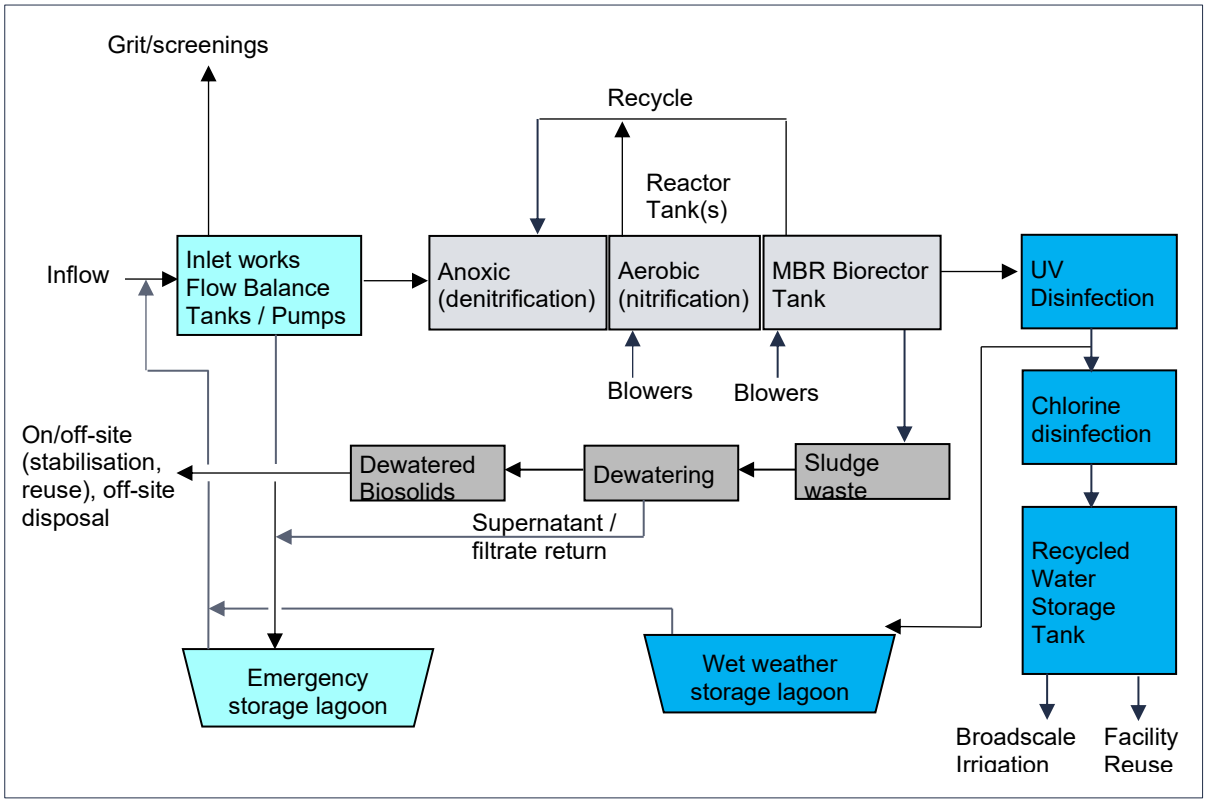


Figure 5-1. Simplified Process Train Flow Diagram

- online flow meters at the inlet (raw), at the outlet of the recycled water tank as it passes into the facility dual reticulation system;
- online pressure, permeability, permeate turbidity and flow through membrane filters to control backwash and cleaning cycles, and ensure efficient operation;
- online flow meter measuring recycled water irrigated to broadscale irrigation; and
- online water level, in key elements of the plant, and the wet weather storage lagoon.

The plant will be controlled through a PLC / SCADA system, allowing both for coordinated control and feedback of the plant, and remote access (incorporating security controls consistent with the site-wide IT security system).

5.5.4 Land Disposal System

The internal facility irrigation scheme will be managed primarily to provide for landscape growth, and as such is not operated to ‘dispose’ of recycled water. It will utilise the dual reticulation recycled water system.

External 'broadscale' irrigation areas are provided to dispose of excess recycled water. This system is based on a travelling irrigator system, involving a distribution pump set delivering the treated effluent to the irrigation areas via an irrigation main. Takeoff points involve a flexible 'layflat' hose to allow the irrigator to travel along its intended path. Defined depths of irrigation are applied by adjusting the speed of travel for fixed irrigation depths per time period. Rainfall sensors and a rainfall gauge allows operators to gauge whether irrigation should be stopped due to rainfall or wet soils, but is more used to adjust system operation to achieve sustainable long term operation, including determining whether irrigation areas have dried sufficiently to re-irrigate.

5.5.5 Wet Weather Storage Lagoon

The wet weather storage lagoon is a constructed 45ML lagoon constructed with:

- A compacted clay liner to achieve a low permeability base;
- Steep sides without fringing macrophytes to minimise mosquito breeding sites; and
- Freeboard suitable to contain at least the 1 in 10 year, 24 hour event, with an emergency spillway designed to pass the major storm event (nominally up to 1 in 100 year event).

5.6 Recycled water quality

The recycled water criteria is shown in Table 5-1, showing the criteria for two distinct recycled water types in the system:

- Dual Reticulation Scheme, irrigation in proximity to public access points (AGWR Table 3.8, Dual reticulation, toilet flushing, washing machines, garden use), and
- Broadscale (external to facility) Irrigation Water Quality, areas >25–30 m to nearest point of public access (AGWR Table 3.8, Municipal use, with restricted access and application).

Table 5-1. Proposed Recycled Water Quality Criteria

Parameter	Location	median	95th %ile	Comments
Dual Reticulation Scheme, irrigation in proximity to public access points[1]				
pH	RWT: In recycled water storage tank at the Wastewater Treatment Plant	-	6.5 – 8.0[2]	Wastewater Treatment Plant treatment requirements.
Turbidity (NTU)		-	≤2	
Free chlorine residual (mg/L)		-	0.3 – 2[2]	
BOD_5 (mg/L)		5	10	
TN (mg/L)		20	25	
TP (mg/L)		10	12	
Ammonia (mg/L)		≤1	-	
Somatic coliphages (viruses) (pfu/100ml)		<1	-	
Clostridium perfingens (protozoa) (cfu/100ml)		<1	-	
E.coli (bacteria) (cfu/100ml)		<1	-	
Broadscale (external to facility) Irrigation Water Quality, areas >25–30 m to nearest point of public access[3]				
BOD_5 (mg/L)[1]	RWT: In recycled water storage tank at the Wastewater Treatment Plant	20	30	Minimum water quality required from recycled water for broadscale irrigation.
TSS (mg/L)[1]		30	40	
TN (mg/L)		20	25	
TP (mg/L)		10	12	
E.coli (cfu/100ml)		100	200	

Table notes:

1 AGWR Table 3.8, Dual reticulation, toilet flushing, washing machines, garden use

2 5th to 95th percentiles

3 AGWR Table 3.8, Municipal use, with restricted access and application

6 RWMP Implementation

6.1 Roles and Responsibilities

The key positions and subsequent responsibilities in relation to this plan are summarised in Table 6-1. The personnel holding these positions and their contact details are shown at the front of this RWMP (behind cover page).

Table 6-1: Project roles and responsibilities

Specific Role	Responsibilities
Site Operator	• Engage the WWTP Manager • Provide necessary funds to support objectives of the RWMP • Ultimate responsibility for the success of the scheme, and compliance with the RWMP
WWTP Manager (may delegate actions to another party)	• Reports to and acts for the Site Operator • Ensure personnel and sub-contractors have relevant expertise, approvals, management plans (i.e. this RWMP) and licenses to undertake any works • Action regular monitoring, maintenance, inspections and audits, as required by the RWMP • Investigate and report to the Site Operator on any environmental incidents and ensure that appropriate action is taken • Ensure that environmental records and files are maintained • Responsible for ensuring this RWMP is updated as required • Act as the primary site contact for Council, EPA and other agency officers for the WWTP and recycled water scheme • Provide information and place signage detailing what 'not to flush' to sewer and 'not to drink' warnings
Service Contractor / WWTP Operator	• Report to the WWTP Manager • Provides the on-site maintenance and operational expertise for the plant by: – Undertaking regular servicing of the WWTP and irrigation area, as required and under the direction of the WWTP Manager – Advising of any actions and provide any data required to maintain the plant in operating condition • Be familiar with and follow the relevant directions of this RWMP
Site Personnel (involved with the WWTP or Irrigation Areas in any way) e.g. groundspersons WWTP Manager visits	• Be aware of and adhere to this RWMP, and to directions given by the WWTP Manager • Have a general duty to not cause environmental harm • Notify the WWTP Manager of any incidents, near misses and hazards immediately. This includes notifying of signs of poor performance of land application areas – ponding, soggy ground, seepage, patches of excessive vegetation growth, or vegetation die back

6.2 Communication, Training and Awareness

The WWTP Manager will ensure that all employees involved with the sewerage scheme are appropriately trained and qualified to carry out their duties.

Prior to commissioning, this RWMP will be updated and detailed operations and maintenance plans developed (likely by the plant operator / supplier). All relevant staff will be made aware and trained as necessary to their role to ensure compliance with all relevant documents, systems and requirements. This will include clear awareness and understanding of the critical control points identified in the risk assessment, and controlled in operating procedures on the site.

Generally, any person contacting the sewerage infrastructure or sewage on the site must be suitably trained to undertake such works safely, will utilise appropriate personal protective equipment and will have completed vaccinations suitable to the works undertaken. Typically, this will apply only to the service contractor and other subcontractors engaged to physically interact with the system (pumpouts, maintenance, monitoring). All personnel must ensure compliance with the relevant site OH&S procedures.

The WWTP Manager is responsible for engaging with suitably experienced contractors and service agents, and it is the responsibility of these contractors to ensure that all persons attending site have the appropriate knowledge, skills and experience.

Any person attending the site for the first time will require a site induction, either from a person with the requisite knowledge, or through site familiarisation with the WWTP Manager.

All relevant personnel are to be made aware of this RWMP, including the contacts page, and the location of the RWMP. Signage shall be available at the WWTP providing contact number(s) for the WWTP Manager or other contact person in relation to the plant, and instructions should an alarm or strobe light be triggered.

All external communications will be managed by the WWTP Manager in conjunction with or as directed by the Site Operator, including communications to local or state government (e.g. NSW EPA) and the public.

6.3 Management of sub-contractors

Sub-contractors will be responsible for adhering to this RWMP, and to directions given by the WWTP Manager in regards to environmental management.

Each sub-contractor is to have a nominated contact point to the WWTP Manager.

6.4 Complaints Management

All complaints and inquiries should be directed to the WWTP Manager who will assess the validity and seriousness of the complaint or inquiry and respond as appropriate. Any complaints will be recorded on the Incident-Complaints Form (Appendix F) or similar, and maintained in a Register (saved in a central location). These will include the following details:

- name, address and contact number of complainant;
- time and date of complaint;
- reasons for the complaint;
- investigations undertaken in response and conclusions formed;
- actions taken to resolve complaint;
- any abatement measures implemented to mitigate the cause of the complaint; and
- name and contact details of the person responsible for resolving the complaint.

6.5 Reporting and Documentation

All reports including audits, monitoring and inspection reports and results must be maintained by the WWTP Manager for a period not less than 5 years.

Documentation related to the treatment plant, including SDS, operations manuals, and a copy of the RWMP must be maintained at the treatment plant compound. The document register in Appendix B is to be updated as required to reflect the most up to date documents, and these shall be disseminated to all locations in the register.

Other documentation (emails, reports, notes, etc.) must be maintained in a central location by the WWTP Manager. Regardless of the source and form of the reporting, all documentation must be stored in electronic format in a central location by the WWTP Manager (scanned if necessary), in addition to any hard copies that may be required.

6.6 Review, Auditing and Updating

A review of this RWMP is to be conducted every 5 years, or where changes in legislation, approvals, or site operations are likely to affect the implementation of this RWMP. The review is to include the impacts of any changes in legislation or applicable guidelines, and changes are to be approved by the Site Operator prior to finalisation.

Each review is to determine potential opportunities for continual improvement in the systems and procedures utilised in the recycled water scheme.

The contacts page is to be updated as required to ensure it remains up to date. No revisions of this report are to contravene any conditions of approval for the site or other relevant legislative requirements.

6.7 Non-compliance and Incidents

Non-compliance with any aspect of this RWMP, any project consent conditions and/or monitoring limits will require corrective action and reporting. The type and scale of corrective action and reporting will depend on the type and scale of the non-compliance. All incidents that require some form of incident response, rectification or with the potential to cause material or serious environmental harm or nuisance must be recorded on the Incident-Complaints Form (Appendix F) or similar, and maintained in a register (each form saved in a central location). A near miss of these events must also be recorded.

Site personnel becoming aware of an incident (environmental or otherwise), must notify the WWTP Manager immediately. The WWTP Manager must liaise with the Site Operator in notifying the appropriate agency if material environmental harm or public health impacts are caused or threatened. The appropriate agency and the order in which they should be contacted is outlined below:

1. Call 000 if the incident presents an immediate threat to human health or property;
2. The appropriate regulatory authority (ARA), being Clarence Valley Council
3. NSW Health via the local Public Health Unit
4. SafeWork NSW (formerly WorkCover); and
5. Fire and Rescue NSW (unless 000 was called initially).

This notification must include at least the following information:

- Name of operator, including approval / registration number;
- Name and contact number of designated contact person;
- A description of the event, including substance and quantity released for a release;
- the location of the event and of the place pollution is or might occurring;
- the time, date and duration of the event;
- the time that you become aware of the event;
- the suspected cause of the event;
- a description of the resulting effects of the event;
- action taken to mitigate any material harm to the environment caused by the event, including monitoring; and
- proposed action to prevent a recurrence of the event.

Appendix F contains the incident-complaint form which must be filled out for any incident or near miss (or a suitable alternative used).

Note: incident response and control is required first where threats to human health, property or the environment exist. Documentation and notification will follow.

7 Recycled Water Management

7.1 Management Measures

Management measures have been prepared based on the environmental risks and impacts identified in Appendix B, and are provided in Appendix C.

Management measures specify mitigation measures, performance criteria, monitoring and reporting requirements.

The measures developed in this report are to be specifically enacted on the site using Standard Operating Procedures (SOPs) for day to day operations.

7.2 Monitoring and Inspections

Monitoring, review and verification will be required for the proposed scheme, as outlined below.

7.2.1 Pre-Validation

A pre-validation program will be implemented to validate all systems as being able to treat wastewater to produce recycled water with suitable log reduction requirements as outlined in Section 5.4 prior to installation. The pre-validation program is included in Appendix D.

7.2.2 Validation

A validation program will be continued following initial pre-validation, designed to establish the validated operating envelope, as per the WaterVal MBR protocol. This will ensure that the as-installed system components remain suitable to achieve the treatment as identified in the pre-validation program. The validation program is outlined in Appendix D.

7.2.3 Ongoing Monitoring

An ongoing verification monitoring program will be undertaken, to check compliance with recycled water quality requirements, provide ongoing checks and early warning for critical control points, and data for the ongoing verification program.

A Monitoring Checklist is provided for on-site use in Appendix D. All results of monitoring and environmental inspections must be documented and be made available to authorised officers upon request.

7.2.4 Review and Inspections

Regular site and plant inspections, and operational review is to be undertaken to ensure the system is operating as required by this RWMP and the operation and maintenance manuals / documentation.

7.3 Contingency and Emergency Response

Appendix E contains tabulated contingency response measures to typical incidents that could occur. They are intended as a guide and to be expanded and refined by the plant operator - actual responses must be tailored to the incident and situation itself.

Health and Safety concerns will always take precedence when managing an incident. If a situation is not safe, personnel will not enter the area unless they are:

- Sufficiently experienced to deal with the situation; and
- Properly fitted with Personal Protective Equipment (PPE) and trained in its use; and
- Acting under an approved Safety Management Plan or Procedure for the specific site.

The WWTP Manager is responsible for enacting effective site health and safety management procedures which are to be complied with by all personnel on the site.

Emergency response is to be undertaken in accordance with a site Safety Management Plan, Emergency Response Plan or equivalent. All emergencies not identified within the contingency plans are to be dealt with as soon as practical to safely avoid or minimise environmental harm.

8 References

DEC (2004). Environmental Guidelines: Use of Effluent by Irrigation. NSW Department of Environment and Conservation

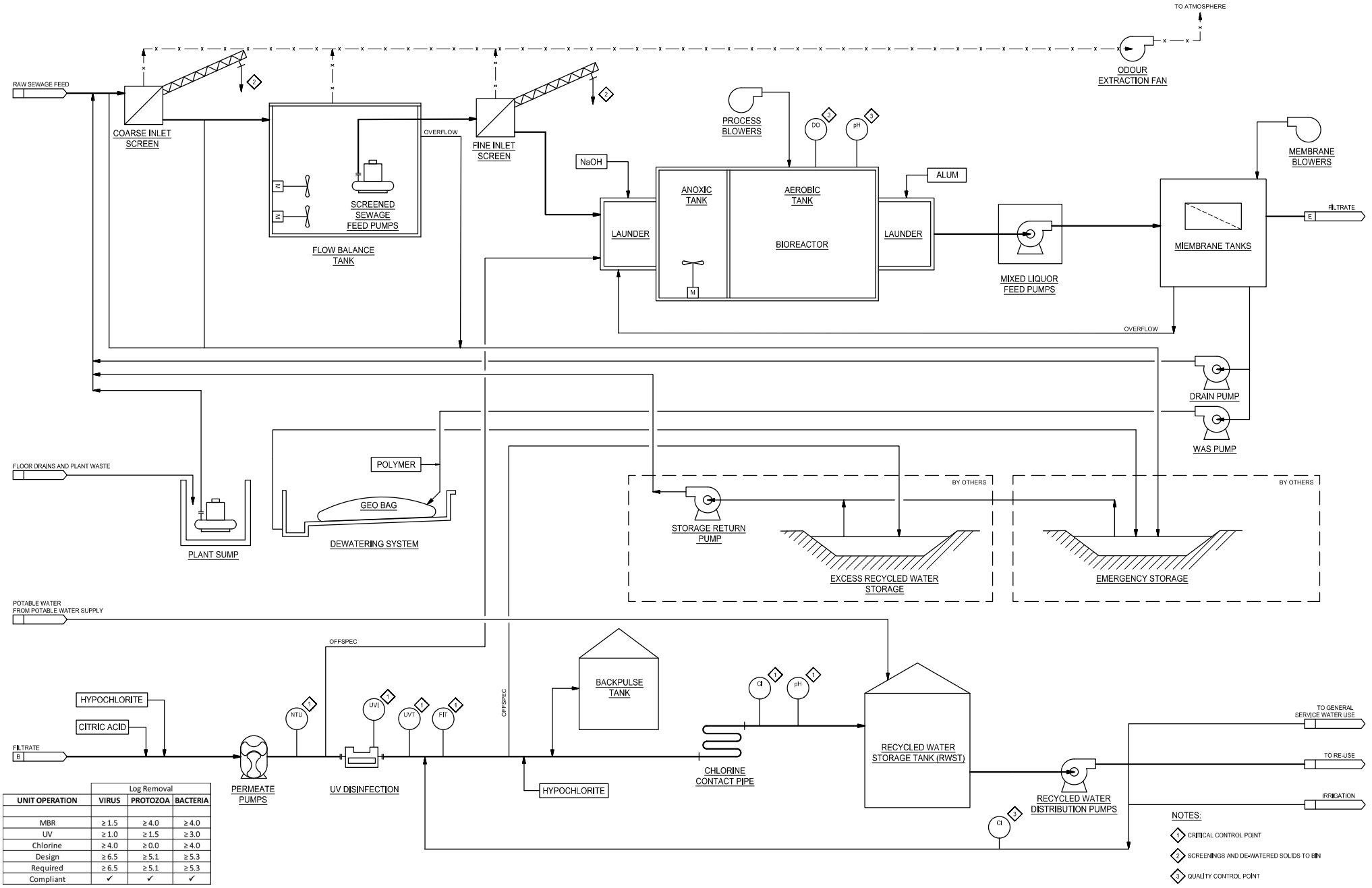
EPHC, NRMMC and AHMC (2006). Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1). Environment Protection and Heritage Council (EPHC), the Natural Resource Management Ministerial Council (NRMMC) and the Australian Health Ministers' Conference (AHMC), November 2006

Sedgman Consulting (2017). Wastewater Management Plan. Report No. PRO-ENV-CD-RPT-00_506. Sedgman Consulting Pty Ltd, May 2017

Appendix A

Supporting Information

A1 – Plans and Figures



UNIT OPERATION	Log Removal VIRUS	PROTOZOA	BACTERIA
MBR	≥ 1.5	≥ 4.0	≥ 4.0
UV	≥ 1.0	≥ 1.5	≥ 3.0
Chlorine	≥ 4.0	≥ 0.0	≥ 4.0
Design	≥ 6.5	≥ 5.1	≥ 5.3
Required	≥ 6.5	≥ 5.1	≥ 5.3
Compliant	✓	✓	✓

AMENDMENTS

REV	DATE	DRAFTER	DESIGN	MGMT	DESCRIPTION
A	09/11/18	SYN			ISSUED FOR CLIENT REVIEW
B	30/11/18	SYN	PC	KD	UPDATED
0	21/12/18	SYN	PC	KD	BUILDING DESIGN GROUP 21 SUBMISSION - STATE
1	04/03/19	SYN	AC	KD	UPDATED POST HAZOP - IFC BDG21 STAGE 4

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PERMEATE PROJECT # J1801071

CLARENCE CORRECTIONAL CENTRE
313 Avenue Rd, Lavadia NSW 2462

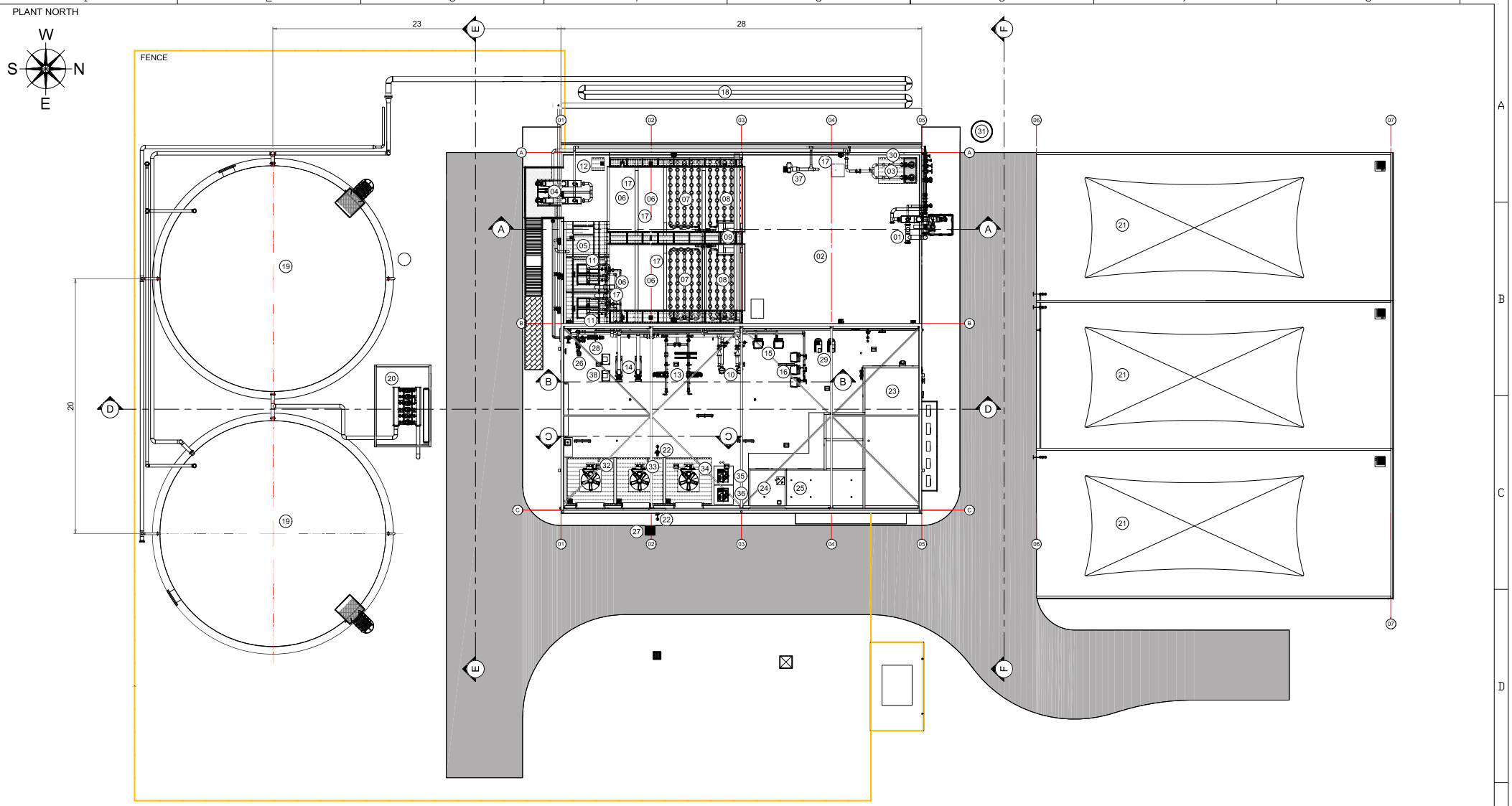
DRAWING NAME
WASTE WATER TREATMENT PLANT
PROCESS FLOW DIAGRAM

PROJECT NORTH

SCALE NTS

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
WWTP - PRE - CD - DWG-57_200

REVISION
1



PLAN VIEW - WASTE WATER TREATMENT PLANT

ITEM No.	DESCRIPTION
01	COARSE INLET SCREENS
02	FLOW BALANCE TANK
03	SCREENED SEWAGE FEED PUMPS
04	FINE INLET SCREENS
05	DE-AERATION LAUNDER
06	PRE ANOXIC TANK
07	AEROBIC TANK - 1
08	AEROBIC TANK - 2
09	RAS WELL

ITEM No.	DESCRIPTION
10	MIXED LIQUOR FEED PUMP
11	MEMBRANE TANKS
12	BACKPULSE TANK
13	PERMEATE PUMPS
14	UV DISINFECTION UNITS
15	MEMBRANE BLOWERS
16	PROCESS BLOWERS
17	MIXERS
18	CHLORINE CONTACT PIPE (BURIED)

ITEM No.	DESCRIPTION
19	RECYCLED WATER STORAGE TANKS
20	RECYCLED WATER PUMP SET
21	GEO BAGS
22	SAFETY SHOWER
23	MCC ROOM
24	W/C ROOM
25	CONTROL ROOM
26	DRAIN DOWN PUMP
27	NEW PIT

ITEM No.	DESCRIPTION
28	WAS PUMP
29	AIR COMPRESSOR
30	SUMP
31	SITE SUMP
32	COAGULANT STORAGE TANK
33	SODIUM HYPOCHLORITE STORAGE TANK
34	SODIUM HYDROXIDE STORAGE TANK
35	CITRIC ACID STORAGE TANK
36	POLYMER STORAGE TANK

ITEM No.	DESCRIPTION
37	FOUL AIR EXTRACTION FAN
38	UV CONTROL CABINETS

SCALE (ORIGINAL A1)
0 5m 10m

NOTES:

1. FOR SECTION - AA REFER, WWTP - PRE - CD - DWG - 57_301.
2. FOR SECTION - BB REFER, WWTP - PRE - CD - DWG - 57_302.
3. FOR SECTION - CC REFER, WWTP - PRE - CD - DWG - 57_303.
4. FOR SECTION - DD REFER, WWTP - PRE - CD - DWG - 57_304.
5. FOR SECTION - EE REFER, WWTP - PRE - CD - DWG - 57_305.
6. FOR SECTION - FF REFER, WWTP - PRE - CD - DWG - 57_306.
7. UNDERGROUND PIPEWORK SHOWN FOR CLARITY.

AMENDMENTS

REV	DATE	DRAFTER	DESIGN	MGMT	DESCRIPTION
A	09/11/18	SYN			ISSUED FOR CLIENT REVIEW
B	30/11/18	SYN	PC	KD	UPDATED
0	21/12/18	SYN	PC	KD	BUILDING DESIGN GROUP 21 SUBMISSION - STATE
1	04/03/19	SYN	PC	KD	DESIGN DEVELOPMENT UPDATE - IFC BDG21 STAGE 4

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PERMEATE PROJECT # J1801071

CLARENCE CORRECTIONAL CENTRE
313 Avenue Rd, Lavadia NSW 2462

DRAWING NAME
WASTE WATER TREATMENT PLANT
GENERAL ARRANGEMENT
PLAN VIEW

PROJECT NORTH

SCALE NTS

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
WWTP - PRE - CD - DWG-57_300

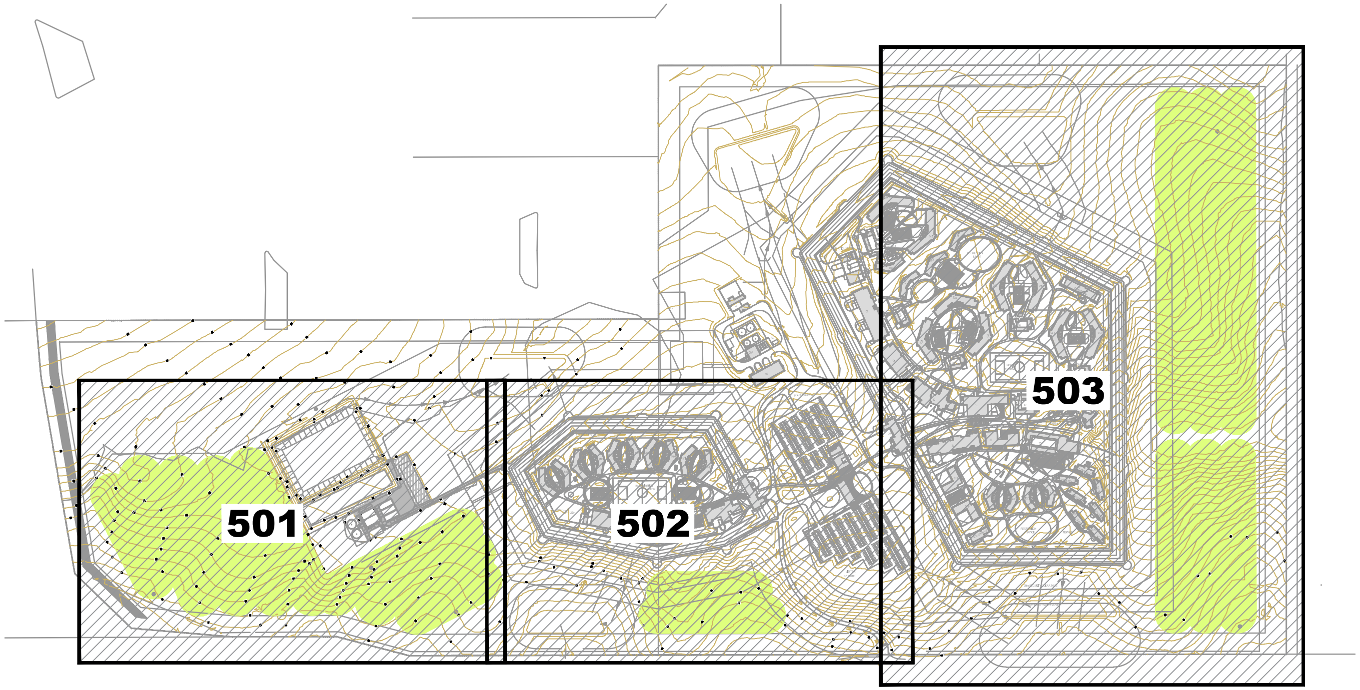
REVISION
1

CLARENCE CORRECTIONAL CENTRE

BROADACRE IRRIGATION - MAINLINE AND VALVES

CLARENCE CORRECTION CENTRE - MAINLINE AND VALVES	
DRAWING SCHEDULE:	
Title:	**ID:**
Mainline and Valves/ Cover Page	PRO-IR-CD-DWG-01_500
Mainline and Valves	PRO-IR-CD-DWG-01_501
Mainline and Valves	PRO-IR-CD-DWG-01_502
Mainline and Valves	PRO-IR-CD-DWG-01_503

PAGE LAYOUT



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FOR CONSTRUCTION

All materials, arrangements, installation to equal or exceed relevant Australian standards / WSAA codes / Manufacturers published advice at all times. Refer Cover Pages for GN-01 GENERAL NOTES and GN-02 RESPONSIBILITIES AND CROSS-REFERENCE DOCUMENTS.

LEGEND

SYMBOL	MANUFACTURER/MODEL		QTY
(isolation valve symbol)	ISOLATION VALVE		4
A	80MM AIR RELEASE VALVE		9
BF	150MM APOLLO BACKFLOW DEVICE 4-AE200-ARP 150		1
W	150MM WATER METER HELIX H5000		1
G	GUN CARRIAGE START POST		19
H	IRRIGATION HYDRANT		16
(blue line)	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	125	2366 m
(blue line)	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	160	280.8 m
(blue line)	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	250	76.0 m
EX-125	Ø125 EXISTING POLY IRRIGATION MAINLINE		
EX-160	Ø160 EXISTING POLY IRRIGATION MAINLINE		
(red valve symbol)	EXISTING ISOLATION VALVE		

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

IRRIGATION

EDWARDS IRRIGATION CONSULTING
Committed to Conservation
Committed to Quality
Unit 1, 2 Henderson Place
LENNOX HEAD NSW
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A member of the AWIC Group

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Ph. (02) 6687-4053
E-mail:
chriseic@bigpond.net.au
ABN: 77 673 782 179
American Society of Irrigation Consultants
Australian Chapter
Full Professional Member Since 1994

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NSW GOVERNMENT

CIVIL & STRUCTURAL Woolacotts Consulting Engineers (02) 8241 9900	PERUMAL PEDAVOLI ARCHITECTS T + 61 2 9291 0000 WEB: www.ppa.com.au Nominated Architect: Vince Pedavoli NSW reg No.5045
MECH, VERT. TRANSPORT. & ESD Erbas and Associates (02) 9437 1022	
ELECTRICAL JHA Consulting Engineers (02) 9437 1000	SECURITY & COMMUNICATIONS Webb Consulting (02) 9555 1147
HYDRAULIC Sedgman (07) 5578 8300	LANDSCAPE Lorna Harrison Pty Ltd (07) 3870 4900

CLARENCE CORRECTIONAL CENTRE
313 Avenue Rd, Lavadia NSW 2462

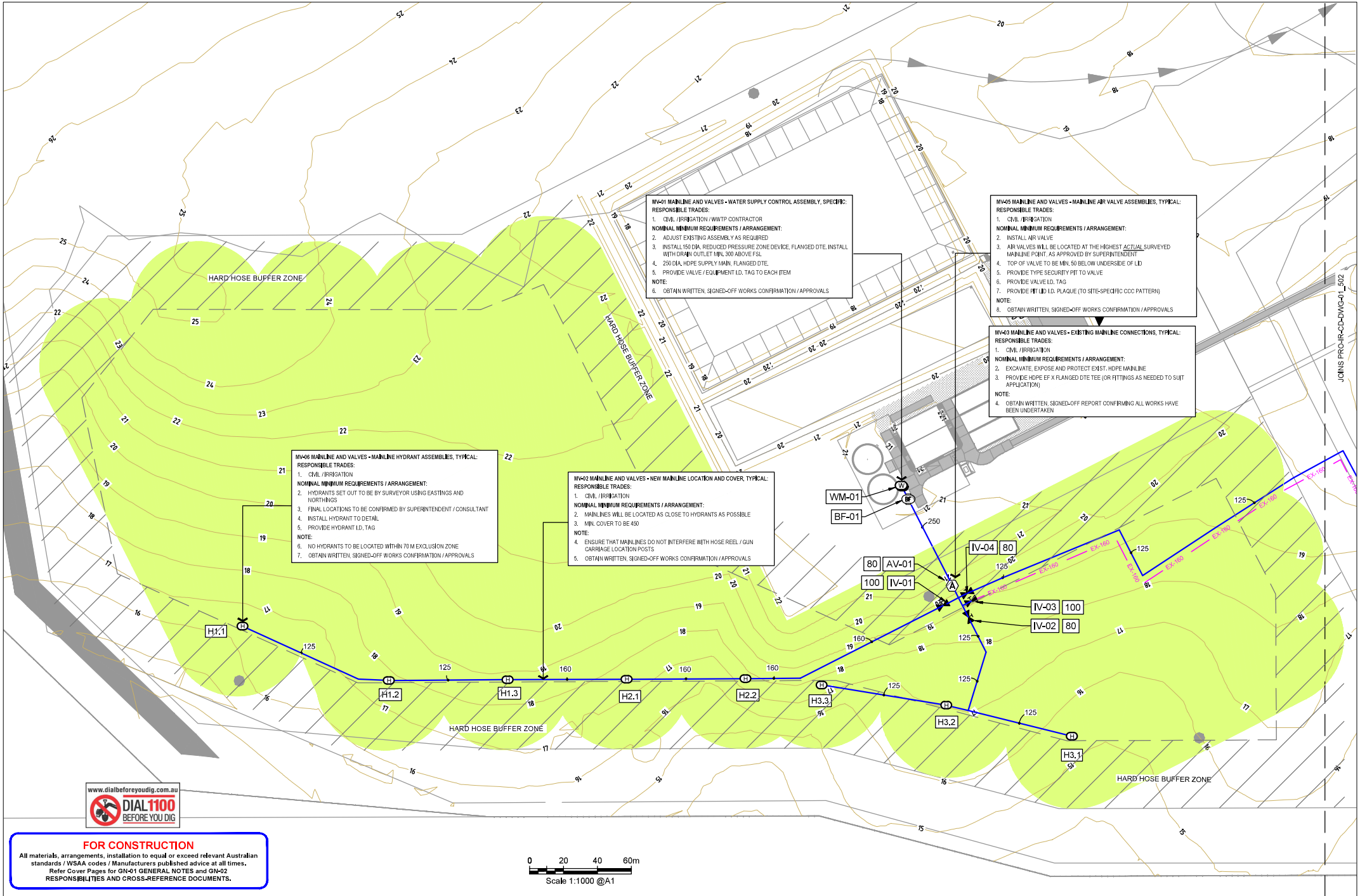
DRAWING NAME
BROADACRE IRRIGATION LAYOUT
MAINLINE AND VALVES - COVER PAGE
SHEET 1

PROJECT NORTH
NORTH

SCALE 1:5000 @ A1 — 06 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_500

REVISION
0



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FOR CONSTRUCTION

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Refer Cover Pages for GN-01 GENERAL NOTES and GN-02 RESPONSIBILITIES AND CROSS-REFERENCE DOCUMENTS.

