Supporting information for a Planning Proposal to rezone to SP2

Altogether Group

Additional Local Water Centre at Huntlee

Level 1, 73 Miller Street
North Sydney NSW 2060

Prepared by:

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Australia

SLR Project No.: 630.030826

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0.1	7 August 2023	Drew Williams	Rob Dwyer	
0.2	18 August 2023	Drew Williams	Rob Dwyer	Steve Shoesmith
0.3	18 April 2024	Drew Williams	Rob Dwyer	Alanna Ryan

Executive Summary

Altogether Huntlee Pty Ltd (a wholly owned subsidiary of Altogether Group) propose to construct and operate an additional Local Water Centre (sewage treatment plant as defined within the *Cessnock Local Environmental Plan 2011*) on land that is earmarked to be rezoned to SP2 Infrastructure within the Huntlee New Town development area.

Altogether Huntlee Pty operates the existing Huntlee Local Water Centre (herein referred to as Huntlee LWC 1) located at North Rothbury and the additional Local Water Centre, once in operation, will mimic the scale, sewage treatment process and resultant expected environmental impacts of Huntlee LWC 1.

The proposed Local Water Centre should not be compared to traditional sewage treatment plants such as those operated by Hunter Water. Such plants require greater land requirements and due to open tanks and ponding areas have greater offsite impacts including the need for designated “no development buffers” between the treatment plant and other development. Larger scale sewage treatment plants, or significant upgrades to existing sewage treatment plants, take longer to implement, have greater potential environmental impacts, and fail to achieve sustainability initiatives for water re-use.

In contrast, the proposed Local Water Centre will be enclosed in a low-scale, single level building within an open space setting and off-site impacts are nil to negligible.

Recycled water, a byproduct of the sewage treatment process of the proposed Local Water Centre, will be reticulated within the Huntlee New Town development area thus reducing waste and water demand of customers. Recycled water produced will be used for:

- Toilet flushing.
- Washing machines.
- Irrigation.
- Car washing.

As demonstrated with other Local Water Centres operated by Altogether in NSW the operational impacts of the Altogether sewage treatment process, from an odour and noise perspective, are minor and well within industry emission guidelines.

Visually, the design of the proposed Local Water Centre although housing an industrial type of activity will be detailed in a manner that is sympathetic to its location with the proposed urban form with significant hard and soft landscaping features.

Traffic movements to and from the Local Water Centre during operation are low and operations are unlikely to have any significant impacts (directly or directly) on groundwater quality.

On the basis of available information from Huntlee LWC 1 as well as information from other similar Altogether LWCs in NSW it is believed that the rezoning of the proposed Local Water Centre to SP2 Infrastructure to allow for it’s construction and operation is worthy of support without the need for specialist studies. Such studies will be required once project design of Huntlee LWC 1 has advanced thus enabling the production of a comprehensive review of environmental factors (REF) at that point. The REF will be prepared in accordance with Sections 5.5 and 5.7 of the *Environmental Planning and Assessment Act 1979* and Clause 171 of the *Environmental Planning and Assessment Act Regulations 2021*. The REF will document potential construction and operational impacts to the fullest extent possible.

Overall Huntlee LWC 2 will make a significant contribution to sustainability through the provision of recycled water back to the new residential areas of Huntlee.

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Acronyms and Abbreviations

AGWR	Australian Guidelines for Water Recycling
CEMP	Construction Environmental Management Plan
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
Huntlee LWC 1	The existing local water centre at North Rothbury operated by Altogether Huntlee Pty Ltd.
Huntlee LWC 2	The proposed additional local water centre within Huntlee New Town that will be constructed and operated by Altogether Huntlee Pty Ltd.
IPART	Independent Pricing and Regulatory Tribunal
LGA	Local Government Area
LWC	Local Water Centre
MBR	Membrane Bioreactor
NOL	Network Operators Licence issued by IPART
NSW	New South Wales
REF	Review of Environmental Factors
UV	Ultra-Violet
WICA	*Water Industry Competition Act 2006*

1.0 Introduction

1.1 Purpose of this report

This report has been prepared for the Altogether Group as information to be provided to aid in the preparation of a Planning Proposal to Cessnock City Council for the rezoning of residential land at Huntlee to 'SP2 Infrastructure'. The Planning Proposal, once endorsed by NSW Department of Environment and Planning (DPE) will allow for the construction and operation of a Local Water Centre (a type of "sewerage system" as defined under *Cessnock Local Environmental Plan 2011*).

Altogether Huntlee Water Pty Ltd (a wholly owned subsidiary of Altogether Group) is a private water utility which currently holds a network operator's licence under the *Water Industry Competition Act 2006* (WICA). Altogether Huntlee Pty Ltd has approval to operate potable water, non-potable water and sewerage infrastructure at the Huntlee development area (licence number 15_030) which includes the operation of the existing Huntlee Local Water Centre (Huntlee LWC 1) located at 2 Triton Boulevard, North Rothbury.

This report provides:

- An overview of the Altogether Group and its operations – this Section.
- An overview of the regulatory process for the assessment, approval, and operation of a Local Water Centre (LWC) in NSW – refer to Section 2.
- A detailed description of the water cycle characteristics of the Altogether LWC's – refer to Section 3.
- An overview of the aspects of the additional LWC (herein referred to Huntlee LWC 2) at Huntlee – refer to Section 4.
- An overview of the potential impacts Huntlee LWC 2 – refer to Section 5.

1.2 Altogether Group and its Operations within NSW

Huntlee LWC 1 is an existing LWC operating within Stage 1 of the Project Approval of the Huntlee New Town development.

The WICA came into operation on 8 August 2008 and, among other things, provides for the licensing of private sector water utilities.

The Altogether Group has seven network operator licences under the WICA at the following scheme sites / localities as detailed in **Table 1**. Network Operator Licences (NOL) are approved and administered by the Independent Pricing and Regulatory Tribunal (IPART).

Table 1: IPART Licenses

Licensee	Scheme	Type	Area	Licence
Altogether Central Park Pty Ltd	Central Park	Network Operator	City of Sydney	12_022
Altogether Cooranbong Pty Ltd	North Cooranbong	Network Operator	Lake Macquarie City Council	15_033
Altogether Discovery Point Pty Ltd	Discovery Point	Network Operator	City of Sydney	13_025
Altogether Huntlee Pty Ltd	Huntlee	Network Operator	Cessnock City Council, Singleton Shire Council	15_030

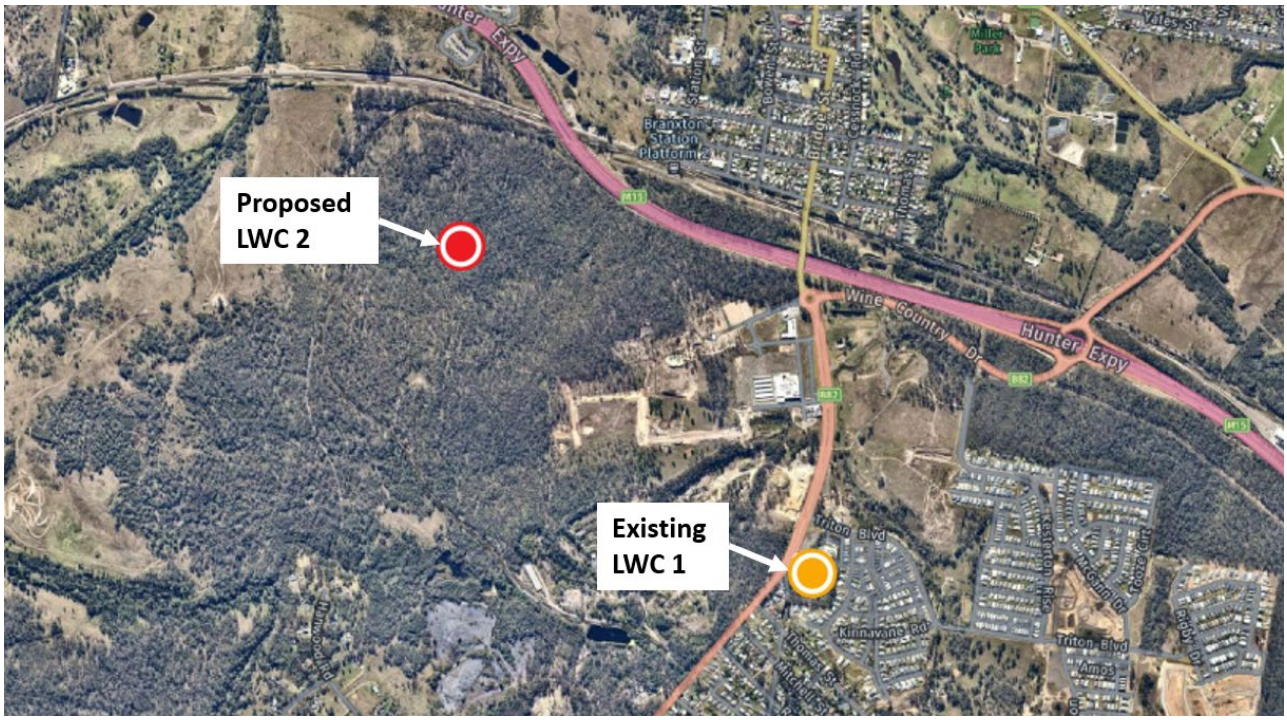
Licensee	Scheme	Type	Area	Licence
Altogether Operations Pty Ltd	Box Hill North	Network Operator	The Hills Shire Council	16_037
Altogether Operations Pty Ltd	Glossodia	Network Operator	Hawksbury City Council	19_043
Altogether Operations Pty Ltd	Shepherds Bay - Network	Network Operator	City of Ryde Council	17_042
Altogether Group Pty Ltd	Altogether Group Pty Ltd	Retail Supplier	Cessnock City Council, City of Ryde Council, City of Sydney, Hawkesbury City Council, Lake Macquarie City Council, Singleton Shire Council, The Hills Shire Council	13_001R

1.3 The Existing Huntlee LWC

Huntlee LWC 1 is located on 2 Triton Road, North Rothbury and is approximately 1.12 hectares in size. New residential development is located approximately 50 metres to the east of buildings and infrastructure within the Huntlee LWC 1 site.

The location and proximity of the two locations is shown in **Figure 1**.

Figure 1: Huntlee LWC 1 and Huntlee LWC 2 Locations



(Source: Nearmaps/Ethos Urban)

Huntlee LWC 1 site was rezoned to SP2 Infrastructure in of 2015 after the consideration of a Planning Proposal prepared by the developer of Huntlee New Town.

Subsequent to the rezoning of the site a review of environmental factors (REF) was prepared by Flow Systems (now known as Altogether Group) to support the construction and operation of Huntlee LWC 1. The REF was provided to IPART and the NSW Minister of

Finance and Services, containing information to the fullest extent possible of all matters affecting, or likely to affect, the environment by the construction and operation of the facility.

The activity subject of the REF did not require development consent under Part 4 of the EP& A Act as stipulated in the then in force *State Environmental Planning Policy (Infrastructure) 2007* and because of the site being zoned SP2 Infrastructure, making it within a prescribed zone.

1.4 Authorship of this Document

This document has been prepared by Rob Dwyer and Drew Williams of SLR Consulting Australia, refer to **Table 2**. Since 2014 Rob Dwyer has provided advice and detailed assessments to Altogether Group (formerly Flow Systems) on a range of matters including the following.

- Review of Environmental Factors (REF) for sewer and recycled water systems to enable licences in accordance with WICA to be sought across the urban release areas of Gables (Box Hill North), Watagan Park (Cooranbong), Huntlee and Bellbird.
- REF for the Glossodia Local Water Centre.
- REF for a sewer and recycled water system throughout the Glossodia Urban Release Area.
- Preparation of a Planning Proposal, development application and review of environmental factors to enable the construction and operation of a water recycling facility in the basement of buildings within the Shepherds Bay Urban Renewal Area, Ryde.
- Part 4 environmental impact statement (EIS) for the establishment of a water recycling facility to service approximately 2,500 dwellings at Cooranbong. The Local Water Centre replaced the need for more traditional sewage facilities which have greater environmental impacts.
- Co-ordination of a Planning Proposal for the establishment of a Local Water Centre (Water Recycling Plant) for the reticulation of recycled to almost 4,000 dwellings at Box Hill North.
- Providing advice to Altogether with respect to internal environmental assessment checklists, minor environmental assessment reporting and internal Altogether Group approval processes.
- REF for the discharge of high-quality recycled water into existing stormwater features at Pitt Town.
- Provision of EPL application documentation for Box Hill North.

Rob is a Registered Planner (Fellow) of the Planning Institute of Australia (PIA) and is accredited under the NSW Registered Environmental Assessment Practitioner (REAP) Scheme – REAP Number 7608.

Table 2: Authorship

Document Authorship		
Name	Rob Dwyer	Drew Williams
Role	Co-Author / Reviewer	Co Author
Qualifications	• Bachelor of Science, Human and Physical Geography (University of Newcastle) • Graduate Diploma of Urban and Regional Planning (University of New England)	• Bachelor of Environmental Science and Management (University of Newcastle) • Diploma of Architecture (Hunter TAFE)
Memberships	• Registered Planner and Fellow, Planning Institute of Australia (PIA). • Accredited under the NSW Registered Environmental Assessment Practitioner (REAP) Scheme – **REAP Number 7608**. • Member, Hunter Chapter Property Council of Australia (PCA).	
Signature		
Name	Rob Dwyer	Drew Williams
Date	18th April 2024	18th April 2024

2.0 General Regulatory Process for an LWC

This section outlines the general regulatory process for the approval of a reticulated sewerage system and LWC.

Water Industry Competition Act 2006 (WICA)

The NSW Government introduced the WICA as part of its strategy for a sustainable water future to harness the innovation and investment potential of the private sector in the water and wastewater industries. WICA established a licensing regime for new entrants to the industry to ensure the continued protection of public health, consumers and the environment. The private sector is now encouraged to develop and operate water management schemes and the licensing system is governed by IPART. Altogether Group has seven network operator licences under this regime, refer to **Table 1** in **Section 1**, as well as

EP&A Act

Altogether Group is a licensed network operator under WICA and may therefore develop sewerage systems within its licensed area of operations without consent being required under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Consequently, the development of the system within an Altogether Group licenced area, is an activity under Part 5 of the EP&A Act. Part 5 obliges Altogether Group to assess, to the fullest extent possible, all matters affecting, or likely to affect, the environment due to the installation and construction of the proposed system. The assessment is most commonly in the form of a Review of Environmental Factors (REF) or where impacts are deemed to be significant, the proposal may trigger an Environmental Impact Statement (EIS). Sections 5.5 and 5.7 of the EP&A Act and Clause 171 of the EP&A Regulations 2021, identify the factors required to be considered by a determining authority when assessing the environmental impact of an activity.

The EP&A Act defines a 'determining authority' and a 'nominated determining authority' as:

***'Determining authority** means a Minister or public authority and, in relation to any activity, means the Minister or public authority by or on whose behalf the activity is or is to be carried out or any Minister or public authority whose approval is required in order to enable the activity to be carried out.'*

'***Nominated determining authority,*** in relation to an activity, means the determining authority nominated by the Minister in *accordance with section 5.2 in relation to the activity.'*

Altogether Group are therefore a determining authority under Part 5 of the EP&A Act within the specified areas of operations.

State Environmental Planning Policy (Transport and Infrastructure) 2021

Under Division 18 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP), a sewage treatment plant or water recycling facility (or Local Water Centre) must be in a prescribed (land) zone in a prescribed circumstance.

The reticulation system (pipes and associated reticulation infrastructure) must be in a prescribed circumstance but not necessarily in a prescribed zone.

This disparity allows for the pipe network and associated lot-based system elements to be on residential land but the treatment facility to be separated by a buffer area from the residential dwellings allocated within prescribed zones.

The prescribed zones and circumstances from the Transport and Infrastructure SEPP are included in **Table 3.**

Table 3: Prescribed Zones and Circumstances – Transport and Infrastructure SEPP

Prescribed Zone	Prescribed Circumstance
a) RU1 Primary Production, *(b) RU2 Rural Landscape,* *(c) RU4 Primary Production Small Lots,* *(c1) E4 General Industrial,* *(c2) E5 Heavy Industrial,* *(d) IN1 General Industrial,* *(e) IN3 Heavy Industrial,* *(f) SP1 Special Activities,* *(g) SP2 Infrastructure*	*(a) is carried out by or on behalf of a public authority*
	(b) consists of the construction or operation of water industry infrastructure and, under the Water Industry Competition Act 2006, a network operator's licence is required before the development may be carried out.

Note: Altogether Group would fall under Prescribed Circumstance (b).

Standard Instrument—Principal Local Environmental Plan (2006 EPI 155a)

The *Standard Instrument - Principal Local Environmental Plan (2006 EPI 155a)* (the Standard Instrument) categorises the recycled water infrastructure that Altogether group offer as a '**sewerage system'.**

The definition under the Standard Instrument is as follows:

sewerage system *means any of the following—*

a) biosolids treatment facility,

b) sewage reticulation system,

c) sewage treatment plant,

d) water recycling facility,

e) a building or place that is a combination of any of the things referred to in paragraphs (a)–(d)."

2.1 Planning Approval Pathways for New Scheme Infrastructure (within WICA Licence Area)

New scheme infrastructure may include:

- Entire new system.
- New local water centre (treatment facility).
- Additional local water centre within a current system.
- Extension/additions to current system.
- Licenced discharge capabilities of current system.

As outlined in Section 2, Altogether Group, as a licensed network operator under WICA may therefore, develop sewage treatment and reticulation systems within its licensed area, under appropriate prescribed zones and circumstances generally without consent under the EP&A Act.

Assessment and approval of the activity typically will involve an REF but under some circumstances may involve an EIS if an impact is deemed to be significant from the conclusions of an REF or determined prior to the completion of an REF.

An essential element of an REF and / or EIS is the declaration. The author and the proponent (Altogether Group) must sign off on the document as meeting the requirements

specific to the type of assessment and that the document is understood as being a key and binding environmental instrument for the activity.

REF's and EIS's are prepared to provide the Independent Pricing and Regulatory Tribunal (IPART) and the NSW Minister of Finance and Services, with information to the fullest extent possible of all matters affecting, or likely to affect, the environment by the construction and operation of the system.

Two scenarios of the planning approval pathway for additional infrastructure within a licensed area is provided in the following.

2.2 Environmental Protection Licence Requirements

Altogether Group is a licensed network operator at Gables, Huntlee, Watagan Rise and Pitt Town. The schemes within these project areas require periodic discharge of high-quality recycled water into the environment. Typically, the most practical and beneficial method for discharge is via established stormwater management systems constructed as part of the subdivision of the area in which the licence operates over.

Under Schedule 1, Part 3, Division 2, Clause 50 'Other Definitions' of the *Pollution of the Environment Act 1997* (POEO Act), the discharge of recycled water from the reticulated system into a stormwater management system (the 'environment') would be regarded as a pollutant - *'Effluent (a) wastewater from sewage collection or treatment plants'*.

Section 48 of the POEO Act applies to scheduled activities where Schedule 1 of the POEO Act indicates that a licence is required for premises at which the activity is carried on. For the purposes of the POEO Act the activities carried out by Altogether Group would be characterised as "Premise-based activities". In relation to Sewage treatment, Schedule 1 specifies the following.