AMMENDMENTS			
REV	BY	DATE	DESCRIPTION
0	BP/CE	05-06-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

IRRIGATION

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CIVIL & STRUCTURAL Woolacotts Consulting Engineers (02) 8241 9900	PERUMAL PEDAVOLI ARCHITECTS T + 61 2 9281 0600 WEB: www.ppa.com.au Nominated Architect: Vince Pedavoli NSW reg No.5645	
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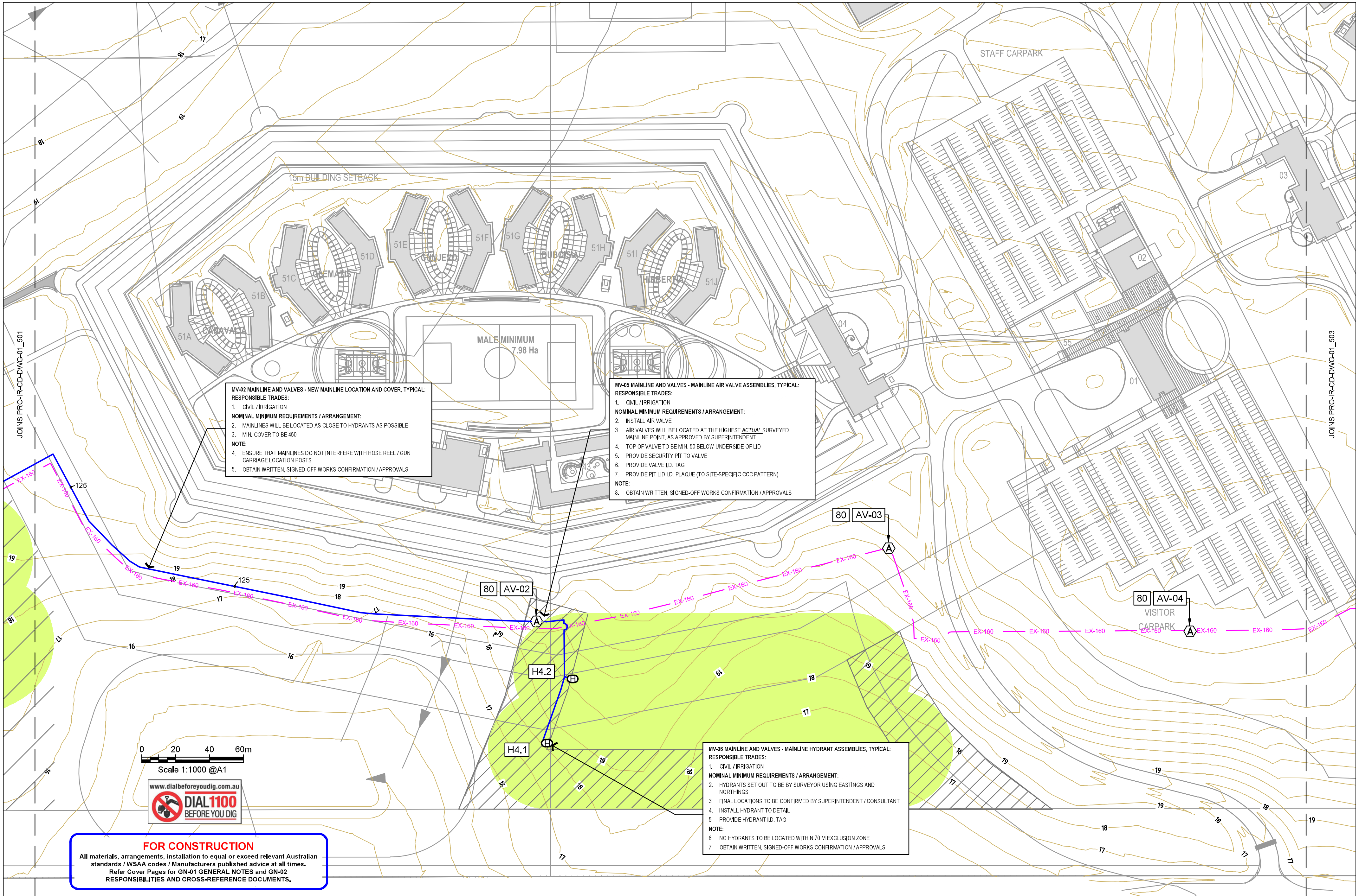
313 Avenue Rd, Lavadia NSW 2462

DRAWING NAME
BROADACRE IRRIGATION LAYOUT
MAINLINE AND VALVES - SHEET 2

PROJECT NORTH

SCALE 1:1000 @ A1
06 FEBRUARY 2020

DRAWING NUMBER						REVISION
SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER	
PRO	IR	CD	DWG	01	501	0



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AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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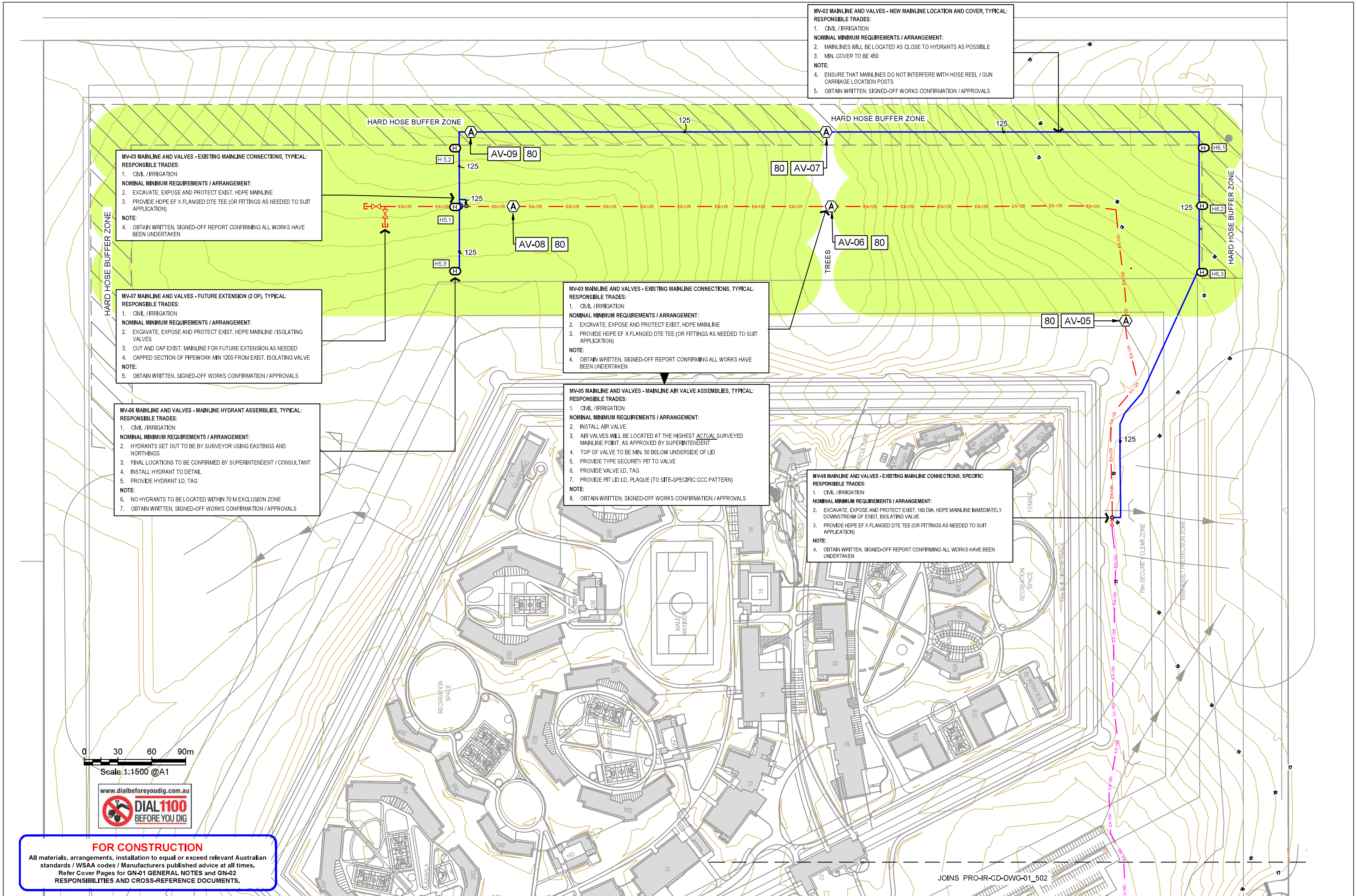
DRAWING NAME
BROADACRE IRRIGATION LAYOUT
MAINLINE AND VALVES - SHEET 3

PROJECT NORTH

SCALE 1:1000 @ A1 — 06 FEBRUARY 2020

DRAWING NUMBER (SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER): PRO-IR-CD-DWG-01_502

REVISION: 0



MV-02 MAINLINE AND VALVES - NEW MAINLINE LOCATION AND COVER, TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. MAINLINES WILL BE LOCATED AS CLOSE TO HYDRANTS AS POSSIBLE
3. MIN. COVER TO BE 450
NOTE:
4. ENSURE THAT MAINLINES DO NOT INTERFERE WITH HOSE REEL / GUN CARRIAGE LOCATION POSTS
5. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

MV-03 MAINLINE AND VALVES - EXISTING MAINLINE CONNECTIONS, TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. EXCAVATE, EXPOSE AND PROTECT EXIST. HDPE MAINLINE
3. PROVIDE HDPE EF X FLANGED DTE TEE (OR FITTINGS AS NEEDED TO SUIT APPLICATION)
NOTE:
4. OBTAIN WRITTEN, SIGNED-OFF REPORT CONFIRMING ALL WORKS HAVE BEEN UNDERTAKEN

MV-07 MAINLINE AND VALVES - FUTURE EXTENSION (2 OF), TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. EXCAVATE, EXPOSE AND PROTECT EXIST. HDPE MAINLINE /ISOLATING VALVES
3. CUT AND CAP EXIST. MAINLINE FOR FUTURE EXTENSION AS NEEDED
4. CAPPED SECTION OF PIPEWORK MIN 1200 FROM EXIST. ISOLATING VALVE
NOTE:
5. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

MV-06 MAINLINE AND VALVES - MAINLINE HYDRANT ASSEMBLIES, TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. HYDRANTS SET OUT TO BE BY SURVEYOR USING EASTINGS AND NORTHINGS
3. FINAL LOCATIONS TO BE CONFIRMED BY SUPERINTENDENT / CONSULTANT
4. INSTALL HYDRANT TO DETAIL
5. PROVIDE HYDRANT I.D. TAG
NOTE:
6. NO HYDRANTS TO BE LOCATED WITHIN 70 M EXCLUSION ZONE
7. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

MV-03 MAINLINE AND VALVES - EXISTING MAINLINE CONNECTIONS, TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. EXCAVATE, EXPOSE AND PROTECT EXIST. HDPE MAINLINE
3. PROVIDE HDPE EF X FLANGED DTE TEE (OR FITTINGS AS NEEDED TO SUIT APPLICATION)
NOTE:
4. OBTAIN WRITTEN, SIGNED-OFF REPORT CONFIRMING ALL WORKS HAVE BEEN UNDERTAKEN

MV-05 MAINLINE AND VALVES - MAINLINE AIR VALVE ASSEMBLIES, TYPICAL:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. INSTALL AIR VALVE
3. AIR VALVES WILL BE LOCATED AT THE HIGHEST *ACTUAL* SURVEYED MAINLINE POINT, AS APPROVED BY SUPERINTENDENT
4. TOP OF VALVE TO BE MIN. 50 BELOW UNDERSIDE OF LID
5. PROVIDE TYPE SECURITY PIT TO VALVE
6. PROVIDE VALVE I.D. TAG
7. PROVIDE PIT LID I.D. PLAQUE (TO SITE-SPECIFIC CCC PATTERN)
NOTE:
8. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

MV-08 MAINLINE AND VALVES - EXISTING MAINLINE CONNECTIONS, SPECIFIC:
RESPONSIBLE TRADES:
1. CIVIL / IRRIGATION
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. EXCAVATE, EXPOSE AND PROTECT EXIST. 160 DIA. HDPE MAINLINE IMMEDIATELY DOWNSTREAM OF EXIST. ISOLATING VALVE
3. PROVIDE HDPE EF X FLANGED DTE TEE (OR FITTINGS AS NEEDED TO SUIT APPLICATION)
NOTE:
4. OBTAIN WRITTEN, SIGNED-OFF REPORT CONFIRMING ALL WORKS HAVE BEEN UNDERTAKEN

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FOR CONSTRUCTION

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AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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DRAWING NAME
BROADACRE IRRIGATION LAYOUT
MAINLINE AND VALVES - SHEET 4

PROJECT NORTH

SCALE 1:1500 @ A1
06 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_503

REVISION
0

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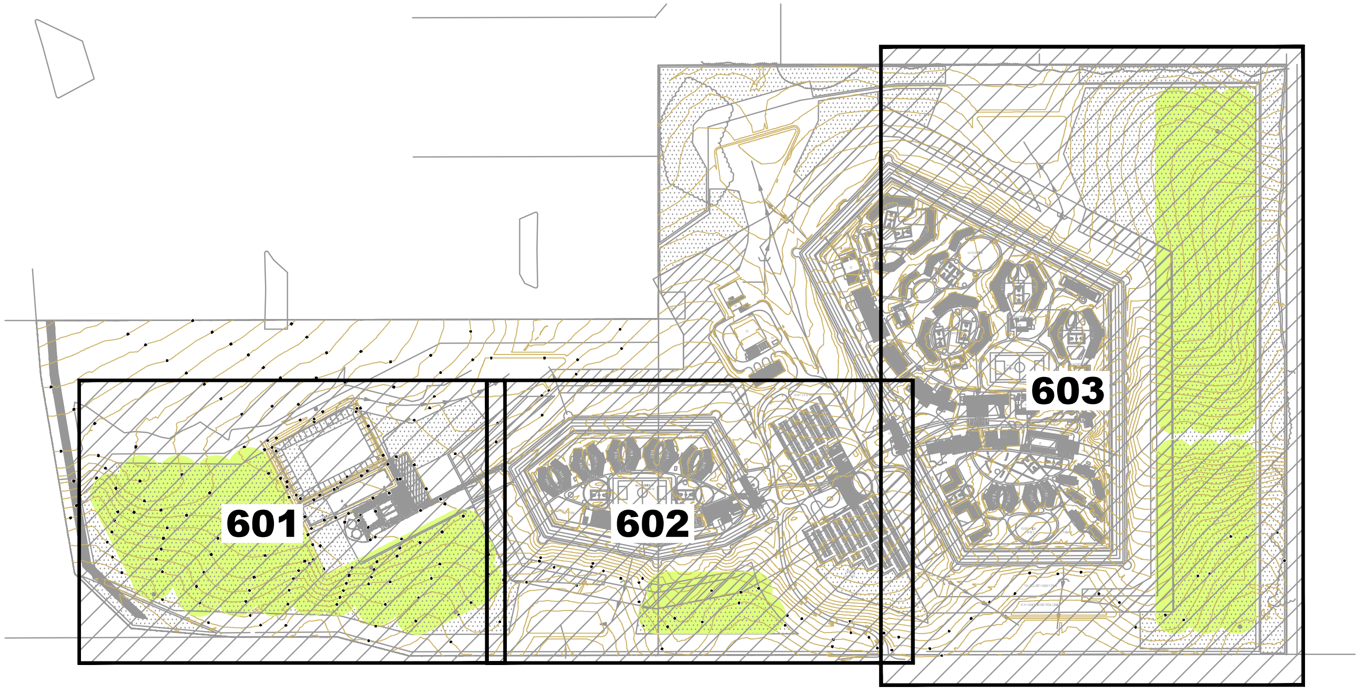
BROADACRE IRRIGATION - IRRIGATION LAYOUTS

CLARENCE CORRECTION CENTRE - IRRIGATION LAYOUTS	
DRAWING SCHEDULE:	
Title:	ID:
Irrigation Layout / Cover Page	PRO-IR-CD-DWG-01_600
Irrigation Layout	PRO-IR-CD-DWG-01_601
Irrigation Layout	PRO-IR-CD-DWG-01_602
Irrigation Layout	PRO-IR-CD-DWG-01_603
Typical Double Run Hose Reel Layout	PRO-IR-CD-DWG-01_604
Equipment GPS Point Locations	PRO-IR-CD-DWG-01_605
Typical Single Run Hose Reel Layout	PRO-IR-CD-DWG-01_606

PAGE LAYOUT



IRRIGATED AREA

ZONE No 1 =	14.96 ha
ZONE No 2 =	2.82 ha
ZONE No 3 =	18.58 ha
TOTAL =	**36.36 ha**

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0 100 200 300m
Scale 1:5000 @A1

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LEGEND

SYMBOL	MANUFACTURER/MODEL		QTY
⧓	ISOLATION VALVE		4
(A)	80MM AIR RELEASE VALVE		9
(BF)	150MM APOLLO BACKFLOW DEVICE 4-AE200-ARP 150		1
(W)	150MM WATER METER HELIX H5000		1
[G]	GUN CARRIAGE START POST		19
(H)	IRRIGATION HYDRANT		16
blue line	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	125	2366 m
blue line	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	160	280.8 m
blue line	IRRIGATION MAINLINE: PE100 PN 12.5 POLY PIPE	250	76.0 m
EX-125	Ø125 EXISTING POLY IRRIGATION MAINLINE		
EX-160	Ø160 EXISTING POLY IRRIGATION MAINLINE		
⋈	EXISTING ISOLATION VALVE		
■	IRRIGATOR LOCATION PAVER		16
▶	GUN CARRIAGE START POINT		19

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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DRAWING NAME
BROADACRE IRRIGATION LAYOUT
IRRIGATION LAYOUT - COVER PAGE
SHEET 1

PROJECT NORTH
NORTH

SCALE 1:5000 @ A1 — 06 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_600

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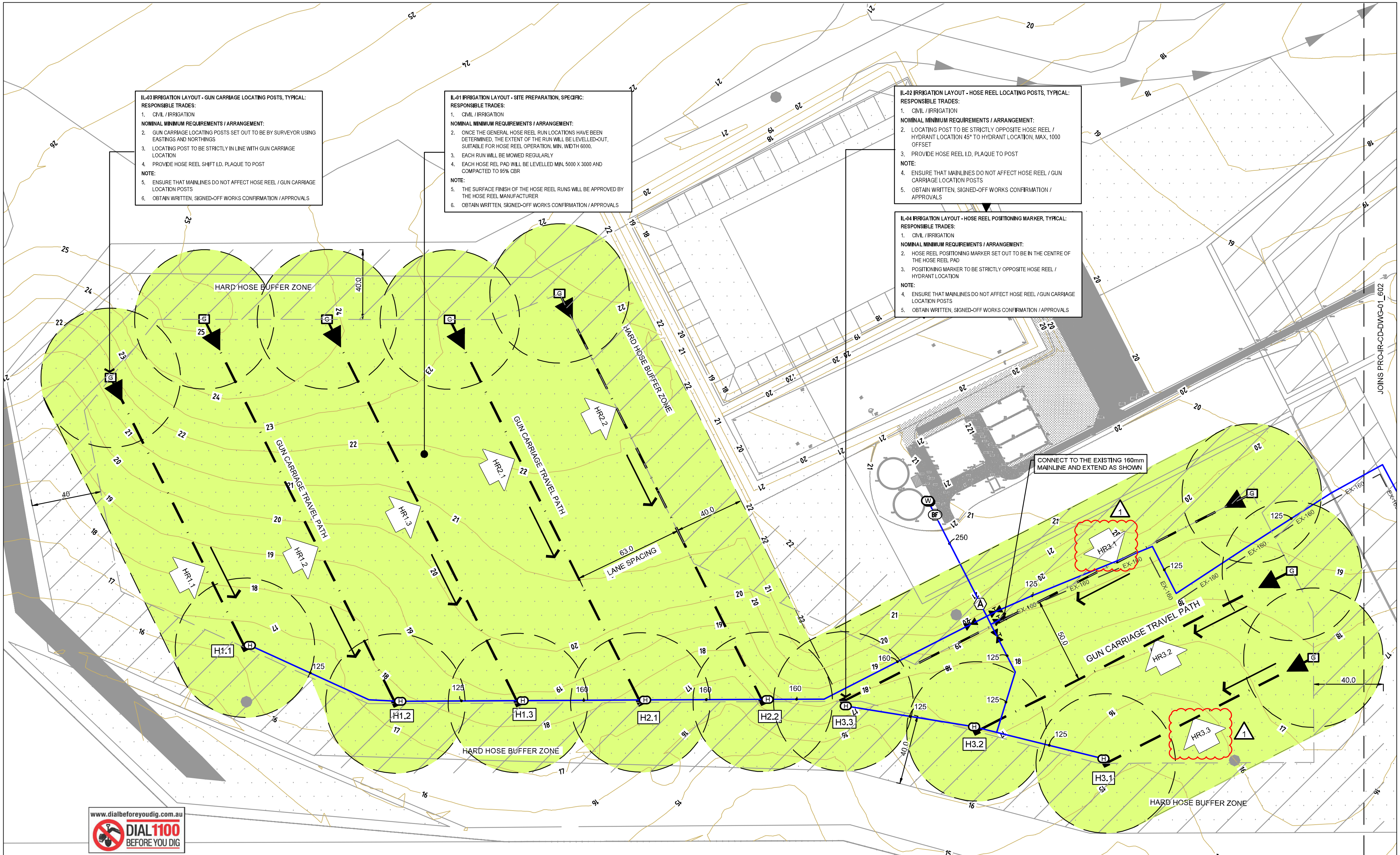
0



IL-03 IRRIGATION LAYOUT - GUN CARRIAGE LOCATING POSTS, TYPICAL:

RESPONSIBLE TRADES:

1. CIVIL / IRRIGATION

NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:

2. GUN CARRIAGE LOCATING POSTS SET OUT TO BE BY SURVEYOR USING EASTINGS AND NORTHINGS
3. LOCATING POST TO BE STRICTLY IN LINE WITH GUN CARRIAGE LOCATION
4. PROVIDE HOSE REEL SHIFT I.D. PLAQUE TO POST

NOTE:

5. ENSURE THAT MAINLINES DO NOT AFFECT HOSE REEL / GUN CARRIAGE LOCATION POSTS
6. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

IL-01 IRRIGATION LAYOUT - SITE PREPARATION, SPECIFIC:

RESPONSIBLE TRADES:

1. CIVIL / IRRIGATION

NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:

2. ONCE THE GENERAL HOSE REEL RUN LOCATIONS HAVE BEEN DETERMINED, THE EXTENT OF THE RUN WILL BE LEVELLED-OUT, SUITABLE FOR HOSE REEL OPERATION. MIN. WIDTH 6000.
3. EACH RUN WILL BE MOWED REGULARLY
4. EACH HOSE REL PAD WILL BE LEVELLED MIN. 5000 X 3000 AND COMPACTED TO 95% CBR

NOTE:

5. THE SURFACE FINISH OF THE HOSE REEL RUNS WILL BE APPROVED BY THE HOSE REEL MANUFACTURER
6. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

IL-02 IRRIGATION LAYOUT - HOSE REEL LOCATING POSTS, TYPICAL:

RESPONSIBLE TRADES:

1. CIVIL / IRRIGATION

NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:

2. LOCATING POST TO BE STRICTLY OPPOSITE HOSE REEL / HYDRANT LOCATION 45° TO HYDRANT LOCATION, MAX. 1000 OFFSET
3. PROVIDE HOSE REEL I.D. PLAQUE TO POST

NOTE:

4. ENSURE THAT MAINLINES DO NOT AFFECT HOSE REEL / GUN CARRIAGE LOCATION POSTS
5. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

IL-04 IRRIGATION LAYOUT - HOSE REEL POSITIONING MARKER, TYPICAL:

RESPONSIBLE TRADES:

1. CIVIL / IRRIGATION

NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:

2. HOSE REEL POSITIONING MARKER SET OUT TO BE IN THE CENTRE OF THE HOSE REEL PAD
3. POSITIONING MARKER TO BE STRICTLY OPPOSITE HOSE REEL / HYDRANT LOCATION

NOTE:

4. ENSURE THAT MAINLINES DO NOT AFFECT HOSE REEL / GUN CARRIAGE LOCATION POSTS
5. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

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0 20 40 60m
Scale 1:1000 @A1

IRRIGATED AREA = 14.96 ha

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
1	BP/CE	11-02-20	FOR FACILITIES
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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PROJECT NORTH

NORTH

DRAWING NAME
BROADACRE IRRIGATION LAYOUT
IRRIGATION LAYOUT - SHEET 2

SCALE 1:1000 @ A1
10 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_601

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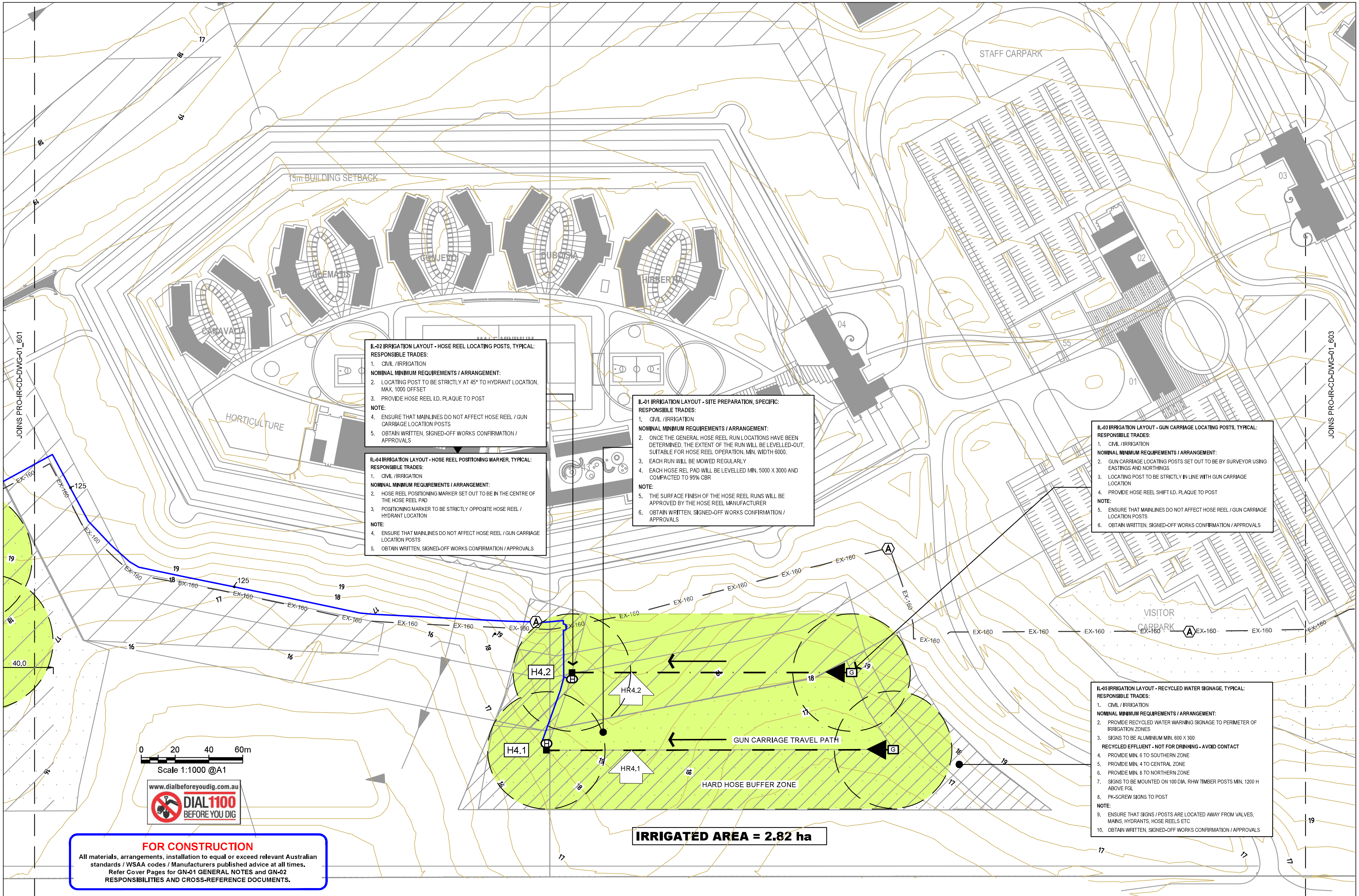
1



AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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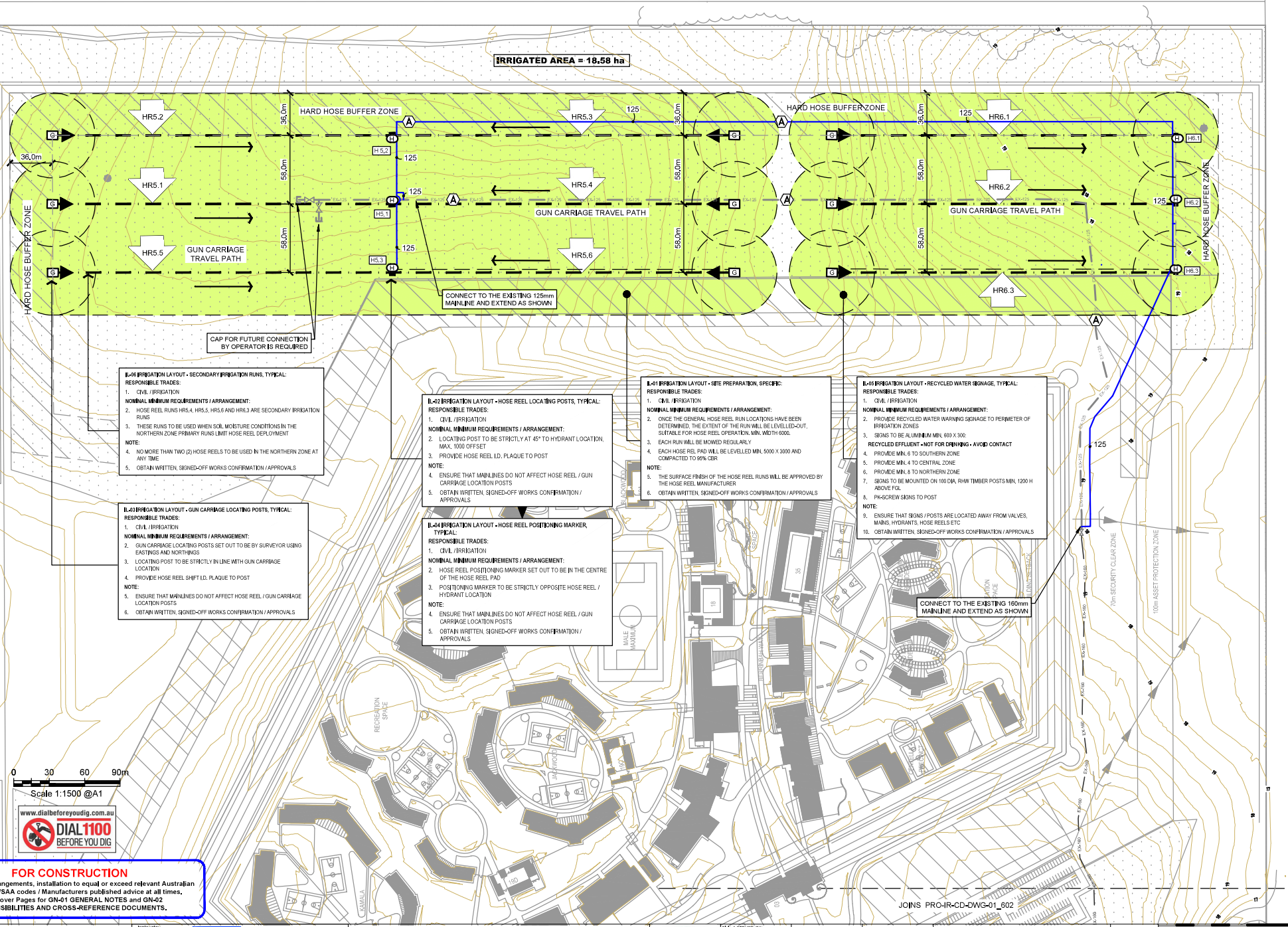
DRAWING NAME
BROADACRE IRRIGATION LAYOUT
IRRIGATION LAYOUT - SHEET 3

PROJECT NORTH

SCALE 1:1000 @ A1 — 06 FEBRUARY 2020

DRAWING NUMBER: SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_602

REVISION: 0



AMENDMENTS			
REV	BY	DATE	DESCRIPTION
0	BP/CE	05-06-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

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PROJECT NORTH

SCALE 1:1500 @ A1
06 FEBRUARY 2020

DRAWING NAME
BROADACRE IRRIGATION LAYOUT
IRRIGATION LAYOUT - SHEET 4

DRAWING NUMBER						REVISION
SECTOR	DISCIPLINE	PHASE	TYPE	SERIES NUMBER		
PRO-IR-CD-DWG-01_603						0

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BROADACRE IRRIGATION - AUTOMATIC CONTROLS

CLARENCE CORRECTION CENTRE - AUTOMATIC CONTROLS	
DRAWING SCHEDULE:	
Title:	**ID:**
Automatic Contols / Cover Page	PRO-IR-CD-DWG-01_700
Automatic Controls	PRO-IR-CD-DWG-01_701

SITE LAYOUT

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0 100 200 300m
Scale 1:5000 @A1

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EQUIPMENT SETOUT POINTS

ITEM	EASTING	NORTHING
SMS.1	505539.3860	6710666.6380
SMS.2	506382.4130	6710565.3050
SMS.3	506284.3845	6709592.9993
SMS.4	506186.6390	6709123.7950
SMS.5	505927.0000	6708590.0000
SMS.6	505974.7920	6708457.9510

LEGEND

SYMBOL	MANUFACTURER/MODEL	QTY
S	MOISTURE SENSOR	6

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
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A	BP/CE	24-01-20	FOR APPROVAL

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DRAWING NAME
BROADACRE IRRIGATION LAYOUT
AUTOMATIC CONTROLS - COVER PAGE
SHEET 1

PROJECT NORTH
NORTH

SCALE 1:5000 @ A1
06 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_700

REVISION
0

AC-01 AUTOMATIC CONTROLS - SOIL MOISTURE CONTROL PLATFORM, SPECIFIC:
RESPONSIBLE TRADE/S:
1. SENSOR MANUFACTURER / SENSOR DEALER

LOCATION / NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. PROVIDE MOBILE PHONE OPERATING SOFTWARE APP
3. INTERFACE SOIL MOISTURE SENSORS WITH APP
4. COMMISSION OPERATING SOFTWARE WITH WWTP OPERATORS
5. PROVIDE OPERATING EDUCATION TO WWTP OPERATORS

NOTE:
6. SOIL MOISTURE DATA IS FOR MONITORING PURPOSES ONLY, THERE IS NO CONTROL INTERFACE.
7. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

AC-02 AUTOMATIC CONTROLS - SOIL MOISTURE SENSOR SET-OUT, TYPICAL:
RESPONSIBLE TRADE/S:
1. SENSOR MANUFACTURER / SENSOR DEALER / CIVIL

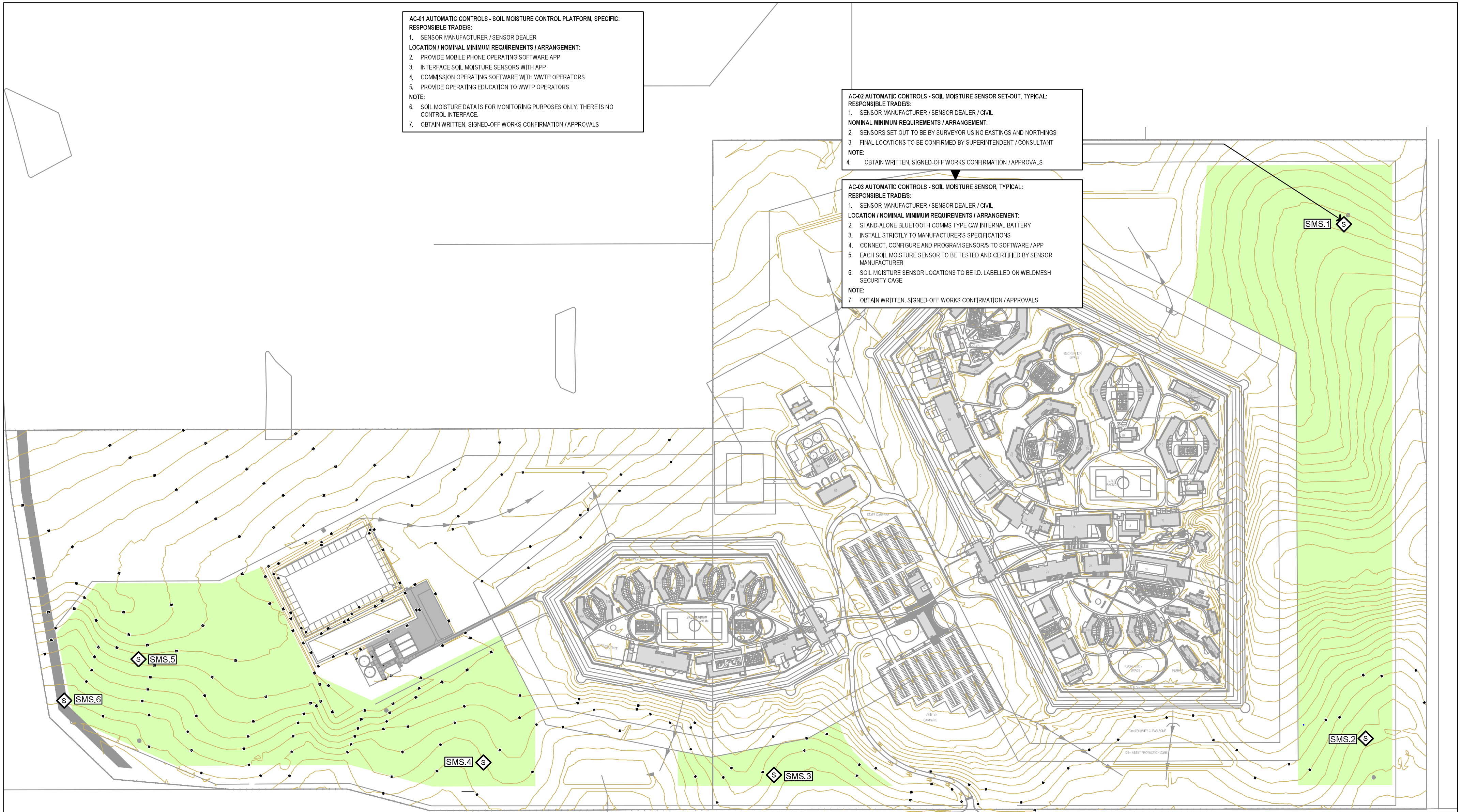
NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. SENSORS SET OUT TO BE BY SURVEYOR USING EASTINGS AND NORTHINGS
3. FINAL LOCATIONS TO BE CONFIRMED BY SUPERINTENDENT / CONSULTANT

NOTE:
4. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS

AC-03 AUTOMATIC CONTROLS - SOIL MOISTURE SENSOR, TYPICAL:
RESPONSIBLE TRADE/S:
1. SENSOR MANUFACTURER / SENSOR DEALER / CIVIL

LOCATION / NOMINAL MINIMUM REQUIREMENTS / ARRANGEMENT:
2. STAND-ALONE BLUETOOTH COMMS TYPE C/W INTERNAL BATTERY
3. INSTALL STRICTLY TO MANUFACTURER'S SPECIFICATIONS
4. CONNECT, CONFIGURE AND PROGRAM SENSOR/S TO SOFTWARE / APP
5. EACH SOIL MOISTURE SENSOR TO BE TESTED AND CERTIFIED BY SENSOR MANUFACTURER
6. SOIL MOISTURE SENSOR LOCATIONS TO BE I.D. LABELLED ON WELDMESH SECURITY CAGE

NOTE:
7. OBTAIN WRITTEN, SIGNED-OFF WORKS CONFIRMATION / APPROVALS



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All materials, arrangements, installation to equal or exceed relevant Australian standards / WSAA codes / Manufacturers published advice at all times. Refer Cover Pages for GN-01 GENERAL NOTES and GN-02 RESPONSIBILITIES AND CROSS-REFERENCE DOCUMENTS.

0 60 120 180m
Scale 1:3000 @A1

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
0	BP/CE	06-02-20	FOR FACILITIES
A	BP/CE	24-01-20	FOR APPROVAL

IRRIGATION

EDWARDS IRRIGATION CONSULTING
Committed to Conservation
Committed to Quality
Unit 1, 2 Henderson Place
LENNOX HEAD NSW
AUSTRALIA 2478
A member of the AWIC Group

0416 635 200
Ph. (02) 6687-4053
E-mail:
chriseic@bigpond.net.au
ABN: 77 673 782 179
American Society of Irrigation Consultants
Australian Chapter
Full Professional Member Since 1994

NORTHERN pathways
building communities improving lives

NSW GOVERNMENT

CIVIL & STRUCTURAL Woolacotts Consulting Engineers (02) 8241 9900	PERUMAL PEDAVOLI ARCHITECTS T + 61 2 9291 0000 WEB: www.ppa.com.au Nominated Architect: Vince Pedavoli NSW reg No.5045
MECH, VERT. TRANSPORT. & ESD Erbas and Associates (02) 9437 1022	
ELECTRICAL JHA Consulting Engineers (02) 9437 1000	SECURITY & COMMUNICATIONS Webb Consulting (02) 9555 1147
HYDRAULIC Sedgman (07) 5578 8300	LANDSCAPE Lorna Harrison Pty Ltd (07) 3870 4900

CLARENCE CORRECTIONAL CENTRE
313 Avenue Rd, Lavadia NSW 2462

DRAWING NAME
BROADACRE IRRIGATION LAYOUT
AUTOMATIC CONTROLS - SHEET 2

PROJECT NORTH
NORTH

SCALE 1:3000 @ A1
06 FEBRUARY 2020

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-IR-CD-DWG-01_701

REVISION
0

A2 – Approval and licence conditions

Development consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under delegation dated 16 February 2015, I determine:

(a) to grant consent to the development application referred to in Schedule 1, subject to the conditions in Schedule 2 and Schedule 3; and
(b) that pursuant to section 89D(2) of the *Environmental Planning and Assessment Act 1979*, any subsequent stage of the development not being for the purpose of a correctional centre with a capital investment value in excess of $30 million is to be determined by the relevant authority and that stage of the development ceases to be State significant development.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts including economic and social impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Gainsford
Executive Director
Priority Projects Assessments

Sydney 14th March 2017

SCHEDULE 1

Application No.:	SSD 7413
Applicant:	Infrastructure NSW, on behalf of Department of Justice
Consent Authority:	Minister for Planning
Land:	313 Avenue Road, Lavadia (Lot 26 DP751376 and Lot 1 DP 1190399)
Approved Development:	Concept Proposal for the staged development of the New Grafton Correctional Centre, comprising: • 1,700 maximum and minimum security beds, consisting of: - 1,000 maximum security beds for male inmates; - 300 maximum security beds for female inmates; and - 400 minimum security beds for male inmates. • core correctional facility buildings including: maximum and minimum accommodation units; special accommodation units; health facilities; education and programs areas; administration; workshops; staff amenities; and visitor facilities; • a recreational oval within the perimeter of the facility;

- six metre high fence/s or wall/s around the perimeter of the facility, with light and security camera poles up to 10 metres in height;
- store buildings, small ancillary facilities, a central energy plant, black-water treatment facilities and a drug dog detection unit and yard located outside the perimeter wall / fence;
- fire access roads on the inside and the outside of the perimeter wall/ fence of the facility;
- water, power, wastewater and communication utilities within the site;
- a maximum building height of 12 metres (approximately three storeys);
- total GFA of approximately 100,000 sqm;
- vegetative buffer of 50 metres along the northern boundary, 15 metres along the eastern boundary and 30 metres along the southern boundary; and
- asset protection zone of 100 metres from every boundary or vegetation buffer;
- one vehicular entry/exit point from Avenue Road;
- 500 car parking spaces;
- 1.5 metre high boundary fence; and
- landscaping of ground cover and /or shrubbery.

Stage 1 Works, including:

- vegetation clearance and biodiversity management activities;
- bulk excavation and site stabilisation works;
- demolition of the existing house and sheds;
- construction of access roads including fire access roads to the extent required to conduct Stage 1 works;
- construction of auxiliary facilities such as construction compound, construction staff parking facilities and stockpiles sites;
- temporary provision of water, power and communication services within the site to the extent required to conduct Stage 1 works; and
- landscaping.

DEFINITIONS

ACHMP	Aboriginal Cultural Heritage Management Plan
Advisory Notes	Advisory information relating to the consent but do not form a part of this consent
AMT	Acceptable Modern Technology
Applicant	Consent holder or person with the benefit of the development consent
Application	The development application and the accompanying drawings plans and documentation described in Condition A5 Schedule 2 and A3 Schedule 3.
APZ	Asset Protection Zone
AS	Australian Standard
AS/NZS	Australian/New Zealand Standard
BAR	Biodiversity Assessment Report
BNR	Biological Nutrient Removal
BOS	Biodiversity Offset Strategy
Construction	The demolition of buildings or works, the carrying out of works, including bulk earthworks and vegetation clearing, and erection of buildings and other infrastructure covered by this consent.
Council	Clarence Valley Council
CEMP	Construction Environmental Management Plan
Certification of Crown Building works	Certification under s109R of the EP&A Act
Certifying Authority	Professionals that are accredited by the Building Professionals Board to issue construction, occupation, subdivision, strata, compliance and complying development certificates under the EP&A Act, *Strata Schemes (Freehold Development) Act 1973* and *Strata Schemes (Leasehold Development) Act 1986* or in the case of Crown development, a person qualified to conduct a Certification of Crown Building works
Day time	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
DEC	Former Department of Environment and Conservation
Department	The Department of Planning and Environment
DPI	Department of Primary Industries
Evening	The period from 6 pm to 10 pm
EIS	Environmental Impact Statement titled *Environmental Impact Statement New Grafton Correctional Centre*, prepared by Dan Keary Urban Planning Pty Ltd and Michael Woodland Consulting Pty Ltd dated August 2016
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
FBA	Framework for Biodiversity Assessment
Feasible	Feasible relates to engineering considerations and what is practical to build
Incident	An occurrence or set of circumstances that causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial. *Note: This meaning of "material harm" applies for the purpose of this approval only.*
MEDLI Model	Model for Effluent Disposal using Land Irrigation
Minister	Minister for Planning, or nominee
NCC	National Construction Code
Night time	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
OEH	Office of the Environment and Heritage
RAP	Registered Aboriginal Parties
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements.
RFS	NSW Rural Fire Service
RMS	Roads and Maritime Services
RtS	Response to Submissions prepared by KEYLAN Consulting Pty Ltd dated November 2016

RL	Relative Level
Secretary	Secretary of Department of Planning and Environment
Secretary's approval, agreement or satisfaction	A written approval from the Secretary (or nominee/delegate)
Sensitive receiver	Residence
Stage 2	Design, construction and operation of the correctional facility
STCFF EEEC	Subtropical Coastal Floodplain Forest of the NSW North Coast Bioregion Endangered Ecological Community
Stock moving route(s)	Stock moving route with a permit issued under the *Local Land Services Act 2013*
Subject Site	313 Avenue Road, Lavadia (Lot 26 DP751376 and Lot 1 DP 1190399)
SWS	Static Water Supply
TfNSW	Transport for New South Wales
W2B	Woolgoolga to Ballina Pacific Highway upgrade works

SCHEDULE 2

CONDITIONS OF CONSENT FOR CONCEPT PROPOSAL

PART A TERMS OF CONSENT

Development Description

A1. Consent is granted to the 'concept proposal' as described in Schedule 1 and the EIS, as amended by the RtS and the conditions contained in this development consent.

Determination of Future Development Applications

A2. In accordance with section 83B(3) of the EP&A Act all development under the concept proposal are to be the subject of future development applications.

A3. The determination of future development applications are to be generally consistent with the terms of development consent SSD 7413 as described in **Schedule 1** and subject to the conditions in Part B, **Schedule 2**.

Development in Accordance with Plans and Documents

A4. The Applicant must carry out the development in accordance with the conditions of consent and generally in accordance with:

a) SSD 7413;

b) the EIS, as amended by the RtS; and

c) the following drawings prepared by NBRS and Partners Pty Ltd, except for:

i) any modifications which are Exempt or Complying Development; and

ii) otherwise provided by the conditions of this consent.

Name of Plan	Date
Landscape Mitigation Plan	February 2016

A5. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

A6. The Applicant must comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:

a) any reports, plans or correspondence that are submitted in accordance with this consent; and

b) the implementation of any actions or measures contained within these reports, plans or correspondence.

Limits of Consent

A7. This consent lapses five years after the date from which it operates, unless the Development has physically commenced on the land to which the consent applies before the date on which the consent would otherwise lapse under section 95 of the EP&A Act.

Staged Submission of Plans and Programs

A8. With the approval of the Secretary, the Applicant may:

a) submit any strategy, plan or program required by this consent on a progressive basis; and/or

b) combine any strategy, plan or program required by this consent.

If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or

program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program. A clear relationship between the strategy, plan or program that is to be combined must be demonstrated.

Community Consultative Committee

A9. Within three months of the date of this approval, unless otherwise approved by the Secretary, the Applicant is required to establish a Community Consultative Committee in accordance with the Department's *Community Consultative Committee Guidelines for State Significant Projects*, dated November 2016.

Built form

A10. Future buildings and structures on the site must not exceed 12 metres from finished ground level, unless it can be demonstrated that visual impacts can be appropriately mitigated.

Dispute Resolution

A11. Where this consent requires further approval from public authorities, the parties must not act unreasonably in preventing an agreement from being reached. In the event that a dispute arises between the Applicant and Council or a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the development, either party may refer the matter to the Secretary for resolution. The Secretary's determination of any such dispute shall be final and binding on the parties.

Statutory Requirements

A12. The Applicant must ensure all licences, permits and approvals/ consents are obtained and kept up to date as required throughout the life of the Development. No condition of this consent removes the obligation of the Applicant to obtain, renew or comply with such licences, permits or approvals.

Note: *The Applicant is required to obtain the relevant license/approval from Council under section 68 of the Local Government Act 1993 prior to the commencement of construction for all domestic effluent disposal and management systems on-site.*

PART B CONDITIONS TO BE SATISFIED IN FUTURE DEVELOPMENT APPLICATIONS

Development Plans

B1. All future development applications involving site and/or construction works must be supported with detailed plans which show the extent of the proposed works including the location of any proposed works, structures or services, floor plans, elevations, sections and building materials.

Built Form

B2. The location, height and design of future buildings and structures must be generally consistent with the development principles and development parameters identified in the EIS.

Residential Amenity Impacts

B3. Details are to be provided demonstrating that consideration has been given to the protection and minimisation of potential amenity impacts on adjoining sensitive land uses, including, but not limited to the following matters:

a) visual amenity, including identifying key views, quantifying likely impacts and identifying appropriate measure to ameliorate the impacts;
b) privacy;
c) noise and vibration;
d) odour;
e) safety procedures; and
f) lighting.

Social and Economic Impacts

B4. A comprehensive Social Impact Assessment must be prepared by a suitably qualified and experienced person and submitted with the development application for Stage 2. The Social Impact Assessment is to:

a) include a social baseline study, which must be directly informed by community engagement. The social baseline study must be submitted to the Secretary for approval prior to finalisation of the Social Impact Assessment and should meet the following objectives:
    i) identification of the directly-affected community and other stakeholders, specifying in what way each might be affected;
    ii) assistance for these people and groups in understanding the proposal;
    iii) completion of a qualitative community profile (including values and aspirations) as well as a quantitative baseline of key social aspects;
    iv) identification of any diversity of views/concerns that might exist in the community;
    v) relevance of any previous, current, and anticipated relevant developments (e.g. Pacific Highway upgrade) and how these might shape community views; and
    vi) detailed consideration of potential impacts (including perceptions) on directly-affected communities (near neighbours and landholders).
b) identify potential impacts, considering the following matters:
    i) way of life;
    ii) culture;
    iii) community;
    iv) political systems;
    v) environment;
    vi) health and wellbeing;

vii) personal and property rights; and
viii) fears and aspirations.

c) assess significance of each impact based on the following characteristics:
   i) duration;
   ii) extent;
   iii) sensitivity (value that community members/groups place on the impact, and capacity to adapt);
   iv) severity; and
   v) level of community concern.

d) discuss mitigation options for potentially significant negative social impacts, and propose strategies to secure and maximise beneficial impacts;

e) propose methods for monitoring social impacts over time, and adaptively managing those impacts and any unanticipated impacts;

f) outline mechanisms for publicly reporting social impact performance over time;

g) clearly explain and describe the process, evidence and all assumptions made to identify the community, and to assess impacts and their significance;

h) be supported and informed by an extensive, inclusive and deliberative program of community engagement, actively seeking input from the affected community and other stakeholders, and demonstrating how that input has informed the proposal;

i) identify social impact indicators that would be monitored from the date of construction to five years after opening, to inform government agency responses and provide a baseline to measure and manage future impacts; and

j) identify the qualifications and experience of the author(s) in social science methods.

Traffic, Access and Car Parking

B5. The development application for Stage 2 must include a detailed assessment of traffic impacts, traffic generation, cumulative traffic impacts and analysis of intersection performance. The assessment must include mitigation and management measures and recommendations on intersection/infrastructure upgrades, where this is deemed necessary. The analysis of intersection performance must include, but not be limited to, the following intersections:

   a) Avenue Road and Eight Mile Lane;
   b) the existing Pacific Highway and Eight Mile Lane;
   c) Old Six Mile Lane and the existing highway; and
   d) Old Six Mile Lane and Avenue Road.

B6. The development application for Stage 2 must demonstrate that Avenue Road and the intersection of Eight Mile Lane and Avenue Road are able to accommodate construction and operational traffic generated by this development.

B7. The development application for Stage 2 must include a traffic management plan and traffic control plan for the facility prepared in consultation with the W2B contractor, RMS, Council and local residents to ensure traffic movements, vehicle access and car parking would be managed appropriately, including inmate transfers.

B8. The development application for Stage 2 must demonstrate adequate access, bus shelter and turning circle areas are incorporated in the design of the facility to ensure any bus services can enter, exit and manoeuvre through the site in accordance with relevant standards.

Wastewater Management

B9. Full details of the proposed wastewater management system to service the proposed correctional facility are to be provided with the development application for Stage 2, including but not limited to:

a) a comprehensive site and soil analysis to demonstrate the suitability of the site for on-site wastewater management, including rainfall frequency and intensity, Coffs Harbour evaporation data and comparison with Alstonville evaporation data;

b) details of the entire wastewater treatment and storage system, including detailed calculation of the water inputs and wastewater outputs, justification of the figures used, and plans showing the location and discharge points. The following matters should be comprehensively addressed:

i) effluent treatment:
   i. defining the type of wastewater treatment proposed for the site (eg. Biological Nutrient Removal, Membrane filtration) and the expected effluent quality;
   ii. defining and justifying the parameters utilised in designing the effluent treatment system;
   iii. if effluent is to be discharged to waters more frequently than 1 year in 10 that effluent must meet the EPA's Accepted Modern Technology (AMT) criteria as a minimum; and
   iv. options for the treatment, management and lawful disposal of any sludge/Biosolids generated by on-site treatment and detail any *Protection of the Environment Operations Act 1997* licensing requirements;

ii) effluent reuse strategies:
   i. demonstrating consistency with the Use of Effluent by Irrigation, Appendix 1 (Guidelines for the use of Reclaimed Water from Municipal Sewage Treatment Plants) DEC 2004; and
   ii. demonstrating consistency with Australian Guidelines for Water Recycling: Managing Health and Environmental Risks; and
   iii. consideration of opportunities for off-site agricultural or horticultural reuse close to the project site where on-site management is not feasible and detail any *Water Industry Competition Act 2006* licensing requirements.

iii) effluent irrigation:
   i. demonstrating consistency with the principals detailed in Use of Effluent by Irrigation (DEC 2004) and Australian Guidelines for Water Recycling: Managing Health and Environmental Risks;
   ii. including an accurate model of the proposed effluent reuse (eg MEDLI model); and
   iii. including a monitoring program.

c) a detailed analysis of potential impacts of off site discharge of the treated effluent on the receiving environment, an assessment of the alternative options and the measures proposed to mitigate any potential impacts; and

d) an analysis of the potential for impacts on the surrounding environment resulting from the overtopping of the effluent storage dam and the measures proposed to avoid and mitigate any adverse impacts.

B10. The development application for Stage 2 must demonstrate that the wastewater management infrastructure needed by the facility is provided as part of the development or alternatively determine with Council the contributions that the Applicant is required to pay to connect to Council infrastructure.

Water Supply

B11. Full details of the proposed potable water supply system infrastructure is to be provided with the development application for Stage 2, including but not limited to:

a) demonstrating that any proposed reticulation works/services would not conflict with future road maintenance and construction activities:

b) prepared in consultation with DPI Water and Council; and

c) details of the ongoing ownership and maintenance of any water supply services.

B12. The development application for Stage 2 must demonstrate that the water infrastructure needed by the facility is provided as part of the development or alternatively determine with Council the contributions that the Applicant is required to pay to connect to Council infrastructure.

Telecommunications

B13. The development application for Stage 2 must include details on the proposed telecommunications infrastructure that is to be installed to service the proposal.

Electricity

B14. The development application for Stage 2 must demonstrate that adequate electricity infrastructure would be provided to service the proposed correctional centre facility.

Surface and Ground Water and Drainage

B15. The development application for Stage 2 is to include full details of the proposed stormwater management system to service the proposed correctional facility. This information must include:

a) an analysis of the impacts of the discharge of stormwater and changed hydrology of the land on the surrounding environment, including quality, quantity and velocity impacts and potential impacts on the nearby State Environmental Planning Policy No 14 – Coastal Wetlands;

b) plans showing the location of the on-site detention facilities and discharge points in relation to the other land uses on the site, particularly the effluent disposal areas and effluent storage facilities;

c) plans prepared in accordance with Council's stormwater and drainage requirements; and

d) detail on any potential impacts on groundwater, including mitigation measures such as lining sediment basins or monitoring groundwater.

Landscaping

B16. The development application for Stage 2 must include detailed landscape plans identifying the species to be used in the site buffer and other landscape areas (preferably species indigenous to the area).

Bushfire Protection

B17. The development application for Stage 2 must demonstrate that bushfire protection measures, comply with the relevant provisions of *Planning for Bushfire Protection 2006* and the requirements of the RFS in relation, but not limited, to:

a) Asset Protection Zones;

b) fire fighting vehicle access roads; and

c) fire fighting water supply.

Biodiversity

B18. The development application for Stage 2 must demonstrate that the proposal is consistent with the endorsed BAR and BOS.

Aboriginal Heritage

B19. An Aboriginal Cultural Heritage Management Plan (ACHMP) must be submitted with the development application for Stage 2.

Ecologically Sustainable Development

B20. The development application for Stage 2 must demonstrate how the principles of ESD have been incorporated into the design, construction and on-going operation of the proposal.

Contamination

B21. If the Phase 2 contamination assessment report identifies a Remediation Action Plan is required to be prepared, a Remediation Action Plan must be submitted with the development application for Stage 2 or a site validation certificate provided to verify that the site has been remediated.

Biting Insects

B22. The development application for Stage 2 shall include a health risk assessment for future inmates, workers and visitors that must identify what measures would be implemented to ameliorate the impact of biting insects and to minimise breeding areas on the site.

SCHEDULE 3

CONDITIONS OF CONSENT FOR STAGE 1 WORKS

PART A ADMINISTRATIVE CONDITIONS

Development Description

A1. Consent is granted to the 'Stage 1 works' as described in Schedule 1 and the EIS, as amended by the RtS and the conditions contained in this development consent.

Development in Accordance with Plans and Documents

A2. The Applicant must carry out the development in accordance with the conditions of consent and generally in accordance with:

a) SSD 7413; and

b) the EIS, as amended by the RtS.

A3. The Applicant must comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:

a) any reports, plans or correspondence that are submitted in accordance with this consent; and

b) the implementation of any actions or measures contained within these reports, plans or correspondence.

Inconsistency between documents

A4. If there is any inconsistency between the plans and documentations referred to above, the most recent document shall prevail to the extent of the inconsistency. However, conditions of this consent prevail to the extent of any inconsistency. Where there is an inconsistency between approved elevations and plans, the elevations prevail.

Development Expenses

A5. It is the responsibility of the Applicant to meet all expenses incurred in undertaking the development, including expenses incurred in complying with conditions imposed under this consent.

Lapsing of Approval

A6. This consent will lapse five years from the date of consent unless the works associated with Stage 1 have physically commenced.

Prescribed Conditions

A7. The Applicant must comply with all relevant prescribed conditions of development consent under Part 6, Division 8A of the Regulation.

Dispute Resolution

A8. Where this consent requires further approval from public authorities, the parties must not act unreasonably in preventing an agreement from being reached. In the event that an agreement is unable to be reached within two months or a timeframe otherwise agreed to by the Secretary, the matter is to be referred to the Secretary for resolution. All areas of disagreement and the position of each party are to be clearly stated to facilitate a resolution. The Secretary's resolution of the matter will be binding on the parties.

Long Service Levy

A9. For work costing $25,000 or more, a Long Service Levy must be paid. For further information please contact the Long Service Payments Corporation on their Helpline 13 14 41.

Legal Notices

A10. Any advice or notice to the consent authority must be served on the Secretary.

Obligation to Minimise Harm to the Environment

A11. In addition to meeting the specific performance criteria established under this approval, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the development.

PART B PRIOR TO THE COMMENCEMENT OF WORKS

Note: Conditions below that refer to actions "prior to issue of a Construction certificate" may be read as prior to issue of a construction certificate for the relevant construction stage, unless otherwise indicated as to be satisfied prior to issue of any construction certificate.

Development Plans

B1. Prior to commencement of works, detailed engineering plans which clearly illustrate the extent of the proposed works must be provided and approved by the Secretary and must illustrate:

a) the extent of site clearance works, which nominate any vegetation proposed to be cleared or retained;

b) existing and finished ground levels and plans which nominate the extent of cut and fill;

c) the location of all drainage facilities, utility services and auxiliary facilities;

d) proposed driveway access, internal road and car parking areas and fire trails; and

e) site and floor plans, elevations, sections and materials for any proposed structures.

B2. Any structures which are to be established on the site are to be detailed in structural drawings that are prepared and signed by a suitably qualified practising Structural Engineer and demonstrate compliance with:

a) the relevant clauses of the NCC; and

b) the development consent.

Notice of Commencement of Works

B3. The Certifying Authority, the Department and Council must be given written notice at least 48 hours prior to the commencement of work on the Subject Site.

Contamination

B4. A Phase 2 contamination assessment report must be prepared and submitted to the Secretary prior to the commencement of any works. This assessment is to define the nature, extent and degree of contamination (if any); assess potential risk posed by contaminants to health and the environment; and to obtain sufficient information to develop a remedial action plan (if required).

B5. A Remediation Action Plan (if required) is to be prepared and approved by an accredited site auditor prior to the commencement of works and submitted to the Certifying Authority.

Biodiversity

B6. Prior to the removal of any vegetation, a revised BAR and Stage 2 BOS must be submitted and approved by the Secretary, addressing:

a) results of additional basic soil sampling required to substantiate or otherwise the potential occurrence of Subtropical Coastal Floodplain Forest of the NSW North Coast Bioregion Endangered Ecological Community (STCFF EEC) on the site; and

b) consistency regarding the likelihood of occurrence for wallum froglet on the project site.

B7. Within six months of the date of this approval, unless otherwise approved by the Secretary, the final BOS (Stage 3 of the BOS) must be submitted and approved by the Secretary.

B8. Within 12 months of commencement of the vegetation clearance works, unless otherwise approved by the Secretary, the applicant must submit evidence that the final BOS (Stage 3 of the BOS) has been implemented, including the retirement of the relevant credits required in the BOS.

B9. A vegetation retention plan must be prepared by a suitably qualified consultant, which must:

a) identify and provide details of the retention of any trees (particularly hollow bearing) and groundcover;

b) provides details on the maintenance and improvement of retained or planted vegetation, particularly within the vegetative buffer areas; and

c) be reviewed by a suitably qualified bushfire consultant and include certification that any vegetation retained within an APZ meets the relevant standards.

Stormwater Management

B10. Full details of the proposed stormwater management system under Stage 1 of the project is to be provided to and approved by Council prior to the commencement of works. This information must include:

a) detailed engineering plans and specifications of the proposed drainage system on the site and provide details on the proposed management of drainage lines traversing the project site;

b) an analysis of the impacts of the discharge of stormwater and changed hydrology of the land from the site at Stage 1 on the surrounding environment, including quality, quantity and velocity impacts and potential impacts on the nearby SEPP 14 Coastal Wetlands;

c) plans prepared in accordance with Council's stormwater and drainage requirements for rural land; and

d) detail on any potential impacts on groundwater, including mitigation measures such as lining sediment basins or monitoring groundwater.

Aboriginal Heritage

B11. An **Aboriginal Cultural Heritage Management Plan** (ACHMP) is to be prepared in consultation with the Aboriginal stakeholders and the OEH and submitted to and approved by the Secretary prior to the commencement of works. The ACHMP must address, but not be limited to, the following matters:

a) the Aboriginal community is to be provided opportunity to identify the potential Bora Ring on the site. If the Bora Ring is identified to be located on the site, the Applicant must ensure this site is appropriately managed as part of the ACHMP;

b) procedures to ensure all works are to immediately cease if unexpected archaeological artefacts are found on-site during any stage of the works and appropriate procedures for notification and recommencing works;

c) all works and reports required under the ACHMP for any particular potential or archaeological site must be completed in accordance with the ACHMP prior to any other works at that site;

d) triggers to identify situations where mechanical salvage excavations cease and manual salvage is commenced;

e) protocols for the salvage required for the project and also for the long term management of any areas of cultural or archaeological significance, within the project boundaries, but not subject to salvage excavations;

f) a requirement for all salvage works to be completed at all locations identified in, and in accordance with the recommendations contained within, the Aboriginal Cultural Heritage Assessment Report prepared by Jacobs dated August 2016;

g) a requirement for all salvage works to be carried out under supervision of a qualified archaeologist and representatives of the Registered Aboriginal Parties (RAPs) for the project; and

h) a requirement for preparation of a final report outlining the results of all salvage work undertaken, which must be prepared in consultation with the project RAPs and should include all comments provided by the project RAPs regarding the salvage process and any long term management of Aboriginal objects.

B12. The final report as required by condition B11(h) outlining the results of all salvage work undertaken must be submitted to OEH for approval prior to the commencement of bulk earthworks.

Pre-construction Dilapidation Reports

B13. The Applicant is to engage appropriately qualified structural and civil engineers to prepare a Pre-Construction Dilapidation Report detailing the current structural condition of all adjoining buildings, infrastructure and roads. Any entry into private land is subject to the approval of the land owner(s). The report must be submitted to the Certifying Authority prior to the commencement of works. A copy of the report is to be forwarded to the Council and each of the affected property owners.

B14. In the event that access for undertaking the Pre-Construction Dilapidation Report is denied by an adjoining owner, the Applicant must demonstrate, in writing, to the satisfaction of the Certifying Authority that all reasonable steps have been taken to obtain access and advise the affected property owner of the reason for the report and that these steps have failed.

Construction Environmental Management Plan

B15. Prior to the commencement of works on the Subject Site, a **Construction Environmental Management Plan** (CEMP) that addresses those works must be prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (Department of Planning and Infrastructure 2004) and approved by the Certifying Authority. The CEMP must be prepared by a suitably qualified and experienced person in consultation with Council and must address, but not be limited to, the following matters where relevant:

a) hours of work;
b) 24 hour contact details of site manager;
c) establishment of site facilities;
d) soil and water management, including surface and ground water quality and quantity, construction contaminants, soils, acid sulfate soils and spills;
e) flora and fauna management;
f) prevention of stock travelling along stock moving routes from entering the site;
g) bushfire prevention;
h) visual amenity of any stockpiles;
i) minimising potential breeding areas on the site for biting insects;
j) traffic management, in consultation with the local Council, including a designated off-street car parking area for construction related vehicles;
k) construction noise and vibration management, prepared by a suitable qualified person;
l) management of dust to protect the amenity of the neighbourhood, including truck movements along Avenue Road;
m) erosion and sediment control;
n) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the Subject Site;
o) external lighting in compliance with AS4282:1997 *Control of the Obtrusive Effects of Outdoor Lighting*;
p) an Unexpected Finds Protocol (UFP); and
q) waste classification (for materials to be removed) and validation (for materials to remain) during construction to confirm the contamination status in these areas of the site.

B16. The CEMP must not include works that have not been explicitly approved in the development consent. In the event of any inconsistency between the consent and the CEMP, the consent shall prevail.

B17. The CEMP must detail how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts and describe the roles and responsibilities of all relevant employees involved in earthworks and construction.

B18. The Applicant must submit a copy of the CEMP to the Department and to the Council, prior to commencement of works.