36 Sewage treatment

(1) This clause applies to ***sewage treatment****, meaning the operation of sewage treatment systems (including the treatment works, pumping stations, sewage overflow structures and the reticulation system) that involve the discharge or likely discharge of wastes or by-products to land or waters.*

(2) The activity to which this clause applies is declared to be a scheduled activity 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.

3.0 Water Cycle Characteristics of an Altogether LWC

Huntlee LWC 2 will utilise sewage from residential areas of Huntlee to produce high quality water. As per Huntlee LWC 1, sewage will be treated through a multi-stage process. The processes that the Huntlee LWC 2 will use will meet the strict *Australian Guidelines for Water Recycling 2006* (AGWR). Wastewater is cleaned to the highest Australian standards, undergoing seven filtration and purification processes including Membrane Bioreactor (MBR) and Ultraviolet (UV) treatment. The seven processes are listed below:

- Wastewater Screening - Plastics and rubbish are taken out of the wastewater.
- Anaerobic Processing - After the wastewater is screened it enters the biological processing tank for anaerobic processing. Natural bugs break down the wastewater.
- Aerobic Air - Air is added to the wastewater, creating new bugs which continue the break down process.
- Chemicals Added - Four chemicals namely: Sodium Hydroxide, Sodium Hypochlorite, Aluminium Sulphate and Acetic Acid - are added at different stages if required during processing.
- Membrane Fibres - Purified water is sucked through microscopic membranes that block out bugs -removing bacteria, pathogens and all other impurities. The holes in the fibres are so tiny, bacteria and viruses are unable to penetrate and are forced out, further cleaning the recycled water.
- Ultraviolet - Water goes through an Ultraviolet purification process neutralising any remaining impurities.
- Chlorine - Chlorine is added to the water for the final purification process.

The end product of the process is tertiary treated and disinfected recycled water plumbed into houses and public recreation areas (third pipe) for non-potable uses. The LWC model of sewage treatment offers a viable and attractive alternative to the traditional large scale sewage treatment plant usually required to service new residential developments.

Larger scale sewage treatment plants (such as those operated by Hunter Water) require larger land parcels and due to open tanks and ponding areas have greater offsite impacts including the need for designated “no development buffers”. Larger scale sewage treatment plants, or significant upgrades to existing sewage treatment plants, take longer to implement, have greater potential environmental impacts, and fail to achieve sustainability initiatives for water re-use.

In contrast, Huntlee LWC 2 will be enclosed in a low-scale, single level building within an open space setting and off-site impacts are nil to negligible.

The use of recycled water reduces waste and water demand of customers by its use for:

- Toilet flushing.
- Washing machines.
- Irrigation.
- Car washing.

The intended biological capacity of Huntlee LWC 2 is approximately 1,000kL per day, although the facility has been designed to achieve this benchmark over time in line with uptake in the western area of the Huntlee New Town development.

Altogether Huntlee Water will undertake operations of Huntlee LWC 2 under the following setting:

- Operation: 24 hours a day, 7 days per week.
- Material stored: recycled water – transported from the LWC site by an underground pipe network back to participating dwellings.
- Waste: wastewater screenings will be collected on the LWC site and disposed by way of an authorised waste disposal contractor in accordance with NSW waste disposal classifications and guidelines.

Very little sludge wasting will occur in the early operational stages of Huntlee LWC 2. When sludge wasting is needed, it will be drawn directly from a bioreactor to a tanker for offsite treatment and disposal using an authorised waste management contractor. In the later stages of the LWC (noting the facilities scalability) once the catchment population of the Huntlee New Town development increases, a sludge dewatering system will be installed and commissioned to convert the liquid sludge to a sludge cake. The cake will be transported via a conveyor to a suitable bin or skip. The cake will be sampled and classified for reuse applications. The bin will be collected and replaced on a weekly basis via a certified organic waste collection vehicle and taken to an organic waste management facility for processing and ultimate beneficial reuse such as landscaping. Grit and screening debris will be collected in a bin and disposed to authorised landfill. The storage and disposal of sludge wasting, sludge cake and grit and screen debris will be carried out in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (DECCW 2009) and the EPA Environmental Guidelines: Use and Disposal of Biosolids Products (2000)

During the operation of the Huntlee LWC 2 a number of chemicals will be used, as required with all sewage treatment plants. The chemical types and predicted volumes are provided in **Table 4**.

Table 4: Chemical Types and Predicted Volumes during Huntlee LWC2 Operation

Chemical	Function	Approx. Consumption (L/year)	Total Storage (L)
Alum	Phosphorous removal	10,000	1x3,000 and 1x4,500
Sulphuric Acid	Lower pH of Reverse Osmosis (RO) feed water	Nil	265
Antiscalant	Reduce fouling of RO membranes	800	265
Sodium Hypochlorite	Water disinfection and mbr membrane cleaning	8,000	1x3,000 and 1x4,500
Sodium Hydroxide	pH correction of mbr feed water and final water	20,000	1x3,000 and 1x4,500
Citric Acid	Mbr membrane cleaning	600	3,500
Sodium Metabisulphate (SMBS)	Dechlorination of RO feed water	1,000	265
RO cleaning chemicals	Cleaning	300	265

These chemicals and potentially hazardous substances will be used and stored according to manufacturers' directions and regulatory requirements including the Work Health and Safety Act 2011, AS 3780 - The storage and handling of corrosive substances and relevant guidelines.

Regarding public health, relatively few restrictions need to be placed on non-drinking water uses due to the high quality of the recycled water and resultant low risk for direct human contact. End use controls and onsite constraints can also be used to minimise both human

exposure to hazards and the impact on receiving environments, such as signage, use of buffer zones, and control of plumbing and distribution systems.

4.0 LWC2 Overview

Huntlee LWC 2 is a sewage treatment facility for Stage 1 of the Huntlee New Town development and will be an additional treatment plant to the existing Huntlee LWC 1. Huntlee LWC 2 will receive sewage from the reticulated sewage system within surrounding development and then produce recycled water for reticulation to lots within the development.

Huntlee LWC 2 will have permanent access from newly created roads within the subdivision and cover an area of approximately 7,800m². The treatment plant will be like that of Huntlee LWC 1, being fully enclosed for the housing of plant and equipment for the treatment process. It will provide 240 m² of treatment space and a roof height ranging from 3.5 – 6.1m across its width. A second separate building will be aligned with the treatment plant housing the treatment tanks, constructed of concrete slip form panels. This building is approximately 364 m² in area and 5 m in height. The site will also accommodate two large tanks to be used for storage of recycled water of 1.2 million litre capacity, approximately 5m high and 20m diameter. Further tanks will be sited to store chemicals required for operation of the facility. A hardstand area will be provided for vehicular access, delivery, landscaping and maintenance purposes.

4.1 Introduction

The Huntlee LWC 2 will utilise sewage from the Huntlee New Town to produce high quality water. The sewage will be treated through a multi-stage process. The processes that the Huntlee LWC 2 will use will meet the strict *Australian Guidelines for Water Recycling 2006 (AGWR)*. Wastewater is cleaned to the highest Australian standards, undergoing seven filtration and purification processes including Membrane Bioreactor (MBR) and Ultraviolet (UV) treatment. The seven processes are listed below:

- Wastewater Screening - Plastics and rubbish are taken out of the wastewater.
- Anaerobic Processing - After the wastewater is screened it enters the biological processing tank for anaerobic processing. Natural bugs break down the wastewater.
- Aerobic Air - Air is added to the wastewater, creating new bugs which continue the break down process.
- Chemicals Added - Four chemicals namely: Sodium Hydroxide, Sodium Hypochlorite, Aluminium.
- Sulphate and Acetic Acid - are added at different stages if required during processing.
- Membrane Fibres - Purified water is sucked through microscopic membranes that block out bugs - removing bacteria, pathogens, and all other impurities. The holes in the fibres are so tiny, bacteria and viruses are unable to penetrate and are forced out, further cleaning the recycled water.
- Ultraviolet - Water goes through an Ultraviolet purification process neutralising any remaining impurities.
- Chlorine - Chlorine is added to the water for the final purification process.

The final product is tertiary treated and disinfected recycled water plumbed into houses and public recreation areas as a third pipe for non-potable uses such as toilet flushing, irrigation, clothes, and car washing.

The intended biological capacity of Huntlee LWC 2 is approximately 1,000kL per day, although the facility has been designed to achieve this benchmark over time in line with uptake of property in the western area of the Huntlee New Town development.

Very little sludge wasting will occur in the operational stages of Huntlee LWC 2. When sludge wasting is needed, it will be drawn directly from a bioreactor to a tanker for offsite treatment and disposal using an authorised waste management contractor. In the later stages of the LWC (noting the facilities scalability) once the catchment population of the Huntlee New Town development increases, a sludge dewatering system will be installed and commissioned to convert the liquid sludge to a sludge cake. The cake will be transported via a conveyor to a suitable bin or skip. The cake will be sampled and classified for reuse applications. The bin will be collected and replaced on a weekly basis via a certified organic collection vehicle and taken to an organic waste management facility for processing and ultimate beneficial reuse such as landscaping. Grit and screening debris will be collected in a bin and disposed to authorised landfill. The storage and disposal of sludge wasting, sludge cake and grit and screen debris will be carried out in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (DECCW 2009) and the EPA Environmental Guidelines: Use and Disposal of Biosolids Products (2000).

The features of the site layout are similar to that of LWC 1. A Preliminary Concept Design Layout is contained in **Appendix B.**

4.2 Outline of Construction Works

The Huntlee LWC 2 will be located on part of Lot 695 DP 1263808 via the creation of a separate torrens title allotment. The site will be accessed from the new roadways proposed within the subdivision design as per MP10_0137-Mod 21.

Construction works will be supervised by a Huntlee Water team on behalf of Altogether Group. Works are scheduled as per the indicative program below.

- Start – December 2025.
- Finish – December 2027.

It is anticipated that construction, equipping and commissioning will take approximately 12 months to complete. The proposed activity will generally include the following stages and elements.

4.2.1 Site Preparation

- Installation of erosion and sedimentation controls across entire activity area.
- Production of a Construction Environmental Management Plan (CEMP).
- Utility location investigations.

4.2.2 Site Establishment

- Establishment of the compound and laydown area on part of the activity area.
- Installation of erosion and sedimentation controls across entire activity area/s.
- Minor topsoil / spoil removal (as required) noting that the activity site will be provided to Altogether as a site fit for the purpose of construction with vegetation removed and bulk earth works complete. The land will be generally contoured to the required bulk earthworks design.
- Temporary security fencing and signage.
- Temporary signage, and lighting.

4.2.3 Local Water Centre 2 Construction Works

The Huntlee LWC 2 construction works will include:

- Excavation and installation of under slab pipe work and conduits followed by traditional form, reinforcement and pouring of concrete floors and walls.
- Installation of concrete tanks. The concrete tanks will be hydraulically tested, and the building finished with architectural finishes. Steel storage tanks will be constructed on concrete ring beam foundations.
- Spoil from the construction of the Huntlee LWC 2 is expected to be minimal and will be managed in accordance with a CEMP for the activity. All spoil will likely be used for re-contouring of the land surrounding the building and facilities.
- Once the building and tanks are substantially complete, it will be equipped with mechanical, electrical and control equipment including pumps, mixers, inlet screens, odour control unit, membranes, UV disinfection and chemical dosing tanks.

4.2.4 Finishing Works and Commissioning

- Make good works at the interface with driveways and kerb (if required).
- Removal of all temporary works such as traffic control barriers, signage, and lighting.
- Testing, commissioning, and validation,
- De-commissioning of the on-site construction compound.

4.3 Construction Plant and Equipment

A range of plant and equipment would be used during construction. An indicative list is provided below.

- Crane(s).
- Grader.
- Front End Loader.
- Small tipping trucks.
- Rigid and articulated delivery trucks.
- Concrete trucks.
- Excavator
- Portable Generators
- Scaffolding
- Elevated Work Platform
- General construction and building tools.

4.4 Construction Workforce

It is anticipated that a small construction crew will undertake the works over an estimated 12-month period. Construction and machine operators will be inducted to the site and appraised of the environmental aspects of the work and applicable site safeguards.

4.5 Construction Hours

4.5.1 Standard Construction Hours

Generally, construction and all deliveries will be undertaken during the following standard hours.

- Monday to Friday 7am to 6pm.
- Saturdays 8am to 3pm.

No construction work or deliveries will occur on Sundays or Public Holidays

4.6 Construction Program

Construction works for the Huntlee LWC 2 are expected to take approximately 24 months. Works are anticipated to begin in December 2025 but may vary depending upon the rate of land sales and construction of the surrounding components of the Huntlee New Town Development.

Sources of materials for construction will be determined during further development of the LWC design.

4.7 Waste

Disposal, tracking and destination facilities of wastes will be recorded and undertaken in accordance with NSW EPA Waste Classification Guidelines.

4.8 Construction Environmental Management Plan

A CEMP will be prepared to ensure that all safeguards and management measures detailed in this REF are implemented, and that construction impacts on the locality are managed. The CEMP will contain (amongst other items) traffic management measures to reduce potential conflicts between pedestrian, local traffic, and the arrival, unloading and departure of construction and delivery vehicles.

4.9 Traffic Management

A traffic control plan will be prepared by a suitably qualified person as part of the CEMP, detailing construction movements and controls, prior to commencement of work on the site. Details within the CEMP are to ensure that compliance with AS 1742.3 Traffic Control at Worksites, WHS 2011 and *Roads Act 1993* occurs.

4.10 Utility Adjustments

Due to the location of the activity area, it is anticipated that installation of utilities will be required including:

- Sewerage connection point(s) at the property boundary in order to receive sewage from supply lines from surrounding development.
- Recycled water connection point(s) at the property boundary in order to reticulate recycled water from the site to surrounding development.
- Potable water supply connection.
- Appropriate phase electricity supply.
- Communication and security equipment.

4.11 Outline of Operation Works

The operation of Huntlee LWC 2 will be undertaken by Altogether Huntlee Water on the following basis.

- The facility will operate 24 hours a day, 7 days per week.
- The goods to be stored are recycled water and drinking water, which are transported by pipe system to the customers.
- Chemicals used for treatment and dosing will also be stored on site.
- Any wastewater screenings will be collected and disposed by way of an authorised waste disposal contractor.

Once operational the plant and equipment used in the facility will include the following.

- Screens.
- Pumps.
- Blowers.
- Mixers.
- Compressors.
- Chemical dosing systems.
- Tanks.
- Electrical cabinets.
- Instrumentation.
- Valves and pipe work.
- Back-up generator.

In the early stages the LWC will run at a high Solids Retention Time (SRT) meaning very little sludge wasting will occur. During this period, when sludge wasting is needed, it will be drawn directly from a bioreactor to a tanker for offsite treatment and disposal using an authorised waste management contractor. As the catchment population increases, the second stage plant will be placed into operation once again allowing the plant to run at a high SRT. In the later stages, once the catchment population of the Huntlee New Town increases, a sludge dewatering system will be installed and commissioned to convert the liquid sludge to a sludge cake. The cake will be transported via a conveyor to a suitable bin or skip. The cake will be sampled and classified for reuse applications. The bin will be collected and replaced on a weekly basis via a certified organic waste collection vehicle and taken to an organic waste management facility for processing and ultimate beneficial reuse such as landscaping. Grit and screening debris will be collected in a bin and disposed to authorised landfill.

In relation to management of recycled water it is noted that Altogether Huntlee Water will address each of the twelve (12) elements associated with recycled water in the AGWR and the 12 elements are identified below.

- Commitment to responsible use and management of recycled water.
- Assessment of the recycled water system.
- Preventive measures for recycled water management.
- Operational procedures and process control.

- Verification of recycled water quality and environmental performance.
- Management of incidents and emergencies.
- Operator, contractor and end user awareness and training.
- Community involvement.
- Validation, research and development.
- Documentation and reporting.
- Evaluation and audit.
- Review and continual improvement.

Recycled water will be managed in accordance with Altogether Huntlee Water's network operator's licence, issued under WICA, its recycled water quality management plan and the associated regular compliance audits by independent auditors under the WICA licensing regime.

5.0 Environmental Assessment

Impacts generated during the construction and operation phase of the activity (the LWC 2) may include the following.

- Air quality.
- Biodiversity.
- Noise.
- Water Quality.
- Soils and Contamination.
- Aboriginal and Other Heritage.
- Visual Amenity.
- Bushfire.
- Waste.
- Traffic and Access.
- Climate Change.
- Ecologically Sustainable Development (ESD).
- Cumulative Impacts.

Modification 21 to MP10_0137

On 10th October 2023 Modification 21 to the development consent MP_10_0137 for Huntlee New Town Stage 1 was granted (MP10_0137-Mod 21). The modification includes expansion of the Huntlee Stage 1 area including clearing and subdivision to create the site identified for Huntlee LWC 2.

MP10_0137-Mod 21 assessed the land on which LWC2 will be located on for Traffic, Roads and Infrastructure, Flooding and Stormwater, Biodiversity and other potential impacts. The details surrounding the assessment of these aspects and determination of the modification are contained in the Modification Documentation for MP10_0137-Mod 21 which is publicly available on the DPE Major Projects Portal.

Further to the modification assessments and report, potential environmental impacts specific to the activity at Huntlee LWC 2 are discussed below.

5.1 Air Quality and Odour

This section describes the potential Air Quality and Odour impacts and mitigation measures associated with the activity.

5.1.1 Existing Environment

The activity area is not located within an area that typically experiences poor air quality. The major air quality concerns associated with construction relate to dust generation from the cleared site. There are not any private dwellings within the vicinity of the activity area.

5.1.2 Construction Impacts

Construction of the proposed activity will involve minor ground disturbance and will have the potential to generate dust. Dust from the activities can be adequately minimised and managed using a suite of controls commonly used to manage dust on construction sites. Air

quality impacts associated with the emissions from vehicles and plant associated with the proposed activity are likely be minor, localised, and temporary. This will be influenced by the weather conditions at the time the activity is undertaken and the extent of activities being undertaken concurrently. A Construction Environmental Management Plan (CEMP) will be implemented for the site to mitigate the risk and impacts of dust during construction.

5.1.3 Operational Impacts

Design of Huntlee LWC 2 will be the same as that of Huntlee LWC 1 which has been operating for at least 5 years. It should be noted that there have been no complaints regarding odour from Huntlee LWC 1 since it commenced operation, nor from any other Altogether LWC operated within NSW.

In order to identify the potential for adverse odour emissions from Huntlee LWC 2, SLR conducted a series of odour intensity surveys, as part of an Odour Impact Assessment, to provide information on the current odour levels (intensity and characteristics) in the vicinity of Huntlee LWC 1. The Odour Impact Assessment is contained in **Appendix A**.

During operations, the main risk to local air quality would be odour emissions from the plant from the following sources.

- Odour Control Unity (OCU) stack.
- Membrane Tanks.
- Bioreactors.
- Pre- and Post- Anoxic Tanks.
- The membrane tanks, bioreactors and pre and post anoxic tanks are enclosed within the structure of the LWC building and pose little threat to the external environment. The OCU stack is the only externally vented plant that may impact external air quality.

Data obtained from the Odour Impact Assessment was used to infer the maximum extent of impacts at Huntlee LWC 2, and based on this, a qualitative risk assessment was completed.

Based on the maximum extent of the odour emissions detected in the vicinity of Huntlee LWC 1, the prevailing wind directions and the location of the future sensitive receptors, potential odour impacts from the operation of Huntlee LWC 2 are summarised as follows:

- “Slightly adverse” – that is, odour impacts are considered to be acceptable or tolerable at the future sensitive receptors within 100 m of the OCU Stack.

Note, for development projects, the overall odour effect is likely to be considered significant if it is *Moderately Adverse* or *Substantially Adverse*, while for *Slightly Adverse* or *Negligible* effects, the impact may be deemed acceptable or tolerable.

Based on the above, the Odour Impact Assessment concluded that whilst odours from the Huntlee LWC 2 may occasionally be detected up to approximately 100 m downwind of the site, it is unlikely that they would be for a duration or magnitude such that significant nuisance impacts would be experienced.

5.1.4 Safeguards and Management Measures

The following mitigation measures should be applied throughout the duration of works:

- All necessary precautions shall be taken to minimise impacts from dust during construction works and from construction vehicles.
- Disturbed areas would be stabilised once works are complete, or progressively where appropriate.

- Odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable.
- Loads of excavated material and loads transported to the site will be kept covered at all times during transportation and will remain covered until they are unloaded either for use at the work site, reused or disposal at an EPA licensed waste disposal facility.
- All work sites, general work areas and stockpiles will be closely monitored for dust generation and watered down (with clean water) or covered in the event of dry and/or windy conditions.
- Water carts for dust suppression will be used during adverse conditions (dry and windy) or if otherwise deemed appropriate where required.
- An Odour Management Plan (OMP) will be implemented and will outline the management structure and strategies for odour performance during the operation of the LWC.

5.2 Aboriginal Heritage

This section describes the potential Aboriginal heritage impacts and mitigation measures associated with the activity.

5.2.1 Existing Environment

A search was undertaken of the Aboriginal Heritage Information Management System (AHIMS) on 20 November 2023 to determine if there are any registered sites within the activity areas (and an approximate buffer of 50m from the centre of the activity area), the search yielded a result of 9 item/s inside the specified Lot 695 DP 1263808.

An Aboriginal Due Diligence Assessment was undertaken by Niche Environment and Heritage, as part of the MP10_0137-Mod 21 application. The Assessment identified isolated areas of significance in the form of potential archaeological deposit and a single site feature, all outside of the Huntlee LWC 2 site.

The Assessment also noted there is potential for further other aboriginal objects to be on the site given its location and proximity to waterways.

The Assessment recommended:

- Test excavations for the potential deposit site (outside of the Huntlee LWC 2 site).
- Management of aboriginal objects in accordance with Huntlee Aboriginal Cultural Heritage Management Plan (2019) (outside of the Huntlee LWC 2 site).

Further investigations were undertaken with respect to the Asset Protection Zone (APZ) surrounding the Huntlee LWC 2 site concluding that:

“No Aboriginal cultural heritage sites or objects were identified within the APZ area.”

The APZ is adjacent to the boundary of the Huntlee LWC 2 site.

5.2.2 Potential Impacts

Based upon the above information there is not expected to be any construction impacts on Aboriginal cultural heritage within the Huntlee LWC 2 site.

5.2.3 Safeguards and Management Measures

The following mitigation measures should be applied throughout the duration of works.

- If suspected Aboriginal objects are identified during construction the following procedures must be followed.
    - Immediately cease all activity at the location.
    - Ensure no further harm occurs, secure the area.
    - Notify Environment Protection Authority's Enviro Line on 131 555, and an archaeologist.
    - No further action to be undertaken until Heritage NSW provides written consent.
- It is recommended that the CEMP for the works include an unexpected finds protocol to be developed and implemented in the event that any potential heritage items are uncovered during excavation.
- If human remains are found during the works, then all works shall cease immediately. The area must be secured within an exclusion zone to prevent unauthorised access and the NSW Police and OEH must be informed as soon as possible.

5.3 Biodiversity

This section describes the potential biodiversity impacts and mitigation measures associated with the activity.

Biodiversity assessments undertaken as part of the MP10_0137-Mod 21 application investigated the additional clearing of Central Hunter Riparian Forest and potential impacts within the Huntlee New Town Stage 1 area. The Huntlee LWC 2 site has been cleared of vegetation and is suitable for development envisaged by Altogeher Group.

5.3.1 Existing Environment

A BioNet database search listed 6 threatened flora species and 9 threatened fauna species to occur within the 10x10km search area.

A Protected Matters Search was undertaken on the DAWE website dated 10 November 2023 to ascertain if any matters of national environmental significance protected by the EPBC Act had been identified as occurring in or relating to within 10 km of the development site Huntlee LWC 2 site.

The search returned 9 threatened ecological communities, 53 threatened species, and 15 migratory species within 10 km of the site. No National Heritage Places or World Heritage Properties were indicated. However, a Wetland of National Significance is located within the buffer area of the site.

MP10_0137-Mod 21 proposed to remove 0.34ha of Central Hunter Riparian Forest within the proposal area, further investigations were made to confirm the potential impact of the development. Watercourses investigated by MJD Environmental found these watercourses to be ephemeral and did not convey sufficient water to sustain a riparian community.

It is noted that the Huntlee LWC2 site has already been cleared and no further impact to biodiversity is expected as a result of the activity.

5.3.2 Potential Impacts

Due to the site already having been cleared under MP10_0137-Mod 21 there is not expected to be any construction or operation impacts associated with the activity. However, proposed mitigation measures are outlined in the following.

5.3.3 Proposed Mitigation Measures

The following mitigation measures are recommended to minimise impacts associated with biodiversity during construction:

- Weed management protocols to be put in place to ensure that invasive and priority weeds do not become established within disturbed areas of the site.
- All sedimentation or otherwise contaminated run-off resulting from disturbance from works is to be adequately contained in so far as is practicable.
- All machinery used on site is to be clean – i.e., tracks, vehicle tyres, buckets and attachments are to be visibly free of soil and plant material to minimise the risk of introduction and spread of weed propagules.
- All waste containing noxious weeds and seeds from the site and will be removed and disposed of so that the spread of weeds is minimised.
- When controlling weeds, refer to measures stipulated by the *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic, and bushland situations.*

5.3.4 Conclusion

The activity is unlikely to have a significant impact on any threatened species, populations, ecological communities, or migratory species in the locality. Mitigation measures will be incorporated into the CEMP for the site to ensure that the impact of the activity on the environment is minimised.

5.4 Bushfire Threat

This section describes the potential bushfire impacts and mitigation measures associated with the activity.

5.4.1 Existing Environment

The activity area sits within ‘Bushfire Prone Land (Non-EPI)’ in accordance with the NSW e-planning special viewer as illustrated in **Figure 2.** According to the NSW ePlanning Spatial Viewer, the activity area sits within the ‘Category 1’ Bushfire Prone Land, with ‘Vegetation Category 1’ being the most extreme.

Category Descriptions as detailed in *NSW Rural Fire Service Guide for Bushfire Mapping, Version 5B* (2015) are as follows;

Category 1

> *“Vegetation Category 1 is considered to be the highest risk for bush fire. It is represented as red on the bush fire prone land map and will be given a 100m buffer. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production. Vegetation Category 1 consists of:*
>
> *Areas of forest, woodlands, heaths (tall and short), forested wetlands and timber plantations.”*

Figure 2: Extract from Bushfire Prone Mapping – Huntlee LWC 2 Site

A bushfire threat assessment was undertaken by MJD Environmental in support of MP10-0137-MOD21. The key recommendations of this assessment are to be taken into account with regard to construction of the Huntlee LWC 2. Design considerations for the estate will take into account the recommendations of *Planning for Bushfire Protection 2019* (PBM).

Due to its location on the north-western boundary of the Huntlee New Town Stage 1 area the Huntlee LWC 2 is subject to a temporary 100m Asset Protection Zone buffer to the west and a variable APZ to 29m on the northern boundary.

5.4.2 Construction Impacts

The construction activities may involve 'hot works', meaning that there will be grinding, welding or other spark or flame generating activities associated with construction. Due to the activity area being located within the 'Category1' zones for bushfire prone land, safeguards will need to be implemented to avoid an increase in the probability of bushfire.

5.4.3 Operational Impacts

There is not expected to be any operational bushfire impacts associated with the activity.

5.4.4 Safeguards and Management Measures

The following mitigation measures are recommended during construction:

- Daily monitoring of local NSW Rural Fire Service Fire Danger Ratings and Meteorological conditions.
- No hot works during 'High' Fire Danger Rating or above.
- Fire extinguishers are to be available for use in emergencies.
- Bushfire risk management and Emergency Plan to be included in site inductions and toolbox talks.
- Future landscaping of the site must take into account requirements of the APZ such as the inclusion of perimeter lawns to enhance firebreak areas.
- Water stored by the LWC2 may be used to supplement supply during a fire emergency.

5.5 Soils and Contamination

This section describes the potential soil and contamination impacts and mitigation measures associated with the activity.

Soils

The activity area is mapped as Class 5 Acid Sulphate Soils on the NSW ePlanning Spatial Mapping tool. Class 5 indicates areas adjacent to or where acid sulphate soils are unlikely to occur.

MP10_0137-Mod 21 was supported by a bulk earthwork plan that outlined the levels of cut and/or fill proposed as part of the subdivision works including the creation of the Huntlee LWC 2 site. In approving MP10_0137-Mod 21 the DPE was satisfied that the concept earthworks and civil design would achieve a suitable final landform in accordance with the Huntlee New Town DCP.

Contamination

The activity area is not located within an area that contains known contaminants and the proposed activity itself is unlikely to create contamination.

A search of the Environmental Protection Agency (EPA) Contaminated Land Record database was completed on 10 November 2023 and identified three sites within the Cessnock LGA. The closest registered contaminated site to any of the activity areas within the LGA is located in the suburb of North Rothbury on Lot 2 DP813163. The site was contaminated as a result of operating a washery at the former Ayrefield Colliery causing environmental degradation from the generation of acid surface and groundwater from the coal washery spoil heaps. This contaminated site is 2.3 km SSE of the activity area. As the site is located a substantial distance from the activity area it can be concluded that this site will not impact the activity. An unexpected finds protocol will be incorporated into the construction environmental management plan (CEMP) to guide contractors, should potentially contaminated material be encountered during works.

5.5.1 Construction Impacts

Construction activities such as disturbance of cleared surface may increase the risk of erosion and sediment laden runoff, though such impacts will be minimized through the implementation of the safeguards and management measures detailed in this section. Construction activities may generate small amounts of dust from site preparation activities and vehicles movements during works.

5.5.2 Operational Impacts

There are no expected operational soil or contamination impacts associated with the activity.

5.5.3 Safeguards and Management Measures

In relation to soils the following measures are recommended and will be contained in the CEMP for construction works.

- Erosion potential would be limited by managing runoff fetches and velocities, with measures such as coir logs, booms and silt fences and curtains.
- Sediment and nutrient controls, prepared in accordance with the Landcom *Managing Urban Stormwater - Soils and Construction* (the Blue Book), will be implemented to reduce the impacts of erosion and sedimentation. Specific erosion and sediment controls are to be contained within the site CEMP. All erosion and sediment control measures will be established before physical activity begins. Control measures are to remain in place until all surfaces have been fully restored and stabilised.

- Sediment and erosion control devices will be inspected regularly, maintained to ensure effectiveness over the entire duration of the project, and cleaned out before 30% capacity is reached.
- Temporary stockpiles will have appropriate erosion control devices installed to control runoff and prevent sedimentation.

The following measures are recommended in the event that potentially contaminated soils or materials are uncovered during construction:

- An unexpected finds protocol shall be developed and implemented in the event that any potentially contaminated soils or materials are uncovered during excavations.
- Treatment, handling, and disposal methods for contamination, when encountered, will be done in accordance with EPA Guidelines.
- All potentially contaminated sand/soil excavated must be stockpiled in a secure area and be assessed and classified in accordance with the Waste Classification Guidelines (EPA, 2014) before being transported from the site for disposal at an appropriately licensed waste facility.
- No chemicals, fuels, and/or waste will be stored or collected for disposal within or adjacent to drainage lines or unsealed surfaces. Nevertheless a 'spill kit' will be always kept on site for potential chemical or fuel spills.

5.6 Heritage Matters

This section describes the potential non-Aboriginal heritage impacts and mitigation measures associated with the activity.

There are three non-Aboriginal heritage items within the proximity to the activity area. Branxton Railway station Group and The Collieries of South Maitland Coalfields Greta Coal Measures Group and Rothbury Riot items within 1 km of the activity area.

None of these items will be impacted construction or operation of the Huntlee LWC2 works.

5.6.1 Safeguards and Management Measures’

The following mitigation measures are recommended during construction:

- It is recommended that the CEMP for the works include an unexpected finds protocol to be developed and implemented in the event that any potential heritage items are uncovered during excavation.

5.7 Noise

This section describes the potential noise impacts and mitigation measures associated with the activity.

The closest sensitive receivers to the Huntlee LWC 2 will be approximately 50m from the activity area. Measures will be established to limit noise impacts however these private dwellings may be directly affected during construction works.

5.7.1 Construction Impacts

The primary source of construction noise will be from machinery and vehicles associated with the works. These impacts will be short term and would include associated traffic movements. Works will include the use of a standard range of plant and equipment.

Construction noise is assessed with reference to the NSW EPA Draft Construction Noise Guideline. Construction noise is unlikely to have an adverse impact on residential receivers for the following reasons:

- Construction will be temporary and would be undertaken during standard hours.
- Initial works will be undertaken before blocks are residential construction commences.
- The nature of the plant and equipment (relatively medium scale) that would be used during construction.
- There would be minimal use of high noise or vibration creating equipment.
- There will be minor increase to traffic during construction which once completed, will return to normal.

5.7.2 Operational Impacts

Noise generating operational components of the Huntlee LWC 2 will be:

- The blowers and compressors room.
- Recycled water pumps.
- Drinking water pumps.
- Back-up generator.

An Operational Noise Assessment from each of these elements were assessed for Huntlee LWC 1, with the same components being included in Huntlee LWC 2. Noise criteria is set out in the NSW Environmental Protection Authority (EPA) NSW Industrial Noise Policy (INP). Predicted noise levels from the proposed blowers and compressors room, recycled water pumps and potable water pumps indicate compliance with all criteria on all occasions at the closest identified noise sensitive receivers provided that a number of minor modifications to the building construction / treatment are implemented.

The following recommendations were made Huntlee LWC 1 and will be applied to Huntlee LWC 2 to improve performance of the building with respect to noise generation.

- Lining of ‘colorbond’ on the internal face of the plant room with appropriate air gap to accommodate minimum 50mm thick polyester or glass wool insulation of density 14kg/m3.
- Construction of a wall at least 1m above the exhaust at the eastern and northern face of the back-up generator platform. The wall is to be constructed of 75mm Hebel panel or masonry structure or modular wall system. The inside wall face is to include absorption such as polyester or glass wool acoustic insulation of density 14kg/m3 faced with perforated foil.

Given these building modifications are implemented acceptable levels of operational noise will be achieved for the operation of the Huntlee LWC 2.

5.7.3 Safeguards and Management Measures

The following mitigation measures, in line with industry best practice are recommended to minimise the impact of potential construction noise from the proposed activity on residential/sensitive receivers:

- All equipment used will comply with Australian Standard: AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites.
- Work and deliveries will only occur during the following times.

  - Monday to Friday 7am to 6pm.
  - Saturdays 8am to 3pm.
- Plant and equipment which is used intermittently will either be shut down in the intervening periods or throttled down to a minimum.
- Any portable equipment with the potential to create high levels of noise (e.g., generators) will only be selected for use if it incorporates effective noise control.
- All employees, contractors and sub-contractors will undergo an environmental site induction prior to commencing work on-site. The induction should include information covering relevant project specific noise issues, sensitive receivers, safeguards and behavioural practices to minimise noise impact from construction.
- Closely affected residents would be notified accordingly of the works being performed in close proximity and informed of the process for making a complaint.
- Any stationary equipment (e.g., generators) would be located as far as possible from residential receptors.
- Plant operators would be instructed to operate equipment in a manner that does not generate unnecessary noise.
- A noise complaint register would be maintained throughout construction. The register would record all complaints and details including:
  - Complainants contact details.
  - Source/type of noise causing disturbance.
  - Time and duration of noise causing disturbance.
  - Measures taken to address the complaint.
  - Complaints handling is to occur in a prompt and responsive manner.
  - Where there are complaints about noise activity they would be reviewed and actions implemented to minimise noise output and disruption to sensitive receptors.
- Provided the mitigation measures documented above are implemented there would be no significant noise and vibration impacts resulting from the proposed activity.

5.8 Pedestrian Access

This section describes the potential amenity, pedestrian and recreational usage impacts and mitigation measures associated with the activity.

Due to the nature and location of the Huntlee LWC 2 site, pedestrian access will be restricted at all times.

5.8.1 Construction Impacts

Along with the required fencing and traffic control measures, there would be various items of construction plant on site as well as temporary stockpiles materials in designated areas on site.

Appropriate safety precautions would be taken during the construction of the works, such as security fencing and construction barrier fencing and temporary traffic changes such as detours to ensure public and worker safety. It would be a requirement of the CEMP for the construction contractor to employ or contract persons to control vehicular and pedestrian movements on adjacent roads, as required to ensure safety.

5.8.2 Operational Impacts

There is not expected to be any operational impacts associated with the activity.

5.8.3 Safeguards and Management Measures

The following measures are recommended to manage amenity and pedestrian access.

- Work areas shall be bounded by fencing or barriers to prevent pedestrian access during construction.
- Safe, alternative access should be provided for pedestrians where required.

5.9 Socioeconomics

This section describes the potential socio-economic impacts and mitigation measures associated with the activity.

MP10-0137-MOD21 will increase the number of residential blocks in Huntlee New Town by an additional 355 residential lots, 26 commercial mixed-use lots, 1 infrastructure lot and 5.67Ha of public open space.

5.9.1 Construction Impacts

There would be short term construction impacts to the existing residents and businesses including the presence of machinery for the purposes of construction of Huntlee LWC 2 and associated traffic movements, changed traffic conditions and a corresponding short term visual impact.

Construction impacts are not expected to create any negative, long-term socio-economic issues. Minor visual impacts during construction will be confined to excavations, soil disturbance, road work activities and the presence of machinery and associated noise and workers' vehicles.

In general, the proposed activity will not result in any substantial negative social or economic impacts during construction.

5.9.2 Operational Impacts

Once construction is complete the activity will provide a positive economic benefit on community and local businesses by providing infrastructure to support the expanded residential subdivision, commercial and school site. Access to recycled water will enhance the opportunity to maintain outdoor spaces to the benefit of the benefit of the community.

Overall, the socio-economic impacts of the proposed activity are considered to be positive.

5.9.3 Safeguards and Management Measures

The following mitigation measures should be applied throughout the duration of the works:

- Construction works will take place in accordance with hours specified.
- Traffic, pedestrian, and cyclist arrangements will be established and maintained throughout the construction phase.