Construction Traffic and Access

B19. A **Construction Traffic and Pedestrian Management Plan** (CTPMP) must be prepared by a suitably qualified person in consultation with Clarence Valley Council, the RMS, Pacific Complete and the immediately adjoining local residents. The CTPMP must be submitted to the satisfaction of the Certifying Authority prior to commencement of works. The CTPMP shall include, but not limited to, the following:
   a) locations of the proposed work zone, plant storage, staff parking and staging area;
   b) measures to mitigate impacts on stock moving routes;
   c) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers to and from the site;
   d) describe the measures that would be put in place to ensure compliance with the Drivers' Code of Conduct, including measures to minimise the potential for fauna strike;
   e) road safety audit and measures to mitigate any safety risks for this stage of the construction works;
   f) haulage routes;
   g) construction vehicle access arrangements;
   h) estimated number of construction vehicle movements during various times of the day;
   i) construction program;
   j) consultation strategy for liaison with surrounding stakeholders, including holders of stock moving route permits affected by construction works;
   k) any potential impacts to general traffic, cyclists, pedestrians, parking and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works; and
   l) cumulative construction impacts of projects, including major transport projects, and details of the duration of the any cumulative impacts and measures to mitigate any associated general traffic, public transport, parking, pedestrian and cyclist impacts.

B20. Prior to commencement of any works, any measures required to mitigate any safety risks for this stage of the construction works must be implemented.

B21. The Applicant must submit a copy of the CTPMP to the Department and Council prior to the commencement of works.

Construction Noise and Vibration

B22. Prior to the commencement of works on the Subject Site, a **Construction Noise and Vibration Management Plan** (CNVMP) must be prepared and approved by the Certifying Authority. The CNVMP must:
   a) be prepared by a suitably qualified expert;
   b) be prepared in consultation with all noise sensitive receivers where noise levels exceed the highly affected noise management level, in accordance with EPA guidelines, and Council;
   c) describe the measures that would be implemented to ensure:
      i) best management practice is being employed; and
      ii) compliance with the relevant conditions of this consent;
   d) describe the proposed noise and vibration management measures in detail;
   e) include strategies that have been developed to address impacts to noise sensitive receivers where noise levels exceed the construction noise management level, for managing high noise generating works;
   f) describe the consultation undertaken to develop the strategies in e) above; and
   g) evaluates and reports on the effectiveness of the noise and vibration management measures.

B23. The Applicant must submit a copy of the CNVMP to the Department and Council prior to the commencement of works.

Construction Waste Management

B24. Prior to the commencement of works on the Subject Site, a **Construction Waste Management Plan** (CWMP), prepared by a suitably qualified person in consultation with

Council, must be submitted to and approved by the Certifying Authority. The CWMP must address, but not limited to, the following matters:

a) identification of an appropriate area within the site for the storage of garbage bins and recycling containers and all waste and recyclable material generated on the land;
b) recycling of demolition materials; and
c) removal of hazardous materials and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines.

B25. The Applicant must submit a copy of the CWMP to the Department and Council prior to the commencement of work.

B26. Details demonstrating compliance with the relevant legislative requirements, associated with the removal of hazardous waste, particularly the method of containment and control of emission of fibres to the air, are to be submitted to the satisfaction of the Certifying Authority prior to the removal of any hazardous materials.

B27. The Applicant must consult Council and the RMS regarding truck routes(s) to be followed by trucks transporting waste material from the Subject Site, prior to the commencement of the removal of any waste material from the Subject Site.

Soil and Water

B28. Soil erosion and sediment control measures must be designed in accordance with the document *Managing Urban Stormwater - Soils & Construction Volume 1* (2004) by Landcom. Details are to be submitted to and approved by the Certifying Authority prior to the commencement of any works. The soil erosion and sediment control measures must address, but not limited to, the following matters:

a) provisions to ensure all works associated with or in close proximity to drainage lines are undertaken in accordance with DPI Water *Guidelines for Controlled Activities*;
b) emergency contingency procedures;
c) detail on any potential impacts on groundwater, including mitigation measures such as lining sediment basins or monitoring groundwater; and
d) classifying all excess soil in accordance with the *Protection of the Environment Operations Act 1997* and removed from the site appropriately.

Flora and Fauna Management

B29. A **Flora and Fauna Management Plan** (FFMP), prepared by a suitably qualified person, must be submitted to and approved by the Certifying Authority. The FFMP must address, but not limited to, the following matters:

a) minimising the risk, introduction and spread of invasive species and diseases;
b) traffic management procedures (including signage, speed limits and help information for incidents) in regard to the protection of the koala and Rufous Bettong;
c) fauna protection/relocation procedures for displaced wildlife, identifying potential release sites and timing protocols; and
d) identifying suitable receiving sites for displaced aquatic/amphibian fauna.

B30. The Applicant must submit a copy of the approved FFMP to the Department and Council prior to the commencement of works.

Bush Fire Management

B31. A **Bush Fire Management Plan** (BFMP), prepared by a suitably qualified person, must be submitted to and approved by the Certifying Authority. The BFMP must address, but not limited to, the following matters:

a) contact person (site supervisor) and 24 hour contact phone number;
b) schedule and description of proposed bush fire mitigation works implemented in accordance with requirements set out in Rural Fire Service letter dated including:
    i) location of asset protection zones (100 metres around compound and 20 metres around perimeter of the Subject Site) and management requirements;

ii) provision and location of 20,000 litres firefighting water supply;
iii) internal vehicle access roads; and

c) a plan identifying the location and storage of bulk flammable liquids and materials;

d) a 'hot works' management plan, including:
i) restriction when 'hot works' are limited or prohibited;
ii) safety measures to be implemented when 'hot works' are being conducted; and

e) an Emergency/Evacuation Plan is to be prepared consistent with the NSW Rural Fire Service document *Guidelines for the Preparation of Emergency/Evacuation Plans* and Australian Standard AS 3745 2010 *Planning for Emergencies in Facilities.*

B32. A copy of the approved BFMP must be submitted to the Clarence Valley Fire Control Centre prior to works commencing.

Complaints and Enquiries Procedure

B33. Prior to the commencement of works, or as otherwise agreed by the Secretary, the following must be made available for community enquiries and complaints for the duration of construction:

a) a toll-free 24hour telephone number(s) on which complaints and enquiries about the application may be registered;
b) a postal address to which written complaints and enquires may be sent;
c) an email address to which electronic complaints and enquiries may be transmitted;
d) a mediation system for complaints unable to be resolved; and
e) a mechanism for community members to make enquiries in common community languages of the area.

The telephone number, the postal address and the email address must be published in newspaper(s) circulating in the local area including in newspapers of culturally and linguistically diverse communities affected by the proposal prior to the commencement of construction. This information must also be provided on the website (or dedicated pages) required by this approval and available in common community languages within three months of construction commencing.

B34. Prior to the commencement of works, or as otherwise agreed by the Secretary, a Construction Complaints Management System consistent with AS/NZS 10002:2014 *Guidelines for Complaint Management in Organisations* must be prepared and implemented. The applicant must maintain the Construction Complaints Management System for the duration of construction and up to 12 months following completion of construction works. Information on all complaints received, including the means by which they were addressed and whether resolution was reached, with or without mediation, must be maintained in a complaints register. The information contained within the Construction Complaints Management System must be made available to the Secretary on request.

Demolition

B35. Any demolition work must comply with the provisions of Australian Standard AS2601: 2001 *The Demolition of Structures.* The work plans required by AS2601: 2001 must be accompanied by a written statement from a suitably qualified person that the proposals contained in the work plan comply with the safety requirements of the Standard. The work plans and the statement of compliance must be submitted to the satisfaction of the Certifying Authority prior to the commencement of works.

Utility Services

B36. Prior to the commencement of works the Applicant is to negotiate with the utility authorities in connection with the relocation and/or adjustment of any services affected by the construction works.

B37. Prior to the commencement of works, written advice must be obtained from relevant utility authorities stating that satisfactory arrangements have been made to ensure provisions of adequate services for the duration of the Stage 1 works.

PART C DURING CONSTRUCTION

Hours of Work

C1. The hours of construction, including the delivery of materials to and from the site, must be restricted as follows:

a) between 7 am and 6 pm, Mondays to Fridays inclusive;

b) between 8 am and 1 pm, Saturdays; and

c) no work on Sundays and public holidays; or

d) works may be undertaken outside these hours where:

i) works are inaudible at the nearest sensitive receivers; or

ii) the delivery of materials is required outside these hours by the Police or other authorities; or

iii) it is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm; or

iv) a variation is approved, in advance, in writing, by the Secretary or her nominee.

Approved Plans to be On-Site

C2. A copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification must be kept on the Subject Site at all times and must be readily available for any officer of the Department, Council or the Certifying Authority.

Management Plans

C3. The ACHMP, CEMP, CNVMP, CWMP, CTPMP's, FFMP and BFMP (as revised from time to time) must be implemented by the Applicant for the duration of the construction works.

Erosion and Sediment Control

C4. All erosion and sediment control measures, are to be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works have been stabilised and rehabilitated so that it no longer acts as a source of sediment.

Bushfire Protection

C5. The following bushfire mitigation works must be implemented for the duration of the construction works:

a) a minimum 100 metre APZ around the construction site compound;

b) a 20 metre APZ around perimeter of the subject land;

c) a fire fighting vehicle access road (to fire trail standard) within the perimeter APZ with:

i) a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass);

ii) maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed;

iii) a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided;

iv) maximum crossfall of the trail is not more than 10 degrees;

v) passing bays every 200 metres and must be a minimum 20 metres long by three metres wide (minimum trafficable width of seven metres at the passing bay);

vi) access for fire fighters;

vii) maintained in a serviceable condition by the owner of the land; and

viii) fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge).

d) installation of a 20,000 litres firefighting water supply and maintained in the following manner:

i) must be located not less than five metres and not more than 20 metres from any structures;
ii) if located above ground it must manufactured using non-combustible material (concrete, metal, etc);
iii) only use non-combustible materials (concrete, metal, etc) to elevate or raise firefighting water supply tank(s) above the natural ground level;
iv) a 65mm metal Storz outlet with a gate or ball valve must be fitted to any firefighting water supply tank(s) and accessible for a firefighting truck;
v) the gate or ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material;
vi) all associated fittings to the firefighting water supply tank(s) must be non-combustible;
vii) any below ground firefighting water supply tank(s) constructed of combustible (polycarbonate, plastic, fibreglass, etc) materials must be shielded from the impact of radiant heat and direct flame contact;
viii) a hardened ground surface for firefighting truck access is to be constructed up to and within four metres of the firefighting water supply (tank or Storz fitting);
ix) any firefighting water supply tank(s) located below ground must be clearly delineated to prevent vehicles being driven over the tank;
x) all water supplies for firefighting purposes must be clearly signposted as a fire fighting water supply;
xi) below ground firefighting water supply tank(s) must have an access hole measuring a minimum 200mm x 200mm to allow firefighting trucks to access water direct from the tank;
xii) firefighting water supply tank(s) and associated fittings, located within 60 metres of a bushfire hazard and on the hazard side of an approved building, must be provided with radiant heat shielding to protect the tank from bush fire impacts and maintain safe access to the water supply for fire fighters;
xiii) a minimum 5hp or 3kW petrol or diesel powered pump(s) must be made available to the water supply. A 19mm (internal diameter) fire hose(s) and/or reel(s) must be connected to the pump. Fire hose(s) and/or reel(s) must be installed so that each elevation of the building can be reached by a fire hose(s). The fire hose(s) and/or reel(s) must be constructed in accordance with 'AS/NZS 1221:1997, Fire hose reels' and must be installed in accordance with 'AS 2441:1988 Installation of fire hose reels';
xiv) pumps are to be shielded from the direct impacts of bush fire;
xv) a Static Water Supply (SWS) sign must be obtained from the local NSW Rural Fire Service (RFS) and positioned for ease of identification by RFS personnel and other users of the SWS. In this regard:
- markers must be fixed in a suitable location so as to be highly visible; and
- markers should be positioned adjacent to the most appropriate access for the water supply.

Note: The definition of below ground dedicated firefighting water supply tank(s) is when the outlet valve is located below natural ground level.

Site Notice

C6. A site notice(s) must be prominently displayed at the boundaries of the Subject Site for the purposes of informing the public of project details including, but not limited to the details of the Builder, Certifying Authority and Structural Engineer. The notice(s) is to satisfy all but not be limited to, the following requirements:

a) minimum dimensions of the notice are to measure 841 mm x 594 mm (A1) with any text on the notice to be a minimum of 30 point type size;

b) the notice is to be durable and weatherproof and is to be displayed throughout the works period;

c) the approved hours of work, the name of the site/project manager, the responsible managing company (if any), its address and 24 hour contact phone number for any inquiries, including construction/noise complaint are to be displayed on the site notice; and

d) the notice(s) is to be mounted at eye level on the perimeter hoardings/fencing and is to state that unauthorised entry to the Subject Site is not permitted.

Incident Reporting

C7. Within 24 hours of the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant must notify the Secretary and any other relevant agencies of the incident.

C8. Within seven days of the detection of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

C9. The Applicant must provide regular reporting on the environmental performance of the Development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

Access to Information

C10. Within three months of the date of this approval, or as otherwise agreed by the Secretary, the Applicant must make the following information publicly available on its website and keep the information up to date:

a) the EIS;

b) current statutory approvals for the Development;

c) approved strategies, plans or programs;

d) a complaints register, updated on an annual basis; and

e) any other matter required by the Secretary.

Note: *This condition does not require any confidential information to be made available to the public.*

Work Cover Requirements

C11. To protect the safety of work personnel and the public, the work site must be adequately secured to prevent access by unauthorised personnel, and work must be conducted at all times in accordance with relevant Work Cover requirements.

Contaminated Land

C12. All asbestos material if found is to be removed in accordance with the guidelines of the WorkCover Authority and the requirements of the EPA.

Hoarding/Fencing Requirements

C13. The following hoarding requirements must be complied with:

a) no third party advertising is permitted to be displayed on hoarding/fencing; and

b) the construction site manager must be responsible for the removal of all graffiti from any construction hoarding/fencing or the like within the construction area within 48 hours of its application.

Protection of Public Infrastructure

C14. The Applicant must:

a) repair or pay the full costs associated with repairing any public infrastructure that is damaged as a result of works undertaken pursuant to this consent within three months of being notified of the damage or as otherwise agreed with the relevant authority; and

b) relocate or pay the full costs associated with relocating any infrastructure that needs to be relocated as a result of the development.

Compliance

C15. The Applicant must ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.

C16. The Applicant shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.

ADVISORY NOTES

Appeals

AN1. The Applicant has the right to appeal to the Land and Environment Court in the manner set out in the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000* (as amended).

Other Approvals and Permits

AN2. The Applicant must apply to the Council for all necessary permits including crane permits, road opening permits, hoarding or scaffolding permits, footpath occupation permits and/or any other approvals under Section 68 (Approvals) of the *Local Government Act 1993* or Section 138 of the *Roads Act 1993*.

Responsibility for other consents / agreements

AN3. The Applicant is solely responsible for ensuring that all additional consents and agreements are obtained from other authorities, as relevant.

Temporary Structures

AN4. An approval under *State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007* must be obtained from the Authority for the erection of the temporary structures. The application must be supported by a report detailing compliance with the provisions of the Building Code of Australia.

AN5. Structural certification from an appropriately qualified practicing structural engineer must be submitted to the Authority with the application under *State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007* to certify the structural adequacy of the design of the temporary structures.

Disability Discrimination Act

AN6. This application has been assessed in accordance with the *Environmental Planning and Assessment Act 1979*. No guarantee is given that the proposal complies with the *Disability Discrimination Act 1992*. The Applicant is responsible to ensure compliance with this and other anti-discrimination legislation. The *Disability Discrimination Act 1992* covers disabilities not catered for in the minimum standards called up in the Building Code of Australia which references AS 1428.1 - *Design for Access and Mobility*. AS1428 Parts 2, 3 & 4 provides the most comprehensive technical guidance under the *Disability Discrimination Act 1992* currently available in Australia.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

AN7. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* provides that a person must not take an action which has, will have, or is likely to have a significant impact on a matter of national environmental significance (NES) matter; or Commonwealth land, without an approval from the Commonwealth Environment Minister.

AN8. This application has been assessed in accordance with the *Environmental Planning & Assessment Act 1979*. The determination of this assessment has not involved any assessment of the application of the Commonwealth legislation. It is the Applicant's responsibility to consult the Department of Sustainability, Environment, Water, Population and Communities to determine the need or otherwise for Commonwealth approval and you should not construe this grant of approval as notification to you that the Commonwealth Act does not have application. The Commonwealth Act may have application and you should obtain advice about this matter. There are severe penalties for non-compliance with the Commonwealth legislation.

Asbestos Removal

AN9. All excavation works involving the removal and disposal of asbestos must only be undertaken by contractors who hold a current WorkCover Asbestos or "Demolition Licence" and a current WorkCover "Class 2 (Restricted) Asbestos Licence and removal must be carried out in accordance with NOHSC: "*Code of Practice for the Safe Removal of Asbestos*".

Site contamination issues during construction

AN10. Should any new information come to light during demolition or construction works which has the potential to alter previous conclusions about site contamination then the Applicant must be immediately notified and works must cease. Works must not recommence on site until the consultation is made with the Department.

Development consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, under delegation dated 11 October 2017, I approve the development referred to in schedule 1, subject to the conditions in schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts including economic and social impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Gainsford
Executive Director
Priority Projects Assessments

Sydney 21st December 2017

SCHEDULE 1

Application No.:	SSD 8368
Applicant:	Infrastructure NSW
Consent Authority:	Minister for Planning
Land:	313 Avenue Road, Lavadia (Lot 26 DP751376 and Lot 1 DP 1190399)
Approved Development:	Construction and operation of the New Grafton Correctional Centre with 1,700 beds, comprising: • 64 buildings, including visitor reception, special accommodation units, health facilities, education facilities, workshops, storage areas, staff and visitor facilities; • a recreational oval within the perimeter of the facility; • six-metre high fence/s and wall/s around the perimeter of each facility; • 12-metre high light and security camera poles; • on-site wastewater treatment facility and associated irrigation areas; • temporary on-site concrete production facilities; • one vehicular entry/exit point from Avenue Road; • 850 car parking spaces; • water, power, wastewater and communication utilities within the site; • 1.5 metre high boundary fence; and • landscaping.

DEFINITIONS

ACHMP	Aboriginal Cultural Heritage Management Plan
Advisory Notes	Advisory information relating to the consent but do not form a part of this consent
Applicant	Consent holder or person with the benefit of the development consent
Application	The development application and the accompanying drawings plans and documentation described in Condition A2.
APZ	Asset Protection Zone
AS	Australian Standard
AS/NZS	Australian/New Zealand Standard
Construction	The demolition of buildings or works, the carrying out of works, including bulk earthworks and vegetation clearing, and erection of buildings and other infrastructure covered by this consent.
Council	Clarence Valley Council
CEMP	Construction Environmental Management Plan
Certification of Crown Building works	Certification under s109R of the EP&A Act
Certifying Authority	Professionals that are accredited by the Building Professionals Board to issue construction, occupation, subdivision, strata, compliance and complying development certificates under the EP&A Act, *Strata Schemes (Freehold Development) Act 1973* and *Strata Schemes (Leasehold Development) Act 1986* or in the case of Crown development, a person qualified to conduct a Certification of Crown Building works
Day time	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Department	The Department of Planning and Environment
DoI	Department of Industry
Evening	The period from 6 pm to 10 pm
EIS	Environmental Impact Statement titled *Environmental Impact Statement New Grafton Correctional Centre*, prepared by BBC Consulting Planners dated June 2017
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
Feasible	Feasible relates to engineering considerations and what is practical to build
Harm	Harm to the environment includes any direct or indirect alteration of the environment that has the effect of degrading the environment and, without limiting the generality of the above, includes any act or omission that results in pollution, and harm will be material if: a) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or b) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good hard to the environment).
Incident	An occurrence or set of circumstances that: • causes, or threatens to cause material harm to the environment; or • results in non-compliance with this consent. *NOTE: "Harm" is defined in this consent.*
Minister	Minister for Planning, or nominee
NCC	National Construction Code
Night time	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that results in non-compliance or is non-compliant with this consent but is not an incident
OEH	Office of the Environment and Heritage
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements.

RMS	Roads and Maritime Services
RSA	Road Safety Audit
RtS	Response to Submissions prepared by BBC Consulting Planners dated September 2017
RtS Addendum	Response to Submissions prepared by Infrastructure NSW dated November 2017
Secretary	Secretary of Department of Planning and Environment
Secretary's approval, agreement or satisfaction	A written approval from the Secretary (or nominee/delegate)
Sensitive receiver	Residence
Stock moving route(s)	Stock moving route with a permit issued under the *Local Land Services Act 2013*
Subject Site	313 Avenue Road, Lavadia (Lot 26 DP751376 and Lot 1 DP 1190399)
TfNSW	Transport for New South Wales

SCHEDULE 2

PART A ADMINISTRATIVE CONDITIONS

Development Description

A1. Except as amended by the conditions of this approval, development approval is granted only to carrying out the development as described in Schedule 1.

Development in Accordance with Plans and Documents

A2. The Applicant must carry out the development in accordance with the conditions of consent and generally in accordance with:

a) State Significant Development Application SSD 8368;

b) the EIS, except where amended by the RtS and RtS Addendum; and

c) the following drawings, except for:

i) any modifications which are Exempt or Complying Development; or

ii) as otherwise provided by the conditions of this consent.

Architectural (or Design) Drawings prepared by *Perumal Pedavoli*			
Dwg No.	**Rev**	**Name of Plan**	**Date**
00_001	B	OVERALL MASTERPLAN	15/11/17
00_002	B	OVERALL MASTERPLAN	15/11/17
00_003	A	MASTERPLAN SHEET 1 OF 3	26/05/17
00_004	B	MASTERPLAN SHEET 2 OF 3	15/11/17
00_005	A	MASTERPLAN SHEET 3 OF 3	26/05/17
00_007	A	SECURE PERIMETER MAXIMUM SECTION	26/05/17
00_011	A	SITE SECTIONS – SHEET 2	26/05/17
00_012	A	SITE SECTIONS – SHEET 3	26/05/17
00_013	A	SITE SECTIONS	26/05/17
01_011	A	VISITOR RECEPTION GROUND FLOOR PLAN	26/05/17
01_101	A	VISITOR RECEPTION ELEVATIONS	26/05/17
01_201	A	VISITOR RECEPTION SECTIONS	26/05/17
02_011	A	STAFF AMENITIES & TRAINING GROUND FLOOR PLAN	26/05/17
02_101	A	STAFF AMENITIES & TRAINING ELEVATIONS	26/05/17
02_201	A	STAFF AMENITIES & TRAINING SECTIONS	26/05/17
03_011	A	MAXIMUM – GATEHOUSE – GROUND FLOOR PLAN	26/05/17
03_012	A	MAXIMUM – GATEHOUSE – FIRST FLOOR PLAN	26/05/17
03_101	A	MAXIMUM – GATEHOUSE – ELEVATIONS	26/05/17
03_201	A	MAXIMUM – GATEHOUSE – SECTIONS	26/05/17
04_011	A	MALE MINIMUM – GATEHOUSE & VISITS – GROUND FLOOR PLAN	26/05/17
04_101	A	MALE MAXIMUM – GATEHOUSE & VISITS – ELEVATIONS	26/05/17
04_201	A	MALE MAXIMUM – GATEHOUSE & VISITS – SECTIONS	26/05/17
05_011	A	STORE GROUND FLOOR PLAN	26/05/17
05_101	A	STORE ELEVATIONS	26/05/17
05_201	A	STORE SECTIONS	26/05/17
06_011	A	UTILITIES GROUND FLOOR PLAN	26/05/17
06_101	A	UTILITIES ELEVATIONS & SECTIONS	26/05/17
07_011	A	OPERATIONS SUPPORT UNIT GROUND FLOOR PLAN	26/05/17
07_101	A	OPERATIONS SUPPORT UNIT ELEVATIONS	26/05/17
07_201	A	OPERATIONS SUPPORT UNIT SECTIONS	26/05/17
08_011	A	MALE MAXIMUM – INDUSTRIES – GROUND FLOOR PLAN – PART 1	26/05/17

08_101	A	MALE MAXIMUM – INDUSTRIES – ELEVATIONS	26/05/17
08_201	A	MALE MAXIMUM – INDUSTRIES – SECTIONS	26/05/17
09_011	A	LAUNDRY / GROUNDS MAINTENANCE / WASTE / HORTICULTURE GROUND FLOOR PLAN	26/05/17
09_101	A	LAUNDRY / GROUNDS MAINTENANCE / WASTE / HORTICULTURE ELEVATIONS	26/05/17
09_201	A	LAUNDRY / GROUNDS MAINTENANCE / WASTE / HORTICULTURE SECTIONS	26/05/17
10_011	A	KITCHEN & FACILITIES MANAGEMENT GROUND FLOOR PLAN	26/05/17
10_101	A	KITCHEN & FACILITIES MANAGEMENT ELEVATIONS	26/05/17
10_201	A	KITCHEN & FACILITIES MANAGEMENT SECTIONS	26/05/17
12_011	A	MALE MAXIMUM RECEPTION BUILDING & HEALTH FACILITY GROUND FLOOR PLAN	26/05/17
12_101	A	MALE MAXIMUM HEALTH, RECEPTION & SEGREGATION ELEVATIONS – SHEET 01	26/05/17
12_102	A	MALE MAXIMUM HEALTH, RECEPTION & SEGREGATION ELEVATIONS – SHEET 02	26/05/17
12_201	A	MALE MAXIMUM HEALTH, RECEPTION & SEGREGATION SECTIONS – SHEET 01	26/05/17
12_202	A	MALE MAXIMUM HEALTH, RECEPTION & SEGREGATION SECTIONS – SHEET 02	26/05/17
14_011	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION GROUND FLOOR PLAN – PART 1	26/05/17
14_013	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION FIRST FLOOR PLAN – PART 1	26/05/17
14_101	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION ELEVATIONS – SHEET 1	26/05/17
14_102	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION ELEVATIONS – SHEET 2	26/05/17
14_201	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION SECTIONS – SHEET 1	26/05/17
14_202	A	MALE MAXIMUM – VISITS / OPERATIONS / ADMINISTRATION SECTIONS – SHEET 2	26/05/17
16_011	A	MALE MAXIMUM RECREATION GROUND FLOOR PLAN	26/05/17
16_101	A	MALE MAXIMUM RECREATION ELEVATIONS	26/05/17
16_201	A	MALE MAXIMUM & FEMALE RECREATION SECTIONS	26/05/17
17_011	A	MULTI-FAITH / INDIGENOUS SPACE GROUND FLOOR PLAN	26/05/17
17_101	A	MULTI-FAITH / INDIGENOUS SPACE ELEVATIONS	26/05/17
17_201	A	MULTI-FAITH / INDIGENOUS SPACE SECTIONS	26/05/17
18_011	A	MALE MAXIMUM PROGRAMS GROUND FLOOR PLAN	26/05/17
18_101	A	MALE MAXIMUM PROGRAMS ELEVATIONS	26/05/17
18_201	A	MALE MAXIMUM PROGRAMS SECTIONS	26/05/17
19_011	A	MALE MAXIMUM – N1, N2, N3, & N5 COMMUNITY CENTRE – TYPE 1 GROUND FLOOR PLAN	26/05/17
19_101	A	MALE MAXIMUM – N1, N2, N3, & N5 COMMUNITY CENTRE – TYPE 1 ELEVATIONS	26/05/17
19_201	A	MALE MAXIMUM – N1, N2, N3, & N5 COMMUNITY CENTRE – TYPE 1 SECTIONS	26/05/17
20_011	A	MALE MAXIMUM – N4 COMMUNITY CENTRE – TYPE 2 GROUND FLOOR PLAN	26/05/17
20_101	A	MALE MAXIMUM – N4 COMMUNITY CENTRE – TYPE 2 ELEVATIONS	26/05/17

20_201	A	MALE MAXIMUM – N4 COMMUNITY CENTRE – TYPE 2 SECTIONS	26/05/17
21_011	A	MALE MAX SEGREGATION GROUND FLOOR & PLANT PLANS	26/05/17
21_101	A	MALE MAX SEGREGATION ELEVATIONS	26/05/17
21_201	A	MALE MAX SEGREGATION SECTIONS	26/05/17
22_011	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 2 GROUND FLOOR PLAN	26/05/17
22_012	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 2 FIRST FLOOR PLAN	26/05/17
22_101	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 2 ELEVATIONS – SHEET 01	26/05/17
22_102	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 2 ELEVATIONS – SHEET 02	26/05/17
22_201	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 2 SECTIONS – SHEET 01	26/05/17
24_011	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 1 GROUND FLOOR PLAN	26/05/17
24_012	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 1 FIRST FLOOR PLAN	26/05/17
24_101	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 1 ELEVATIONS – SHEET 01	26/05/17
24_102	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 1 ELEVATIONS – SHEET 02	26/05/17
24_201	A	MALE MAXIMUM ACCOMMODATION UNIT TYPE 1 SECTIONS	26/05/17
26_011	A	MALE MAXIMUM – RESIDENTIAL UNIT – GROUND & FIRST FLOOR PLAN	26/05/17
26_101	A	MALE MAXIMUM – RESIDENTIAL UNIT – ELEVATIONS	26/05/17
26_201	A	MALE MAXIMUM – RESIDENTIAL UNIT – SECTIONS	26/05/17
28_011	A	FEMALE – INDUSTRIES / BAKERY / STAFF DINING GROUND FLOOR PLAN	26/05/17
28_101	A	FEMALE – INDUSTRIES / BAKERY / STAFF DINING ELEVATIONS	26/05/17
28_201	A	FEMALE – INDUSTRIES / BAKERY / STAFF DINING SECTIONS	26/05/17
29_011	A	FEMALE VISITS & RECEPTION GROUND FLOOR PLAN	26/05/17
29_101	A	FEMALE VISITS, RECEPTION & HEALTH ELEVATIONS	26/05/17
29_201	A	FEMALE RECEPTION & HEALTH SECTIONS	26/05/17
35_011	A	FEMALE PROGRAMS; EDUCATION & RECREATION GROUND FLOOR PLAN – PART 1	26/05/17
35_101	A	FEMALE PROGRAMS, EDUCATION & RECREATION ELEVATIONS – PART 1	26/05/17
35_102	A	FEMALE PROGRAMS, EDUCATION & RECREATION ELEVATIONS – PART 2	26/05/17
35_201	A	FEMALE PROGRAMS, EDUCATION & RECREATION SECTIONS – PART 1	26/05/17
35_102	A	FEMALE PROGRAMS, EDUCATION & RECREATION ELEVATIONS – PART 2	26/05/17
37_011	A	FEMALE 60 BED ACCOMMODATION UNIT GROUND FLOOR PLAN	26/05/17
37_012	A	FEMALE 60 BED ACCOMMODATION UNIT FIRST FLOOR PLAN	26/05/17
37_101	A	FEMALE 60 BED ACCOMMODATION UNIT ELEVATIONS	26/05/17
37_201	A	FEMALE 60 BED ACCOMMODATION UNIT SECTIONS	26/05/17

39_011	A	FEMALE SEGREGATION GROUND FLOOR & ROOF PLANS	26/05/17
39_101	A	FEMALE SEGREGATION ELEVATIONS	26/05/17
39_201	A	FEMALE SEGREGATION SECTIONS	26/05/17
40_011	A	FEMALE - RESIDENTIAL UNIT - GROUND & FIRST FLOOR PLAN	26/05/17
40_101	A	FEMALE - RESIDENTIAL UNIT – ELEVATIONS	26/05/17
40_201	A	FEMALE - RESIDENTIAL UNIT – SECTIONS	26/05/17
41_011	A	FEMALE COTTAGE GROUND FLOOR PLAN	26/05/17
41_101	A	FEMALE COTTAGE ELEVATIONS	26/05/17
41_201	A	FEMALE COTTAGE SECTIONS	26/05/17
42_011	A	MALE MINIMUM - INDUSTRIES / GROUNDS MAINTENANCE / WASTE / HORTICULTURE - GROUND FLOOR PLAN - PART 1	26/05/17
42_101	A	MALE MINIMUM - INDUSTRIES / GROUNDS MAINTENANCE / WASTE / HORTICULTURE – ELEVATIONS	26/05/17
42_201	A	MALE MINIMUM - INDUSTRIES / GROUNDS MAINTENANCE / WASTE / HORTICULTURE - SECTIONS - PART 1	26/05/17
42_202	A	MALE MINIMUM - INDUSTRIES / GROUNDS MAINTENANCE / WASTE / HORTICULTURE - SECTIONS - PART 1	26/05/17
43_011	A	MALE MINIMUM PROGRAMS / ADMINISTRATION GROUND FLOOR PLAN - PART 1	26/05/17
43_101	A	MALE MINIMUM PROGRAMS / ADMINISTRATION ELEVATIONS	26/05/17
43_102	A	MALE MINIMUM PROGRAMS / ADMINISTRATION ELEVATIONS – SHEET 2	26/05/17
43_201	A	MALE MINIMUM PROGRAMS / ADMINISTRATION SECTIONS – SHEET 1	26/05/17
43_202	A	MALE MINIMUM PROGRAMS / ADMINISTRATION SECTIONS – SHEET 2	26/05/17
46_011	A	MALE MINIMUM HEALTH, RECEPTION & SEGREGATION GROUND FLOOR PLAN	26/05/17
46_101	A	MALE MINIMUM HEALTH, RECEPTION & SEGREGATION ELEVATIONS	26/05/17
46_201	A	MALE MINIMUM HEALTH, RECEPTION & SEGREGATION SECTIONS	26/05/17
51_011	A	MALE MINIMUM – RESIDENTIAL UNIT – GROUND & FIRST FLOOR PLAN	26/05/17
51_101	A	MALE MINIMUM – RESIDENTIAL UNIT – ELEVATIONS	26/05/17
51_201	A	MALE MINIMUM – RESIDENTIAL UNIT – SECTIONS	26/05/17
Landscape Drawings prepared by *Lorna Harrison Pty Ltd*			
Dwg No.	**Rev**	**Name of Plan**	**Date**
01_01	-	LANDSCAPE SITE PLAN A	26/05/17
00_01	-	LANDSCAPE PLAN EXISTING TREES TO BE RETAINED/REMOVED	26/05/17
02_01	-	LANDSCAPE ENTRANCE PRECINCT	26/05/17
05_01	-	LANDSCAPE FEMALE	26/05/17
05_3	-	LANDSCAPE FEMALE PLANTING SCHEDULE	30/10/16
06_01	-	MALE MINIMUM	26/05/17
06_3	-	LANDSCAPE MALE MINIMUM PLANTING SCHEDULE	30/10/17
03_1	-	BERRINBAH WAY + CULTURAL SPACE	26/05/17

Out of Hours Work Protocol

A3. The Out-of-Hours Work Protocol identified in *Stage 2 - Environmental Noise and Vibration Assessment New Grafton Correctional Centre,* prepared by Day Design Pty Ltd, dated 30 May 2017 is not approved. Any out-of-hours work must be undertaken in accordance with condition C1.

Local Workforce

A4. The definition of local area for the project commitment to target 80 per cent construction workforce from the local area must be constrained to residents who reside within 90-minutes of the site and within the Clarence Valley LGA or residents who reside within the Clarence Valley LGA. The Applicant would need to report and monitor against this revised definition of local area. The reporting and monitoring of local workforce participation must be provided to the Secretary upon request, within the timeframe stated in the request.

Community Consultative Committee

A5. The Community Consultative Committee (CCC) established pursuant development consent SSD 7413 must continue to exercise its functions in accordance with Community Consultative Committee Guidelines: State Significant Projects (2016) for the duration of construction and for at least two years following the completion of construction.

Terms of Consent

A6. The Secretary may make written direction to the Applicant:

a) arising from the Department's assessment of any strategies, plans, programs, reviews, audits, notification, reports or correspondence that are submitted in accordance with this consent (including any stages of these documents);

b) arising from the Department's assessment of any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this consent or in relation to an incident (whether notified to the Department or not); and

c) in relation to the implementation of any actions or measures contained in any of the documents listed in (a) or (b) of this condition.

Inconsistency between documents

A7. If there is any inconsistency between the plans and documentations referred to above, the most recent document shall prevail to the extent of the inconsistency. However, conditions of this consent prevail to the extent of any inconsistency. Where there is an inconsistency between approved elevations and plans, the elevations prevail.