5.10 Traffic and Access

Initial construction of the Huntlee LWC 2 will take place prior to the establishment of surrounding residential lots. The site is located in the north-western corner of the Huntlee New Town Stage 1 development area.

5.10.1 Construction Impacts

The proposed activity would have negligible impacts on traffic and transport in the surrounding areas follows:

- The construction vehicle access routes will be from the existing street network.
- Vehicle movements associated with the activity area during construction will mostly consist of the delivery and operation of plant and equipment outlined in **Section 4.**
- Vehicle movements will occur at various stages throughout the construction period.

5.10.2 Operational Impacts

Based upon the operational traffic movements at Huntlee LWC 1 it can be stated that traffic movements to and from Huntlee LWC 2 will be low. Typically, once operational, medium rigid truck movements will be limited to chemical deliveries and the removal of solid waste bins, which is estimated to be two trucks per week. Operator / employees of Altogether will visit site using passenger and light vehicles up to three times per week.

It is unlikely any negative impacts to traffic and transport occur during the operational phase.

5.10.3 Safeguards and Management Measures

The following mitigation measures should be applied throughout the duration of the works:

- A traffic control plan shall be prepared as part of the CEMP, prior to commencement of work on the site detailing construction movements and controls.
- Work areas shall be bounded by fencing or barriers and appropriate signage to prevent pedestrian access during construction. Safe, alternative access should be provided for pedestrians where required.
- Where works would result in delays to traffic, where possible, they would be scheduled to occur outside of morning and afternoon peak traffic periods and the public would be notified in advance.
- Parking for construction workers would be accommodated within the construction footprint and existing cleared areas nearby.
- Where possible, all loading and unloading operations will be conducted within the internal construction zone to alleviate the need for lifting materials from the street.

5.11 Visual Amenity

This section describes the potential visual amenity impacts and mitigation measures associated with the activity.

The infrastructure to be constructed consists of two operational buildings, fully enclosed, housing plant and equipment for the treatment process, the treatment plant building will be 24m x 10m (240m² area) and roof height ranging from 3.5 – 6.1m across its width. The second separate building will be aligned with the treatment plant housing the treatment tanks being approximately 364m² and 5m in height.

The design of Huntlee LWC 2 will be detailed in a manner that is sympathetic to its location with the proposed urban form. Architectural finishes and treatments range from concrete and glass with aluminium trim to colour bond steel for roofs and tanks, to provide a robust look to the facility but with architectural detail to integrate the facility into a residential neighbourhood. The facility is intended to present as a community asset.

Setbacks will wrap around three sides of the development for bushfire management and a combination of hard and soft landscaping will be incorporated. An intensive area of planting

centred on a contoured garden mound on the eastern and southern boundaries will provide an effective screening of the development from future residential development. The plants will be selected to achieve the landscape objectives based on native species and with the intention to retain existing vegetation wherever possible.

The activity area is located on the northwestern boundary of the proposed residential subdivision and due to its location will have a lesser visual impact. The area will be landscaped to reduce visual impact and low fencing will be employed to deter entry.

5.11.1 Construction Impacts

Temporary visual impacts will occur due to the activity including:

- Temporary fencing and signage.
- Changes in traffic conditions.
- Machinery presence and movements (including deliveries).

5.11.2 Operational Impacts

Due to the scale and size of the works, the site will be well landscaped and designed to limit the visual impact of the development.

5.11.3 Safeguards and Management Measures

The following mitigation measures are recommended during construction:

- During construction works the site shall be kept in a clean and orderly manner to reduce the visual impact to site users.
- Installation of screening and temporary fencing will be conducted where appropriate.
- The proposed activity will be managed such that the development footprint is limited to the extent necessary to complete the scope of works.

5.12 Water Quality and Hydrology

This section describes the potential water quality, coastal processes and flooding impacts and mitigation measures associated with the activity.

The activity area is not located near any natural freshwater catchment, with stormwater and runoff from the site draining into the local stormwater system. It has been established that several drainage depressions occur to the south of the site, however these do not flow or sustain any riparian vegetation.

The activity does not require works by which the water table is likely to be lowered below 1m AHD.

5.12.1 Construction Impacts

The only potential construction impact would include soil erosion. Surface water across the activity area will be managed in accordance with Landcom's *Managing Urban Stormwater – Soils and Construction* (the Blue Book) to ensure any impacts to surface water are minimised.

5.12.2 Operational Impacts

There are unlikely to be any negative impacts to water quality or hydrology during the operational phase of the Huntlee LWC 2.

5.12.3 Safeguards and Management Measures

The following mitigation measures are recommended to minimise impacts associated with hydrology during construction at all activity areas:

- All erosion and sediment control measures will be established before physical activity begins. Control measures are to remain in place until all surfaces have been fully restored and stabilised. These structures would be removed once the site is stabilised.
- Sediment and nutrient controls, prepared in accordance with the Landcom *Managing Urban Stormwater - Soils and Construction* (the Blue Book), will be implemented to reduce the impacts of stormwater, erosion, and sedimentation on water quality.
- Works would be stopped if unsuitable weather conditions are predicted, such as during and after heavy rain.
- Temporary stockpiles will have appropriate erosion control devices installed to control runoff and prevent sedimentation.
- In the event that significant tracking of mud and soil occurs on adjacent roads, cleaning of the road will be undertaken as soon as practically possible.
- Water quality control measures are to be used to prevent any materials (e.g., concrete, grout, sediment etc.) entering drain inlets or waterways.

5.13 Waste

This section describes the potential waste impacts and mitigation measures associated with the activity.

5.13.1 Construction Impacts

Wastes will be generated during the construction phase including site commission and decommission. Expected waste streams include:

- Construction waste (spoil, concrete, and building materials).
- Waste oils and liquids from machinery.
- Domestic wastes generated by workers.

Waste minimisation will be practiced throughout construction by promotion of waste segregation and correct disposal. Waste generated from the proposed activity will be managed in accordance with the CEMP and resource management hierarchy principles of the *Waste Avoidance and Resource Recovery Act 2001*.

5.13.2 Operational Impacts

Any operational waste impacts associated with the activity area will be managed by the facility manager Altogether Group.

5.13.3 Safeguards and Management Measures

The following mitigation measures should be applied throughout the duration of the works:

- Waste that cannot be avoided, re-used, or recycled will be managed in accordance with the principles of the *Waste Avoidance and Resource Recovery Act 2001* and classified in accordance with the Waste Classification Guidelines and disposed of at appropriately licenced facilities.

- All waste generated during the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with the waste disposal safeguards.
- All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site.
- Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at an EPA licensed waste depot.
- In the unlikely event of a pollution incident, the relevant authorities will be notified in accordance with Clause 148 of the POEO Act and remedial actions undertaken. Environmental incident response and notification procedures will be detailed in the CEMP prior to the commencement of construction.
- The work site will be left clean and free of debris and other rubbish at the end of works.
- All hazardous wastes on site will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials.
- Treatment, handling, and disposal methods for contaminated soils, if encountered, will be done in accordance with NSW EPA Guidelines. Contaminated soils will be disposed of at an EPA licensed waste depot.
- All waste bins on site will have self-closing lids preventing waste from being airborne.

5.14 Climate Change and Hazards

This section describes the potential climate change and hazard impacts associated with the activity.

An increase in the global concentration of greenhouse gas has led to an increase in the earth's average surface temperature and has contributed to the phenomenon of 'climate change'. The State of the Climate 2020 (CSIRO and Bureau of Meteorology 2020) report confirms that Australia's climate has warmed on average by 1.44 ± 0.24 °C since national records began in 1910, leading to an increase in the frequency of extreme heat events.

Other findings from the report indicate that in the southeast of Australia there has been a decline of around 12 per cent in April to October rainfall since the late 1990s. There has been a decrease in streamflow at the majority of streamflow gauges across southern Australia since 1975. Rainfall and streamflow have increased across parts of northern Australia since the 1970s. There has been an increase in extreme fire weather, and in the length of the fire season, across large parts of the country since the 1950s, especially in southern Australia.

Oceans around Australia are acidifying and have warmed by around 1°C since 1910, contributing to longer and more frequent marine heatwaves. Sea levels are rising around Australia, including more frequent extremes, that are increasing the risk of inundation and damage to coastal infrastructure and communities.

The NSW and ACT Regional Climate Modelling (NARCliM) is a partnership between the NSW, ACT and South Australian governments and the Climate Change Research Centre at the University of NSW. NARCliM provides high resolution climate projections at a scale that supports local decision makers.

Based on long-term (1910–2011) observations, temperatures in the Hunter Region have been increasing since about 1960, with higher temperatures experienced in recent decades.

The region is projected to continue to warm during the near future (2020–2039) and far future (2060–2079), compared to recent years (1990–2009). The warming is projected to be on average about 0.7°C in the near future, increasing to about 2°C in the far future. The number of high temperature days is projected to increase in parts of the region, with fewer potential frost risk nights anticipated. The warming trend projected for the region is large compared to natural variability in temperature and is of a similar order to the rate of warming projected for other regions of NSW.

5.14.1 Safeguards and Mitigation Measures

With the implementation of management measures identified below there are not expected to be any significant impacts associated with climate change during construction.

- Recycled materials will be incorporated where possible.
- The energy efficiency and related carbon emissions will be considered in the selection of vehicle and plant equipment.
- No refuelling is recommended within the subject site. If, however, refuelling is required at the subject site, areas designated for the storage, refuelling and maintenance of plant are to be established where native vegetation has previously been cleared.
- Appropriate spill kits, advocated for use in association with fuels and chemicals are to be maintained on-site. These are to include spill booms and other methods aimed at the containment of fuels and chemicals spilled within the aquatic environment.
- No refuelling is recommended within the subject site. If, however, refuelling is required at the subject site, areas designated for the storage, refuelling and maintenance of plant are to be established where native vegetation has previously been cleared and at least 30 m from a waterway.
- During operation, routine inspections and maintenance would be carried out to ensure any issues are identified and appropriately managed. As such, there are not expected to be any significant impacts associated with climate change during operation.

5.15 Cumulative Impacts

This section describes the potential cumulative impacts and mitigation measures associated with the activity.

The impacts on the environment due to the construction of the proposed activity are considered to be minor. There will be a change in the type of vehicles entering the activity during construction namely construction and delivery vehicles and employee vehicles.

Cumulative impacts could occur if the construction of the proposed activity coincided with the construction of other projects particularly any that may be contemplated within adjacent land.

It is anticipated that potential adverse cumulative impacts would relate to the temporary increase in construction traffic and cumulative noise and air impacts. These impacts would be largely avoidable through the implementation of mitigation measures detailed in this REF.

The assessment within this REF indicates that the activity is not likely to have a significant effect on the environment. A range of environmental factors as listed in Clause 171 of the Environmental Planning and Assessment Regulation 2021 (as amended) and Commonwealth Matters of National Environmental Significance have been considered as contained.

Implementation of the mitigation measures and safeguards identified above will minimise the risk of any impact and therefore further reduce the significance of any effect of cumulative impacts.

5.16 Ecologically Sustainable Development (ESD)

This section describes the potential ESD aspects associated with the activity.

Ecologically Sustainable Development (ESD) is a primary objective of environmental protection in NSW, ESD is an objective of the EP&A Act under section 1.3, is defined under Section 1.4 of the EP&A Act and is a required assessment consideration under section 171 of the Environmental Planning and Assessment Regulation 2021. ESD has the same meaning it has in section 6(2) of the *Protection of the Environment Administration Act 1991* and requires environmental assessments to include the reasons justifying the carrying out of the proposed activity in the manner proposed, having regard to biophysical, economic and social considerations.

ESD is defined as:

"ecologically sustainable development requires the effective integration of social, economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs—

a. the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

b. inter-generational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

c. conservation of biological diversity and ecological integrity – namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

d. improved valuation, pricing and incentive mechanisms – namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The overall objectives of ESD are to use, conserve and enhance natural resources. This ensures that ecological processes are maintained, facilitating improved quality of life, now and into the future.

The proposed activity will be effectively managed to avoid significant and/or costly environmental impact or degradation. This REF has been developed to appropriately identify, avoid, mitigate and manage environmental risk in line with the principles and objectives of ESD including:

- The Precautionary Principle.
- Social Equity, Inter-Generational Equity.
- Conservation of Biological Diversity and Ecological Integrity.
- Improved Valuation and Pricing of Environmental Resources.

Each of these principles is explained below.

5.16.1 The Precautionary Principal

The precautionary principle, in summary, holds that where there are threats of serious or irreversible environmental damage, the lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. To this end, there has been careful evaluation undertaken in order to avoid where possible, serious or irreversible damage to the environment. In the circumstances where avoidance was not possible, appropriate mitigated measures have been developed.

5.16.2 Social Equity, Inter-generated Equality

Intergenerational equity is centred on the concept that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. There is a moral obligation to ensure that today's economic progress, which will benefit both current and future generations, is not offset by environmental deterioration.

The various consultation activities have ensured that the planning, design and environmental assessment phases of the activity have been transparent. The content of this REF (including appendices) has enabled an understanding of the potential implications of the activity and therefore identify the required management strategies and mitigation measures to ensure potential for impact is appropriately minimised.

5.16.3 Conservation of Biological Diversity and Ecological Integrity

The principle of conservation of biological diversity and ecological integrity holds that the conservation of biological diversity and ecological integrity should be a fundamental consideration for the proposed activity.

5.16.4 Improved Valuation and Pricing of Environmental Resources

The principle of improved valuation, pricing and incentive mechanisms deems that environmental factors should be included in the valuation of assets and services. The cost associated with using or impacting upon an environmental resource is seen as a cost incurred to protect that resource. Bases for evaluating costs relating to issues of biodiversity, noise, air quality, soil and water, traffic and transport, heritage and visual impacts have been considered in the preparation of the REF.

The approach taken in the REF acknowledges and accepts the financial costs associated with all the measures required for the activity to avoid, minimize, mitigate and manage potential environmental and social impacts for the proposed activity.

6.0 Conclusion

On the basis of available information from the existing Huntlee Water LWC 1 as well as other similar Altogether LWCs in NSW it is believed that the rezoning of the proposed LWC 2 site to SP2 Infrastructure to allow for it's construction and operation is worthy of support. The proposed LWC will also make a significant contribution to sustainability through the provision of recycled water back to the new residential areas of Huntlee.

Once the SP2 Infrastructure is in place an REF will be prepared for Huntlee LWC 2 and will be prepared in accordance with Sections 5.5 and 5.7 of the EP&A Act and Clause 171 of the EP&A Regulations 2021. The REF will document potential construction and operational impacts to the fullest extent possible.

Appendix A Odour Impact Assessment

Supporting information for a Planning Proposal to rezone to SP2

Altogether Group

Additional Local Water Centre at Huntlee

SLR Project No.: 630.030826

18 April 2024

Huntlee Local Water Centre Site 2

Odour Impact Risk Assessment

Altogether Group Pty Ltd

Prepared by:

SLR Consulting Australia

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SLR Project No.: 610.031586.00001

7 March 2024

Revision: v1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
v0.1	14 December 2023	J A Cox R Abrantes	K Lawrence	DRAFT
V1.0	7 March 2024	J A Cox	K Lawrence	J A Cox
	Click to enter a date.			
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Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Altogether Group Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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1.0 Introduction

Altogether Group Pty Ltd (the Proponent) currently owns and operates a Local Water Centre (LWC) located at the corner of Triton Boulevard and Neeves Lane in Huntlee (Huntlee LWC 1) and are proposing to construct and operate a second facility (Huntlee LWC 2) within Lot 695 DP 1263808 (the Site), approximately 1.5 km northwest of Huntlee LWC 1.

The Proponent also owns and operates a number of similar LWCs across NSW, all of which, including Huntlee LWC 1, have a Network Operator Licence under the *Water Industry Competition Act 2006*.

This report presents the outcomes of field odour intensity surveys completed in the vicinity of Huntlee LWC 1 and makes inferences from this data about the risk of adverse odour impacts in the vicinity of the proposed Huntlee LWC 2 (the Project).

2.0 Assessment Approach

Demonstration of compliance with the relevant NSW Environment Protection Authority (NSW EPA) odour impact assessment criterion (refer to **Section 5.5**) would require dispersion modelling to be completed using site-specific odour emissions. Dispersion modelling would require an extensive, long-term odour emissions monitoring program to enable assessment of potential odour impacts taking into account the inherent diurnal and seasonal variability in odour emissions.

Given the Proponent has demonstrated over several years that Huntlee LWC 1 (and multiple similar LWCs) are able to operate in close proximity to sensitive receptors (including residences) without adverse air quality impacts, and the Project is located less than 2 km from Huntlee LWC 1 (i.e., in the same airshed), in lieu of dispersion modelling, odour intensity surveys were completed in the vicinity of the existing Huntlee LWC 1 and from this, the maximum zone of impact at the Project site (refer to **Section 6.1**) has been estimated.

The results of the odour intensity surveys were used to complete a qualitative risk-based assessment of the impacts associated with the operation of the Project, to identify if the potential risk of adverse off-site air quality impacts (refer to **Section 6.2**).

The risk-based assessment methodology takes account of a range of impact descriptors, including the following:

- Nature of Impact: *does the impact result in an adverse or beneficial environment?*
- Sensitivity: *how sensitive is the receiving environment to the anticipated impacts?* This may be applied to the sensitivity of the environment in a regional context or specific receptor locations.
- Magnitude: *what is the anticipated scale of the impact?*

The integration of sensitivity with impact magnitude is used to derive the predicted significance of the change. See **Appendix A** for a full description of the risk assessment methodology.