Evidence of consultation

A8. Where consultation with any stakeholder identified in the conditions of this consent is required by any conditions of this consent, the Applicant must:

a) consult with the relevant stakeholder prior to submitting the required document for approval;

b) submit evidence of such consultation as part of the relevant document;

c) describe how matters raised by the stakeholder have been addressed and identify any matters that have not been resolved; and

d) include details of any outstanding issues raised by the stakeholder and an explanation of disagreement between any stakeholder and the Applicant.

Development Expenses

A9. It is the responsibility of the Applicant to meet all expenses incurred in undertaking the development, including expenses incurred in complying with conditions imposed under this consent.

Lapsing of Approval

A10. This consent will lapse five years from the date of consent unless the works associated with the project have physically commenced.

Prescribed Conditions

A11. The Applicant must comply with all relevant prescribed conditions of development consent under Part 6, Division 8A of the Regulation.

Dispute Resolution

A12. In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the Development, either party may refer the matter to the Secretary for resolution. The Secretary's resolution of the matter shall be binding on the parties.

Long Service Levy

A13. For work costing $25,000 or more, a Long Service Levy must be paid. For further information please contact the Long Service Payments Corporation on their Helpline 13 14 41.

Legal Notices

A14. Any advice or notice to the consent authority must be served on the Secretary.

Review of Strategies, Plans and Programs

A15. Within three months of:

a) the submission of a compliance report under conditions of this consent;

b) the submission of an incident report under conditions of this consent;

c) the submission of an Independent Environmental Audit under conditions of this consent;

d) the approval of any modification to the conditions of this consent; or

e) the issue of a direction of the Secretary under condition A6,

the strategies, plans and programs required under this consent must be reviewed, and the Department must be notified in writing that a review is being carried out.

A16. If necessary to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised and submitted:

a) to the Secretary's satisfaction if previously approved by the Secretary; or

b) to the Secretary for information.

Where revisions are required, the revised document must be submitted to the Secretary within six weeks of the review.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.

Incident Notification, Reporting and Response

A17. The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident.

A18.

a) A written incident notification must also be emailed to the Department at the following address: compliance@planning.nsw.gov.au within 24 hours after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant forms the view that an incident has not occurred.

b) Written notification of an incident must:
   i) identify the development/project and application number;
   ii) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
   iii) identify how the incident was detected;
   iv) identify when the applicant/proponent became aware of the incident;
   v) identify any actual or potential non-compliance with conditions of consent/approval;
   vi) describe what immediate steps were taken in relation to the incident;
   vii) identify further action(s) that will be taken in relation to the incident; and
   viii) identify a project contact for further communication regarding the incident.

A19.

a) Within seven days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Applicant must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements for such reporting set out in A17.b), and such further reports as may be requested.

b) The Incident Report must include:
   i) a summary of the incident;
   ii) outcomes of an incident investigation, including identification of the cause/s of the incident;
   iii) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
   iv) details of any communication with other stakeholders regarding the incident.

A20. Any written requirements of the Secretary or relevant public authority (as determined by the Secretary) which may be given at any point in time, to address the cause or impact of an incident must be complied with and within any timeframe specified by the Secretary or relevant public authority.

A21. If statutory notification is provided to the EPA as required under the POEO Act in relation to the project, such notification must also be provided to the Secretary within 24 hours after the notification was provided to the EPA.

A22. Incidents are to be notified as part of monitoring the carrying out of the Development to provide data on compliance with this consent or the environmental impact of the Development. Accordingly, Division 2B of Part 6 of the EP&A Act applies.

Non-compliance Notification and Reporting

A23. The Department must be notified in writing to compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of any non-compliance.

A24. The notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Obligation to Minimise Harm to the Environment

A25. In addition to meeting the specific performance criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the development.

PART B PRIOR TO THE COMMENCEMENT OF WORKS

Certified Plans

B1. Plans certified in accordance with section 109R of the EP&A Act are to be submitted to the Certifying Authority and the Department prior to commencement of each stage of the construction works and must include details as required by any of the following conditions.

Notice of Commencement of Works

B2. The Certifying Authority, the Department and Council must be given written notice at least 48 hours prior to the commencement of work approved under this consent.

Cell Design

B3. The Applicant must provide details to the Certifying Authority that demonstrate the design of accommodation units satisfactorily address any cell and fire safety design requirements of Department of Corrective Services prior to commencement of above ground works approved under this consent.

Development contributions

B4. Prior to commencement of works approved under this consent, a contribution under section 94A of the EP&A Act of $3,000,000 (adjusted on a quarterly basis to account for movements in the Australian Bureau of Statistics Consumer Price Index – Building Construction (NSW)) must be paid to Council.

Stormwater Management

B5. Full details of the proposed stormwater management system is to be prepared in consultation with Council and Crown Lands and Water of Department of Industry and submitted to the satisfaction of the Certifying Authority prior to the commencement of works approved under this consent. This information must include:

a) detailed engineering plans and specifications of the proposed drainage system on the site and provide details on the proposed management of drainage lines traversing the project site;

b) an analysis of the impacts of the discharge of stormwater and changed hydrology of the land from the site on the surrounding environment, including quality, quantity and velocity impacts and potential impacts on the nearby SEPP 14 Coastal Wetlands;

c) plans prepared in accordance with Council's stormwater and drainage requirements for rural land; and

d) detail on any potential impacts on groundwater, including mitigation measures such as lining sediment basins or monitoring groundwater.

Aboriginal Cultural Heritage

B6. Any cultural induction or safety packages developed and delivered for the construction stage of the site must be prepared in consultation with OEH and must have input from all Aboriginal groups who have identified themselves as contact points for knowledge-holders. Evidence of consultation must be submitted to the satisfaction of the Certifying Authority prior to commencement of works approved under this consent.

Safety Measures

B7. Prior to commencement of works approved under this consent, the Applicant must consult with the adjoining landowner at 493 Avenue Road, Lavadia and must identify what additional security measures would be provided to the landowner to address potential safety concerns. Evidence that the landowner agrees to the proposed measures and a timeframe for installation must be submitted to the Department and the Certifying Authority.

Stock Movement Protocol

B8. Prior to commencement of works approved under this consent, the Stock Movement Protocol must be amended to include a Traffic Management Plan prepared in consultation with Local Land Services and affected surrounding landholders (at a minimum all properties along Avenue Road) to manage road sharing, particularly with respect to ensuring stock moving routes are not hindered by additional traffic movements, and to monitor and address complaints during construction. The Stock Movement Protocol must include, but not limited to, management procedures during times of flood.

Reflectivity

B9. The building materials used on the facades of the buildings must have a maximum normal specular reflectivity of visible light of 20 per cent and must be designed so as not to result in glare that causes any discomfort or threatens the safety of pedestrians or drivers. A statement demonstrating compliance with these requirements or where compliance cannot be met a report that demonstrates that the exceedance would not result in glare that causes any discomfort or threatens the safety of pedestrians or drivers is to be submitted to the satisfaction of the Certifying Authority prior to the commencement of above ground works.

Outdoor Lighting

B10. All outdoor lighting within the Subject Site must comply with AS 1158.3.1:2005 *Lighting for roads and public spaces – Pedestrian area (Category P) lighting – Performance and design requirements* and AS 4282-1997 *Control of the obtrusive effects of outdoor lighting*. Details demonstrating compliance with these requirements are to be submitted to the satisfaction of the Certifying Authority.

Access for People with Disabilities

B11. The works the subject of this application must be designed and constructed to provide access and facilities for people with a disability in accordance with the NCC. The Certifying Authority must ensure that evidence of compliance with this condition from an appropriately qualified person is provided and that the requirements are referenced on any certified plans.

Pre-construction Dilapidation Reports

B12. The Applicant is to engage appropriately qualified structural and civil engineers to prepare a Pre-Construction Dilapidation Report detailing the current structural condition of all adjoining buildings, and infrastructure and roads on all proposed and potential haulage routes. Any entry into private land is subject to the approval of the land owner(s). The report must be submitted to the Certifying Authority prior to the commencement of works approved under this consent. A copy of the report is to be forwarded to the Council and each of the affected property owners.

Structural Details

B13. Prior to the commencement of works approved under this consent, the Applicant must submit to the satisfaction of the Certifying Authority structural drawings prepared and signed by a suitably qualified practising Structural Engineer that demonstrates compliance with:
   a) the relevant clauses of the NCC; and
   b) the development consent.

External Walls and Cladding

B14. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the NCC.

Prior to the commencement of works approved under this consent, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the NCC.

The Applicant must provide a copy of the documentation given to the Certifying Authority to the Secretary within seven days after the Certifying Authority accepts it.

Car Parking and Service Vehicle Layout

B15. Plans demonstrating compliance with the following traffic and parking requirements must be submitted to the satisfaction of the Certifying Authority prior to the commencement of relevant above ground works:

a) all vehicles should enter and leave the Subject Site in a forward direction. In the event that site constraints do not permit heavy rigid vehicles to enter and leave in a forward direction, then all reversing movements should be undertaken under the control of certified traffic controllers to ensure public safety when vehicles are reversing;

b) the layout of the proposed car parking areas that form part of this consent (including driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS/NZS 2890.1:2004 *Parking facilities Part 1: Off-street car parking*, AS/NZS 2890.6:2009 *Parking facilities – Off-street parking for people with disabilities* and AS/NZS 2890.2-2002 *Parking facilities – Off-street commercial vehicle facilities* for heavy vehicle usage;

c) all construction vehicles are to be contained wholly within the site and vehicles must enter the site before stopping;

d) appropriate pedestrian advisory signs are to be provided at the egress from the car park;

e) all works/ regulatory signposting associated with the proposed development shall be at no cost to the relevant roads authority; and

f) the swept path of the longest vehicle entering and exiting the Subject Site in association with the new work, as well as manoeuvrability through the Subject Site, must be in accordance with AUSTROADS.

Mechanical Ventilation

B16. All mechanical ventilation systems must be installed in accordance with Part F4.5 of the NCC and must comply with the Australian Standards *AS1668.2 Mechanical Ventilation of Buildings* and AS3666 *Microbial Control of Air Handling and Water Systems of Building*, to ensure adequate levels of health and amenity to the occupants of the building and to ensure environment protection. Details must be submitted to the satisfaction of the Certifying Authority prior to the commencement of installation of mechanical works approved under this consent.

Storage and Handling of Waste

B17. The building plans and specifications accompanying the relevant plans submitted to the Certifying Authority prior to the commencement of any building works shall demonstrate that an appropriate area will be provided within the premises for the storage of garbage bins and recycling containers and all waste and recyclable material generated by this premises. The storage area(s) must:

a) ensure all internal walls of the storage area are rendered to a smooth surface, coved at the floor/wall intersection, graded and appropriately drained with a tap in close proximity to facilitate cleaning;

b) include provision for the separation and storage, in appropriate categories, of material suitable for recycling; and

c) include provision for separate storage and collection of organic/food waste.

Road Design

B18. Kerb and gutter, stormwater drainage, full road width pavement including traffic facilities (vehicle crossings) and paved footpaths must be constructed along the areas where road works are to be undertaken. All roads and traffic facilities (vehicle crossings) must be designed to meet the requirements of Council and the RMS (if applicable) and obtain the necessary permits and approvals from the relevant road authority.

Construction Environmental Management Plan

B19. Prior to the commencement of works approved under this consent, a **Construction Environmental Management Plan** (CEMP) that addresses those works must be prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (Department of Planning and Infrastructure 2004) to the satisfaction of the Certifying Authority. The CEMP must be prepared by a suitably qualified and experienced person in consultation with Council and must address, but not be limited to, the following matters where relevant:

a) hours of work;
b) 24 hour contact details of site manager;
c) establishment of site facilities;
d) soil and water management, including surface and ground water quality and quantity, construction contaminants, soils, acid sulfate soils and spills;
e) flora and fauna management;
f) prevention of stock travelling along stock moving routes from entering the site;
g) bushfire prevention;
h) visual amenity of any stockpiles;
i) minimising potential breeding areas on the site for biting insects;
j) traffic management, in consultation with the local Council, including a designated off-street car parking area for construction related vehicles;
k) construction noise and vibration management, prepared by a suitable qualified person;
l) management of dust to protect the amenity of the neighbourhood, including truck movements along Avenue Road;
m) erosion and sediment control;
n) concrete production management;
o) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the Subject Site;
p) external lighting in compliance with AS4282:1997 *Control of the Obtrusive Effects of Outdoor Lighting*;
q) an Unexpected Finds Protocol (UFP); and
r) waste classification (for materials to be removed) and validation (for materials to remain) during construction to confirm the contamination status in these areas of the site.

B20. The CEMP must not include works that have not been explicitly approved in the development consent. In the event of any inconsistency between the consent and the CEMP, the consent shall prevail.

B21. The CEMP must detail how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts and describe the roles and responsibilities of all relevant employees involved in earthworks and construction.

B22. The Applicant must submit a copy of the CEMP to the Department and to the Council, prior to commencement of works approved under this consent.

Road Safety - Construction

B23. Prior to commencement of construction works, an independent Road Safety Audit (RSA) of Six Mile Lane and Old Six Mile Lane, from the existing Pacific Highway to

Avenue Road, must be prepared by a suitably qualified independent traffic engineer to identify any road safety risks associated with the movement of construction vehicles associated with the construction of the correctional centre and ensure that appropriate measures are implemented to mitigate any identified risks to the satisfaction of Council and RMS. The RSA must also consider the construction traffic impacts on the existing intersection of Six Mile Lane and the Grafton Regional Airport.

Construction Traffic and Access

B24. A **Construction Traffic and Pedestrian Management Plan** (CTPMP) must be prepared by a suitably qualified person in consultation with Clarence Valley Council, the RMS, Pacific Complete and the immediately adjoining local residents. The CTPMP must be submitted to the satisfaction of the RMS, Council and the Certifying Authority prior to commencement of works approved under this consent. The CTPMP must include, but not limited to, the following:

a) any measures required to address outcomes of RSA required by condition B23;
b) locations of the proposed work zone, plant storage, staff parking and staging area;
c) measures to mitigate and manage impacts on stock moving routes;
d) measures to clearly distinguish construction vehicles for this project (such as stickers or magnets) from other construction projects and must be clearly visible to any passing vehicle or person;
e) identify measures to mitigate the construction traffic generated by workers, including identifying measures that would ensure that the Level of Service at intersections impacted by construction traffic do not deteriorate to a Level of Service E (such as 'park and ride' facilities or shuttle bus services) and details of monitoring to be undertaken to ensure this criteria is met;
f) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers to and from the site, including addressing the following:
   - a map of the primary haulage route highlighting critical locations;
   - safety initiatives for haulage through residential areas and/or school zones;
   - an induction process for vehicle operators & regular toolbox meetings;
   - a complaint resolution and disciplinary procedure; and
   - community consultation measures for peak haulage periods;
g) describe the measures that would be put in place to ensure compliance with the Drivers' Code of Conduct, including measures to minimise the potential for fauna strike;
h) haulage routes;
i) construction vehicle access arrangements;
j) estimated number of construction vehicle movements during various times of the day;
k) construction program;
l) consultation strategy for liaison with surrounding stakeholders, including holders of stock moving route permits affected by construction works;
m) any potential impacts to general traffic, cyclists, pedestrians, parking and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works; and
n) cumulative construction impacts of projects, including major transport projects, and details of the duration of the any cumulative impacts and measures to mitigate any associated general traffic, public transport, parking, pedestrian and cyclist impacts.

B25. Prior to commencement of any works, any measures required to mitigate any safety risks for this stage of the construction works must be implemented.

B26. The Applicant must submit a copy of the CTPMP to the Department and Council prior to the commencement of works approved under this consent.

Construction Noise and Vibration

B27. The construction management noise level for the evening period must be revised and calculated in accordance with the *Interim Construction Noise Guideline*.

B28. Prior to the commencement of works approved under this consent, a **Construction Noise and Vibration Management Plan** (CNVMP) must be prepared to the satisfaction of the Certifying Authority. The CNVMP must:
   a) be prepared by a suitably qualified expert;
   b) describe the measures that would be implemented to ensure:
      i) best management practice is being employed; and
      ii) compliance with the relevant conditions of this consent;
   c) describe the proposed noise and vibration management measures in detail;
   d) include strategies that have been developed to address impacts to noise sensitive receivers where noise levels exceed the construction noise management level, for managing high noise generating works;
   e) describe the consultation undertaken to develop the strategies in e) above; and
   f) evaluates and reports on the effectiveness of the noise and vibration management measures.

B29. The Applicant must submit a copy of the CNVMP to the Department and Council prior to the commencement of works approved under this consent.

Construction Waste Management

B30. Prior to the commencement of works approved under this consent, a **Construction Waste Management Plan** (CWMP), prepared by a suitably qualified person in consultation with Council, must be submitted to the satisfaction of the Certifying Authority. The CWMP must address, but not limited to, the following matters:
   a) identification of an appropriate area within the site for the storage of garbage bins and recycling containers and all waste and recyclable material generated on the land;
   b) recycling of demolition materials; and
   c) removal of hazardous materials and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines.

B31. The Applicant must submit a copy of the CWMP to the Department and Council prior to the commencement of work approved under this consent.

B32. Details demonstrating compliance with the relevant legislative requirements, associated with the removal of hazardous waste, particularly the method of containment and control of emission of fibres to the air, are to be submitted to the satisfaction of the Certifying Authority prior to the removal of any hazardous materials.

B33. The Applicant must consult Council and the RMS regarding truck routes(s) to be followed by trucks transporting waste material from the Subject Site, prior to the commencement of the removal of any waste material from the Subject Site.

Soil and Water

B34. Soil erosion and sediment control measures must be designed in accordance with the document *Managing Urban Stormwater - Soils & Construction Volume 1* (2004) by Landcom. Details are to be submitted to the satisfaction of the Certifying Authority prior to the commencement of any works. The soil erosion and sediment control measures must address, but not limited to, the following matters:
   a) provisions to ensure all works associated with or in close proximity to drainage lines are undertaken in accordance with DPI Water *Guidelines for Controlled Activities*;
   b) emergency contingency procedures;

c) detail on any potential impacts on groundwater, including mitigation measures such as lining sediment basins or monitoring groundwater; and
d) classifying all excess soil in accordance with the *Protection of the Environment Operations Act 1997* and removed from the site appropriately.

Flora and Fauna Management

B35. A **Flora and Fauna Management Plan** (FFMP), prepared by a suitably qualified person, must be submitted to the satisfaction of the Certifying Authority. The FFMP must address, but not limited to, the following matters:
a) minimising the risk, introduction and spread of invasive species and diseases;
b) traffic management procedures (including signage, speed limits and help information for incidents) in regard to the protection of the koala and Rufous Bettong;
c) fauna protection/relocation procedures for displaced wildlife, identifying potential release sites and timing protocols; and
d) identifying suitable receiving sites for displaced aquatic/amphibian fauna.

B36. The Applicant must submit a copy of the approved FFMP to the Department and Council prior to the commencement of works approved under this consent.

Concrete Batching Plant Management Plan

B37. A **Concrete Batching Plant Management Plan** (CBPMP), prepared by a suitably qualified person, must be submitted to the satisfaction of the Certifying Authority. A copy of the plan must be submitted to the Secretary prior to the establishment of Concrete Batching Plant and form part of the CEMP required by condition B19. The CBPMP must address, but not limited to, the following matters:
a) demonstrate how the development will be managed during construction to meet the requirements of this development consent;
b) a description of the works proposed to be undertaken;
c) a description of the plant, equipment and materials to be used and/or stored on each site, including dangerous and hazardous goods;
d) a summary of the potential environmental impacts associated with the establishment and operation of the facility;
e) details of the mitigation, monitoring and management procedures specific to the plant that would be implemented to minimise environmental and amenity impacts during establishment of the plant and operation;
f) include a program to monitor the effectiveness of these measures;
g) details of how waste, including highly alkaline wastewater, dust and solid waste, is to be managed in association with the operation of the Plant; and
h) detail any licenses required to discharge waste from the plant.

Utility Services

B38. Prior to the commencement of work approved under this consent, the Applicant is to negotiate with the utility authorities (e.g. Transgrid and Telecommunications Carriers) in connection with the relocation and/or adjustment of the services affected by the construction works.

B39. Prior to the commencement of works approved under this consent, written advice must be obtained from relevant utility authorities stating that satisfactory arrangements have been made to ensure provisions of adequate services for the duration of the construction works, particularly water supply.

B40. Prior to the commencement of above ground works written advice must be obtained from the electricity supply authority, an approved telecommunications carrier and an approved gas carrier (where relevant) stating that satisfactory arrangements have been made to ensure provisions of adequate services.

Community Communication Strategy

B41. A community Communication Strategy must be prepared to provide mechanisms to facilitate communication between the Applicant, the relevant Council and the community (including adjoining affected landowners and businesses, and others directly impacted by the development), during the construction of the development and for the duration of the development.

B42. The Community Communication Strategy must:

a) identify people to be consulted during the construction phases;

b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;

c) provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;

d) set out procedures and mechanisms:

i) through which the community can discuss or provide feedback to the Applicant;

ii) through which the Applicant will respond to enquiries or feedback from the community; and

iii) to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.

B43. The Community Communications Strategy must be submitted to the Secretary for approval no later than one month before the commencement of any work.

B44. Prior to the commencement of works approved under this consent, the Community Communication Strategy must be approved by the Secretary, or within another timeframe agreed with the Secretary.

B45. The Community Communication Strategy, as approved by the Secretary, must be implemented for the duration of the development.

Access to Information

B46. At least 48 hours before the commencement of construction until the completion of all works under this consent, or such other time as agreed by the Secretary, the Applicant must:

a) make the following information and documents (as they are prepared, obtained or approved) copies of the following publicly available on its website:

i) the documents referred to in condition A2 of this consent;

ii) all current statutory approvals for the development;

iii) all approved strategies, plans and programs required under the conditions of this consent;

iv) regular reporting on the environmental performance of the development in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent;

v) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;

vi) a summary of the current stage and progress of the development;

vii) contact details to enquire about the development or to make a complaint;

viii) a complaints register, updated monthly;

ix) audit reports prepared as part of any independent environmental audit of the development and the Applicant's response to the recommendations in any audit report;

x) any other matter required by the Secretary; and

b) keep such information up to date, to the satisfaction of the Secretary.

Note: *This condition does not require any confidential information to be made available to the public.*

Complaints and Enquiries Procedure

B47. Prior to the commencement of works approved under this consent, or as otherwise agreed by the Secretary, the following must be made available for community enquiries and complaints for the duration of construction:
   a) a toll-free 24 hour telephone number(s) on which complaints and enquiries about the application may be registered;
   b) a postal address to which written complaints and enquires may be sent; and
   c) an email address to which electronic complaints and enquiries may be transmitted.

B48. A **Complaints Management System** must be prepared before the commencement of any construction works and be implemented and maintained for the duration of these works.

The **Complaints Management System** must include a **Complaints Register** to be maintained recording information on all complaints received about the development during the carrying out of any construction works associated with the development. The **Complaints Register** must record the:
   a) number of complaints received;
   b) number of people affected in relation to a complaint; and
   c) nature of the complaint and means by which the complaint was addressed and whether resolution was reached, with or without mediation.

The **Complaints Register** must be provided to the Secretary upon request, within the timeframe stated in the request.

Compliance Reporting

B49. A Pre-Construction Compliance Report must be prepared for the development, and submitted to the Certifying Authority for approval before the commencement of works approved under this consent. A copy of the endorsed compliance report must be provided to the Department at compliance@planning.nsw.gov.au before the commencement of works approved under this consent.

B50. The Pre-Construction Compliance Report must include:
   a) details of how the terms of this consent that must be addressed before the commencement of construction have been complied with; and
   b) the expected commencement date for construction.

B51. Prior to commencement of construction works approved under this consent, the Pre-Construction Compliance Report must be approved by the Secretary.

Independent Environmental Audit

B52. No later than one month before the commencement of construction works approved under this consent or within another timeframe agreed with the Secretary, a program of independent environmental audits must be prepared for the development in accordance with the latest version of AS/NZS ISO 19011-2014: Guidelines for Auditing Management Systems (Standards Australia, 2014) and submitted to the Secretary for information.

B53. The program must require an independent environmental audit every year. The scope of each audit must be defined in the program. The program must ensure that environmental performance of the development in relation to each compliance requirement that forms the audit scope is assessed at least once in each audit cycle.

PART C DURING CONSTRUCTION

Hours of Work

C1.

a) Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:
   i) between 7 am and 6 pm, Mondays to Fridays inclusive; and
   ii) between 8 am and 5 pm, Saturdays.

b) No work may be carried out on Sundays and public holidays.

c) Works may be undertaken outside these hours where:
   i) works are inaudible at the nearest sensitive receivers; or
   ii) the delivery of vehicles, plant or materials is required outside these hours by the Police or other public authorities; or
   iii) it is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm; or
   iv) works are undertaken in accordance with an approved Environmental Protection Licence under the *Protection of the Environment Operations Act 1997*; or
   v) a variation is approved, in advance, in writing by the Secretary or her nominee.

Approved Plans to be On-Site

C2. A copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification must be kept on the Subject Site at all times and must be readily available for any officer of the Department, Council or the Certifying Authority.

Aboriginal Cultural Heritage

C3. The **Aboriginal Cultural Heritage Management Plan** (ACHMP) prepared by Jacobs dated 8 March 2017, and **Salvage Report**, prepared by Jacobs, dated 26 June 2017, are to be updated to the satisfaction of OEH within three months of approval of the development, or as otherwise agreed by the Secretary. The updated ACHMP and Salvage Report must identify what measures would be implemented to allow input from all Aboriginal groups who have identified themselves as contact points for knowledge-holders and their input:

a) should be evident in the finalised statement of significance of any salvaged or collected Aboriginal objects from the site; and

b) should be considered for the temporary curation and long-term storage of the above objects.

Independent Environmental Audit

C4. The environmental audit program prepared and submitted to the Secretary in accordance with conditions B52 and B53 above must be implemented and complied with for the duration of the development.

C5. All independent environmental audits of the development must be conducted by a suitably qualified, experienced and independent team of experts and be documented in an audit report which:

a) assesses the environmental performance of the development, and its effects on the surrounding environment including the community;

b) assesses whether the development is complying with the terms of this consent;

c) reviews the adequacy of any document required under this consent; and

d) recommends measures or actions to improve the environmental performance of the development, and improvements to any document required under this consent.

C6. Within three months of commencing an Independent Environmental Audit, or unless otherwise agreed by the Secretary, a copy of the audit report must be submitted to the Secretary, and any other NSW agency that requests it, together with a response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Secretary.

Management Plans

C7. The ACHMP, CEMP, CNVMP, CWMP, CTPMP, FFMP and CBPMP (as revised from time to time) must be implemented by the Applicant for the duration of the construction works.

Stock Movement Protocol

C8. The Stock Movement Protocol must be implemented for the duration of construction works and must be updated to address any matters raised by Local Land Services or any complaints that are validated by Local Land Services.

Local Workforce

C9. If the project commitment target for the construction workforce from the local area cannot be achieved as per condition A4, residents within a 90-minute catchment should be the next group considered to minimise impacts on local housing supply. All new opportunities for work must be made available to candidates from the local area in the first instance. If the Applicant is unable to achieve a sufficient workforce from either group, the Applicant must consult with Council to identify strategies to address housing supply impacts, including the need for any additional short-term accommodation to mitigate any impacts on cost of housing.

Erosion and Sediment Control

C10. All erosion and sediment control measures, are to be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works have been stabilised and rehabilitated so that it no longer acts as a source of sediment.

Disposal of Seepage and Stormwater

C11. Any seepage or rainwater collected on-site during construction or groundwater must not be pumped to the street stormwater system unless separate prior approval is given in writing by Council.

Site Notice

C12. A site notice(s) must be prominently displayed at the boundaries of the Subject Site for the purposes of informing the public of project details including, but not limited to the details of the Builder, Certifying Authority and Structural Engineer. The notice(s) is to satisfy all but not be limited to, the following requirements:

a) minimum dimensions of the notice are to measure 841 mm x 594 mm (A1) with any text on the notice to be a minimum of 30 point type size;

b) the notice is to be durable and weatherproof and is to be displayed throughout the works period;

c) the approved hours of work, the name of the site/project manager, the responsible managing company (if any), its address and 24 hour contact phone number for any inquiries, including construction/noise complaint are to be displayed on the site notice; and

d) the notice(s) is to be mounted at eye level on the perimeter hoardings/fencing and is to state that unauthorised entry to the Subject Site is not permitted.

Construction Noise Management

C13. The development must be constructed with the aim of achieving the construction noise management levels detailed in the *Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)*. All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the CNVMP, as required by condition B28.

C14. If the noise from a construction activity is substantially tonal or impulsive in nature (as described in Chapter 4 of the NSW *Industrial Noise Policy*), 5 dB(A) must be added to the measured construction noise level when comparing the measured noise with the construction noise management levels.

C15. The Applicant shall ensure construction vehicles do not arrive at the Subject Site or surrounding residential precincts outside of the construction hours of work outlined under condition C1.

C16. The Applicant must schedule rock breaking, rock hammering, sheet piling, pile driving and any similar activity only between the following hours unless otherwise approved by the Secretary:
a) 9 am to 12 pm, Monday to Friday;
b) 2 pm to 5 pm Monday to Friday; and
c) 9 am to 12 pm, Saturday.

C17. Wherever practical, and where sensitive receivers may be affected, piling activities are completed using augered piling methods. If driven piles are required they must only be installed where outlined in a CNVMP.

C18. Any noise generated during the construction of the development must not be offensive noise within the meaning of the *Protection of the Environment Operations Act, 1997* or exceed approved noise limits for the Subject Site.

Vibration Criteria

C19. Vibration caused by construction at any residence or structure outside the Subject Site must be limited to:
a) for structural damage vibration, *German Standard DIN 4150 Part 3 Structural Vibration in Buildings. Effects on Structures*; and
b) for human exposure to vibration, the evaluation criteria presented in *British Standard BS 6472 – Guide to Evaluate Human Exposure to Vibration in Buildings* (1 Hz to 80 Hz) for low probability of adverse comment.

C20. The above limits apply unless otherwise outlined in a CNVMP, approved by the Certifying Authority.

C21. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified above.

Work Cover Requirements

C22. To protect the safety of work personnel and the public, the work site must be adequately secured to prevent access by unauthorised personnel, and work must be conducted at all times in accordance with relevant Work Cover requirements.

Hoarding/Fencing Requirements

C23. The following hoarding requirements must be complied with:
a) no third party advertising is permitted to be displayed on hoarding/fencing; and

b) the construction site manager must be responsible for the removal of all graffiti from any construction hoarding/fencing or the like within the construction area within 48 hours of its application.

Protection of Public Infrastructure

C24. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:

a) repair or pay the full costs associated with repairing any public infrastructure that is damaged as a result of works undertaken pursuant to this consent within three months of being notified of the damage or as otherwise agreed with the relevant authority; and

b) relocate or pay the full costs associated with relocating any infrastructure that needs to be relocated as a result of the development.

Road Occupancy Licence

C25. A Road Occupancy Licence must be obtained from the Transport Management Centre (RMS) for any works impacting on traffic flows of adjoining roads during construction activities.

Protection of Trees

C26.

a) No street trees are to be trimmed or removed unless it forms a part of this development consent or prior written approval from Council is obtained or is required in an emergency to avoid the loss of life or damage to property.

b) All street trees shall be protected at all times during construction. Any tree on the footpath, which is damaged or removed during construction due to an emergency, shall be replaced, to the satisfaction of Council.

c) All trees on the Subject Site that are not approved for removal and trees on adjoining properties are to be suitably protected by way of tree guards, barriers or other measures as necessary to protect root system, trunk and branches, during construction.

Waste

C27. All waste generated by the project must be assessed, classified and managed in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (DECCW, 2009).

C28. The body of any vehicle or trailer used to transport waste or excavation spoil shall be covered before leaving the premises to prevent any spillage or escape of any dust, waste or spoil. Mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorised plant leaving the site shall be removed before leaving the premises.

No obstruction of public way

C29. The public way (outside of any construction works zone) must not be obstructed by any materials, vehicles, refuse, skips or the like, under and circumstances. Non-compliance with this requirement will result in the issue of a notice by the relevant Authority to stop all works on site.

Impact of Below Ground (sub-surface) Works – Non-Aboriginal Relics

C30. If any unexpected archaeological relics are uncovered during the course of the work, then all works must cease immediately in that area and the Heritage Division contacted. Depending on the possible significance of the relics, an archaeological assessment and management strategy may be required before further works can continue in that area. Works may only recommence with the written approval of the Heritage Division.

Incident Reporting

C31. Within 24 hours of the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant must notify the Secretary and any other relevant agencies of the incident in accordance with the requirements outlined in conditions A17 to A22 of this consent.

C32. Within seven days of the detection of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested in accordance with Condition A19 of this consent.

Compliance Tracking and Reporting

C33. The Applicant must provide regular (six monthly) reporting on any environmental performance required by the development consent for the development on its project website, in accordance with the reporting arrangements in any plans or other documents approved under the conditions of this consent.

Compliance – General

C34. The Applicant must ensure that all employees, contractors and sub-contractors are aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

C35. **Construction Compliance Reports** must be submitted to the Department at compliance@planning.nsw.gov.au for information every six (6) months from the date of the commencement of construction works approved under this consent, for the duration of construction. The Construction Compliance Reports must provide details on the compliance performance of the development for the preceding 6 months and must be submitted within one month following the end of each 6 month period for the duration of the development, or such other timeframe as required by the Secretary.

C36. The **Construction Compliance Reports** must include:

a) a results summary and analysis of environmental monitoring;
b) the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;
c) details of any review of, and minor amendments made to, the CEMP and associated sub-plans as a result of construction carried out during the reporting period;
d) a register of any modifications undertaken and their status;
e) results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;
f) a summary of all incidents notified in accordance with this consent; and
g) any other matter relating to compliance with the terms of this consent or as requested by the Secretary.

Community Communication Strategy

C37. The Community Communication Strategy, as approved by the Secretary, must be implemented for the duration of construction approved under this consent.

PART D PRIOR TO OCCUPATION OR COMMENCEMENT OF USE

Operational Traffic Management Plan

D1. Prior to occupation, the Applicant must identify in consultation with Council what management practices (such as an operational traffic management plan) would be implemented to manage staff and visitors so that operational traffic use Eight Mile Lane and Avenue Road to access the facility.

Road Safety - Operation

D2. Prior to occupation, an independent RSA of Six Mile Lane and Old Six Mile Lane, from the existing Pacific Highway to Avenue Road, must be prepared by a suitably qualified traffic engineer to identify any road safety risks and ensure that appropriate measures are identified to mitigate any identified risks to the satisfaction of Council and RMS. The RSA must:

a) consider expected traffic volumes on these roads in 2030 (ten year horizon from occupation) as agreed by RMS and Council with consideration of management practices identified to address condition D1;
b) utilise a speed limit of 80km/h on both Avenue Road and Eight Mile Lane (or as otherwise advised by RMS); and
c) consider Austroads Guide to Traffic Management Part 6 Intersections, Interchanges and Crossings, Section 2.3.6 Warrants for BA, AU and CH Turn Treatments and Austroads Guide to Road Design Part 4A Unsignalised and Signalised Intersections.

D3. Prior to commencement of operations, the Applicant must implement the recommendations of the RSA required by condition D2, including upgrade Eight Mile Lane and Avenue Road intersection, Old Six Mile Lane and Avenue Road intersection and Six Mile Lane and the Grafton Regional Airport intersections to the satisfaction of Council, where required.

Wastewater Management

D4. Prior to occupation, the Wastewater Management Plan and Recycled Wastewater Management Plan, must be updated to the satisfaction of EPA, Crown Lands and Water of Department of Industry and Council to address, but not limited to:

a) details of nutrient removal from the irrigation areas;
b) location and number of soil moisture sensors;
c) allow for soil moisture buffer capacity of 5 mm to 10 mm for irrigation areas;
d) monitoring indicators, frequency and sampling methodology; and
e) procedures for managing any overflow of the wet weather storage dam and emergency procedures for discharge from the site during flooding events.