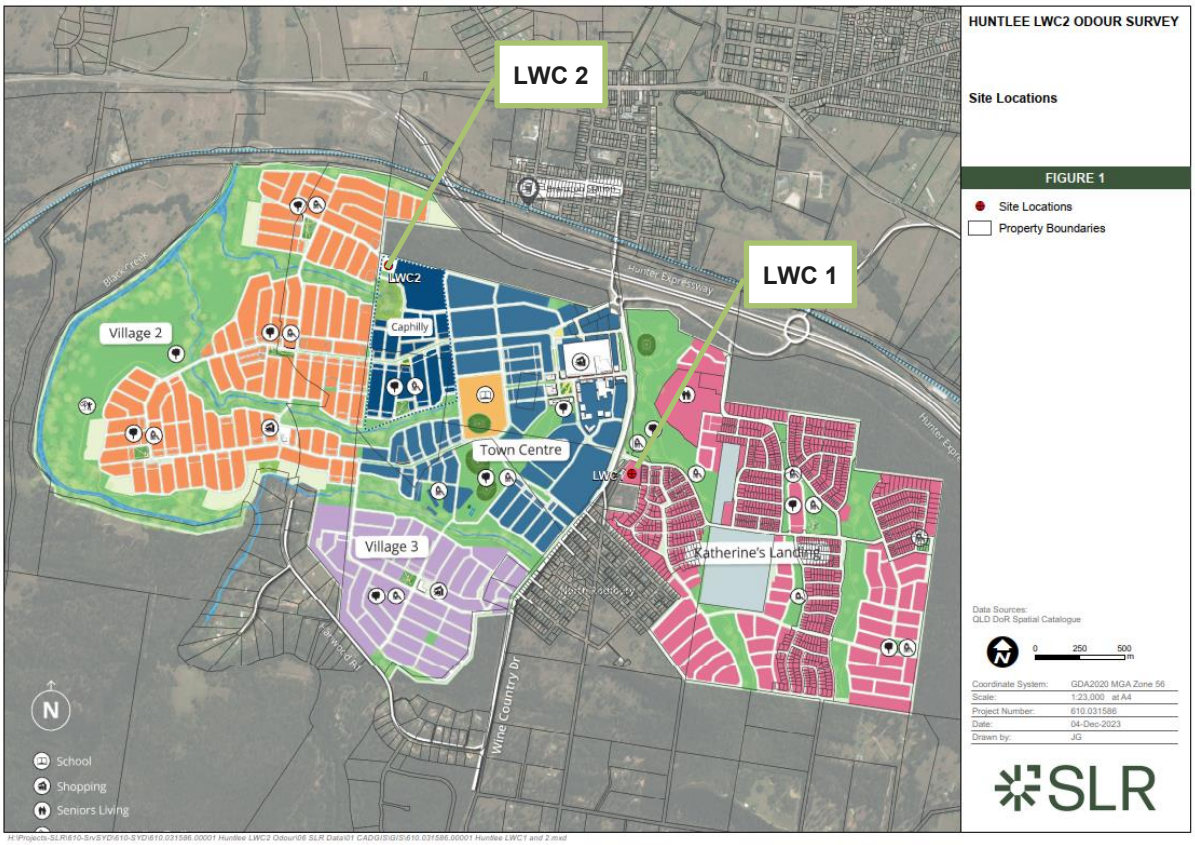
Given the nature and scale of the proposed operations, and the limited design data currently available, it is considered that this approach is appropriate to identify if the proposed activities have the potential to give rise to off-site air quality impacts.

3.0 Project Overview

3.1 Site Location

The Site is located within the Cessnock Council Local Government Area (LGA) and is situated approximately 1.5 km northwest of Huntlee LWC 1 (see **Figure 1)**.

Figure 1 Site Location

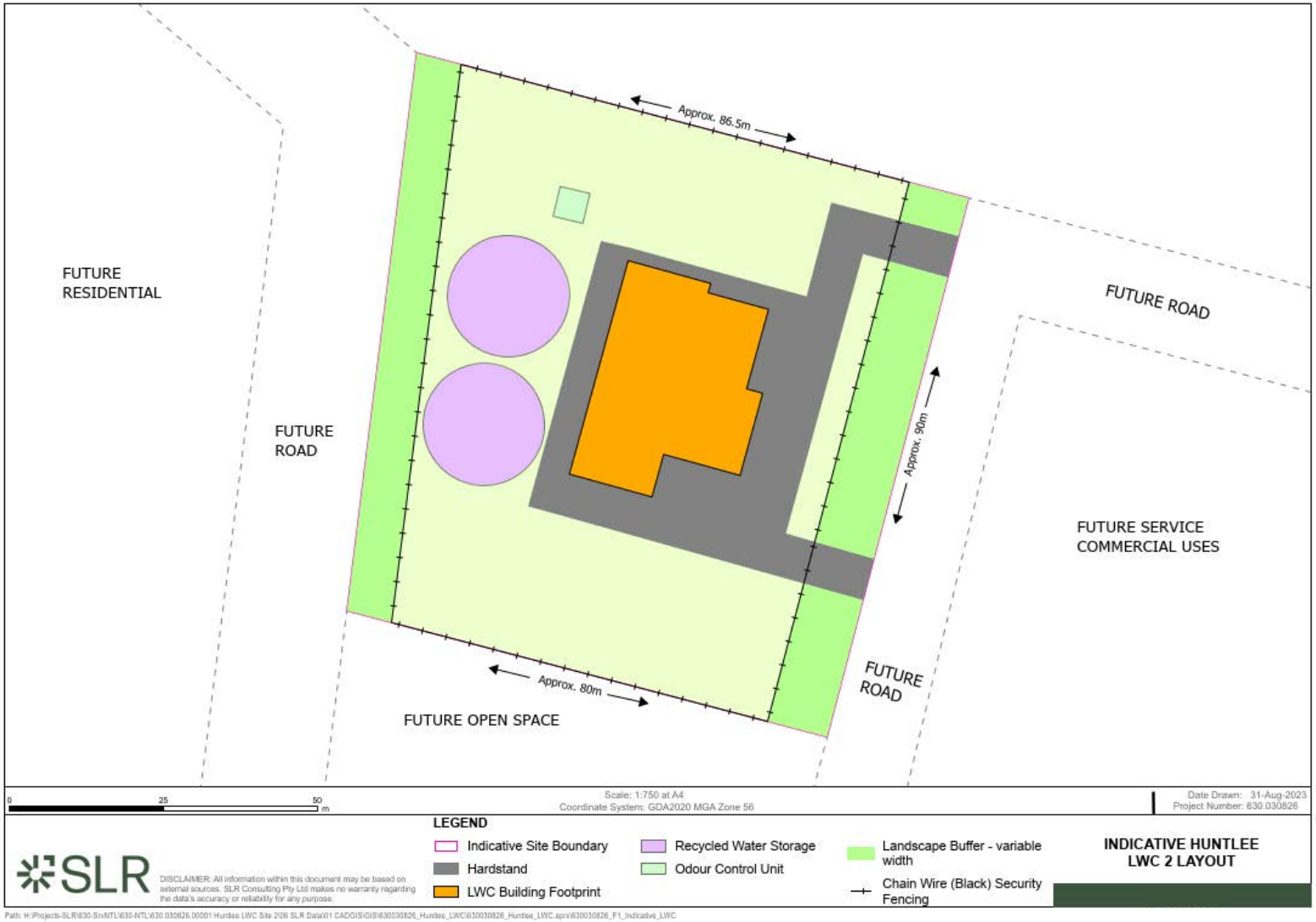


3.2 Proposed Design

It is understood that the Project will be of the same design as Huntlee LWC 1, and will utilise sewage from the future residential areas to produce high quality recycled water. The sewage is treated at the LWC to provide recycled water plumbed into houses for non-potable uses such as toilet flushing, washing machines, irrigation and car washing, thus reducing potable water demand. The facility is intended to operate 24 hours a day, 7 days per week, and would be housed in a low-scale, single level building within an open space setting.

The indicative layout of the Project is shown in **Figure 2**.

Figure 2 Indicative Project Layout



3.3 Identification of Odour Sources

The potential sources of odour at the proposed Huntlee LWC 2 are:

- Odour Control Unit (OCU) stack.
- Membrane tanks.
- Bioreactors.
- Tanks (pre- and post- anoxic).

Odorous emissions from the OCU stack are considered to pose the greatest risk of resulting in adverse off-site odour impacts, as the other sources are enclosed and only fugitive odour emissions emanate.

It is understood that the design of the Project will be the same as that of Huntlee LWC 1, which has been operating for at least five years. There have been no complaints regarding odour from Huntlee LWC 1 since it commenced operation, nor from any other Altogether LWCs operated within NSW.

As shown in **Figure 3**, the OCU stack at Huntlee LWC 1 is located approximately 50 m from the closest residences. The OCU stack at Huntlee LWC 2 will be at a similar distance to the nearest residences as Huntlee LWC 1.

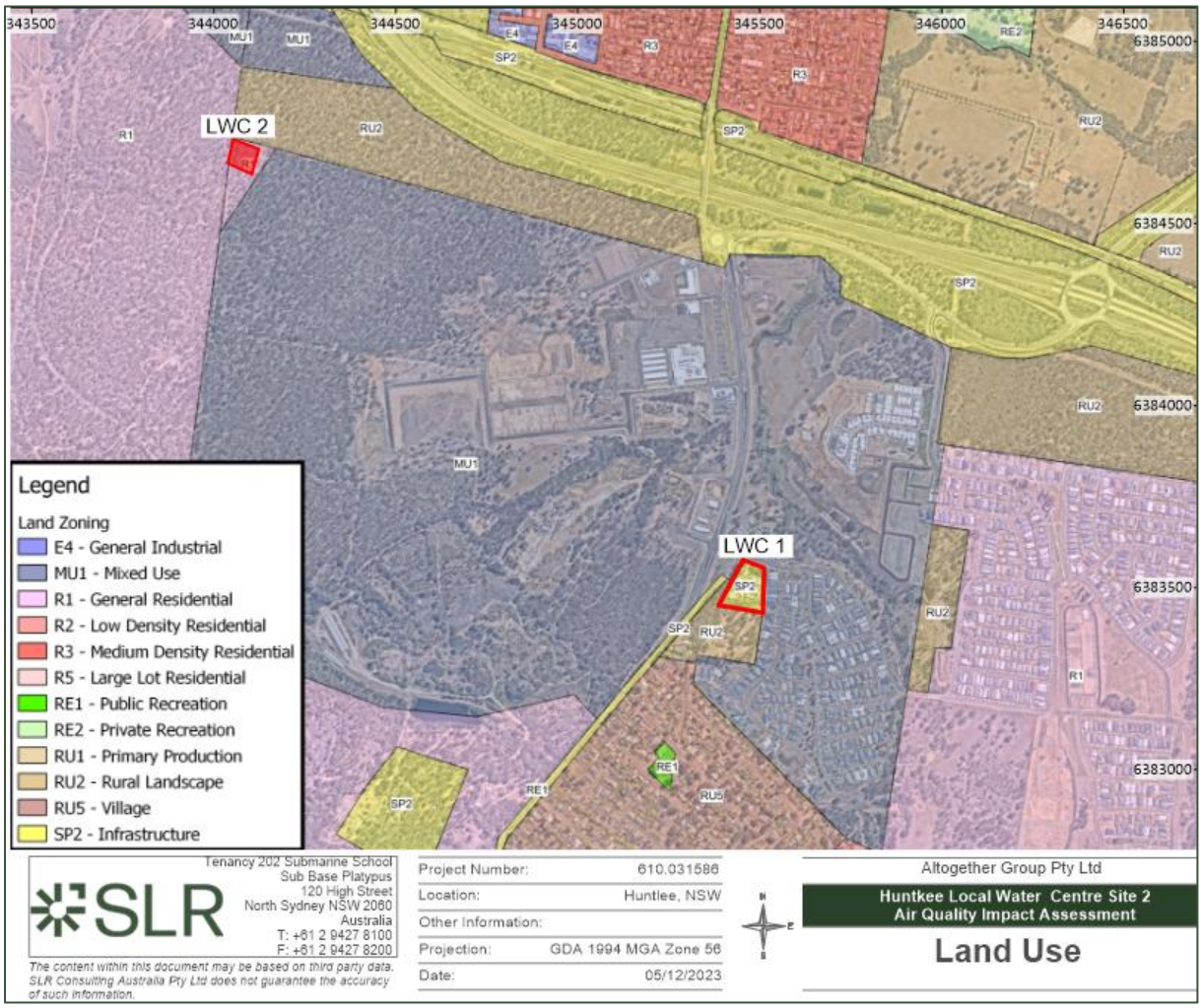
Figure 3 Huntlee LWC 1 - Distance of OCU Stack from Residences

4.0 Project Setting

4.1 Surrounding Land Use and Sensitive Receptors

As shown in **Figure 4**, the Site is located within General Residential (R1) zoned land and is surrounded by land zoned as Mixed Use (MU1) and Rural Landscape (RU1) by the Cessnock Local Environmental Plan 2011.

Figure 4 Surrounding Land Uses



As presented in **Figure 1,** the nearest sensitive receptors are future residences located to the north, west and southwest of the Site, and future commercial receptors to the east and southeast, and parkland to the south.

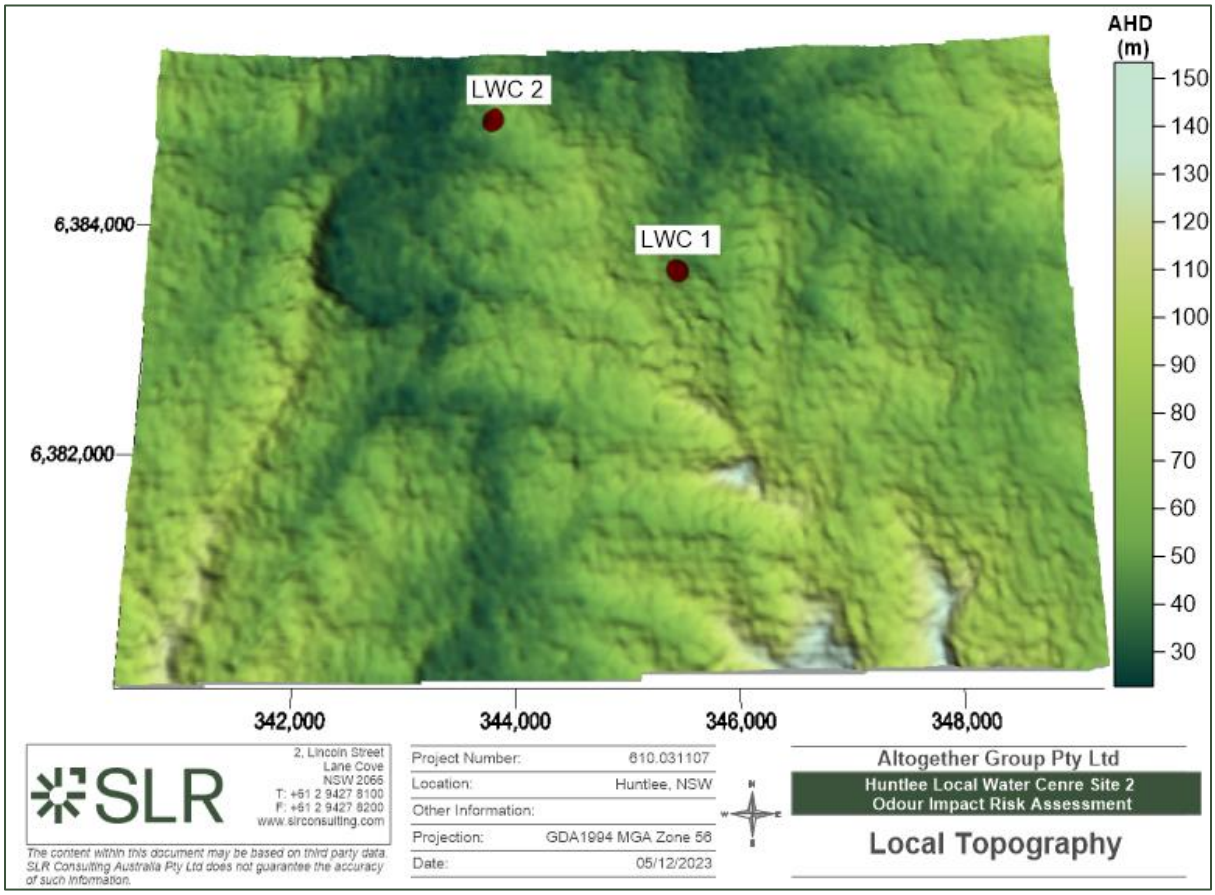
4.2 Local Topography

Local topography is important in air quality studies as local atmospheric dispersion can be influenced by night-time katabatic (downhill) drainage flows from elevated terrain or channelling effects in valleys or gullies.

The topography of the Site and near surrounds is relatively flat with an elevation of approximately 50 m Australian Height Datum (ADH). The terrain rises to approximately 80 m

AHD at a distance of approximately 1 km east of the Site. A three-dimensional representation of the area surrounding the Site is presented in **Figure 5**. The location of the LWC 1 is also indicated.

Figure 5 Regional Topography



4.3 Local Wind Conditions

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness (characterised by features such as the topography of the land and the presence of buildings, structures and trees) will also influence dispersion.

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station recording wind speed and wind direction data is the Maitland Airport Automatic Weather Station (AWS), located approximately 13 km southeast of the Site (Station ID 61428). For the purpose of this assessment, it is assumed that the wind conditions recorded at Maitland Airport AWS are representative of the wind conditions experienced at the Site. This was verified with the use of hand-held anemometer during the odour surveys.

Annual and seasonal wind roses for the years 2018 to 2022 compiled from data recorded by the Maitland Airport AWS are presented in **Figure 6**. Wind roses show the frequency of

occurrence of winds by direction and strength. The bars correspond to the 16 compass points (degrees from North). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e. northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus, it is possible to visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for particular periods during the day.

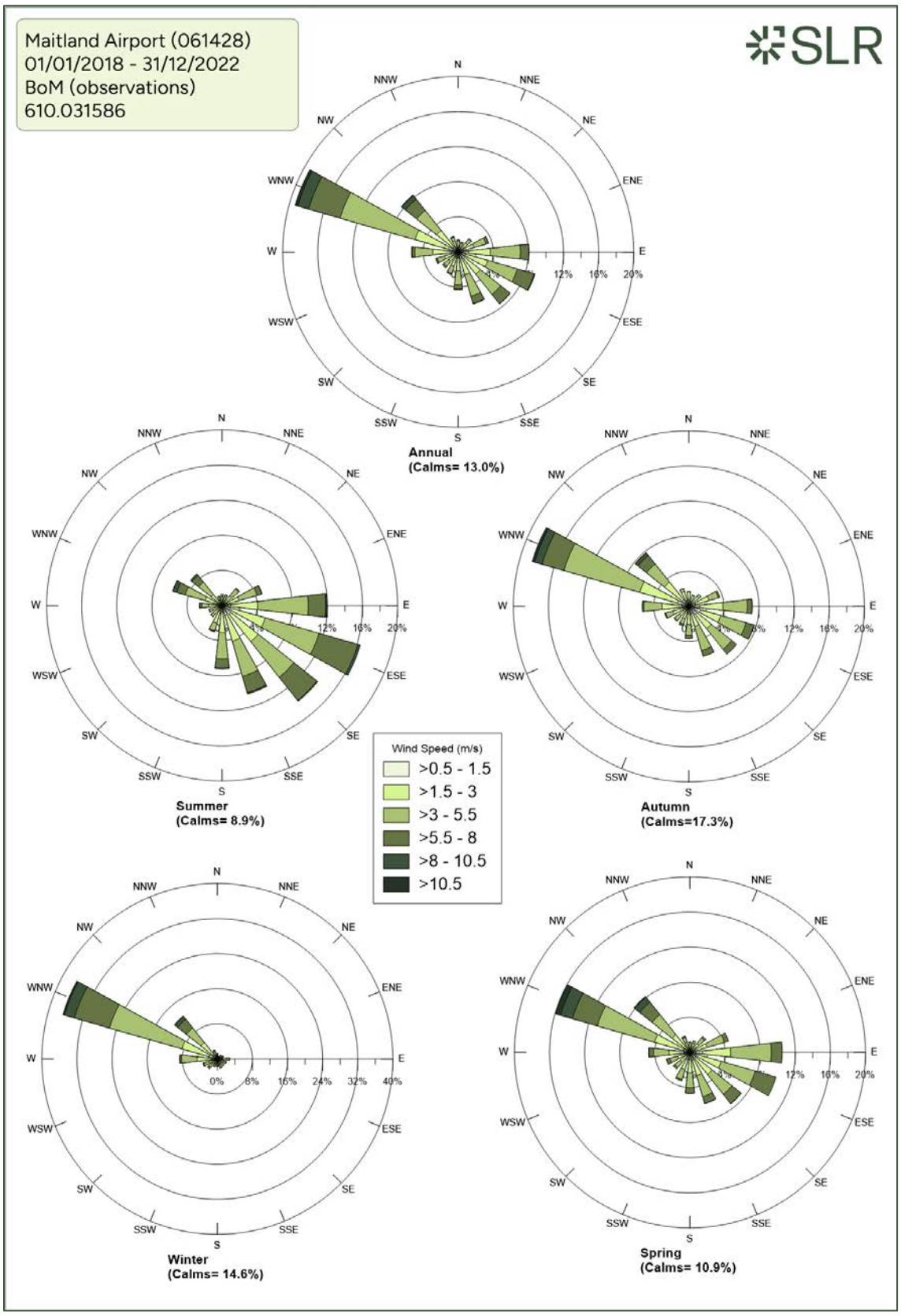
The annual wind rose for the years 2018 to 2022 (**Figure 6**) indicate that the majority of winds originated from west-northwest, northwest and eastern quadrant direction, with very few winds from north and south directions. The five-year frequency of calm wind conditions was recorded to be 13.0% for years 2018 and 2022.