D5. Prior to occupation the Applicant must provide evidence to Council and the Secretary that adequate procedures have been developed to manage biosolids generated as part of the waste water management scheme. If offsite disposal is required, the Applicant must provide the Secretary with details of agreement with an appropriate waste facility for disposal of the biosolids.

Odour Management Plan

D6. The Applicant must prepare an **Odour Management Plan** to outline measures to minimise impacts from the project on local and regional air quality. The Plan must be prepared by a suitably qualified and experienced person(s) and must include, but not be limited to:

a) identification of all major sources of odour that may be emitted from the project;
b) monitoring for odour emissions from the project, in accordance with any requirements of the EPA;
c) pro-active management and response mechanisms for odour emissions, with specific reference to measures to be implemented and actions to be taken to minimise and (where practicable) prevent potential odour impacts on surrounding

land uses resulting from meteorological conditions or the mode of operation of the project;

d) provision for review of air quality monitoring data;
e) plans for regular maintenance of process equipment to minimise the potential for odour emissions; and
f) a contingency plan should an incident, process upset or other initiating factor lead to elevated odour impacts, whether above normal operating conditions or environmental performance goals/ limits.

Aboriginal Cultural Heritage

D7. Prior to occupation, the Applicant must demonstrate to the satisfaction of OEH that input from all Aboriginal groups who have identified themselves as contact points has been incorporated in cultural induction or safety packages developed and delivered for the operation of the correctional centre. Copies of the relevant cultural induction or safety packages, including evidence of Aboriginal input, must be submitted to the Certifying Authority and the Secretary prior to occupation.

Biodiversity Management

D8. Prior to occupation, the Applicant must investigate options to increasing the vegetative buffer along the southern and south-eastern boundary to maintain an east-west biodiversity corridor in consultation with OEH or demonstrate to OEH that the vegetative buffer cannot be provided.

Bush Fire Management

D9. Prior to occupation, the Applicant must prepare a **Fire Management Plan** in consultation with NSW RFS Clarence Valley Control Centre to address:

a) strategy for managing grass fires;
b) emergency management procedures for fire within the facility;
c) internal road systems;
d) water supplies;
e) hazardous materials;
f) annual review and reporting mechanism; and
g) site familiarisation procedures and response mechanisms.

Sustainable Travel Plan

D10. The **Sustainable Travel Plan** (STP) for the development must be prepared in consultation with TfNSW and submitted to the Secretary for approval prior to occupation unless otherwise agreed by the Secretary. The STP must identify measures to support sustainable transport modes, target a reduction in private vehicle travel and include provision for review and monitoring.

External Walls and Cladding

D11. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the NCC.

Prior to occupation, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the NCC.

The Applicant must provide a copy of the documentation given to the Certifying Authority to the Secretary within seven days after the Certifying Authority accepts it.

Pre-operation Compliance Report

D12. A **Pre-Operation Compliance Report** must be prepared and submitted to the Secretary for information no later than one month before the commencement of

operation or within another timeframe agreed with the Secretary. The Pre-Operation Compliance Report must include:

a) details of how the terms of this approval that must be addressed before the commencement of operation have been complied with; and

b) the commencement date for operation.

Operation of the building must not commence until the Pre-Operation Compliance Report has been submitted for information to the Secretary.

Mechanical Ventilation

D13. Following completion, installation and testing of all the mechanical ventilation systems, the Applicant must provide evidence to the satisfaction of the Certifying Authority, prior to occupation, that the installation and performance of the mechanical systems complies with:
   a) the NCC;
   b) *Australian Standard AS1668 The use of ventilation and air-conditioning in buildings* and other relevant codes;
   c) the development consent and any relevant modifications; and
   d) any dispensation granted by the New South Wales Fire Brigade.

Road Damage

D14. The cost of repairing any damage caused to Council or other Public Authority's assets in the vicinity of the or along nominated haulage routes to the Subject Site as a result of construction works associated with the approved development is to be met in full by the Applicant prior to occupation.

Compliance Certificate

D15. A Certificate of Compliance under the provision of section 306 of the *Water Management Act* must be obtained from the water supply authority (Council) prior to occupation. The Applicant must pay Section 64 Contributions in the sum of $3,000,000.

Post-construction Dilapidation Report

D16. Prior to occupation:
   a) the Applicant must engage a suitably qualified person to prepare a **Post-Construction Dilapidation Report** at the completion of the construction works. This report is to ascertain whether the construction works created any structural damage to infrastructure and roads;
   b) the report is to be submitted to the satisfaction of the Certifying Authority. In ascertaining whether adverse structural damage has occurred to infrastructure and roads, the Certifying Authority must:
      i) compare the post-construction dilapidation report with the pre-construction dilapidation report required by these conditions; and
      ii) have written confirmation from the relevant authority that there is no adverse structural damage to their infrastructure and roads;
   c) a copy of this report is to be forwarded to the Council.

Fire Safety Certification

D17. Prior to occupation, a **Fire Safety Certificate** must be obtained for all the Essential Fire or Other Safety Measures forming part of this consent. A copy of the Fire Safety Certificate must be submitted to the relevant authority and Council. The Fire Safety Certificate must be prominently displayed on the premises.

Structural Inspection Certificate

D18. A **Structural Inspection Certificate** or a **Compliance Certificate** must be submitted to the satisfaction of the Certifying Authority prior to occupation. A copy of the relevant Certificate with an electronic set of final drawings (contact approval authority for

specific electronic format) must be submitted to the approval authority and the Council after:

a) the site has been periodically inspected and the Certifier is satisfied that the structural works is deemed to comply with the final design drawings; and
b) the drawings listed on the Certificate have been checked with those listed on the final Design Certificate/s.

Signage

D19. Way finding signage for pedestrians and cyclists must be installed within the site prior to occupation.

Registration of Easements

D20. Prior to occupation, the Applicant must provide to the Certifying Authority evidence that all matters required to be registered on title including easements required by this consent, approvals, and other consents have been lodged for registration or registered at the NSW Land and Property Information.

Food Preparation Areas

D21. All food premises must be designed and constructed to comply with Food Safety Standard 3.2.3 *Food Premises and Equipment* of the Food Standards Code.

D22. The Applicant is to obtain a certificate from a suitably qualified tradesperson, certifying that the kitchen, food storage and food preparation areas have been fitted in accordance with *Australian Standard AS4674 Design, construction and fit-out of food premises*. The Applicant must provide evidence of receipt of the certificate to the satisfaction of the Certifying Authority prior to the occupation.

External Lighting

D23. The Applicant must submit to the consent authority evidence from a qualified practitioner that external lighting complies with *AS/NZ1158.3: 1999 Pedestrian Area (Category P) Lighting* and *AS4282: 1997 Control of the Obtrusive Effects of Outdoor Lighting*.

D24. Street lighting must be provided at the main access on Avenue Road to the facility and designed to Council's requirements. The street lighting must be designed to minimise impacts on adjoining neighbours.

PART E POST OCCUPATION

Sustainable Travel Plan

E1. The STP, as required by condition D10, must be updated annually and the measures to promote a modal shift away from private vehicle travel identified in the STP must be implemented accordingly.

Stock Movement Protocol

E2. The Stock Movement Protocol must be implemented for the duration of operations of the facility and must be updated to address any matters raised by Local Land Services or any complaints that are validated by Local Land Services.

Wastewater Management

E3. A performance assessment/audit of the wastewater management system must be prepared quarterly by a suitably qualified experienced independent person and submitted to Council for a commissioning period of up to two years from occupation, and annually thereafter. Annual performance assessment should include an assessment of the sustainability of irrigation practices.

E4. The performance assessment/audit should be guided by Environmental Guidelines: Use of Effluent by Irrigation (DEC 2004) and the updated Wastewater Management Plan and Recycled Water Management Plan required by condition D4.

E5. If any of the 'Proposed Recycled Water Criteria' specified in the updated Recycled Water Management Plan required by condition D4 are exceeded, the Applicant must provide Council a quarterly performance assessment/audit of the wastewater management system for four periods before reverting back to annual reporting.

Odour Management

E6. The **Odour Management Plan** must be implemented for the duration of operation of the facility.

E7. The Applicant must ensure the development does not cause or permit the emission of any offensive odour (as defined in the POEO Act).

E8. The Applicant must carry out an Odour Audit of the development no later than six months after the commencement of operation of the development. The audit must:

a) be carried out by a suitably qualified, experienced and independent person(s), whose appointment has been endorsed by the Secretary;
b) audit the development in full operation;
c) include a summary of odour complaints and any actions that were carried out to address the complaints;
d) assess the operation against odour impact predictions in the [EIS/Submissions Report];
e) review design and management practices in the development against industry best practice for odour management; and
f) include an action plan that identifies and prioritises any odour mitigation measures that may be necessary to reduce odour emissions.

E9. Within six months of commissioning of the Odour Audit required by condition E8, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the Odour Audit report to the Secretary, together with the Applicant's response to any recommendations contained in the Odour Audit report.

Bush Fire Management

E10. Asset Protection Zones must be maintained in accordance with NSW RFSs *Planning for Bush fire Protection 2006* and *Standards for asset protection zones*, as illustrated on Drawing Number *3206-ARC-DA2_00_002*, Revision B, Titled Overall Masterplan 1:2500, dated 15 November 2017 for the duration of operation of the facility.

E11. The Fire Management Plan must be implemented for the duration of operation of the facility and reviewed annually in consultation with NSW RFS Clarence Valley Control Centre.

Social Performance Reports

E12. Social Performance Reports are to be prepared by a suitably qualified experienced independent person to monitor and report on the social indicators identified in the Social Impact Assessment (SIA), prepared by BBC Consulting Planners, dated 7 June 2017, in accordance with the timeframe outlined in the SIA. Copies of the Social Performance Reports must be submitted to Council and the Department.

Community Communication Strategy

E13. The Community Communication Strategy, as approved by the Secretary, must be implemented for the duration of the development.

Unobstructed Driveways and Parking Areas

E14. All driveways and parking areas must be unobstructed at all times. Driveways and car spaces must not be used for the manufacture, storage or display of goods, materials or any other equipment and shall be used solely for vehicular access and for the parking of vehicles associated with the use of the premises.

Noise Control – Plant and Machinery

E15. Noise associated with the operation of any plant, machinery or other equipment on the Subject Site, must not exceed 5 dB(A) above the rating background noise level when measured at the boundary of the sensitive receiver.

E16. The Applicant must carry out a noise monitoring program for a minimum period of one week where valid data is collected following occupation. The monitoring program must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Secretary within two months of occupation to verify that project specific noise levels identified in *Stage 2 - Environmental Noise and Vibration Assessment New Grafton Correctional Centre,* prepared by Day Design Pty Ltd, dated 30 May 2017 are being met.

Should the noise monitoring program identify any exceedance of the noise criteria referred to above, the Applicant is required to implement appropriate noise attenuation measures so that operational noise levels do not exceed the project specific criteria or provide attenuation measures at the affected noise sensitive receivers.

Storage of Hazardous or Toxic Material

E17. Any hazardous or toxic materials must be stored in accordance with Workcover Authority requirements and all tanks, drums and containers of toxic and hazardous materials must be stored in a bunded area. The bund walls and floors must be constructed of impervious materials and must be of sufficient size to contain 110 per cent of the volume of the largest tank plus the volume displaced by any additional tanks within the bunded area.

E18. The storage and handling of medical liquid oxygen, must be in accordance with *AS 1894 The storage and handling of non-flammable cryogenic and refrigerated liquids.*

Public Way to be Unobstructed

E19. The public way must not be obstructed by any materials, vehicles, refuse, skips or the like under any circumstances.

External Lighting

E20. External Lighting must comply with *AS/NZ1158.3: 1999 Pedestrian Area (Category P) Lighting* and *AS4282: 1997 Control of the Obtrusive Effects of Outdoor Lighting.*

ADVISORY NOTES

Appeals

AN1. The Applicant has the right to appeal to the Land and Environment Court in the manner set out in the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000* (as amended).

Other Approvals and Permits

AN2. The Applicant must apply to the Council for all necessary permits including crane permits, road opening permits, hoarding or scaffolding permits, footpath occupation permits and/or any other approvals under Section 68 (Approvals) of the *Local Government Act 1993* or Section 138 of the *Roads Act 1993*.

Responsibility for other consents / agreements

AN3. The Applicant is solely responsible for ensuring that all additional consents and agreements are obtained from other authorities, as relevant.

Temporary Structures

AN4. An approval under *State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007* must be obtained from the Authority for the erection of the temporary structures. The application must be supported by a report detailing compliance with the provisions of the Building Code of Australia.

AN5. Structural certification from an appropriately qualified practicing structural engineer must be submitted to the Authority with the application under *State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007* to certify the structural adequacy of the design of the temporary structures.

Disability Discrimination Act

AN6. This application has been assessed in accordance with the *Environmental Planning and Assessment Act 1979*. No guarantee is given that the proposal complies with the *Disability Discrimination Act 1992*. The Applicant is responsible to ensure compliance with this and other anti-discrimination legislation. The *Disability Discrimination Act 1992* covers disabilities not catered for in the minimum standards called up in the Building Code of Australia which references AS 1428.1 - *Design for Access and Mobility*. AS1428 Parts 2, 3 & 4 provides the most comprehensive technical guidance under the *Disability Discrimination Act 1992* currently available in Australia.

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

AN7. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* provides that a person must not take an action which has, will have, or is likely to have a significant impact on a matter of national environmental significance (NES) matter; or Commonwealth land, without an approval from the Commonwealth Environment Minister.

AN8. This application has been assessed in accordance with the *Environmental Planning & Assessment Act 1979*. The determination of this assessment has not involved any assessment of the application of the Commonwealth legislation. It is the Applicant's responsibility to consult the Department of Sustainability, Environment, Water, Population and Communities to determine the need or otherwise for Commonwealth approval and you should not construe this grant of approval as notification to you that the Commonwealth Act does not have application. The Commonwealth Act may have application and you should obtain advice about this matter. There are severe penalties for non-compliance with the Commonwealth legislation.

Asbestos Removal

AN9. All excavation works involving the removal and disposal of asbestos must only be undertaken by contractors who hold a current WorkCover Asbestos or "Demolition Licence" and a current WorkCover "Class 2 (Restricted) Asbestos Licence and removal must be carried out in accordance with NOHSC: "*Code of Practice for the Safe Removal of Asbestos*".

Site contamination issues during construction

AN10. Should any new information come to light during demolition or construction works which has the potential to alter previous conclusions about site contamination then the Applicant must be immediately notified and works must cease. Works must not recommence on site until the consultation is made with the Department.

Appendix B

System Management

Clarence Correctional Centre

Legislation and Approvals Register

Document No.: PRO-ENV-CD-RPT-00_507-B01

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	26-Feb-2020	

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1 Legislation and Approvals Register

1.1 Purpose

The Legislation and Approvals Register maintains a list of the key legislation applicable to this RWMP, and a list of the current approvals for the recycled water scheme operation. It is intended to assist with compliance with relevant approvals and legislative requirements through raising awareness of applicable legislative instruments and current approvals for the site.

Table 1 shows a list of relevant agencies, Table 2 the current approvals in place for the site, and Table 3 provides a list of applicable legislation, along with a short description of each.

1.2 Responsible person

It is the responsibility of the WWTP Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.3 Periodic Review and updating the register

The register is to be reviewed periodically, and updated as required to ensure it remains current. Reviews should be undertaken with each audit / review of the RWMP.

1.3.1 Legislation and Approvals Register

The register of current approvals, and applicable legislation is shown in Table 2 and Table 3 respectively.

1.3.2 Information sources

Key information sources which may be useful in updating this registry include:

- NSW Legislation, http://www.legislation.nsw.gov.au/#/
- Australian Government, ComLaw, http://www.comlaw.gov.au
- NSW EPA Legislation, http://www.epa.nsw.gov.au/legislation/.

1.4 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.5 Referenced Materials

n/a

Table 1. Relevant Agencies

Agency Name	Relevance	Contact	Contact Details
Clarence Valley Council	The appropriate regulatory authority (ARA) for development approval of scheme under s68 approval Notification for pollution incidents		
NSW EPA	Regulation of scheme if approved under an EPL Notification for pollution incidents		
NSW Health	Public Health Unit Notification and advice in case of incidents involving actual or potential public health impacts		

Table 2. Approval Register

Approval number	Title / Description	Date Issued	Anniversary Date
SSD 7413	Stage 1 Conditions of Development Consent – for the concept proposal and Stage 1 works for the entire CCC facility, including the wastewater treatment plant and recycled water scheme	14 March 2017	
SSD 8368	Stage 2 Conditions of Development Consent – for the design and construction of the facility for the entire CCC facility, including the wastewater treatment plant and recycled water scheme	21 December 2017	
TBA	Approval to Construct Wastewater Treatment Plant and Recycled Water Scheme	TBA	
TBA	Approval to Operate Wastewater Treatment Plant and Recycled Water Scheme	TBA	

Table 3. Environmental Legislation Register

Jurisdiction	Title	Administered by	Description
Commonwealth Legislation	*Environment Protection and Biodiversity Conservation Act 1999*	Commonwealth Department of Environment	Legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. The Act may apply in relation to protected matters in vegetation to be retained on the site, though only if irrigation / disposal encroaches on these areas.
New South Wales Legislation	The *Protection of the Environment Operations Act 1997* (POEO Act)	NSW EPA	The primary piece of environmental legislation in New South Wales. The POEO Act is administered by the NSW Environment Protection Authority (EPA), who also approve, administer and issue Environmental Protection Licences (EPLs), including: 36 Sewage treatment… if it has a processing capacity that exceeds: a. 2,500 persons equivalent, as determined in accordance with guidelines established by an EPA Gazettal notice, or b. 750 kilolitres per day, whichever is the greater. The Act also includes requirements for notification of incidents resulting in actual or potential to cause material harm to the environment.
	Water Industry Competition Act 2006 (WICA)		The Act encourages competition and investment in the water industry for provision of water and wastewater services by both public and private water utilities. The Act provides for a licensing regime for private sector providers of reticulated drinking water, recycled water and sewerage services. Licences include a network operator's licence for construction, maintenance and operation of water industry infrastructure; and a retail supplier's licence to supply water or provide sewerage services by means of water industry infrastructure. Under Schedule 3, item 7 of the Act, water industry infrastructure that 'i) is not able to be connected to water industry infrastructure operated by a public water utility because it is not practicable or economical to connect the infrastructure' is exempt from the requirements for a licence. As such, this implies that the collection and treatment of sewage and the irrigation of recycled water on the site can proceed without a WICA licence. Note however that once the site is able to be connected, there is a period of one year during which the exemption continues to apply and then section 5 of the Act requires the water industry infrastructure to be licensed.
New South Wales State Environmental Planning Policies (SEPPs)	State Environmental Planning Policy No 33 – Hazardous and Offensive Development		SEPP 33 relates to hazardous and offensive industries or storage establishments, providing guidance on approval, application requirements, and the provision of a preliminary hazard analysis. A preliminary screening assessment has been conducted for the site, determining the wastewater scheme does not trigger the thresholds for a potentially hazardous facility and does not therefore trigger SEPP 33.

Clarence Correctional Centre

Risk Assessment Register

Document No.: PRO-ENV-CD-RPT-00_507-B02

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	26-Feb-2020	

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1 Risk Assessment Register

The Risk Assessment Register is a risk-based tool to explicitly evaluate the environmental risks and potential impacts associated with various aspects of the site and operation. It is to be used to identify and prioritise management to ensure that site management, staff and their subcontractors are aware of and adequately prepared to manage the relevant risks of the project.

Table 2 shows the risk assessment.

1.1 Responsible person

It is the responsibility of the WWTP Manager to ensure this procedure remains up to date and is periodically revised and updated.

1.2 Periodic Review and updating the register

The register is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken with each audit / review of the RWMP.

1.3 Risk Assessment

A system flow diagram has been developed, as shown overleaf, identifying all relevant system elements, inflows and outflows, sources and end users (intentional and unintentional) for the system, based on the available system information.

This has been used to undertake the hazard and risk identification, determining the hazards, sources and events (including treatment failure) that can compromise recycled water quality. From this, critical control points are identified, and control measures are specified to effectively control hazards and prevent adverse impacts.

Risk assessment is undertaken with reference to the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1) 2006* (EPHC *et* al, 2006) and AS/NZS ISO 31000:2009 *Risk management - Principles and guidelines*, according to the schema outlined in Table 1. Risks are assessed in terms of the likelihood of occurrence of a hazardous event, or impact, and the consequence should the impact occur.

Likelihood is a measure or description of how likely it is that an event will occur. It applies specifically to the resulting environmental impact, rather than the frequency or probability solely of the initial incident. A single incident may spark a chain of events, each with an associated likelihood, leading to a final environmental impact. Each event in the chain is dependent upon the previous event occurring in the first place. These ‘conditional probabilities’ or ‘conditional likelihoods’ need to be factored into determining the final likelihood of the environmental impact occurring.

A **consequence** is the outcome or impact of an event, measured qualitatively or quantitatively, and being a loss, injury, an expressed concern, disadvantage or gain. There may be a range of possible outcomes associated with an event.

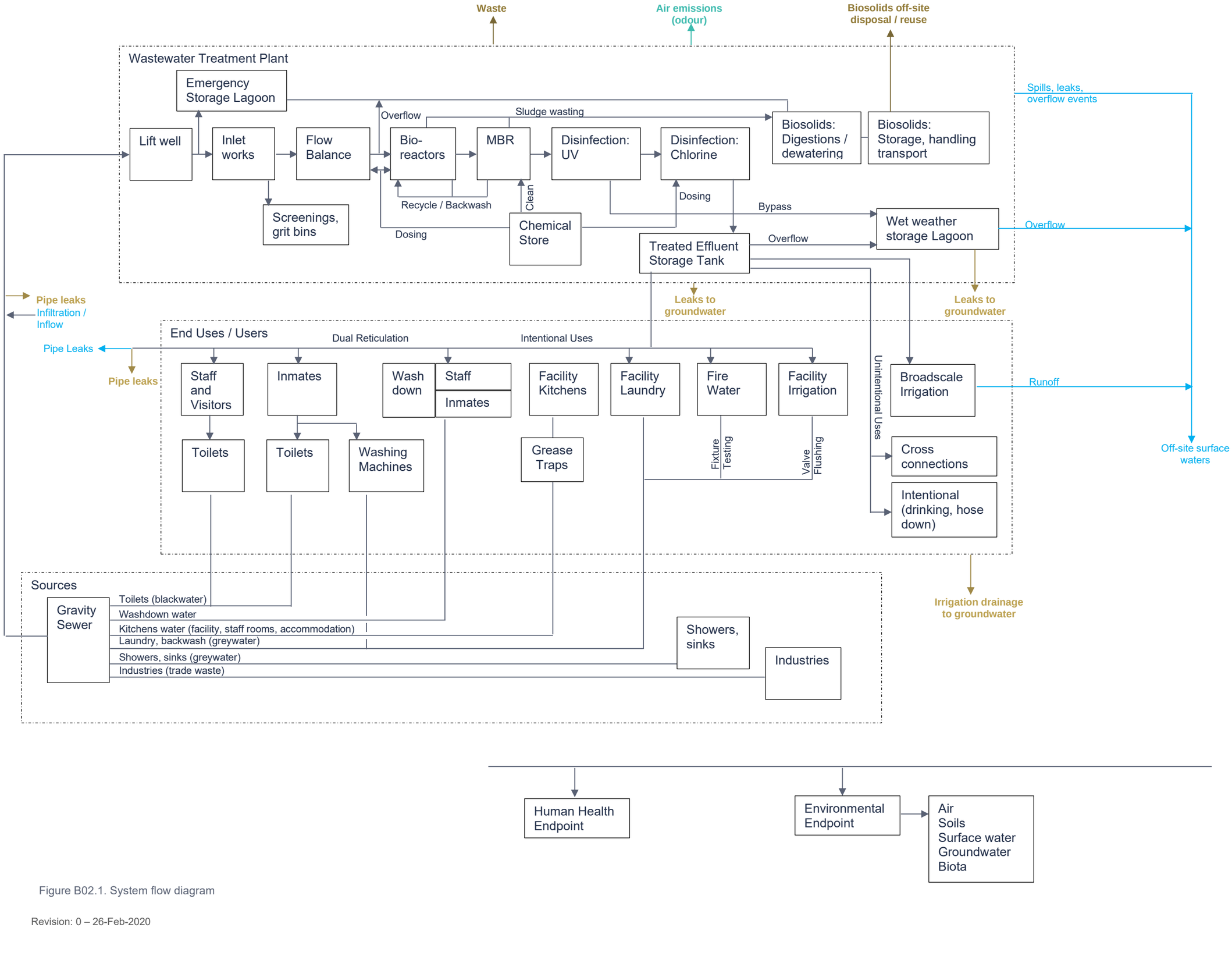

Figure B02.1. System flow diagram

Table 1. Risk assessment process – likelihood, consequence and risk rating

Measures of Likelihood		
Level	Descriptor	Description
A	Rare	May occur only in exceptional circumstances. May occur once in 100 years
B	Unlikely	Could occur but not expected, could occur within 20 years or in unusual circumstances
C	Possible	Might occur or should be expected to occur within a 5- to 10-year period
D	Likely	Will probably occur within a 1- to 5-year period
E	Almost Certain	Is expected to occur with a probability of multiple occurrences within a year

Measures of Consequence			
Level	Descriptor	Environment	Social and Health
1	Insignificant	No observed impact	No complaints No health impacts
2	Minor	Localised and reversible through minor remediation actions, impacts confined to site	Minor complaint, easily and immediately rectified, minor inconvenience Minor impact for small population
3	Moderate	Localised, reversible impact requiring remediation or rehabilitation, local impacts primarily contained to on-site	Formal complaint, requiring consultation and liaison with person issuing complaint and council, moderate inconvenience, rectified over 1-2 weeks Minor impact for large population
4	Major	Severe impact to the environment, resulting in impacts to significant fauna/vegetation or environmental processes; requires long term remediation to return to original state; predominantly local, but potential for off-site impacts	Complaint reflected in local paper, surrounding community affected, rectified over months Major impact for small population
5	Catastrophic	Severe, irreversible impact on entire ecosystem; loss of threatened species or populations; widespread on-site and off-site impacts.	Complaint reflected in paper and news, greater surrounding community affected, rectified over years, ongoing and irreversible inconvenience Major impact for large population

Risk Matrix					
Likelihood	Cosequence				
	Catastrophic (5)	Major (4)	Moderate (3)	Minor (2)	Insignificant (1)
Almost certain (E)	VH	VH	H	M	L
Likely (D)	VH	VH	H	M	L
Possible (C)	VH	VH	H	M	L
Unlikely (B)	VH	H	M	L	L
Rare (A)	H	H	L	L	L

VH = Very High risk; H = High risk; M = Moderate risk; L = Low risk

1.4 Records

Records of this register and supporting information (where required) are to be maintained for a period of not less than 5 years.

1.5 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.6 Referenced Materials

EPHC, NRMMC and AHMC (2006). Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1). Environment Protection and Heritage Council (EPHC), the Natural Resource Management Ministerial Council (NRMMC) and the Australian Health Ministers' Conference (AHMC), November 2006.

AS/NZS ISO 31000:2009 Risk management - Principles and guidelines

Table 2. Risk Assessment

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
WWTP - general	Access by unauthorised persons Negative visual amenity impacts	C x 4 = VH C x 3 = H	Ensure WWTP and pump stations are locked when no staff are present. Warning signs to be installed. Maintain site in clean and orderly condition.	Security fencing / system Site amenity and nearest sensitive site users (visual)	B x 2 = L B x 2 = L
	Contact of untreated or insufficiently treated wastewater by staff	E x 4 = VH	Ensure sufficient training is provided and only staff with the correct training to operate the plant. Adopt PPE appropriate to the tasks being undertaken. All staff working on the plant are to have appropriate vaccinations. All staff to ensure compliance with applicable site OH&S procedures	Staff training, pre-qualification and pre-requisites Site access	B x 2 = L
	Systemic failures due to poor quality equipment	C x 4 = VH	Utilise only proven technologies and suppliers with good references (check with references) Undertake comparison of long term cost and maintenance requirements.	Tender / contract / design process	B x 2 = L
	Recycled water not suitable for end uses: • Human health impacts • Environmental impacts	C x 4 = VH C x 4 = VH	Implement initial validation program prior to dual reticulation use, and ongoing verification program Emergency storage and wet weather storage for off-specification water Broadscale irrigation for irrigation of off-specification water intended for the dual reticulation system (or excess recycled water) Water Management Control System in place to control water usage if required		B x 2 = L B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Wastewater source	High strength sewage Heavy metals and other specific contaminants Cleaning products, chemicals (including inappropriate disposal, such as for paints) Food scraps and other biological material Oil and grease Nutrients Pathogens Salts Foreign matter (pillow cases, sheets, mop heads, large objects) from inmates	C x 4 = VH	Robust, triple disinfection barrier, MBR treatment plant Appropriate inlet works and screening Grease traps for all kitchen wastes Procedures in the facility for handling, storage and disposal of chemicals and other potentially hazardous wastes Security to control for excessive chemical addition to sewer where possible Select cleaning products and other chemicals to match the capability of the WWTP process where possible Soil and water monitoring to ensure: • Recycled water is safe to use • Soils are not degrading over time	End users, security and other staff Plant supply / design Recycled water tank Wet weather storage lagoon Irrigation soils	B x 2 = L
Sewerage pipe network	Odour nuisance	C x 4 = VH	Daily visual inspections for odour. Locate and rectify sources of odour as soon as possible. Rectification to be undertaken in coordination with suitably qualified person (e.g. sewerage engineer). Respond and act on complaints as soon as possible.	Sewerage pipe system, particularly vents, manholes, pump stations, inlet points Nearest sensitive site users (for noise, odour)	B x 2 = L
	Blockages causing odour (see above) or overflows of system, backup of blackwater systems	C x 4 = VH	Daily inspections of plant and flow meters, and input from site staff on potential issues. Act on potential blockages as soon as aware. Respond and act on complaints as soon as possible. Ensure potential block points can be accessed, but design for anticipated loads (including foreign bodies in sewerage system) to avoid blockage.	Sewerage pipe system, particularly vents, manholes, pump stations, inlet points Flow meter Nearest sensitive site users (for noise, odour)	B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
	Leaks causing land/groundwater contamination, increasing flows into WWTP (infiltration/inflow)	C x 3 = H	Daily recording and qualitative assessment of inflows to plant to identify excessive infiltration/inflow increases, or decreases in flow. Design to minimise as much as reasonably practical infiltration and inflow into the system Routine water balance to be conducted based on inflow/outflow flow meter readings Implement an infiltration/inflow reduction program if necessary Visual inspections of site to alert management to potential issues (e.g. ponding, soggy ground, odour).	Site Flow meters	B x 2 = L
Pump station(s)	Blockages, pump failure, odour, overflows Excessive pump noise	C x 4 = VH B x 3 = M	Fit with visual strobe alarm for pump failure and high level to notify Nominated Person. Daily visual inspections for odour, pump failure or alarm, blockages and noise. Weekly alarm tests to be undertaken. Telemetry to be available to warn of potential issues and provide early warning remotely Backup power to be available. Utilise a complaints register and act on complaints as soon as received. Spill kit available on site.	Pump station(s) Nearest sensitive site users (for noise, odour) Spill kit	B x 2 = L B x 2 = L
Inlet works	Blockages, odour, human contact for cleaning, overflows	C x 3 = H	Daily inspections as a minimum, with any blockages removed immediately. Robust inlet works to be utilised All staff contacting sewage to have appropriate training, PPE and vaccination shots. No public access. All staff to ensure compliance with applicable site OH&S procedures. Complaints register and act on complaints as soon as received. Spill kit available in WWTP enclosure.	Inlet works Nearest sensitive site users (for noise, odour) Staff training, pre-qualification and pre-requisites Spill kit	B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Emergency Storage Lagoon	Overflows Excessive algal growth Human contact to exposed sewage or runoff waters Odour nuisance Leaks (to groundwater, or surface expression)	C x 4 = VH C x 3 = H C x 5 = VH C x 4 = VH C x 4 = VH	Any flow into pond drawn back into WWTP as soon as possible for treatment. Washout pond as required to minimise odour nuisance. HPDE lined lagoon. Visual inspections of pond system monthly and immediately before and after rainfall. Include overflow points and drainage structures to ensure that overflows are unlikely to occur, that diversion structures are working correctly, and that sufficient freeboard is available. Utilise licensed contractors to remove liquid in pond prior to any overflows occurring if the WWTP cannot treat. All staff contacting sewage to have appropriate training, PPE and vaccination shots. No public access. Complaints register and act on complaints as soon as received. Preventative maintenance.	Wet weather storage pond Security Staff training, pre-qualification and pre-requisites Nearest sensitive site users (for noise, odour) Spill kit	B x 2 = L B x 2 = L B x 2 = L B x 2 = L B x 2 = L
Pumps, alarms and level sensors	Pump failure and/or overflows due to pump/level sensor failure Excessive pump noise	C x 4 = VH B x 3 = M	Daily visual inspections of treatment plant to include review of alarms. Regular alarm testing to be undertaken to ensure high level alarms remain functional. Pumps to be regularly inspected to ensure they are in working order. Backup power to be available and all essential systems to have redundancies in place Telemetry to be available to warn of potential issues and provide early warning remotely Complaints register and act on complaints as soon as received. Preventative maintenance of the plant.	Inlet screen, pumps, alarms, tanks, flow meters, level sensors Nearest sensitive site users (for noise, odour).	B x 2 = L B x 2 = L
Balance tank	Pump failure and/or overflows. Excessive build-up of sludge	C x 4 = VH C x 3 = H	Regular sludge depth measurements in first two years of operations, frequency afterwards to be determined based on initial de-sludging rate. Refer pumps, alarms and level sensors above. Spill kit available in WWTP enclosure. Preventative maintenance of the plant.	Sludge depth Pumps and fittings Level sensor Spill kit	B x 2 = L B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Anoxic / anaerobic tank(s) Aeration Tank(s)	Insufficient or excessive dissolved oxygen in system resulting in odour and failure of treatment	D x 3 = H	Online continuous oxygen meter or regular manual testing of dissolved oxygen for anoxic / anaerobic tanks	Anoxic / anaerobic tank Aeration tank Aerator pump and diffusers Inlet and outlet flow meters Pumps and other systems Sludge level in tank Sludge wasting rate - sludge age Staff training, pre-qualification and pre-requisites Nearest sensitive site users (for noise, odour) Spill kit	B x 2 = L
	Aerator pump failure or insufficient dissolved oxygen in system resulting in anaerobic or anoxic conditions, odour and failure of treatment	C x 3 = H	Online continuous oxygen meter for aerobic tank. Automatic controller linked to PLC		B x 2 = L
	Excessive build-up of sludge producing anoxic conditions and odour issues, as well as reducing effectiveness of treatment	C x 3 = H	Daily visual inspections of all system components to ensure they are working effectively and excessive noise is not being generated. Ensure that pumps are working effectively and no blockages or pump failures have occurred.		B x 2 = L
	Overflows	C x 4 = VH			B x 2 = L
	Excessive pump and aeration system noise	C x 3 = H	Regular sludge depth measurements in first two years of operations, frequency afterwards to be determined based on initial de-sludging rate. Refer pumps, alarms and level sensors above. Regularly review operational parameters (recycle, wasting rate, oxygen transfer) to ensure processes are occurring as required. All staff contacting sewage to have appropriate training, PPE and vaccination shots. No public access. All staff to ensure compliance with applicable site OH&S procedures. Complaints register and act on complaints as soon as received. Spill kit available in WWTP enclosure. Preventative maintenance of the plant.		B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Membranes or media filtration	Excessive build-up of sludge, pump failure producing overflows Membrane or media physical failure	C x 3 = H C x 4 = VH	Daily visual inspections of all system components to ensure they are working effectively and excessive noise is not being generated. Ensure that pumps are working effectively and no blockages or pump failures have occurred. Regular sludge depth measurements in first two years of operations, frequency afterwards to be determined based on initial de-sludging rate. Refer pumps, alarms and level sensors above. Daily inspection of pressure readings and turbidity levels in treated water tank to determine if cleaning / flushing maintenance is required Telemetry to be available to warn of potential issues and provide early warning remotely All staff contacting sewage to have appropriate training, PPE and vaccination shots. No public access. All staff to ensure compliance with applicable site OH&S procedures. Complaints register and act on complaints as soon as received. Spill kit available in WWTP enclosure. Preventative maintenance of the plant.	MBR / media tank and screens Sludge depth Pumps and fittings Pressure sensors Turbidity in disinfection (UV) system Staff training, pre-qualification and pre-requisites Nearest sensitive site users (for noise, odour) Spill kit	B x 2 = L B x 2 = L
Disinfection	Pump failure and/or overflows Poor water quality Disinfection system failure Excessive turbidity and organic matter, or poor pH control reducing disinfection efficiency	C x 2 = M C x 3 = H C x 4 = VH C x 3 = H	Refer pumps, alarms and level sensors above. Regular (refer manufacturers' instructions) calibration and maintenance to be undertaken. Comparative testing to be undertaken in conjunction with other sampling to assess whether sensors are in need of replacement/calibration/maintenance. Spill kit available in WWTP enclosure. Manual dosing and/or testing of chlorine levels if required until maintenance undertaken. Preventative maintenance of the plant.	Pumps and fittings Online water quality meters Level sensor Chlorine residual, pH and contact time UV Transmittance (UVT), UV Intensity (UVI) and flow Spill kit	B x 2 = L B x 2 = L B x 2 = L B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Wet weather storage lagoon	Overflows from stormwater runoff Excessive algal growth (especially potentially toxic species) Human contact to exposed sludge or runoff waters Odour nuisance Leaks (to groundwater, or surface expression)	C x 4 = VH C x 4 = VH C x 5 = VH C x 4 = VH C x 4 = VH	Visual inspections of pond system monthly and immediately before and after rainfall. Include overflow points and drainage structures to ensure that overflows are unlikely to occur, that diversion structures are working correctly and that sufficient freeboard is available and erosion is not occurring. Utilise irrigation scheduling to draw down the lagoon prior to forecast storm or wet periods, and following wet periods (soil moisture monitors to be utilised to avoid over watering) Utilise licensed contractors to remove liquid in pond prior to any overflows occurring. All staff contacting sewage to have appropriate training, PPE and vaccination shots. No public access. Complaints register and act on complaints as soon as received. Implement pond management plan for algae control (and other components). Spill kit available, with equipment (eg. Boom) for larger scale spill control. Preventative maintenance.	Wet weather storage pond Security Staff training, pre-qualification and pre-requisites Nearest sensitive site users (for noise, odour) Spill kit	B x 2 = L B x 2 = L B x 2 = L B x 2 = L B x 2 = L
	Growth of mosquitos in pond	C x 2 = M	Free draining stormwater system where small, still, ponded areas are avoided. Avoid close spaced fringing aquatic vegetation that produce still spaces for mosquitos to breed. Introduce / maintain native fish to control mosquito larvae if a mosquito problem is identified (if practicable)	Wet weather storage pond	B x 2 = L
	Contamination of groundwater from leaks and spills	C x 4 = VH	Ensure pond is sufficiently impermeable to store treated recycled water. Monitoring of downslope groundwater well to provide early detection of leaks	Groundwater monitoring bore	B x 2 = L
Chemical storage and handling	Spills of hazardous or toxic materials.	C x 3 = H	Chemicals and hydrocarbons maintained within bunded area(s) with impervious floors. Maintain spill kit(s) on site at all times, and ensure all staff are appropriately trained in their use.	Chemical delivery Chemical storage locations Staff training	B x 2 = L