The seasonal wind roses for the years 2018-2022 (**Figure 6**) indicate that:

- In summer, wind speeds ranged from calm to moderate winds (between 0.5 m/s and 8 m/s). The majority of winds originated from the eastern quadrants, primarily from the east-southeast. Calm wind conditions were recorded approximately 8.9% of the time during summer.
- In autumn, wind speeds ranged from calm to strong winds (between 0.5 m/s and 10.5 m/s). The majority of winds originated from the west-northwest, northwest and the eastern quadrant. Calm wind conditions were observed to occur approximately 17.3% of the time during autumn.
- In winter, wind speeds ranged from calm to strong winds (between 0.5 m/s and 10.5 m/s). The majority of winds originated from west-northwest direction, with very few winds from all other directions. Calm wind conditions were observed to occur approximately 14.6% of the time during winter.
- In spring, wind speeds ranged from calm to strong winds (between 0.5 m/s and 10.5 m/s). There are winds from each direction with more winds from west-northwest and east directions and less winds from north and south directions. Calm wind conditions were observed to occur approximately 10.9% of the time during spring.

Further discussion of the prevailing wind directions on the days the odour intensity surveys were completed, and the associated implications for the relative locations of the Project and residences, is presented in **Section 6.1**.

Figure 6 Annual and Seasonal Wind Roses for Maitland Airport AWS (2018 to 2022)



5.0 Air Quality Policy and Guidance

The following air quality policy and guidance documents have been referenced within this assessment and have been used to identify the relevant air quality criteria (see **Section 5.5**).

5.1 Protection of the Environment Operations (POEO) Act 1997

The POEO Act is a key piece of environment protection legislation administered by the NSW Department of Planning and Environment which enables the Government to establish instruments for setting environmental standards, goals, protocols and guidelines.

The following sections of the POEO Act are of general relevance to the Project:

- Section 124 and 125 of the POEO Act states that any plant located at a premise should be maintained in an efficient condition and operated in a proper and efficient manner to reduce the potential for air pollution.
- Section 126 of the POEO Act requires that materials (e.g., waste storage/disposal at the Project Site) are managed in a proper and efficient manner to prevent air pollution (e.g. odour).
- Section 128 of the POEO Act states:
    1. *The occupier of a premises must not carry out any activity or operate any plant in or on the premises in such a manner to cause or permit the emission at any point specified in or determined in accordance with the regulation of air impurities in excess of [the standard of concentration and/or the rate] prescribed by the regulations in respect of any such activity or any such plant.*
    2. *Where neither such a standard nor rate has been so prescribed, the occupier of any premises must carry on activity, or operate any plant, in or on the premises by such practicable means as may be necessary to prevent or minimise air pollution.*

5.2 NSW EPA Approved Methods for Modelling and Assessment

State air quality guidelines adopted by the NSW EPA are published in the NSW EPA's *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* publication (NSW EPA, 2022), hereafter referred as the Approved Methods.

The Approved Methods lists the statutory methods for modelling and assessing air pollutants (including odour) from stationary sources and specifies criteria which reflect the environmental outcomes adopted by the EPA. The Approved Methods are referred to in the *POEO (Clean Air) Regulation 2022* (NSW Parliament, 2022) for assessment of impacts of air pollutants.

The odour impact assessment criteria set out in the Approved Methods relevant to the Project are reproduced and discussed in **Section 5.5**.

It is noted that a sensitive receptor is defined in the Approved Methods as follows:

> "*A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area. An air quality impact assessment should also consider the location of known or likely future sensitive receptors.*"

5.3 Odour Technical Framework and Notes

The EPA's *Assessment and Management of Odour from Stationary Sources in NSW* (Technical Framework and Technical Notes) publications provide a policy framework for assessing and managing activities that emit odour and offer guidance on dealing with odour issues (NSW DEC, 2006a; NSW DEC, 2006b). These documents are required to be referenced when assessing any odour issue in NSW. These documents do not provide specific guidance for qualitative assessment of impacts associated with LWC operations.

5.4 NSW DoP Best Practice Odour Guideline

The draft NSW *Best Practice Odour Guideline - Sewerage systems including sewage treatment plants, water recycling facilities, sewage reticulation systems and sewer mining* (DoP NSW, 2010), hereafter referred to as the Odour Guideline, covers the management and assessment of odour emissions from sewerage system infrastructure in urban areas. It is noted that the Odour Guideline is a draft document that is not legally enforceable and is not official government policy, but provides best practice guidance for managing odour for existing, new and expanding sewage treatment plants.

The following guidance is provided in the DoP Odour Guideline for new sewage treatment plants (STPs). It is noted that as described in **Section 3.2**, the Project is not a traditional STP, however the guidance is still considered relevant:

- *The odour design criteria to be adopted during the engineering design stage for a new STP is the achievement of a 2 odour unit (ou) odour assessment criterion at the boundary of the Industrial Zone or the Rural or infrastructure (SP2) lot(s).*
- *Adoption of good operational practices such as an Odour Management Plan (OMP). An OMP would specify odour operational and management standards and practices and set out strategies and measures for minimising the risks of odour incidents and contingency actions for managing odour issues if they occur.*
- *Adoption of 'good neighbour' procedures and practices and encouraging staff to:*
  - *communicate and consult with neighbours,*
  - *seek opportunities to explain and interpret management practices,*
  - *provide detailed information about proposed activities or works in progress,*
  - *actively participate in community forums on issues relating to the sewerage system, its management and community values,*
  - *be responsive to neighbour's concerns and professionally conciliate any issues, and*
  - *cooperate with neighbours to resolve concerns.*

5.5 NSW EPA Odour Impact Assessment Criteria

Impacts from odorous air contaminants are often nuisance-related rather than health-related. Odour performance goals guide decisions on odour management but are generally not intended to achieve "no odour".

The detectability of an odour is a sensory property that refers to the theoretical minimum concentration that produces an olfactory response or sensation. This point is called the odour threshold and defines 1 ou. An odour goal of less than 1 ou would theoretically result in no odour impact being experienced.

In practice, the character of a particular odour can only be judged by the receiver's reaction to it, and preferably only compared to another odour under similar social and regional conditions. Based on the literature available, the level at which an odour is perceived to be a nuisance can range significantly depending on a combination of the following factors:

- *Odour Quality*: whether an odour results from a pure compound or from a mixture of compounds. Pure compounds tend to have a higher threshold (lower offensiveness) than a mixture of compounds.
- *Population sensitivity:* any given population contains individuals with a range of sensitivities to odour. The larger a population, the greater the number of sensitive individuals it may contain.
- *Background level:* whether a given odour source, because of its location, is likely to contribute to a cumulative odour impact. In areas with more closely located sources it may be necessary to apply a lower threshold to prevent offensive odour.
- *Public expectation:* whether a given community is tolerant of a particular type of odour and does not find it offensive, even at relatively high concentrations. For example, background agricultural odours may not be considered offensive, particularly in a rural or semi-rural environment, until a higher threshold is reached than for odours from a landfill facility.
- *Source characteristics:* whether the odour is emitted from a stack (point source) or from an area (diffuse source). Generally, the components of point source emissions can be identified and treated more easily than diffuse sources. Emissions from point sources can be more easily controlled using control equipment.
- *Health Effects:* whether a particular odour is likely to be associated with adverse health effects. In general, odours from agricultural activities are less likely to present a health risk than emissions from industrial facilities.

Experience gained through odour assessments from proposed and existing facilities in NSW indicates that an odour performance goal of 7 ou is likely to represent the level below which "offensive" odours should not occur (for an individual with a 'standard sensitivity' to odours). NSW DEC (now NSW EPA) recommends within the Odour Framework that, as a design goal, no individual be exposed to ambient odour levels of greater than 7 ou. This is expressed as the 99th percentile value, as a nose response time average (approximately one second).

Odour performance goals need to be designed to take into account the range in sensitivities to odours within the community and provide additional protection for individuals with a heightened response to odours. In NSW this is done using a statistical approach which depends on the size of the affected population. As the affected population size increases, the number of sensitive individuals is also likely to increase, which suggests that more stringent goals are necessary in these situations. In addition, the potential for cumulative odour impacts in relatively sparsely populated areas can be more easily defined and assessed than in highly populated urban areas. It is often not possible or practical to determine and assess the cumulative odour impacts of all odour sources that may impact on a receptor in an urban environment. Therefore, the proposed odour performance goals allow for population density, cumulative impacts, anticipated odour levels during adverse meteorological conditions and community expectations of amenity.

The equation used by NSW EPA to determine the appropriate impact assessment criteria for complex mixtures of odorous air pollutants, as specified in the Approved Methods, is expressed as follows:

Impact assessment criterion (ou) = (log10(population)-4.5)/-0.6

A summary of the impact assessment criteria given for various population densities, as drawn from the Approved Methods, is given in **Table 1**.

Table 1 NSW EPA Impact Assessment Criteria for Complex Mixtures of Odorous Air Pollutants

Population of Affected Community	Impact Assessment Criteria for Complex Mixtures of Odours (ou) (nose-response-time average, 99th percentile)
Urban area (> 2000)	2.0
~500	3.0
~125	4.0
~30	5.0
~10	6.0
Single residence (< 2)	7.0

Source: The Approved Methods (NSW EPA, 2022)

6.0 Odour Assessment

6.1 Odour Intensity Surveys

In order to identify the potential for adverse odour emissions from the Project, SLR conducted a series of odour intensity surveys to provide information on the current odour levels (intensity and characteristics) in the vicinity of Huntlee LWC 1. From these data, the potential odour impacts in the vicinity of the Project have been inferred. The following sections present details regarding the odour survey methodology adopted and the outcomes of the surveys.

6.1.1 Methodology

A series of ambient odour field surveys were performed by SLR staff on 24 and 27 November, and 4 December 2023. A total of 10 surveys were performed over the three survey dates. The purpose of these surveys was to investigate the odour impacts from the Huntlee LWC 1 by assessing the odour levels in the vicinity of the existing facility, and from this, identify the maximum zone of impact at the Project.

Maximum concentrations of odour generally tend to occur when meteorological conditions are least favourable for dispersion. These conditions are usually characterised by low winds speeds (ie calm conditions) and a stable atmosphere, which typically occur during the evenings and overnight (more so during winters).

Meteorological data from the Maitland AWS, operated by Bureau of Meteorology (BoM) was used to inform the locations of the surveys to ensure observations were being made downwind of Huntlee LWC 1. The times of the day were varied to capture varying meteorological conditions across the days of the odour surveys.

Publicly accessible areas upwind and downwind of LWC 1 were surveyed (ie public roads and footpaths) as well as areas within the boundary of LWC 1.

It is noted that an odour survey provides only a snapshot of the odour levels observed at the surveyed locations at the times of the observations, and that while the odour surveys performed provide an indication of the likely impact under a variety of meteorological conditions, they cannot capture all meteorological conditions nor all operational conditions at Huntlee LWC 1. However, these snapshots repeated over time can provide useful information in assessing odour impact risk.

6.1.2 Odour Assessor

SLR only utilises personnel to conduct odour patrol surveys who have successfully undertaken and comply with the odour assessor sensitivity screening protocol in accordance with *AS/NZS 4323.3:2001 Stationary source emissions – Part 3: Determination of odour concentration by dynamic olfactometry*.

The SLR odour assessor was near the middle of the sensitivity range of the AS4323.3:2001 criterion to qualify as an odour assessor.

6.1.3 Odour Intensity

During the odour surveys, SLR adopted the approach prescribed by the German VDI 3882:1992 Part 1 *Olfactometry – Determination of Odour Intensity* to record odour intensity.

This method was utilised during the odour surveys as there is currently no Australian Standard for rating odour intensity. The German VDI 3882 standard is the standard most commonly referred to by the NSW EPA.

To assess the odour intensity at each location for any discernible odours detected, the odour assessor classified their perception of the odour intensity in accordance with the scale outlined in **Table 2**.

Table 2 Summary of Odour Intensity Scale Utilised during the Field Odour Surveys

Perceived Odour Strength	Intensity Level Rating	Interpretation
Extremely Strong	6	In normal circumstances, this should be very rare in a field situation. For an offensive type of odour, the reaction would be to mitigate against further exposure. This remains the dominant thought and motivation until the exposure level is reduced. The odour cannot be tolerated.
Very Strong	5	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level is considered unpleasant/undesirable to the point that action to mitigate against further exposure is considered or taken.
Strong	4	The odour character is clearly recognisable. For an offensive type of odour, exposure to this level would be considered unpleasant/undesirable.
Distinct	3	The odour character is clearly recognisable. Note that this must still apply even if in a different context or situation - for example, not knowing or expecting what type of odour may be present. The odour is tolerable – even for an offensive odour.
Weak	2	The assessor is reasonably sure that odour is present but not 100% sure of the odour character. For example, at the “weak” level, suspended gravel dust is similar to a wet cement odour.
Very Weak	1	The odour character is not recognisable. There is probably some doubt whether the odour is actually present.
Not perceptible	0	No odour

6.1.4 Odour Survey Results

The odour survey results for all surveys conducted in the vicinity of Huntlee LWC 1 are shown in **Figure 7**. A summary of the survey dates, times and observations are presented in **Table 3**.

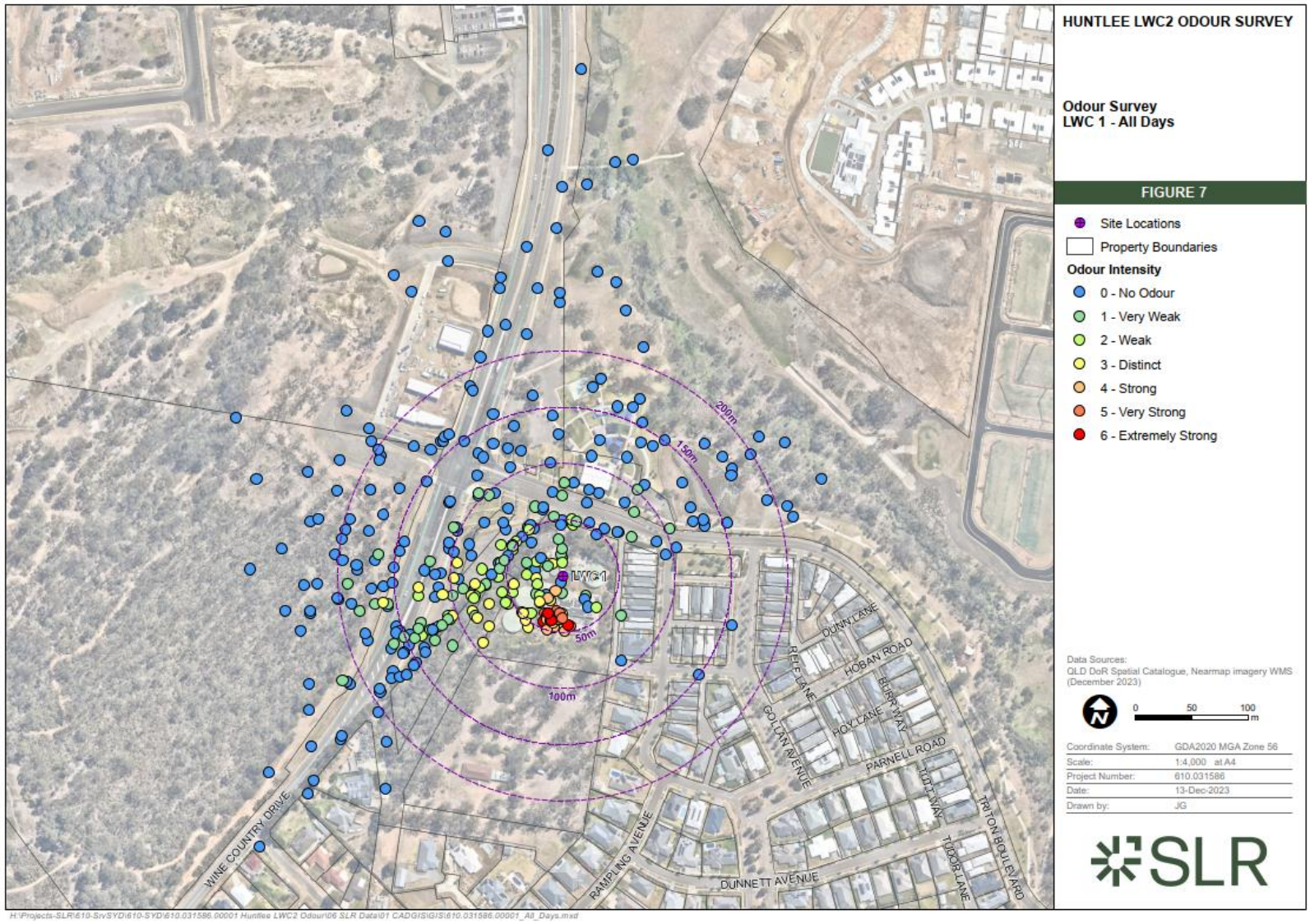
Results for individual survey days, showing all intensities captured during the respective surveys, are presented in **Appendix A**.

It is important to note that the odour intensity scale is not the same as the odour concentration (in ou) predicted by dispersion modelling. The relationship between odour intensity and odour concentration varies depending on the odour and source characteristics. It is also noted that the survey results are representative of the odour intensities observed at the time of the surveys and do not necessarily reflect the long-term trend in the behaviour of the odours experienced in the vicinity of Huntlee LWC 1, or the peak impacts that are output by a dispersion model.

Table 3 Summary of Odour Surveys

Survey Date	Survey Times	Prevailing Meteorological Conditions	Odour Characteristics
Friday 24 November 2023	S1: 7:00 am – 8.30 am S2: 8:35 am – 9:40 am S3: 10:40 am – 11:40 am	Hot & sunny (storms developing towards end of day) Winds blowing from south-southeast, east-northeast & east,	Faecal/toilet water (only when Odour Intensity was classed as *3 – Distinct* and above)
Monday 27 November 2023	S1: 9:40 am – 10.30 am S2: 10:30 am – 11:40 am S3: 12:15 pm – 1:00 pm	Hot & sunny Winds blowing predominantly from south	Faecal/toilet water (only when Odour Intensity was classed as *3 – Distinct* and above)
Monday 4 December 2023	S1: 1:00 pm – 2:00 pm S2: 2:15 pm – 3:00 pm S3: 3:35 pm – 4:35 pm S4: 4:45 pm – 6:00 pm	Hot & sunny Winds blowing from east and southeast	Faecal/toilet water (only when Odour Intensity was classed as *3 – Distinct* and above)

Whilst the odour intensities were recorded to be between Strong and Extremely Strong close to the OCU stack (within the site boundary of Huntlee LWC 1), typically they decreased to Weak/Very Weak within 10 m. The maximum distance downwind of the LWC-1 OCU stack that was classed as Strong, was approximately 30 m downwind. The Day 4 survey detected Distinct odours at a distance of approximately 150 m. Typically, the observations show that within 100 m the odour was Very Weak or none was detected.


HUNTLEE LWC2 ODOUR SURVEY
Odour Survey
LWC 1 - All Days
FIGURE 7
Site Locations
Property Boundaries
Odour Intensity
0 - No Odour
1 - Very Weak
2 - Weak
3 - Distinct
4 - Strong
5 - Very Strong
6 - Extremely Strong
LWC1
50m
100m
150m
200m
WINE COUNTRY DRIVE
RAMPLING AVENUE
DUNNETT AVENUE
GOLAN AVENUE
REES LANE
DUNN LANE
HOBAN ROAD
BERRY WAY
HOY LANE
PARNELL ROAD
TUDOR LANE
TRITON BOULEVARD
Data Sources:
QLD DoR Spatial Catalogue, Nearmap imagery WMS (December 2023)
0
50
100
m
Coordinate System: GDA2020 MGA Zone 56
Scale: 1:4,000 at A4
Project Number: 610.031586
Date: 13-Dec-2023
Drawn by: JG
SLR

6.1.5 Application of Odour Intensity Survey Results to the Project

In order to assess the potential impacts from the Project on the nearby sensitive receptors, the maximum extent of each odour intensity detected during the surveys completed in the vicinity of Huntlee LWC 1 have been overlaid on the Masterplan layout of Huntlee Site[1], at the approximate location of the proposed LWC 2 OCU stack, as shown in **Figure 8**.

Based on these data, the maximum extent of the odour intensity at the Project is considered to be as follows:

- Odour intensities of 'very weak' (I=1) up to approximately 200 m downwind of Huntlee LWC 1.
- Odour intensities of 'weak' (I=2) up to approximately 120 m downwind of Huntlee LWC 1.
- Odour intensities of 'distinct' (I=3) up to approximately 100 m downwind of Huntlee LWC 1.
- Odour intensities of 'strong' (I=4), 'very strong' (I=5), and 'strong' (I=6) within 50 m of the OCU stack (located inside Huntlee LWC 1 boundary).

Consideration of these distances in relation to the future sensitive receptors at LWC 2 is discussed further in the risk assessment presented at **Section 6.2**.

[1] Available from: https://huntlee.com.au/media/vbcpuzo5/18674_hun_fa_caphillylaunch_mediarollout_display_masterplan_hr.png


HUNTLEE LWC2 ODOUR SURVEY
Maximum Zone of Impact
FIGURE 8
Site Locations
Property Boundaries
Odour Intensity
1 - Very Weak
2 - Weak
3 - Distinct
4 - Strong
5 - Very Strong
6 - Extremely Strong
200m
150m
100m
50m
LWC2
Lot 146
DP1233016
Lot 11
DP1137569
Data Sources:
QLD DoR Spatial Catalogue
0 25 50 m
Coordinate System: GDA2020 MGA Zone 56
Scale: 1:2,500 at A4
Project Number: 610.031586
Date: 13-Dec-2023
Drawn by: JG
SLR

6.2 Risk Assessment

The potential for odour impacts from a source at sensitive receptors may be evaluated by addressing the Frequency, Intensity, Duration, Offensiveness and Location (FIDOL) factors, namely:

- Frequency – as detailed in **Section 4.1**, the nearest sensitive receptors are future residences located to the north, west and southwest of the Site, future commercial receptors to the east and southeast, and parkland to the south. When considering the annual data collected at Maitland Airport AWS (refer to **Figure 6**) and the location of the Project in relation to the future residences specifically (refer to **Figure 8**), the wind directions that have the most potential to carry odour from the Project towards the future residences are those blowing from between northeast and south. Winds from between west-southwest and northwest would have the most potential to carry odour towards the future commercial development.
    - As shown on **Figure 6**, the wind directions blowing towards the future residences (i.e., those blowing from between northeast and south) occur between 6% and 12% of the time, therefore there is a low likelihood that these receptors would potentially experience frequent odour impacts from the Site.
    - The future commercial receptors would potentially experience more frequent odour impacts, as the prevailing wind direction shown on **Figure 6** is winds from the west-northwest, which occur approximately 20% of the time.
- Intensity – as shown on **Figure 7**, distinct odour was detected up to 150 m downwind of the OCU stack at Huntlee LWC 1. As the Masterplan for the area (refer to Figure 1) shows proposed residential and commercial properties within 150 m, the intensity at could be medium intensity. Beyond 150 m any odours are likely to be of low intensity.
- Duration - Given that conducive wind directions occur less than 20% of the time at the future residences or commercial properties, the potential duration of any odour impacts is concluded to be low.
- Offensiveness – The odour surveys show that odour classed as distinct with a faecal characteristic were detected up to 100 m downwind of the OCU stack at Huntlee LWC 1.
- Location - the impact of location on the acceptability of odours from the Site has been accounted for by the surrounding receptors sensitivity classifications detailed in **Appendix A** (i.e., high).

Based on the FIDOL analysis above, and the results of the odour intensity surveys (refer to **Section 6.1.5**), a risk-based assessment of potential odour impacts was completed that considers three impact descriptors – nature of impact, receptor sensitivity and magnitude of impact (refer to **Appendix A** for details of the full methodology.

With respect to odour from the operation of the Project:

- **nature of impact**: does the impact result in an adverse, neutral or beneficial environment?
    - If released at sufficient magnitude, the nature of the emissions could cause a nuisance impact on the receiving environment and is therefore categorised as *adverse.*

- **receptor sensitivity**: how sensitive is the receiving environment to the anticipated impacts?
    - Based on the categories presented in **Table A1**, the identified sensitive receptors are predominantly residences, and as such, the sensitivity is categorised as *high.*
- **magnitude**: what is the anticipated scale of the impact?
    - As noted above, the maximum extent of the distinct odour emissions detected in the vicinity of Huntlee LWC 1 was 100 m downwind. The Project is assumed to be of the same design as Huntlee LWC 1, which as shown on **Figure 3**, has residences located approximately 50 m east of the OCU stack. The wind directions blowing towards these residences (refer to **Figure 6**),occur at a similar frequency for the proposed commercial receptors (approximately 20% of the time) and more frequently than would occur for the proposed residences at the Project (between 6% and 12% of the time) and there have been no complaints associated with the operation of Huntlee LWC 1. On this basis, the anticipated magnitude of odour impacts is categorised as follows:
        - Future residences/commercial properties within 100 m of the OCU Stack = Small (i.e. anticipated impacts would be tolerable)

Given the above, the potential impact of odour emissions from the Project are considered to be as detailed below. For development projects, the overall odour effect is likely to be considered significant if it is *Moderately Adverse* or *Substantially Adverse*, while for *Slightly Adverse* or *Negligible* effects, the impact may be deemed acceptable or tolerable.

- ***Slightly adverse*** (i.e. odour impacts are considered to be acceptable or tolerable) at the future sensitive receptors within 100 m of the OCU Stack (see **Table 4**).

Table 4 Impact Significance – Odour from Project Within 100 m of the OCU Stack

Magnitude (Potential Odour Exposure Impact)	Receptor Sensitivity		
	Low	Medium	High
Very Large	Moderately adverse	Substantially adverse	Substantially adverse
Large	Slightly adverse	Moderately adverse	Substantially adverse
Medium	Negligible	Slightly adverse	Moderately adverse
Small	Negligible	Negligible	**Slightly adverse**
Negligible	Negligible	Negligible	Negligible

7.0 Mitigation Measures

As outlined in **Section 6.2**, the risk of odour impacts at the nearest future sensitive receptors is anticipated to be slightly adverse. Therefore, assuming the design is to be the same as Huntlee LWC 1, additional physical controls are not deemed necessary.

However, to ensure that impacts on off-site air quality are minimised, it is recommended that good management procedures be adopted. It is recommended that the management procedures are documented in an Odour Management Plan (OMP). The OMP should outline the management structure and strategies for odour performance during the operation of the Project. It is recommended that the OMP be developed as per the recommendations of the Odour Guideline and that it includes procedures for complaints registering and investigation.

8.0 Conclusion

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Altogether Group Pty Ltd to complete an Odour Assessment for the proposed construction and operation of Huntlee LWC 2 within Lot 695 DP 1263808.

This assessment has been completed based on field odour intensity surveys to assess the intensity of odours in the vicinity of the existing Huntlee LWC 1, located approximately 1.5 km southeast of Huntlee LWC 2. These data were used to infer the maximum extent of impacts at Huntlee LWC 2, and based on this, a qualitative risk assessment was completed.

Based on the maximum extent of the odour emissions detected in the vicinity of Huntlee LWC 1, the prevailing wind directions and the location of the future sensitive receptors, potential odour impacts from the Project are summarised as follows:

- ***Slightly adverse*** (i.e. odour impacts are considered to be acceptable or tolerable) at the future sensitive receptors within 100 m of the OCU Stack (see **Table 4**).

For development projects, the overall odour effect is likely to be considered significant if it is *Moderately Adverse* or *Substantially Adverse*, while for *Slightly Adverse* or *Negligible* effects, the impact may be deemed acceptable or tolerable.

Based on the above, SLR concludes that whilst odours from the Project Site may occasionally be detected up to a distance of approximately 100 m downwind of the Project, it is unlikely that they would be for a duration or magnitude such that significant nuisance impacts would be experienced.

9.0 References

DoP NSW. (2010). NSW Best Practice Odour Guideline.

NSW DEC. (2006a). *Technical Framework - Assessment and management of odour from stationary sources in NSW.* Sydney: NSW Department of Environment and Conservation.

NSW DEC. (2006b). *Technical Notes - Assessment and management of odour from stationary sources in NSW.* Sydney: NSW Department of Environment and Conservation.

NSW EPA. (2022, August). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.*

NSW Parliament. (2022, December). Protection of the Environment Operations (Clean Air) Regulation 2022.

10.0 Feedback

At SLR, we are committed to delivering professional quality service to our clients. We are constantly looking for ways to improve the quality of our deliverables and our service to our clients. Client feedback is a valuable tool in helping us prioritise services and resources according to our client needs.

To achieve this, your feedback on the team's performance, deliverables and service are valuable and SLR welcome all feedback via https://www.slrconsulting.com/en/feedback. We recognise the value of your time and we will make a $10 donation to our 2023 Charity Partner - Lifeline, for every completed form.

Appendix A Odour Risk Assessment Methodology

Huntlee Local Water Centre Site 2

Odour Impact Risk Assessment

Altogether Group Pty Ltd

SLR Project No.: 610.031586.00001

7 March 2024

ODOUR RISK ASSESSMENT METHODOLOGY

Nature of Impact

Predicted impacts may be described in terms of the overall effect upon the environment:

- **Beneficial:** the predicted impact will cause a beneficial effect on the receiving environment.
- **Neutral:** the predicted impact will cause neither a beneficial nor adverse effect.
- **Adverse:** the predicted impact will cause an adverse effect on the receiving environment.

Receptor Sensitivity

Sensitivity may vary with the anticipated impact or effect. A receptor may be determined to have varying sensitivity to different environmental changes, for example, a high sensitivity to changes in air quality, but low sensitivity to noise impacts. Sensitivity may also be derived from statutory designation which is designed to protect the receptor from such impacts.

Sensitivity terminology may vary depending upon the environmental effect, but generally this may be described in accordance with the following broad categories - Very high, High, Medium, and Low.

Table A1 outlines the methodology used in this study to define the sensitivity of receptors to air quality impacts.

Table A1 Receptor Sensitivity to Odours

Sensitivity	Criteria
High	Surrounding land where: • users can reasonably expect enjoyment of a high level of amenity; and • people would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples may include residential dwellings, hospitals, schools/education and tourist/cultural.
Medium	Surrounding land where: • users would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home; or • people wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial/retail premises and playing/recreation fields.
Low	Surrounding land where: • the enjoyment of amenity would not reasonably be expected; or • there is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial use, farms, footpaths and roads.

Magnitude

Magnitude describes the anticipated scale of the anticipated environmental change in terms of how that impact may cause a change to baseline conditions. Magnitude may be described quantitatively or qualitatively. Where an impact is defined by qualitative assessment, suitable justification is provided in the text.

Table A2 Magnitude of Impacts

Magnitude	Description
Very Large	Impact is predicted to cause significant consequences on the receiving environment (may be adverse or beneficial)
Large	Impact is predicted to possibly cause statutory objectives/standards to be exceeded (may be adverse)
Medium	Predicted impact may be tolerated for most of the days, but maybe intolerable for some days.
Small	Predicted impact may be tolerated.
Negligible	Impact is predicted to cause no significant consequences.

Significance

The risk-based matrix provided below illustrates how the definition of the sensitivity and magnitude interact to produce impact significance.

Table A3 Impact Significance Matrix

Potential Odour Exposure Impact	Receptor Sensitivity		
	Low	Medium	High
Very Large	Moderately adverse	Substantially adverse	Substantially adverse
Large	Slightly adverse	Moderately adverse	Substantially adverse
Medium	Negligible	Slightly adverse	Moderately adverse
Small	Negligible	Negligible	Slightly adverse
Negligible	Negligible	Negligible	Negligible

Where the overall effect is greater than “slight adverse”, the effect is likely to be considered significant. Note that this is a binary judgement: either it is “significant”, or it is “not significant”. Concluding that an effect is significant should not mean, of itself, that a development proposal is unacceptable, and the planning application should be refused; rather, it should mean that careful consideration needs to be given to the consequences, scope for securing further mitigation, and the balance with any wider environmental, social and economic benefits that the proposal would bring.

Appendix B Daily Odour Survey Plots

Huntlee Local Water Centre Site 2

Odour Impact Risk Assessment

Altogether Group Pty Ltd

SLR Project No.: 610.031586.00001

7 March 2024

Figure B-1 Odour Survey Results Day 1 (24 November 2023)

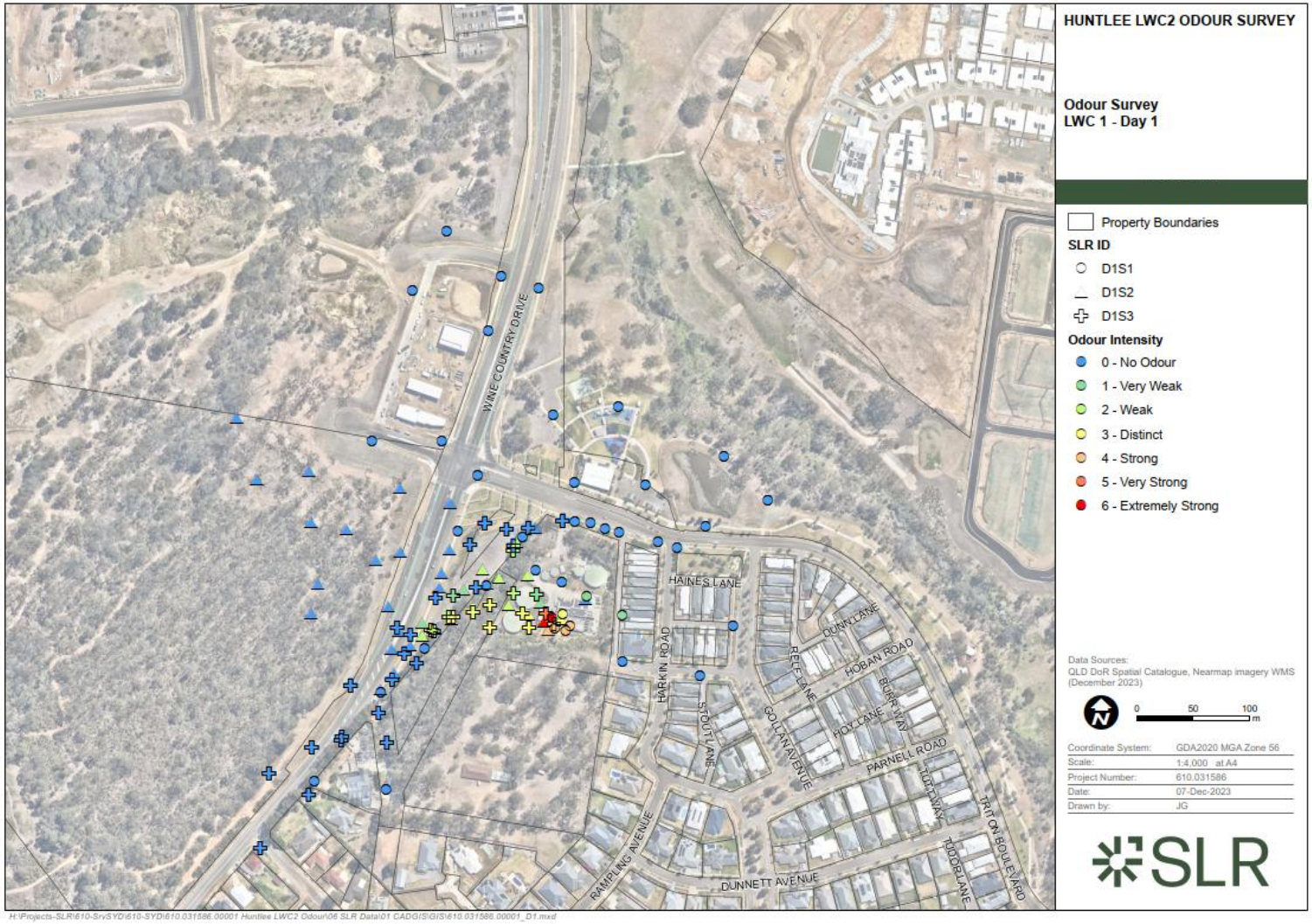


Figure B-2 Odour Survey Results Day 2 (27 November 2023)