Aspect	Potential Hazard	Maximum (unmitigated) Risk	Mitigation Measures	Critical Control Points	Residual (mitigated) Risk
Irrigation area	Pump or infrastructure failure, resulting in blockages, leaks or insufficient application or localised application of effluent Human contact to irrigation waters or post irrigation soils or vegetation Livestock access causing irrigation damage, or becoming infected by pathogens (e.g. helminths) Excessive application of effluent, leaching to groundwaters or run off from site, soil structural or chemical degradation	C x 3 = H C x 4 = VH C x 3 = H C x 4 = VH	Maintain MEDLI model (or similar) for irrigation areas and calibrate against application rates and soil data to enable long term planning. Utilise soil water monitors and irrigation controllers to ensure adequate but not excessive watering of soils. Monthly visual inspections to be undertaken of supply infrastructure. Monthly visual inspections of irrigation area infrastructure and runoff locations especially discharge points. 6-monthly sampling of soils for signs of impacts from irrigation for first 2 years, annually thereafter. All staff contacting sewage to have appropriate training, PPE and vaccination shots. All staff to ensure compliance with applicable site OH&S procedures. No public or staff access to surface irrigation areas until sufficient withholding time (at least 4 hours) after irrigation. Where recycled water quality is suitable for dual reticulation, withholding time may be waived. Similar withholding time for livestock access. Preferably no access. If livestock are to access irrigation area, ensure WWTP is managed to specifically design to remove pathogens of concern for livestock (e.g. helminths and other parasites – note MBR / UV / chlorine disinfection should be sufficient) and test for same. Complaints register and act on complaints as soon as received. Preventative maintenance.	Treated water quality Irrigation soils Irrigation infrastructure, including soil water monitors Irrigation scheduling Livestock access Staff training, pre-qualification and pre-requisites Nearest sensitive site users (for noise, odour)	B x 2 = L B x 2 = L B x 2 = L B x 2 = L
Maintenance vehicles and roads	Dust and noise generation	C x 2 = M	Complaints register and act on complaints as soon as received. Traffic speed limits on unsealed areas.	Nearest sensitive site users (for noise, dust) and roadways utilised by these vehicles	B x 2 = L

Clarence Correctional Centre

Document Register

Document No.: PRO-ENV-CD-RPT-00_507-B03

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	26-Feb-2020	

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1 Document Register

1.1 Purpose

The Document Register is intended to maintain a list of the key Documents applicable to the RWMP, by ensuring the applicable documentation is recorded in one location.

Table 1 provides a list of applicable documents, along with a short description of each.

1.2 Responsible person

It is the responsibility of the WWTP Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.3 Periodic Review and updating the register

The register is to be reviewed periodically, and updated as required to ensure it remains current. Reviews should be undertaken with each audit / review of the RWMP.

1.4 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.5 Referenced Materials

n/a

Table 1. Document Register

Reference	Title	Date and Version	Description
PRO-ENV-CD-RPT-00_507	Recycled Water Management Plan	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-B01	B01 Legislation and Approvals Register	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-B02	B02 Risk Assessment Register	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-B03	B03 Document Register	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-C01	C01 Operational Management	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-C02	C02 Pond Management	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-C03	C03 Hazardous Materials Management	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-C04	C04 Irrigation Management Plan	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-D01	D01 Monitoring Checklist	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-E01	E01 Contingency Response	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-F01	Form F1 - Incident_Complaint form	26-Feb-2020, 0	
PRO-ENV-CD-RPT-00_507-F02	Form F2 - Visual monitoring form	26-Feb-2020, 0	

Appendix C

Operational Management

Clarence Correctional Centre

Operational Management Plan

Document No.: PRO-ENV-CD-RPT-00_507-C01

Revision Status

Revision Number	Author	Description	Date	Approved By
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1 Operational Management Plan

The Operational Management Plan has been prepared based on the risk assessment undertaken for the scheme in Appendix B2 of the Recycled Water Management Plan (RWMP), which outlined key hazards / risks, potential impacts, mitigation measures and management tools required to outline these mitigation measures.

1.1 Responsible person

It is the responsibility of the WWTP Manager to ensure this procedure remains up to date and is periodically revised and updated.

1.2 Periodic Review and updating the register

This procedure is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the risk assessment register, or where changes to site practices or to legislative instruments or other requirements dictate the need to update this procedure.

1.3 Recycled Water Management Procedures

Procedures for the management of project related impacts are provided in Table 1.

1.4 Identified Sensitive Receivers

Identified sensitive receptors are shown in the RWMP.

1.5 Records

Records of any monitoring, auditing and supporting information (where required) are to be maintained by the WWTP Manager for a period of not less than 5 years.

1.6 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

WWMP – Wastewater Management Plan (Sedgman Consulting, 2017)

RWMP – Recycled Water Management Plan

1.7 Referenced Materials

Sedgman Consulting (2017). Wastewater Management Plan. Report No. PRO-ENV-CD-RPT-00_506. Sedgman Consulting Pty Ltd, May 2017

Table 1. Operational Management

Environmental Component	Target	Control Measures	Responsibility
C1 Construction and installation	Design and installation of a robust and quality system suitable to the task. Meet requirements of licenses and approvals.	Utilise only proven technologies and suppliers with good references. Ensure that multiple references are contacted. Undertake comparison of long term cost and maintenance requirements. Ensure Site Operator understands the long term requirements for each system. Ensure plant, equipment and the system complies with the conditions of approvals and meets the design criteria outlined in the RWMP. Ensure the detailed O&M manual and supporting documentation aligned to the requirements, standards and objectives / targets outlined in this RWMP.	WWTP Manager
C2 General	No spills or incidents resulting in a release to the environment and serious or material environmental harm Nil complaints Well maintained site All persons responsible for the operation of the system must be appropriately trained	Maintain a service agreement with a reliable operator to undertake servicing for at least the first year of operation and supply preventative maintenance services. Ensure the plant operators are competent in the running of an WWTP, including the monitoring, maintenance and identification of hazards or malfunctions of the plant. Undertake training of site staff to operate the plant, and ensure all staff are appropriately trained in equipment/material use and maintain good 'housekeeping' practices on the site. Maintain the site in a clean and orderly condition. Maintain plant and equipment in good working order to minimise the potential for environmental harm or nuisance to occur.	WWTP Manager
	All system components to be serviced, maintained and operated in accordance with the manufacturer's specifications No access to unauthorised persons Adequate protection for staff	Undertake daily visual inspections of plant/equipment and the site for evidence or risks of spills, leaks, off-site movement of dust, odour, excessive noise generation, etc. Ensure WWTP and pump stations are locked when no staff are present. Install security fencing around the WWTP, and either security fencing or lockable wet weather storages and pump stations. Place warning signs on security fencing and sewerage infrastructure. Adopt PPE appropriate to the tasks being undertaken, and all staff with the potential to contact treated or untreated wastewater in their roles are to receive vaccinations suitable to their tasks. An emergency response / contingency drawing and plan must be implemented and updated as required relating to the control of pump failure and overflows, specific locations of spill kits, pump stations and overflow points, and control equipment, and rehabilitation plans. This will be maintained on-site in easy access to WWTP staff and operators.	WWTP Manager
C3 Noise	Nil complaints	Ensure plant and equipment are maintained in good working order, and position and muffle where required to minimise noise generation impacts to nearby sensitive receptors. Repair, remove or replace equipment if necessary, to control excessive noise emissions. Limit noisy activities (truck movements, machinery, etc.) in areas likely to cause noise nuisance to suitable day time working hours. Maintain incidents-complaints register, and act on complaints as soon as possible. Upon the receipt of a complaint, not considered vexatious, undertake assessments of potential control methods and implement measures to reduce impacts on the sensitive receptor.	WWTP Manager

Environmental Component	Target	Control Measures	Responsibility
C4 Air quality	Minimise dust, air and odour related emissions and resultant nuisance impacts. Nil complaints	Cover all loads of loose materials exiting the site (i.e. with potential to cause dust or particulate emissions). Provide adequate ventilation internally to WWTP infrastructure, and vent fumes etc. to air via an adequate mixing mechanism such that off-site air quality does not breach odour criteria due to site activities. Provide adequate process control to avoid wastewater deterioration that may cause odorous emissions and remove sludge off-site as soon as practicable through licensed waste contractor. Design the drainage system to avoid long term pooling/ponding of wastewater. Undertake daily qualitative assessments of odorous emissions from the WWTP and wet weather storage. If excessive odour is detected, inspect the system for pump out, maintenance or repair requirements. If no issues are identified and the odour persists, utilise a suitably qualified contractor or consultant to rectify. Maintain incidents-complaints register, and act on complaints as soon as possible. Upon the receipt of a complaint, not considered vexatious, undertake assessments of potential control methods and implement measures to reduce impacts on the sensitive receptor.	WWTP Manager
C5 Alarms and Control	Suitable alarms and control measures in place and operational	System alarms must be capable of operating without mains power and the WWTP Manager notified if an alarm is triggered. Daily visual inspections of the treatment plant are to include a review of alarms, and regular alarm testing (i.e. weekly) is to be undertaken to ensure they remain functional. Automatic shutoff of systems should be initiated prior to overflows or disinfection / turbidity levels falling outside of safe ranges.	WWTP Manager Staff, any person
C6 Sewerage System	No nuisance odours or noise Control of wastewater quality to avoid failure of WWTP Minimise leaks and overflows Nil complaints	Informative signage to be provided in staff and visitor amenity blocks identifying what “not to flush”. These items will be listed after consultation with the supplier / manufacturer of the treatment system or a suitably qualified person. Selection and provision of chemicals and related materials to inmates to take into account WWTP requirements. Install grease traps between grease sources on the site and the sewerage system (i.e. kitchens). Undertake daily visual inspections of pump stations for odour, pump failure or alarm, blockages and noise. Ensure backup power is available in case of pump failure or imminent overflows from pump stations. Daily inspections of flow meters, pump stations and the WWTP, plus input from other site staff and tenant complaints shall be used to provide early warning of potential blockages, overflows or increases in Infiltration/Inflow (I/I). Prepare an estimate of I/I from flow records in relation to rainfall and any available groundwater information in the first year of operation and undertake an annual re-assessment of the estimated I/I to provide information of any potential problems with the system. Any blockages, leaks or other similar issues are to be rectified by suitably qualified and experienced persons as soon as possible. Maintain incidents-complaints register, and act on complaints as soon as possible. Maintain a spill kit in an easily accessible location on the site.	WWTP Manager

Environmental Component	Target	Control Measures	Responsibility
C7 WWTP Operation	No nuisance odours or noise Suitable control and backup to avoid failure Maintain recycled water quality Minimise leaks and overflows Nil complaints	***General*** Ensure backup power is available in case of pump failure or imminent overflows. The backup should be sufficient to undertake basic processes (pumping, potentially aeration) so as to avoid septic conditions within various parts of the plant, and to aid in pump out operations or cleaning if required. Pumps and other integral equipment are to be regularly inspected to ensure they are in good working order. Maintain a stocked spill kit in the WWTP enclosure. Refer also to *C5 Alarms and Control*. ***Inlet works*** Daily inspections of the inlet works and inlet screens are to be undertaken, with any blockages removed immediately. Coarse waste is to be disposed in sealed bags in general waste. ***Tanks*** Regular sludge depth measurements are to be undertaken in the first 2 years of operations. The frequency thereafter is to be determined based on the initial de-sludging rate. It is also recommended that additional sludge characteristics assessments, such as the use of an Imhoff cone or similar, be included in regular plant inspections and tests. Daily visual inspections of all system components are to be undertaken to ensure they are working effectively and excessive noise or odour is not being generated. Ensure that pumps are working effectively and no blockages or pump failures have occurred. ***Operation*** Regularly review the plant operational parameters (recycle, wasting rate, oxygen transfer) to ensure processes are occurring as required. Undertake daily inspections of pressure readings for ultrafiltration / MBR screens, and turbidity levels in the treated water tank to determine if cleaning, flushing or other maintenance is required. Failure in automatic disinfection systems may require manual dosing and/or testing of chlorine levels until maintenance is undertaken. Re-treat any effluent that does not comply or appears not to comply based on visual or olfactory observations. ***Monitoring and Control*** The PLC controller is to be linked to key processes, and informed by at least the following online meters: • Dissolved oxygen for the aeration tank; • Turbidity and chlorine for disinfection; • Pressure for MBR membranes; • pH, in an area best able to inform the correct plant operation and output pH. Regularly test the anaerobic tank using a manual dissolved oxygen meter or online meter. Maintain a record of daily volumes of effluent and recycled water: • flowing through the sewage treatment plant • released to the irrigation area • released in leaks or overflows (estimated – e.g. cumulative inflow – outflow) • pumped out or otherwise removed off-site. Monitor recycled water quality leaving the plant as described in Appendix D. Undertake regular calibration and maintenance of online and manual meters. Comparative testing is also to be undertaken in conjunction with other sampling to assess whether sensors are in need of replacement, calibration or maintenance. Maintain incidents-complaints register, and act on complaints as soon as possible.	WWTP Manager

Environmental Component	Target	Control Measures	Responsibility
C8 Recycled water storage tanks	No overflows No odours or complaints Sufficient capacity always maintained	Provide security fencing or otherwise exclude unauthorised persons from accessing the tank area. Fit storages with lockable valves and openings. Warning signs are to be installed in highly visible locations to warn of recycled water storage within the tanks and taps with signs advising 'not to drink: recycled water' or similar. Organise sludge pump out by licensed contractor (note sludge waste is a regulated waste) prior to the operating volume of the tank being compromised. Good quality recycled water input to the tank will likely render this a very rare occurrence. Any spillage is to be cleaned up immediately. Include mosquito screening on open inlets and outlets to the tank.	WWTP Manager
C9 Wet weather storage pond	Refer to C2 – Pond Management Plan		
C10 Other uses	Use of recycled water is safe, and compliant with relevant approvals and legislative requirements	Recycled water to be used only for: <u>Dual Reticulation Scheme</u> • Toilet flushing • Washing machines • Facility laundry • Washdown water • Fire water and testing • Facility irrigation, as well as irrigation valve flushing. <u>Broadacre irrigation</u> • Broadscale irrigation on-site.	WWTP Manager
C11 Waste Management	Minimise the amount of sludge waste produced as a result of the operation of the WWTP All waste generated by the operation is disposed of appropriately Nil complaints	Waste material stored on site is to be located in dedicated and controlled areas to avoid environmental harm or nuisance - e.g. washing into stormwater system, blowing of litter from garbage areas. Waste material is not to be burned or buried on site. Remove all waste from the site to licensed waste receivers (landfill, transfer station, etc.). Sludge waste is to be removed from the site by licensed operators as required to control odour. Storage of sludge waste is to occur only in tanks integral to the WWTP process – e.g. treatment tanks, WAS tank, etc. Chemical waste is to be taken off-site and disposed at a location able to legally accept such waste, unless the plant supplier has confirmed it can be incorporated into the treatment plant. No tipping of chemicals, waste, or other contaminants into waterways or the stormwater system. After the first 2 years of operation, if the WWTP is operating effectively and is stable, undertake a review of operating procedures and plant operations to determine if there is any potential to reduce sludge waste. Determine actions and timeframes to achieve any nominated sludge waste reductions and act on these timeframes. A spill cleanup kit will be located within the WWTP enclosure. Maintain incidents-complaints register, and act on complaints as soon as possible.	WWTP Manager

Environmental Component	Target	Control Measures	Responsibility
C12 Spill Management	Any spills contained and cleaned up prior to causing environmental harm on or off-site	Ensure spill containment / cleanup kit is available on the site. In the event of a spill, deploy spill response equipment to first contain, and then clean up the spill if safe to do so (refer to Appendix E – Contingency Response). Dispose of contaminated material in an appropriate manner. Ensure spill kit remains adequately stocked – undertake monthly inspections, plus an inspection after each use, to ensure this kit remains fully stocked at all times. Ensure staff are trained in the use of a spill kit. Maintain incidents-complaints register, and act on complaints as soon as possible.	WWTP Manager
C13 Hazardous materials / chemical storage	Storage and handling to be in accordance with AS1940 and AS3780 as appropriate to the chemical	Install a designated storage area for dangerous goods and hazardous material (including material which could cause environmental harm) which are secured from potential spills by bunding, or similar, and maintained in a good working order. Ensure spill response equipment of a suitable type and capacity is located on-site in an easily accessible location. Storage of minor quantities of hazardous chemicals / fuels to be undertaken in accordance with *AS1940 - The storage and handling of flammable and combustible liquids* and *AS3780-2008 The storage and handling of corrosive substances*. No tipping of chemicals, waste, etc. into waterways or the stormwater system.	WWTP Manager
C14 Occupational Health and Safety	No workplaces injuries, illness or incidents	Develop and fully implement an Occupational Health and Safety (OH&S) Plan (or similar) prior to staff beginning work on the sewerage system, WWTP or irrigation systems. Wear and maintain PPE in accordance with the OH&S Plan.	WWTP Manager
C15 Reporting	Appropriate recording and reporting of key issues	Maintenance, inspection or other logs and checklists are to be completed as nominated by the system manufacturer / supplier. Generally, this is on a daily basis. All incidents (e.g. chemical spills, burst pipes, overflows) and complaints are to be recorded in an incident – complaints register. Notification of incidents / complaints is to be undertaken in accordance with the emergency and incident response procedure in Appendix B. All written records and results of monitoring are to be maintained for a period of not less than 5 years. An annual summary of the previous year's monitoring is to be prepared, prior to the anniversary date of the site registration certificate and maintained for a period not less than 5 years. Supply to DEHP if required.	WWTP Manager
C16 Auditing and Review		The WWTP Manager is to review the complaints register weekly and assess the effectiveness of any corrective action undertaken. Maintenance logs are to be compared weekly to the maintenance requirements from the manufacturer's documentation.	WWTP Manager

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Pond Management Plan

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1 Pond Management Plan

This Pond Management Plan has been prepared based on the risk assessment undertaken for the project, which outlined key hazards / risks, potential impacts, mitigation measures and management tools required to outline these mitigation measures.

1.1 Responsible person

It is the responsibility of the Site Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.2 Periodic Review and updating the register

The procedure is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the risk assessment register where changes to site practices or to legislative instruments or other requirements dictate the need to update this management procedure.

1.3 Pond Management Procedures

Procedures for the management of project related impacts are provided in Table 1.

1.4 Records

Records of any monitoring, auditing and supporting information (where required) are to be maintained by the Site Manager for a period of not less than 5 years.

1.5 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.6 Referenced Materials

n/a

Table 1. Pond Management

Element	Detail
Applicable site activities Design, operation and management of the wet weather storage lagoon.	
Aim Manage Lagoon to avoid overflows, maintain recycled water quality, excessive breeding of mosquitoes and impacts from toxic algal blooms.	
Performance Criteria Recycled water meets irrigation water requirements Maintenance of lagoon freeboard. Lagoon embankments, drainage and diversion structures are stable over time. No occupational harm to staff or others from accessing lagoon areas Nil complaints	
Responsibility	Site Manager
Actions/Mitigation Measures	***General*** • Provide security fencing or otherwise exclude unauthorised persons from accessing the lagoon area and contacting lagoon contents (in-situ or from flows out of lagoon). • Warning signs to be installed in highly visible locations to warn of recycled water storage within the lagoon. • No swimming within the lagoon and enact the OH&S Plan to deal with potential health and safety incidents. Include a flotation device (life ring and rope) adjacent to the lagoon in case of any fall-ins • Lagoons to be maintained to minimise the infiltration of effluent into bed or banks of the lagoons (maintain low permeability). • Maintain an operational freeboard at all times except in emergencies, extreme rainfall events and during transfer of treated sewage effluents to return the lagoon to an adequate freeboard. • Maintain diversion channels around lagoons to divert all stormwater runoff from entering lagoons. • Organise sludge pump out by licensed contractor prior to the operating volume of the lagoon being compromised. • Any spillage is to be cleaned up immediately. ***Algae*** • If a blue green algal (or cyanobacteria) bloom is suspected to be present, immediately inform site staff to avoid all contact with waters until sampling and analysis of the lagoon waters can confirm the nature of the bloom. • Algal blooms are likely to disperse without outside assistance, but may require management actions including: – Breaking down stratification in the lagoon by mixing or aeration; – Dosing of the lagoon with algicides, following approval from NSW EPA / Council or consultation (and agreement) from a suitably qualified external consultant or specialist; – Filtering out of algae using a shore-based pump and filter unit (or similar). ***Mosquito control*** • Maintain the site and lagoon such that excessive mosquito breeding does not occur, by for instance: – Ensuring the site remains free draining where small, still, lagooned areas are avoided; – Minimise close spaced fringing aquatic vegetation that produce still spaces for mosquitos to breed; – Introduce / maintain aquatic invertebrates or native fish to control mosquito larvae.
Monitoring	• Visual assessment of lagoon is to be undertaken on a daily basis for signs of erosion of banks, surface slicks or algal scums or blooms, or other evidence of pollution or environmental impact. Evidence of algal blooms include discoloured and/or cloudy water, scum on the water surface, or an earthy or musty odour coming from the water; • While blue green algal blooms can only be identified by laboratory analysis, the NSW Office of Water's Key to blooms page can be used as a first step in identifying the type of bloom that might be present, found at: • https://www.waternsw.com.au/water-quality/algae/identifying-algal-blooms • Conduct weekly visual inspections for presence of breeding mosquitos. • Conduct regular sludge measurements to determine the operating sludge characteristics (additions, depth increases, etc.). • Conduct inspections of the lagoon structure (embankments, walls, overflow and takeoff points, weirs, discharge structures, diversion structures, pumps, etc.) on a quarterly basis, and following large rainfall events.
Reporting	All incidents and complaints are to be recorded in an incidents – complaints register. All written records and results of monitoring are to be maintained by the Site Manager for a period of not less than 5 years.

Clarence Correctional Centre

Hazardous Materials Management

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1 Hazardous Materials Management

1.1 Purpose and Scope

This procedure outlines methods to minimise and where possible avoid potential impacts as a result of hazardous materials. This procedure applies to the construction and operational phases of development.

Site personnel and environmental values of receiving environments may be impacted by incorrect storage and handling of hazardous substances used within the site.

1.2 Environmental Values

Health and safety of workers on the site and the integrity and value of receiving natural environments shall be protected from impacts due to handling and storage of dangerous goods and hazardous materials.

1.3 Environmental Protection Objectives

The objectives proposed for protection of environmental values are:

- to ensure correct handling and storage of fuels, oils and other hazardous materials on the site; and
- to minimise the risk of release of potential contaminants to receiving environments.

1.4 Responsible person

It is the responsibility of the Site Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.5 Periodic Review and updating

This procedure is to be reviewed periodically, and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the risk assessment register where changes to site practices or to legislative instruments or other requirements dictate the need to update this management procedure.

1.6 Management measures

Measures for the management of environmental impacts as a result of hazardous materials are provided in the table overleaf.

1.7 Chemical Register and Preliminary Risk Screening Assessment

A chemical register will be required to be maintained at the site, including a hard copy of the SDS and particulars of the chemicals stored and used. This will form part of the chemicals management / emergency response / work health and safety management systems for the site.

A Preliminary Risk Screening Assessment after the *Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines* (DoP, 2011) is provided in Section 2, which is to be kept up to date to reflect the materials used and stored as part of the sewerage and recycled water scheme.

Should the assessment show that the scheme exceeds the thresholds stated, SEPP 33 may apply and additional assessment will be required to determine further assessment requirements and approvals.

1.8 Terms and Abbreviations

SDS - Safety Data Sheet

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.9 Referenced Materials

n/a

2 Preliminary Risk Screening Assessment

A preliminary risk screening assessment was conducted on the chemicals anticipated to be stored in the WWTP compound, as outlined in the *Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines* (DoP, 2011), with the results in Table 2-1.

Table 2-1. Preliminary storage risk screening

Chemical	UN	Class	Hazchem Code	Packaging Group	Quantity (estimate)	Threshold
Caustic (sodium hydroxide)	1824	8 Corrosive	2X	II	<25t	25t
Sodium Hypochlorite (Chlorine)	1791	8 Corrosive	2X	II	<25t	25t
Aluminium Sulfate (Alum)	3264	8 Corrosive	2X	III	<50t	50t

The site is not considered potentially hazardous based on the storage screening assessment. Transportation screening was also conducted, with the results in Table 2-2.

Table 2-2. Preliminary transport risk screening

Chemical	UN	Class / Packaging Group	Site movements		Threshold	
			Movements / week	Minimum quantity per load (t)	Movements / week	Minimum quantity per load (t)
Caustic (sodium hydroxide)	1824	8 Corrosive II	1 or less	≤2 t	>30	Bulk 2 Packages 5
Sodium Hypochlorite (Chlorine)	1791	8 Corrosive II	1 or less	≤2 t	>30	Bulk 2 Packages 5
Aluminium Sulfate (Alum)	3264	8 Corrosive III	1 or less	≤2 t	>30	Bulk 2 Packages 5

The site is not considered potentially hazardous based on the transportation screening assessment.

Overall, based on the anticipated storage and transportation quantities, the wastewater scheme does not trigger the thresholds for a potentially hazardous facility will therefore not trigger SEPP 33 - Hazardous and Offensive Development.

Table 3. Hazardous Materials Management

Element	Detail
Applicable site activities Chemical and Hazardous Materials storage and management	
Performance Criteria No adverse human health or environmental impacts occur as a result of incorrect storage and handling of hazardous materials. No spillage or handling incidents occur as a result of incorrect storage and handling of hazardous materials.	
Responsibility	Site Manager
Actions/Mitigation Measures	• Vehicles transporting hazardous materials shall be appropriately licensed and shall display appropriate signage. • Hazardous materials shall be transported in containers that are compatible with the product requirements. • All persons required to be in contact with hazardous materials shall be supplied with appropriate personal protective equipment. • A secured, bunded containment area shall be provided for the storage and handling of hazardous materials within the site. • The containment area bunding shall be impervious and be designed to prevent release of substances to the environment in the event of spills or leakages. • The containment area shall be located away from overland flow paths and be constructed to prevent the entry of stormwater. • All plant and equipment refuelling/servicing operations shall utilise spill or drop pans in an appropriate containment area. • Any waste oil and oily waste materials (rags, oil filters etc.) shall be removed from site and disposed of at an approved location. • Any maintenance of equipment shall be conducted within a designated bunded area designed to contain any spills and waste water. • A register shall be maintained of all hazardous materials to be kept on the construction site and kept with the Safety Data Sheet (SDS) for each substance. • All hazardous materials shall be stored and handled in accordance with the requirements of the SDS. • Incompatible substances shall be stored separately. • All construction staff and sub-contractors shall receive appropriate training in the safe storage and handling of hazardous materials. • A spill response kit containing spill clean-up materials and instructions shall be maintained in an accessible location within the construction site and adequately signed. • Spills of hazardous materials must not be hosed. Dry cleanup procedures shall be employed as appropriate to the substance.
Monitoring	• Weekly visual inspections shall be conducted of the hazardous waste containment area to detect leakages or spills. • Monthly inspection shall be conducted of the contents of the spill response kit and all contents shall be replaced as soon as possible after use. • Daily inspections shall be conducted of refuelling/servicing areas to detect leakages or spills. • Where monitoring indicates potential environmental impacts may occur, incident response measures shall be implemented in accordance with the contingency response procedures outlines in Appendix E.
Reporting	All incidents* and complaints are to be recorded in an incidents – complaints register. Notification of incidents/complaints is to be undertaken in accordance with the contingency response procedure in Appendix E. All written records and results of monitoring are to be maintained for a period of not less than 5 years.

Table notes

* an incident is an actual or near miss resulting (or having the potential to cause) material harm to the environmental as defined under the Protection of the Environment Operations Act 1997

Clarence Correctional Centre

Irrigation Management Plan

Document No.: PRO-ENV-CD-RPT-00_507-C04

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	20-Feb-2020	

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1 Irrigation Management Plan

1.1 Purpose and Scope

This Irrigation Management Plan has been prepared based on the risk assessment undertaken for the scheme in Appendix B2 of the Recycled Water Management Plan (RWMP), the latest irrigation design for the Project (refer Appendix A to the RWMP), and in response to the Stage 2 Conditions of Development Consent (SSD 8368) in particular conditions D4, E3 and E4 which require:

> *D4. Prior to occupation, the Wastewater Management Plan and Recycled Wastewater Management Plan, must be updated to the satisfaction of EPA, Crown Lands and Water of Department of Industry and Council to address, but not limited to:*
>
> *a) details of nutrient removal from the irrigation areas;*
>
> *b) location and number of soil moisture sensors;*
>
> *c) allow for soil moisture buffer capacity of 5 mm to 10 mm for irrigation areas;*
>
> *d) monitoring indicators, frequency and sampling methodology; and*
>
> *e) procedures for managing any overflow of the wet weather storage dam and emergency procedures for discharge from the site during flooding events.*
>
> *E3. A performance assessment/audit of the wastewater management system must be prepared quarterly by a suitably qualified experienced independent person and submitted to Council for a commissioning period of up to two years from occupation, and annually thereafter. Annual performance assessment should include an assessment of the sustainability of irrigation practices*
>
> *E4. The performance assessment/audit should be guided by Environmental Guidelines: Use of Effluent by Irrigation (DEC 2004) and the updated Wastewater Management Plan and Recycled Water Management Plan required by condition D4.*

The s68 application review by Whitehead & Associates (9 October 2019) also references the need for an irrigation management plan prior to the Approval to Operate being granted.

The above conditions are specifically addressed:

- D4.a: Nutrient removal rates have been addressed elsewhere (refer WWMP, Sedgman Consulting 2020). Removal of slashed grass from broadacre areas, and mown grass and garden clippings from facility areas, is addressed in Table 1-2 - 'Vegetation'.
- D4.b: Shown in Appendix A to the RWMP
- D4.c: a soil moisture buffer capacity is allowed in the design, and required before irrigation commences (Table 1-2 - 'Irrigation and Soil management', 'Monitoring')
- D4.d: detailed in Appendix D to the RWMP, and described in Table 1-2
- D4.e: addressed in Appendices C1, C2 and E1 to the RWMP
- E3 and E4: incorporated into Table 1-2 and Appendix D to the RWMP

1.2 Aims and Objectives

This Irrigation Management Plan aims to provide procedures to undertake sustainable irrigation on the site. The objectives of this plan are to:

- Provide details on the operational requirements for the irrigation system to comply with the *Environmental Guidelines: Use of Effluent by Irrigation* (the NSW Effluent Guidelines, DEC, 2004)
- Detail the monitoring required for the irrigation scheme to provide early warning of potential issues

- Identify triggers that require further action and responses to address issues.

1.3 Site and Scheme Description

A description of the site and key environmental features, including the soil, vegetation and drainage features of the site, is provided in Section 4 of the RWMP. A detailed description of the scheme, including wastewater treatment plant (WWTP) and irrigation system is provided in Section 5 of the RWMP. In terms of this plan, there are two distinct irrigation systems:

- Facility irrigation – sports fields, turf and garden areas within the facility, sourced from the dual reticulation system (high end use standard), and
- Broadacre irrigation – disposal of excess recycled water on grass and pasture land external to the facility (minimum medium end use standard).

The supplied recycled water would be considered a 'medium strength' effluent according to the NSW Effluent Guidelines (DEC, 2004), based on the salinity levels (expected to exceed 600mg/L TDS).

1.4 Irrigation Scheduling

A MEDLI model was prepared for the scheme by Permeate Partners (2019), based on the designed system as follows:

- Modelling period of 50 years from 1967 to 2016
- Recycled water available for irrigation @ 378kL/day (i.e. 99% of 469kL/day to account for losses at RWP and 5% annual allowances to leaks into sewerage network less 110kL/day used for toilets and laundry within the Centre
- Nutrient levels of TN @ 20mg/L and TP @ 10mg/L.
- Excess recycled water lagoon size of 45ML
- Site specific climate data
- Soil profile based on soil information collected on site and the available profiles in MEDLI
- Vegetation type as continuous Kikuyu pasture
- Irrigation triggered when soil water deficit reaches 5mm and rainfall is less than or equal to 1mm, and
- Irrigation area of 39Ha.
- Average irrigation rate of ~1mm/day.

The modelling determined that:

- There are no overflows from the excess recycled water lagoon during the modelling period, and
- The Nutrients are taken up by the pasture and / or soil.

Modelling by Sedgman Consulting (2020) based on a worst-case situation where no facility reuse was possible (no irrigation or other dual reticulation use) found that with a 42.5ha broadacre irrigation area, and utilising a fixed application rate approach (irrigating 2mm every 3 days), all of the available recycled water can be irrigated long term without overflow or overloading of the soil-vegetation system.

However, this would not be for long term irrigation, as it would be required only during worst case 'emergency' conditions, and long-term irrigation management will follow the above Permeate Partners (2019) modelling approach.

Based on the above and the designs in Appendix A to the RWMP, the overall irrigation scheduling approach will be as summarised in Table 1-1.

Table 1-1. Irrigation Scheduling Approach

Element	Detail
Overall approach	Facility irrigation: • fixed sprinkler systems using dual reticulation water Broadacre irrigation: • Application by travelling irrigator, with automatic start to allow for setting of equipment and vacating area prior to irrigation starting, and also for automatic starting during night time hours. Equipment will be manually moved to each new run as required. • Irrigation of the northern irrigation areas will be prioritised during wetter periods when soil moisture is excessive and/or groundwater levels high on the southern irrigation areas. • Soil moisture sensors will be deployed as identified in Appendix A to the RWMP, to provide soil moisture data on each irrigation area. Soil moisture sensors will be deployed at least 150cm below ground to target the active soil root zone
Timing	Facility irrigation: no time constraints Broadacre irrigation: • Daytime hours (8am – 4:30pm) - utilise irrigation personnel to move equipment, set and stop irrigation, and undertake inspections and the like • Night time hours (7pm – 6am) - used for automatic start operations, whereby equipment is set to run during Daytime hours, with a timer delaying the start time. This enables overnight irrigation within the limits of the supply network and without manual repositioning of equipment.

Element	Detail
Initial startup	The following approach will be used for initial irrigation runs in broadacre irrigation areas: • Utilise soil-water sensors and physical observation to determine whether irrigation area is dry enough to irrigate, including examination of physical soil cores (nominally >6mm soil-water deficit) • Set initial runs to locations with soil water sensors, and to a maximum 6mm/day application rate[1], aiming for an average of 1mm/day (averaged over the year) • Set catch cans in several locations in the spray arc and along the run (where grade changes, etc.) to measure the actual application rate, and adjust equipment as needed to achieve required irrigation depths. Download soil water sensor data (pre-irrigation soil moisture status) where irrigator will travel • Observe irrigation from a position outside of the irrigation zone and spray drift area for signs of runoff, ponding or waterlogging of soils • Following irrigation and allowing for a suitable withholding period (none required for dual reticulation quality water, 1-4 hours or until dry otherwise), access the catch cans and measure water application. • Download soil moisture sensor data after suitable period to allow water to infiltrate to full sensor depth (determine through trial and error, but end of day may be suitable). • Utilise application volumes, run length, spray arcs, can test data, soil moisture sensor data to determine water balance. Compare to irrigation scheduling rate requirements, and need to avoid runoff and excessive deep drainage, and adjust equipment as necessary. • Shift irrigators to new runs and repeat above catch can test to confirm application equipment is running effectively. For facility irrigation areas, observe irrigation areas to ensure no ponding or runoff is occurring, and that no spray drift into public areas is occurring. Measure application rates and inspect areas for leaks or excessive wetting (leaks, blockages, etc.).
Ongoing irrigation	• Collect soil sensor data on a monthly basis or more often as required and undertake routine inspection of irrigation areas for signs of waterlogging, ponding, excessive runoff or erosion. • Compile and maintain a daily water balance utilising the measured application rates and weather data • Check equipment with catch can tests (or similar) as required • Adjust maximum application rates to suit local soil conditions for each field, to apply the maximum 6mm/day application rates over the shortest time that is practicable without causing runoff (this may allow for more flexibility in the system)
Review	• Undertake routine soil testing, vegetation observations and recycled water testing as detailed in Appendix D to the RWMP. • The volume and depth of recycled water irrigated to each irrigation zone will be recorded on a daily basis, and a water balance maintained, recording rainfall, potential evapotranspiration, and water applied. After the first year of data collection, the MEDLI water balance will be reviewed and irrigation amended as required.

Table notes:

1 While the Permeate Partners (2019) modelling was based on a 5mm soil water deficit trigger, the irrigation equipment can achieve a low application rate of 6mm/day, or around 2mm/hour based on the equipment specifications, which is suitable for these type of soils – a higher application rate may be possible (with same annual average of 1mm/day).

1.5 Responsible person

It is the responsibility of the WWTP Manager to ensure this plan remains up to date and is periodically revised and updated.

1.6 Periodic Review and update

This plan is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the risk assessment register, or where changes to site practices or to legislative instruments or other requirements dictate the need to update this plan.

1.7 Irrigation Management Procedures

Procedures for the management of project related impacts are provided in Table 1-2.

1.8 Records

Records of any monitoring, auditing and supporting information (where required) are to be maintained by the WWTP Manager for a period of not less than 5 years.

1.9 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

WWMP – Wastewater Management Plan (Sedgman Consulting, 2017)

RWMP – Recycled Water Management Plan

1.10 Referenced Materials

DEC (2004). Environmental Guidelines: Use of Effluent by Irrigation, NSW Department of Environment and Conservation.

Permeate Partners (2019). Clarence Correctional Centre - Waste Water Treatment Plant: Design Basis and System Description. Permeate Partners Pty Ltd, ref: J1801071, 4 March 2019.

Sedgman Consulting (2020). Wastewater Management Plan. Report No. PRO-ENV-CD-RPT-00_506. Sedgman Consulting Pty Ltd, February 2020

Table 1-2. Irrigation Management Procedures

Environmental Component	Target	Control Measures	Responsibility
Facility Irrigation from Dual Reticulation System			
Recycled Water Quality	Irrigation water meets recycled water criteria: Median / 95%ile pH: 6.5 – 8.0 Turbidity (ntu): ≤2 Free Cl (mg/L): 0.3 – 2 BOD_5 (mg/L): 5 / 10 TN (mg/L): 20 / 25 TP (mg/L): 10 / 12 NH_3 (mg/L): ≤1 Somatic coliphages (pfu/100ml): <1 C. perfingens (cfu/100ml): <1 E.Coli (cfu/100ml): <1	• Monitoring of end water quality from the recycled water tank at the WWTP, and operational parameters within the WWTP will be undertaken to ensure recycled water quality is not released to the facility irrigation scheme outside of these limits. • Where recycled water quality does not meet the stipulated limits, water will instead be irrigated to the broadacre irrigation scheme (if broadacre recycled water quality is met) and/or directed to the wet weather storage for later retreatment in the WWTP.	WWTP Manager
Irrigation offsets and withholding periods	Maintain suitable offsets to avoid environmental harm or public nuisance or health issues	• For irrigation of recycled water meeting the above recycled water quality criteria: – Maintain a minimum 40 metres to surface waters or drains from the surface irrigation area – No withholding period applies	
Broadacre Irrigation from Recycled Water Tank / Irrigation Pumpset at WWTP			
Recycled Water Quality	Irrigation water meets recycled water criteria: Median / 95%ile BOD_5 (mg/L): 5 / 10 TSS (mg/L): 30 / 40 TN (mg/L): 20 / 25 TP (mg/L): 10 / 12 E.Coli (cfu/100ml): 100 / 200	• Monitoring of end water quality from the recycled water tank at the WWTP, and operational parameters within the WWTP will be undertaken to ensure recycled water quality is not released to the broadacre irrigation scheme outside of these limits. • Where recycled water quality does not meet the stipulated limits, water will instead be directed to the wet weather storage for later retreatment in the WWTP. • If livestock are to access the irrigation area, undertake testing for livestock specific pathogens (e.g. helminths).	WWTP Manager

Environmental Component	Target	Control Measures	Responsibility
Irrigation offsets and withholding periods	Maintain suitable offsets to avoid environmental harm or public nuisance or health issues	• For irrigation of recycled water meeting the above recycled water quality criteria: – 40 metres to surface waters or drains – 40 meters to retained vegetation – 30m from publicly accessible areas – 6 metres if area up-gradient and 3 metres if area down-gradient of property boundaries and fence lines – No public or staff are to be allowed access to surface irrigation areas until sufficient withholding time (at least 4 hours) after irrigation has passed, unless the recycled water meets the requirements for dual reticulation water – Similar withholding times are to be enacted for livestock access, but preferably no access is to be allowed. • Prevent spray drift to off-site and public access areas by not irrigating using surface spray systems in strong wind events in the direction of these areas.	
General Irrigation Scheme Management			
General	System operated efficiently and without failure	• Irrigation systems to be maintained in accordance with manufacturers specifications. • In particular, pipes, filters and emitters to be inspected routinely to ensure even distribution of recycled water across irrigation areas.	WWTP Manager
	Minimise run-on and run-off	• Where irrigation area slopes flow onto irrigation areas with significant upslope catchments (suitable to produce run-off into the irrigation area), construct diversion drains to divert run-on water around the irrigation area • Control runoff by irrigating to within the hydraulic capacity of soils (refer below)	
Soil Amelioration	Soil is provided with necessary fertilisation and ameliorants to support long term sustainable recycled water irrigation	• Soil to be assessed by an agronomist (or similar) and ameliorants, including gypsum, fertiliser and/or agricultural lime added as needed.	

Environmental Component	Target	Control Measures	Responsibility
Irrigation and Soil management	No soil structural breakdown or salinisation Irrigate within hydraulic capacity of irrigation soils No ponding or waterlogging of soils	• Irrigation to be undertaken only if irrigation water meets required specifications (Appendix D), and only to within limits suitable to long term sustainable irrigation. • Avoid excessive deep drainage, ponding, waterlogging or runoff. This is to follow the irrigation scheduling approach outlined in Table 1-1, and to achieve the following: – Initial application rates are to be determined based on the application scenarios presented in the Wastewater Management Plan or MEDLI modelling undertaken by a suitably qualified person (refer Table 1-1). – Application rates will be adjusted based on practical considerations, and feedback from both field observations and soil moisture sensors. The aim will be to irrigate so that soil moisture does not exceed field capacity during or after irrigation and does not result in runoff or any overland flow. If necessary, irrigation will include on-off periods to allow for adequate surface infiltration – Irrigation is to cease during rainfall events, and not recommence until the soil has dried sufficiently to accept further irrigation. – Ensure an even spread of recycled water over the irrigation area, and if necessary rotate irrigation areas if weather allows – Confirm correct application rates are being applied by the use of can tests (or similar) in the irrigation zones • Maintain a well-grassed or landscaped irrigation area to minimise the risk of erosion and sediment wash-off during storm events, and assist in maximising infiltration, soil permeability and soil structure. Effective drainage is to be implemented to avoid ponding and saturated soils. • Soil monitoring as detailed in 'monitoring' below and Appendix D to RWMP must be conducted to provide early warning of potential soil issues, and rectification applied as required by the results.	WWTP Manager
Vegetation	Vegetation on irrigation areas healthy and maximises reuse and uptake of recycled water, while protecting soil health and structure	• Routine inspection of the vegetation must be conducted to assess for weeds, pests and diseases, and health. These inspections are to provide advice on fertiliser and weed/pest treatment requirements, as well as harvesting timing where appropriate • Facility irrigation areas will be regularly mown or trimmed with clippings removed as mulch or to green waste. • For broadacre areas, based on the routine nutrient balance review and monitoring of soil and groundwater nutrient levels, determine the need to harvest and remove vegetation from the irrigation areas. Re-assess at least annually and where required investigate alternative options for harvest and disposal – default requirement is to reuse as mulch on-site, dispose of to green waste, or where suitable provide as fodder to cattle.	
Public health	No unauthorised access or public safety issues from irrigation of recycled water	• Install prominent warning signs indicating that the area is being irrigated with treated effluent, to avoid contact with the water and not to drink it. • Prevent spray drift to off-site and public access areas by not irrigating using surface spray systems in strong wind events in the direction of these areas. • Irrigation water pressure is to be managed and sprinklers sited to ensure no water is discharged outside the irrigation area.	
Complaints and Nuisance	Nil complaints	• Maintain incidents-complaints register, and act on complaints as soon as possible.	
Monitoring	Monitoring meets following criteria: • daily irrigation rate does not exceed maximum rate soil can accept • no runoff or excessive wetting of soils	• Flow meters are to be installed to measure the daily amount of irrigation water applied to each separate irrigation area, recorded on a daily basis to ensure that the scheduled volume of recycled water is not exceeded. • Initial daily irrigation observations are to be undertaken to ensure irrigation does not cause runoff or	

Environmental Component	Target	Control Measures	Responsibility
	• no leaks, spills • no degradation or contamination of soil due to effluent irrigation when compared to baseline • no deterioration of groundwater due to irrigation of recycled water on the site when compared to baseline	excessive wetting of soils, until irrigation rates are confirmed to be suitable to site conditions. • During initial irrigation runs, until the system is confirmed to be correctly operating, undertake can tests in irrigation areas to confirm the correct irrigation depths are being applied, for each piece of infrastructure. Repeat at least monthly for the first year and 6-monthly thereafter • Collect soil sensor data as required to inform irrigation scheduling – should be before and after irrigation initially, then monthly once system stabilises. Inspect soil moisture status prior to irrigation commencing (suitable soil water deficit available). Undertake soil sampling close to soil moisture sensors during each soil sampling event to correlate sensor data with actual soil moisture. • Regular visual inspections are to be undertaken of supply infrastructure and the irrigation area for signs of soil structural breakdown, over irrigation, leaks, etc. Rectify any issues as soon as possible. • For the first 2 years, 6-monthly sampling of soils is to be undertaken to detect chemical and physical signs of impacts from irrigation. Frequency to reduce to 2-yearly thereafter. • Groundwater monitoring is to be conducted of bores in or proximate to the irrigation areas to detect changes in groundwater from irrigation. Monitoring to include quarterly monitoring of pH, EC and water level; and quarterly for the first 2 years of operations followed by 2-yearly thereafter for major cations and anions, nitrogen and phosphorous.	
Reporting	Appropriate recording and reporting of key issues	• Maintenance, inspection or other logs and checklists are to be completed as nominated by the system manufacturer / supplier. • All incidents (e.g. chemical spills, burst pipes, overflows) and complaints are to be recorded in an incident – complaints register. • Notification of incidents / complaints is to be undertaken in accordance with the Incident Response and Contingency Plan in Appendix E of the RWMP. • All written records and results of monitoring are to be maintained for a period of not less than 5 years. An annual summary of the previous year's monitoring is to be prepared, prior to the anniversary date of the site registration certificate and maintained for a period not less than 5 years.	WWTP Manager
Auditing and Review		• For the first 2 years, undertake a quarterly review of the suitability and sustainability of irrigation practices. Following this initial period, review to be undertaken annually.	

Appendix D

Monitoring Plan

Clarence Correctional Centre

Monitoring Checklist

Document No.: PRO-ENV-CD-RPT-00_507-D01

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	26-Feb-2020	

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1 Monitoring Checklist

This document summarises the key monitoring to be undertaken at the site.

1.1 Responsible person

It is the responsibility of the Site Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.2 Periodic Review and updating the register

The procedure is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the aspects and impacts register where changes to site practices or to legislative instruments or other requirements dictate the need to update this management procedure.

1.3 Validation and Verification Programs

Prior to first delivery of recycled water to the dual reticulation system, a pre-validation and validation program is required to be passed, with a verification program required to ensure ongoing performance in the early stages of the scheme. The specific aims of each of these programs is as follows, with the monitoring requirements detailed in Table 1-1:

- Pre-validation - validate all systems as being able to treat wastewater to produce recycled water with suitable log reduction requirements as outlined in Table 1-1
- Validation – a four (4) week program whereby the log removal

1.4 Monitoring Checklist

The ongoing operational Monitoring Checklist is provided in Table 1-1. Validation and Verification Programs

Description	Location(s)	Parameters, Sampling	Criteria
Pre-Validation	Triple barrier system: • Membrane Bioreactor (MBR) modules • UV Disinfection system • Chlorination system	Evidence of successful validation in similar situations, to achieve the stated log reduction for viruses, protozoa and bacteria	Log reduction requirements of: ⩾6.5 for Viruses ⩾5.1 for Protozoa, and ⩾5.3 for Bacteria
Validation		Challenge testing to establish the validated operating envelope, to achieve the stated log reductions, as per the WaterVal MBR protocol	

Table 1-2.

1.5 Records

Records of any monitoring, auditing and supporting information (where required) are to be maintained by the Site Manager for a period of not less than 5 years.

1.6 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.7 Referenced Materials

n/a

Table 1-1. Validation and Verification Programs

Description	Location(s)	Parameters, Sampling	Criteria	Frequency	Reporting
Pre-Validation	Triple barrier system: • Membrane Bioreactor (MBR) modules • UV Disinfection system • Chlorination system	Evidence of successful validation in similar situations, to achieve the stated log reduction for viruses, protozoa and bacteria	Log reduction requirements of: ⩾6.5 for Viruses ⩾5.1 for Protozoa, and ⩾5.3 for Bacteria	Once	Pre-validation report
Validation		Challenge testing to establish the validated operating envelope, to achieve the stated log reductions, as per the WaterVal MBR protocol		Sampling at least twice weekly over a 4 week period	Validation report

Table 1-2. Operational Verification Monitoring Checklist

Description	Monitoring Sites	Parameters	Criteria	Frequency	Reporting
Annual Audits and Review	Site	Review of Performance and Procedures	Site and operations compliant, opportunities for improvement acted on	Annual	Audit documentation
	RWMP	All of RWMP	RWMP is up to date and accurately reflects site activities	Annual	Written record of audit
General Inspections and review	WWTP, pump stations	Visual indications of: • Poor maintenance • Spills or leaks (or potential for) • Off-site dust, odour, noise emissions • Blockages (e.g. inlet works)	Site managed in good order No leaks or spills No offsite dust, noise or odour emissions likely to result in nuisance impacts No system blockages	Daily	Entry into WWTP logbook WWTP Daily Checklist
	Alarms and level sensors	Alarms and level sensors	All in working order	Weekly	WWTP Checklist
	Irrigation Scheme	Observe irrigation for signs of waterlogging, runoff, erosion, and equipment for signs of leaks: - First month of irrigation – during / immediately after irrigation	Surface ponding and runoff are similar to areas outside of the irrigation zones. No leaks, good spread of irrigation water.	Daily observations	Entry into WWTP logbook WWTP Daily Checklist
		- First year of operation– during / immediately after irrigation		One event, each month	
		- Subsequent years		6-Monthly	
Review of sludge generation / management	WWTP	Opportunities for reduction of sludge volumes	Opportunities identified, or no opportunities exist	2 years after operation commences, and 5 yearly thereafter	Dedicated report

Description	Monitoring Sites	Parameters	Criteria			Frequency	Reporting
Wastewater and Recycled Water monitoring program	Aerobic tank	Dissolved Oxygen	As identified by manufacturer / supplier			Continuous	WWTP Daily Checklist
	Anaerobic tank	Dissolved Oxygen	As identified by manufacturer / supplier			Daily	WWTP Daily Checklist
	Disinfection point	Turbidity (ntu) Chlorine (mg/L) pH	Median ≤2, Maximum ≤5 NTU ≥ 0.2 *As per validation envelope (refer Table 1-1)*			Continuous Continuous	WWTP Daily Checklist
	Flow into the plant Flow into the Recycled Water Tank Flow into the Wet Weather Storage Flow into broadscale Irrigation Areas	Flow rate	No indication of excessive infiltration / inflow			Continuous (daily readings)	WWTP daily checklist Prepare an annual summary of results
	RWT: The recycled water storage tank at the treatment plant (for dual reticulation use)		<u>5%ile</u>	<u>Median</u>	<u>95%ile</u>	Weekly *first year* Monthly *thereafter*	Maintain records on site Prepare an annual summary of results
		pH	≥6.5	-	≤8.0		
		Turbidity (ntu)	-	-	≤2		
		Free chlorine residual (mg/L)	≥0.3	-	≤2		
		BOD_5 (mg/L)	-	≤5	≤10		
		TN (mg/L)	-	≤20	≤25		
		TP (mg/L)	-	≤10	≤12		
		Ammonia (mg/L)	-	≤1	-		
		Biological					
		Somatic coliphages (viruses) (pfu/100ml)					
		Clostridium perfingens (protozoa) (cfu/100ml)	-	<1	-	*Daily in case of any exceedance until clear for 5 consecutive days*	
		E.Coli (bacteria) (cfu/100ml)	-	<1	-		
			-	<1	-		
		Total Oil and Grease	95%ile ≤1			6-monthly	
	RWT: The recycled water storage tank at the treatment plant (for broadscale irrigation)		<u>Median</u>	<u>95%ile</u>		3-monthly	Maintain records on site Prepare an annual summary of results
		TSS (mg/L)	≤30	≤40			
		BOD_5 (mg/L)	≤20	≤30			
		TN (mg/L)	≤20	≤25			
		TP (mg/L)	≤10	≤12			
		Biological					
		E.Coli (bacteria) (cfu/100ml)	<1	-			
		Metals suite (include Al, As, B, Cd, Cu, Hg, Ni, Pb, Zn)	*Refer Table 3.3 from DEC (2004) for Long Term Acceptance Rates.*			6-monthly	

Description	Monitoring Sites	Parameters	Criteria	Frequency	Reporting
	D1: The off-site overflow point as discharge leaves the site (for off-site discharges)	5-day Biochemical Oxygen Demand (BOD_5) pH Electrical Conductivity Total Phosphorous Total Nitrogen E.Coli	*Information only. Compliance to be determined based on event particulars*	On overflow event	Summary report including lab results, description of event
	WWTP and Wet weather storage Flow meters	Leaks, overflows or pumpouts	No leaks or overflows	Daily	Entry into WWTP logbook WWTP daily checklist
Sewerage System	Network and flow meters	Infiltration / Inflow	No indication of excessive infiltration / inflow	After first year Every 2 years after	Short report
WWTP and wet weather storage	Tanks and ponds	Sludge depth Sludge accumulation and wasting rate	Sufficient storage capacity	As required	Entry into WWTP logbook WWTP checklist
Irrigation Area	Soil locations suitable to represent the entire irrigation area Sample topsoil (top 100mm) and subsoil (300-500mm) as composite samples for testing. Collect soil samples close to each soil sensor	pH Electrical conductivity Exchangeable sodium percent (ESP) Cation exchange capacity (CEC) Available Phosphorous Organic Nitrogen Nitrate N Total Organic Carbon Soil moisture	Monitoring results indicate no degradation or contamination of soil due to effluent irrigation. *Soil moisture used to calibrate / validate soil sensor data.*	Prior to irrigation commencing on-site. Every 6 months for two years then 2 yearly thereafter.	Maintain records on site Prepare summary report of results
		Total phosphorus Phosphorus sorption capacity		6-yearly	
	Irrigation area	Visual indications of ponding, waterlogging, runoff	No ponding or runoff to public accessible areas to occur during irrigation events.	Opportunistically / at least once a month	Entry into WWTP logbook
	Groundwater bores	Water level (below ground level & relate to AHD) pH EC	Monitor and compare to baseline results. No deterioration of groundwater due to irrigation of recycled water on the site	Quarterly - baseline & operational	Maintain records on site Prepare an annual summary of results
		Major cations and anions Total nitrogen Nitrate nitrogen Total phosphorous Available phosphorous		Quarterly - baseline Quarterly first 2 years operations, 2-yearly thereafter	
	Vegetation	Weeds, pests and diseases, and health Weed/pest treatment requirements, and harvesting timing where appropriate	At least 70% vegetation cover	On each inspection Otherwise monthly	Entry into WWTP logbook

Description	Monitoring Sites	Parameters	Criteria	Frequency	Reporting
Daily water balance – irrigation, pond	Soil moisture sensors	Soil moisture / moisture potential	*Information only – to inform sustainable irrigation practices*	Initial irrigation: Pre-and post-irrigation Ongoing: Monthly	Record with daily water balance information
	Irrigator application areas	Irrigation depth (catch can test or similar) Application volumes (run length/time, spray arc)	Ensure irrigation depth applied matches target (no overwetting, under application)	Initial runs each irrigator, and as required thereafter	Maintain records with equipment information, logbook Record with daily water balance information
Wet weather storage pond Emergency Storage Pond	Pond area	Visual evidence of plumes, surface scums or slick, erosion, staining, litter or chemical spills	No visual indication of erosion, spills, leaks and potential for environmental impacts.	Daily	Entry into WWTP logbook
	Pond	Visual indication of algal bloom - odours, scums, discoloration, earthy or musty odour.	No problem algal blooms.	Weekly / opportunistically	Evidence of algal blooms to be written in WWTP logbook.
	Pond	Visual indication of mosquitos breeding in the pond	No visual indication of excessive mosquito activity or mosquito related complaints	Weekly / opportunistically	Evidence of mosquitos to be written in WWTP logbook.
	Pond (embankments, walls, overflow points, takeoff points, diversion structures, pumps)	Visual indication of erosion, structural failure, or other failure	Good pond structure	Quarterly and following large rainfall events	Entry into WWTP logbook
Spill kits	Spill kits	Contents	Spill kit appropriately stocked	Monthly and following use of spill kit	Record requirements for stocking in site manager's logbook.

Appendix E

Contingency Plan

Clarence Correctional Centre

Incident Response and Contingency Plan

Document No.: PRO-ENV-CD-RPT-00_507-E01

Revision Status

Revision Number	Author	Description	Date	Approved By
0	MW	FINAL	26-Feb-2020	

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1 Incident Response and Contingency Plan

This procedure has been prepared to outline basic control methods to ensure the correct containment, cleanup and reporting is undertaken for incidents occurring on-site , and to provide a timely and appropriate response to accidents or incidents that may occur. It is intended as a guide only, and actual responses are to be tailored to meet the specific site and incident conditions under advice/supervision or actions from suitably qualified and experienced persons.

1.1 Responsible person

It is the responsibility of the Site Manager to ensure this procedure remains up to date, and is periodically revised and updated.

1.2 Periodic Review and updating the register

The procedure is to be reviewed periodically and updated as required to ensure it remains current. Reviews should be undertaken following any revision of the aspects and impacts register where changes to site practices or to legislative instruments or other requirements dictate the need to update this management procedure.

1.3 Health and Safety

Health and Safety Plan will override any item within this procedure in the event of a conflict, however generally if a situation is not safe, personnel will not enter the area unless they are:

- Properly fitted with Personal Protective Equipment (PPE) and trained in its use;
- Sufficiently experienced to deal with the situation; and
- Acting under an approved Safety Management Plan or Procedure for the specific site

The Site Manager is responsible for enacting effective site health and safety management procedures which are to be complied with by all personnel on the site.

1.4 Contingency Response

Table 1 shows tabulated contingency responses. These are intended as a guide only, and actual responses are to be tailored to meet the specific site and incident conditions under advice/supervision or actions from suitably qualified and experienced persons

1.5 Assessment of Importance of Incident – Environmental Aspects only

Each incident should be assessed rapidly prior to any action being undertaken, to gauge the correct approach. A general guideline to the level of potential impact is outlined below:

Major Impact – any one or more of the following:

- where there is an immediate threat to human life and property;
- where the incident could be associated with significant harm to native fauna and flora;
- creates an immediate observable harm to environmental receptors;
- where it occurs in water catchments that have recognised conservation and scientific values; or
- where the incident has the potential to seriously contaminate soil or water resources.

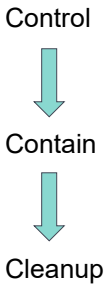
Moderate Impact - any one or more of the following:

- where there is significant (but not immediate) threat to human life and property;
- where the incident may result in chronic or long-term harm to native fauna and flora; or
- may have a long term (but not immediate) observable impact on environmental receptors.

Minor Impact - applies to any one or a combination of the following:

- where there is no perceived threat to human life or property;
- where the incident is outside sensitive environments; or
- where the incident poses no immediate or long term threat to environmental receptors.

Generally, any control methods should follow the:



hierarchy of approaches, whereby the source of the spill is (safely) controlled, the spill itself contained so as to minimise or avoid its movement into the environment, and cleanup undertaken using approved methods according to the nature of the substance.

1.6 Records

Records of any monitoring, auditing and supporting information (where required) are to be maintained by the Site Manager for a period of not less than 5 years.

1.7 Terms and Abbreviations

WWTP – Wastewater Treatment Plant

RWMP – Recycled Water Management Plan

1.8 Referenced Materials

n/a

Table 1. Contingency Plan

Incident	Response	Contact persons
General Contingency Response		
Any issue with the system	1. Notify Site Manager immediately 2. Site Manager to assess issue and either: – Rectify, or – Seek assistance to rectify, such as by using external contractor.	Site Manager
High level reached in system or tanks	1. Initiate repairs if required, and check that system is not blocked. 2. Irrigate (if this can be done sustainably) or engage licensed contractor to pump out system and remove off-site prior to any overflows occurring.	Maintenance staff/contractor System Operator(s) Service contractor Pump out contractor
High level reached in wet weather storage	1. Initiate irrigation if it can be undertaken sustainably. If not, wet weather storage may need to be pumped out and removed off-site by licensed contractor. 2. Overflow from the wet weather storage should not occur without actions being undertaken to avoid the overflow.	System Operator(s) Pump out contractor
Odour or excessive 'nuisance' noise detected at sensitive location (residence, workplace, or public area)	1. Investigate the source immediately and initiate maintenance / repair works to rectify. 2. If necessary, engage qualified and experienced contractors to determine course of action.	System Operator(s) Maintenance staff/contractor Service contractor
Complete system failure	1. Immediately contact the service contractor to rectify the system.	System Operator(s) Maintenance staff/contractor Service contractor
Receipt of complaint	1. Record details of complaint in incidents-complaints register 2. Investigate whether the complaint is justifiable or can be described as 'vexatious' 3. Investigate cause of justifiable complaints and rectify if possible (refer below). Maintain open communication with complainant	Site Manager
Fuel, chemical or wastewater spill	1. Implement spill response procedures immediately to contain, then clean up the spill if safe to do so (refer below) 2. If spill is too large to contain in a short period of time, request outside assistance. This may include external contractors, NSW EPA, Council or others 3. Refer to Environmental Harm caused or threatened (below) 4. Undertake sampling of receiving waterway if spill is not minor or insignificant in nature **Spill Response:** • In the event of a spill, deploy spill response equipment to first contain, and then clean up the spill if safe to do so • Dispose of contaminated material in an appropriate manner • Ensure spill kit remains adequately stocked – replace used materials before they run out • Ensure staff are trained in the use of a spill kit.	Site Manager NSW EPA Council
Environmental Harm caused or threatened	1. Initiate spill response as soon as possible. Notification is to occur if material or serious environmental harm is caused or threatened (refer Terms and Abbreviations, of main report) 2. Notify appropriate authority (NSW EPA or Council) as soon as practicable, but not before spill response procedures have been fully implemented and if possible spill contained if the notification will delay these operations. 3. Notification is to follow procedures in RWMP	NSW EPA and/or Council

Incident	Response	Contact persons
Emergency Services	1. If an emergency occurs: – Phone 000 (000 or 112 for mobile phones) for emergencies – Depending on event, contact: ➤ Fire services ➤ State Emergency Service (SES) ➤ Police ➤ Ambulance Service ➤ Council	
Specific Contingency Response		
Soil monitoring identifies increases in sodicity (Exchangeable Sodium Percentage) over time	1. If ESP exceeds 5 AND the increase is substantial (>10% change from baseline) develop amelioration plan: – Consult with soil expert to determine dosing rates and methods, based on soil results (additional monitoring if required) – Undertake amelioration to soils, targeting those most at risk of deterioration first (slopes, drainage paths, etc.) – Post application monitoring to track soil status and continue application as required (frequency determined through consultation with soils expert) 2. Record the results, advice and steps taken, along with post-application monitoring results as evidence to confirm effective amelioration 3. Continue normal soil monitoring	
Soil monitoring identifies increase in chemical constituent, such that ongoing irrigation will exceed nominal soil levels from DEC (2004)	1. Determine whether constituent is above baseline levels 2. If so, determine whether increase is due to recycled water irrigation, through sampling of recycled water for this constituent 3. If this is confirmed: – determine its source within the plant and implement measures to reduce and control – rotate or expand irrigation so that the total load per ha is reduced to a satisfactory level for long term irrigation 4. Continue normal soil monitoring, including this constituent to confirm no overloading is occurring	
Observation of irrigation events, or soil moisture sensors indicate overwetting of soils is occurring Particularly relevant to slopes and areas of unstable soils	1. Stop irrigation 2. If overland flow is caused, or if ponding is caused that will not infiltrate prior to the next rainfall event: – Close downstream drainage system to enable first flush waters to be pumped (via mobile diesel pump or similar) back to the storage lagoon. This may include shutting off detention basin outlet, or placing sandbags or similar in drain or culverts until first flush has passed. – First flush is typically 15mm, but may be varied depending on the severity of the overwetting or runoff event 3. If no overland flow is caused: – determine cause of over watering – amend irrigation schedule if required – no further irrigation on this area until soils are sufficiently dried	
Disinfection indicators (turbidity, chlorine, redox, etc.) exceed or do not achieve requirements	1. Implement immediate corrective actions and divert waters away from dual reticulation system until rectified 2. Consider manual dosing to ensure effective disinfection – may no longer be suitable for dual reticulation system 3. Only supply dual reticulation system when disinfection indicators are within suitable limits 4. Refer also to 'Monitoring results within the dual reticulation recycled water tank exceed criteria' below	

Incident	Response	Contact persons
Monitoring results within the dual reticulation recycled water tank exceed criteria	5. If the exceedance relates to disinfection (i.e. biological test results, critical control point parameters): – Cease supply to facility immediately – Divert overflow to wet weather storage lagoon – Investigate: ➤ Are the results reliable? (additional monitoring may be required) ➤ Is there a disinfection / treatment failure? – Rectify as necessary, including shock-dosing to achieve disinfection requirements (but divert water to lagoon for irrigation) if required 6. If exceedance relates to other element: – If health based (e.g. chemical constituent, metals, exceedance of turbidity levels, etc.) then implement actions in item 1 above – If aesthetic based, then either implement actions in item 1 above, or seek approval from facility operators to continue supply 7. Advise regulator of exceedance, immediate and follow up actions, and keep informed as required of rectification works	
Monitoring results indicate exceedance of irrigation criteria in wet weather storage lagoon	1. If possible, cease irrigation and determine source of exceedance: – Provide WWTP rectification and lagoon waters rectification if possible – Continue irrigation when water quality meets criteria, or – Irrigate over larger area, such that the total load equivalent (kg/ha) remains the same as for the criterion ➤ e.g. irrigating 10mg/L over 14ha is the same load as irrigating 20mg/L over 28ha – advise regulator of exceedance, immediate and follow up actions, and keep informed as required of rectification works	
Groundwater monitoring indicates increases in chemical constituents	1. Determine source of changes: – Compare data to baseline and any control sites – are results consistent with normal background levels? If not, – Determine source and cause of changes: ➤ WWTP failure and recycled water exceedance – refer ‘Monitoring results indicate exceedance of irrigation criteria in wet weather storage lagoon’ above ➤ Excessive wetting of soils causing elevated deep drainage – should be observable on soil moisture sensors (over wetting). Reduce irrigation rates ➤ Otherwise, consider changing irrigation area (e.g. to northern reserve area) or spreading out irrigation waters to reduce overall chemical load (as kg/ha)	

Appendix F

Forms

Incident / Complaints form

Date:.....

Name: .....
(Person filling out form)

□ Complaint □ Incident

□ Major - moderate
□ Minor
□ Near Miss

Nature of Incident / Complaint (tick one): ☐ water ☐ air ☐land

☐ other.....

Details

Name and Address of person or company complaining / reporting incident:.....

.....

..... Phone:.....

If company, person lodging complaint / notification:.....

Time of Incident / Complaint:.....

Location of Incident:.....

.....

Description

.....

.....

.....

.....

.....

.....

.....

Actions Taken	Date Acted On	Signed
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

Notification – notify incidents following the procedures in the RWMP.

Visual Monitoring / Inspection form

Date: .....

Inspection by: .....

Notes: .....

.....

All the site is in a satisfactory condition? .....Y☐ N☐

Any signs of erosion, sediment loss or other pollution?.....Y☐ N☐

Any action required?.....Y☐ N☐

Required Actions taken?.....Y☐ N☐

Location	Details[1]	Actions Undertaken	Date Acted Upon
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[1] Erosion, or potential for erosion; pollution on or off-site; inappropriate activities; water quality controls in need of repair, replacement or reinstatement; new controls required; surface stabilisation or maintenance work required, inappropriate waste management practices, etc.