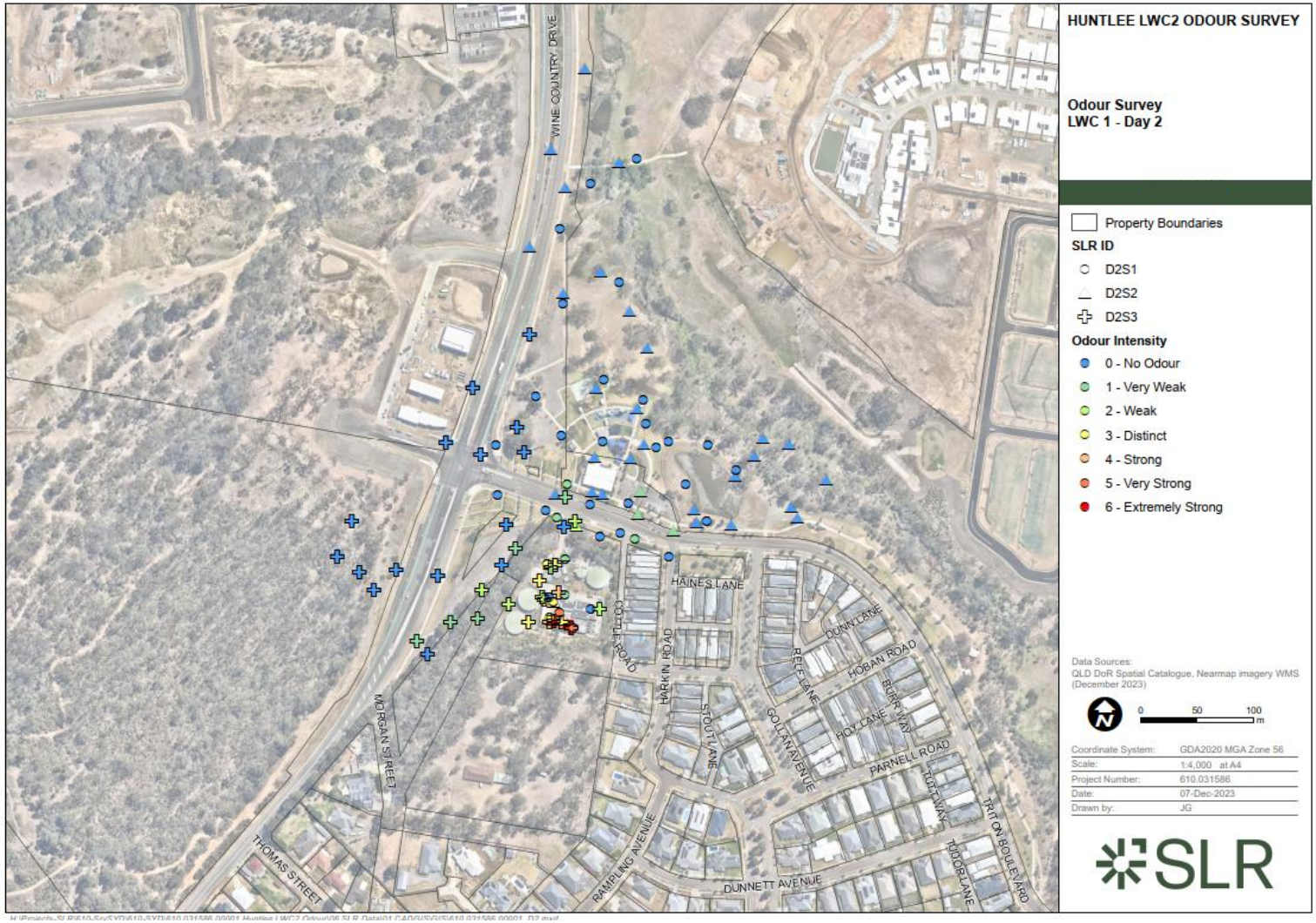
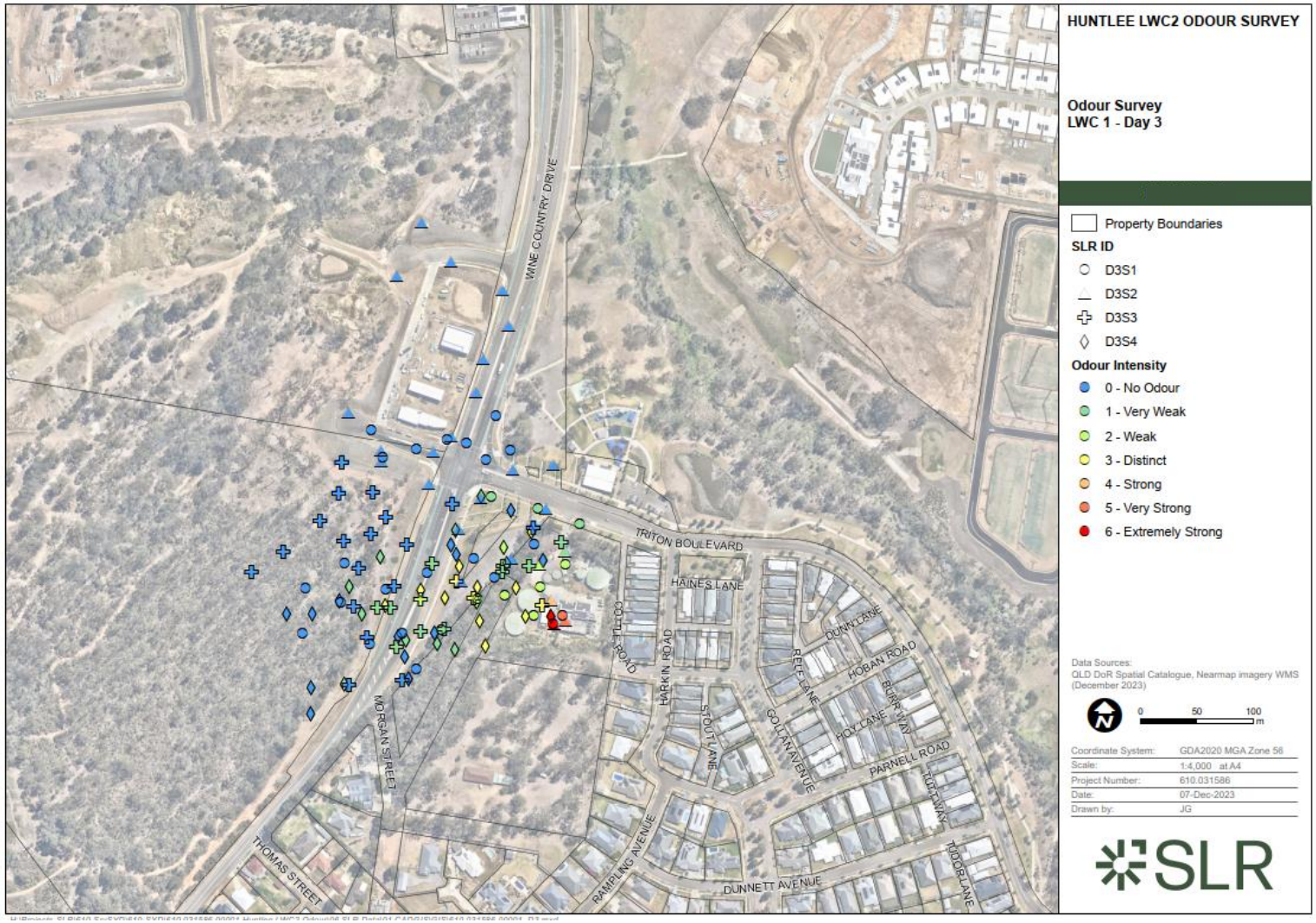
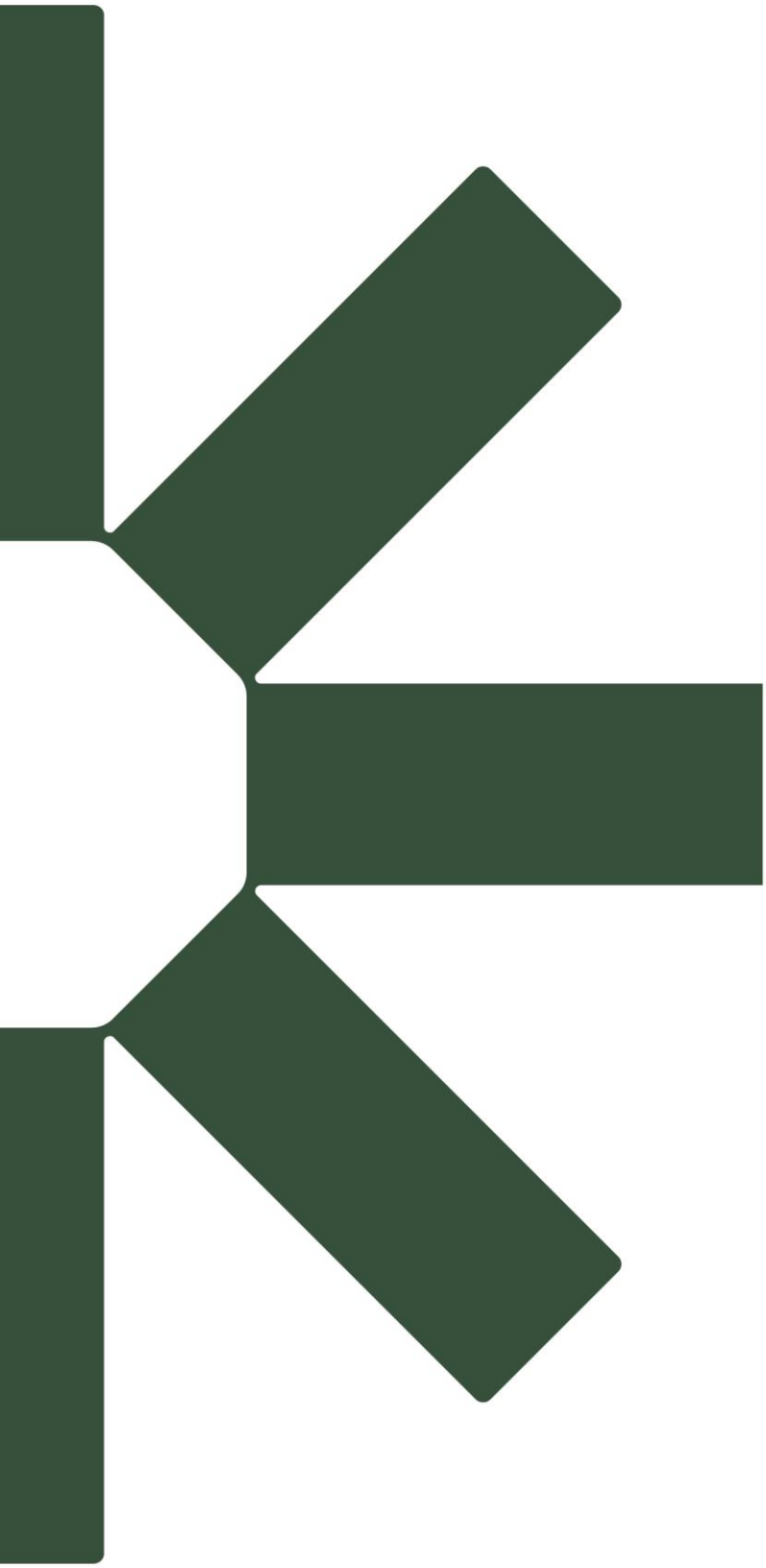


Figure B-3 Odour Survey Results Day 3 (4 December 2023)





Making Sustainability Happen

Appendix B Indicative Concept Plan for Huntlee LWC 2 site

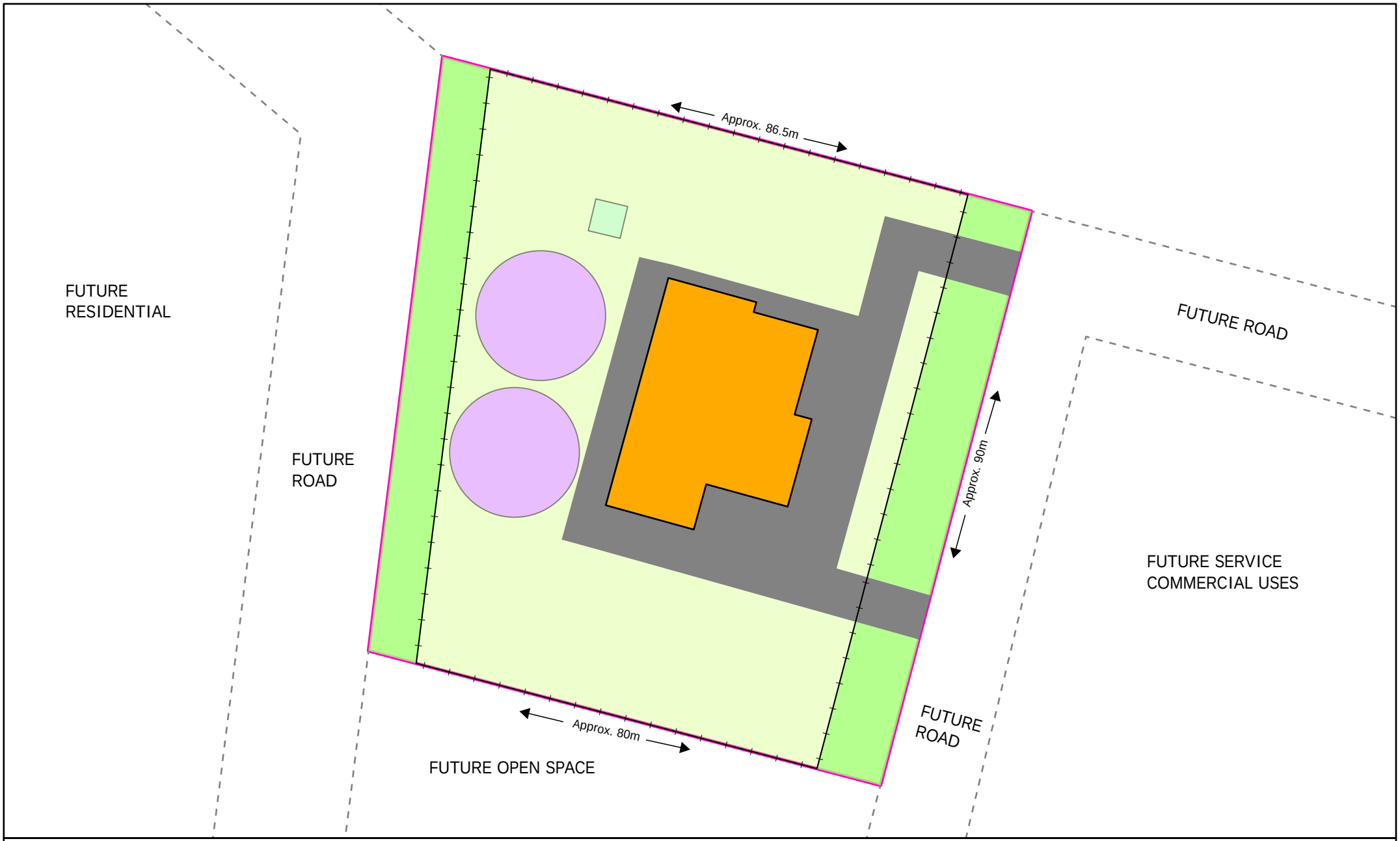
Supporting information for a Planning Proposal to rezone to SP2

Altogether Group

Additional Local Water Centre at Huntlee

SLR Project No.: 630.030826

18 April 2024



0 25 50 m

Scale: 1:750 at A4
Coordinate System: GDA2020 MGA Zone 56

Date Drawn: 31-Aug-2023
Project Number: 630.030826

LEGEND

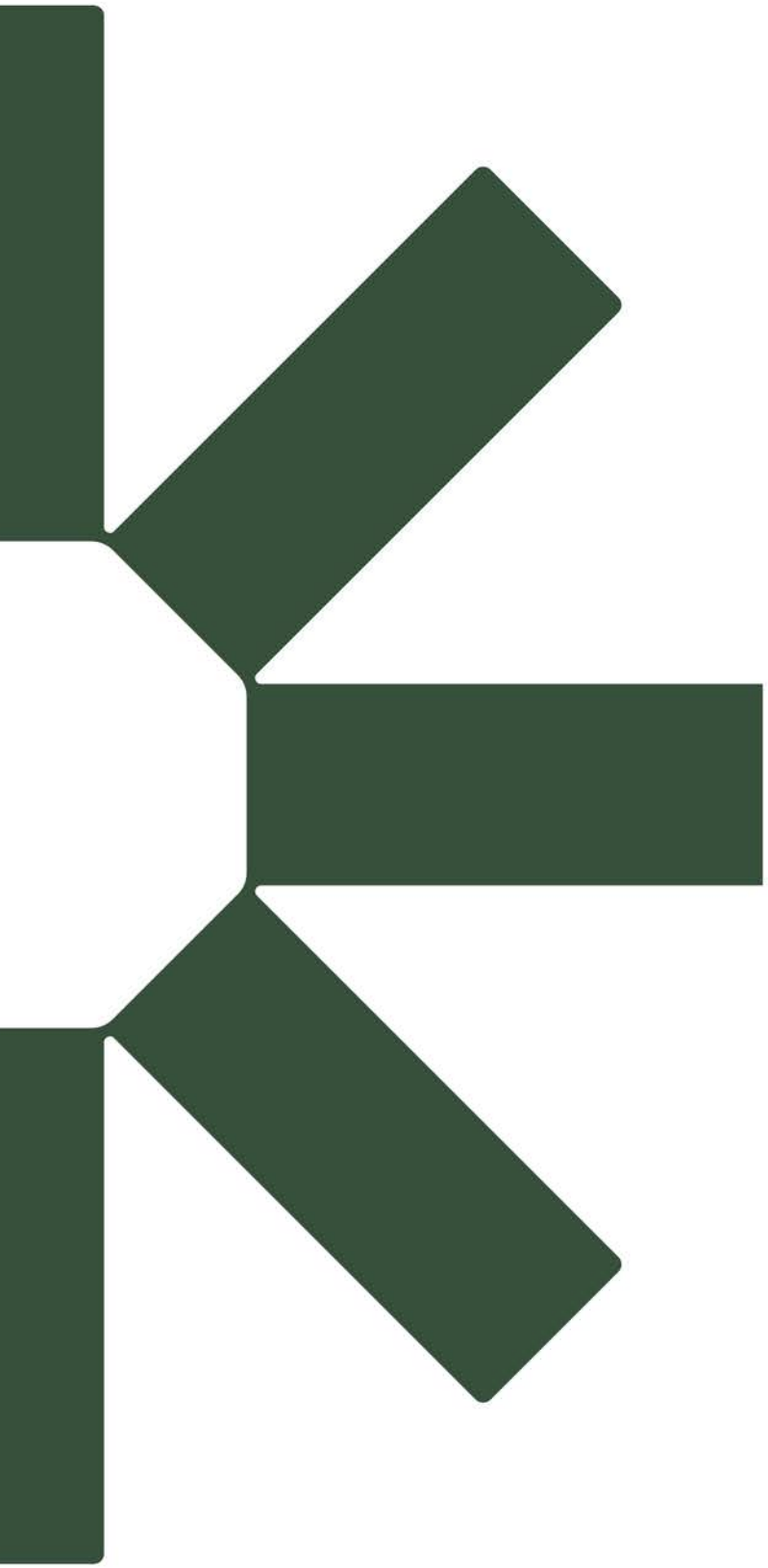
- Indicative Site Boundary
- Hardstand
- LWC Building Footprint
- Recycled Water Storage
- Odour Control Unit
- Landscape Buffer - variable width
- Chain Wire (Black) Security Fencing

SLR

INDICATIVE HUNTLEE LWC 2 LAYOUT

FIGURE 1

Path: H:\Projects-SLR\630-SrvNTL\630-NTL\630.030826.00001 Huntlee LWC Site 2\06 SLR Data\01 CADGIS\GIS\630030826_Huntlee_LWC\630030826_Huntlee_LWC.aprx\630030826_F1_Indicative_LWC



Making Sustainability Happen