LANDSCAPE VEGETATION MANAGEMENT PLAN

Moorebank Intermodal Precinct – West Precinct Stage 2

Moorebank Intermodal Precinct – Precinct West Stage 2

SSD 7709

Landscape Vegetation Management Plan

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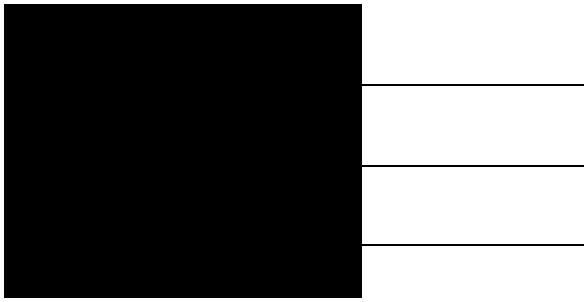

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
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Acronyms and Definitions

Acronym / Term	Meaning
CoC	Condition(s) of Consent
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
Development (the)	The operational areas identified under the SSD 7709 (MPW Stage 2) consent
DPE	NSW Department of Planning and Environment (formerly Department of Planning, Industry and Environment)
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
ESR	ESR Australia & New Zealand
FCMM	Final Compilation of Management Measures (2 November 2018)
IMT	Intermodal (freight) terminal facility
IPC	Independent Planning Commission
LCC	Liverpool City Council
LOGOS	LOGOS Property Group
LVMP	Landscape Vegetation Management Plan
MLP	Moorebank Logistics Park
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
OEMP	Operational Environmental Management Plan
OFFMP	Operational Flora and Fauna Management Plan
SSD	State significant development
SSFL	Southern Sydney Freight Line
UDDR	Urban Design Development Report (Reid Campbell, 2021)

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1. Introduction

1.1. Background

The Moorebank Logistics Park (MLP) is an integral component of the freight, ports and transport strategies of both the NSW and Commonwealth governments located approximately 27km south-west of the Sydney Central Business District and 26km west of Port Botany within the Liverpool Local Government Area (Figure 2-1).

The MLP aims to streamline the freight logistics supply chain from port to store, deliver savings to businesses and consumers, and help service the rapidly growing demand for imported goods in south-west Sydney. In completion, MLP will move 1.55 million shipping containers annually by rail instead of road. It will also feature Australia's largest purpose-built warehouse and distribution precinct, serviced by the latest automated technology which will see driverless shuttle carriers collect and transport containers around the precinct to be processed, unpacked and stored on site prior to distribution.

The MLP is divided into the Moorebank Precinct West (MPW) and Moorebank Precinct East (MPE) developments.

The Sydney Intermodal Terminal Alliance (SIMTA) received approval for the construction and operation of Stage 2 of the MPW development (State significant development (SSD) 7709), which comprises the second stage of development under the MPW Concept Approval (SSD 5066).

The MPW Stage 2 development (the Development) involves the construction and operation of a multi-purpose Intermodal (freight) Terminal (IMT) facility, rail link connection, warehousing, freight village, and upgrades to the Moorebank Avenue and Anzac Road intersection and the subdivision of site including ancillary works. Details on the key components of the Development are included in Schedule 1 of the Development Consent SSD 7709 and Section 2 of this plan.

1.2. Development Ownership

In 2022, LOGOS joined the ESR group of companies and since August 2024, the LOGOS and ESR operations have been integrated to now operate under the name ESR Australia & NZ (ESR). The applicant/ approval holder entity remains unchanged at this stage until further notice and references to LOGOS and LOGOS authored documents and/or plans may continue and remains relevant where LOGOS and ESR are used interchangeably.

1.3. Purpose

The Operational Environmental Management Plan (OEMP) is the overarching guide for the operational environmental management of the Development and has been prepared in accordance with Environmental Management Plan Guideline – Guideline for infrastructure Projects (DPIE, 2020) to address:

- The Consolidated SSD 7709 development consent

- Final Compilation of Management Measures (FCMMs) (2 November 2018) included in Appendix 2 of the SSD 7709 Consolidated Consent
- EPBC 2011/6086 Approval
- Environment Protection Licence (EPL) No. 21361.

The OEMP identifies the operational environmental management measures that will be applied to activities undertaken across the Development (detailed in Section 2) to manage identified environmental risks.

This Landscape Vegetation Management Plan (LVMP), as a sub-plan of the OEMP, has been prepared to assist in the operational monitoring and maintenance of landscape elements required for the Development and to address Conditions of Consent (CoC) B82 and C6(c)(iv). This LVMP addresses the relevant requirements of the consolidated SSD 7709 consent.

The LVMP has been prepared by suitably qualified and experienced persons. The LVMP is to be submitted to the Planning Secretary for approval, prior to commencement of operations.

The Urban Design Development Report (UDDR) (Reid Campbell, 2021) was prepared to recognise existing natural landscape attributes of the site and surrounding area and to integrate components of the development to improve and enhance these where possible by providing environmental connectivity and function.

1.4. Objectives

The primary objectives of this LVMP are to provide:

- An inspection and maintenance schedule that identifies replacement measures for shrubs and trees which fail at an equivalent pot size or larger
- Graffiti management.

Responsibilities and timing for weed and pathogen control are discussed in Section 3.2. Section 3.3 outlines the Development's approach to weed and pathogen control.

1.5. Compliance Matrix

The Development operates under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The CoCs include requirements to be addressed in this plan and delivered during the operation of the Development. The address of these requirements is provided in Table 1-1.

In Table 1-1, Primary Conditions are specific to the development of the management plan, while Secondary Conditions are conditions which are related to the environmental aspects associated with the plan.

Table 1-1 Relevant SSD 7709 MPW Stage 2 CoCs

Condition	Requirement	LVMP section
Primary Conditions		
B82	Prior to commencement of operation, the Applicant must prepare a Landscape Vegetation Management Plan (LVMP) and submit it to the Planning Secretary for approval. The LVMP must be prepared by a suitably qualified and experienced person(s) and form part of the OEMP required under Condition C5. The LVMP must include: (a) An inspection and maintenance schedule and require replacement plantings for shrubs and trees which fail at an equivalent pot size or larger; and	Section 3 of this LVMP
	(b) Graffiti management.	Section 3 of this LVMP
C6	As part of the OEMP required under Condition C5 of this consent, the Applicant must include the following: (c) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;	Refer to the OEMP
	(d) describe the procedures that would be implemented to: (i) keep the local community and relevant agencies informed about the operation and environmental performance of the development; (ii) receive, handle, respond to, and record complaints; (iii) resolve any disputes that may arise; (iv) respond to any non-compliance; (v) respond to emergencies; and	Refer to the OEMP
	(e) include the following environmental management plans: (i) Landscape Vegetation Management Plan (see Condition B82)	(iv) This LVMP

1.6. Proposed Progressive Implementation of the OEMP

The OEMP and sub-plans, including this LVMP, are applicable to the MPW Stage 2 development. Operational areas will be progressively implemented as warehouses and the terminal facility are constructed and tenanted.

The progressive implementation of the OEMP is discussed in Section 1.5 of the OEMP.

1.7. Document Structure

The structure of this LVMP is as follows:

- **Section 1** provides a brief overview of the MLP and the purpose of the OEMP and LVMP.
- **Section 2** provides a summary of the activities being undertaken during operation of the Development.
- **Section 3** outlines the implementation strategy of this LVMP including a monitoring and maintenance schedule, weed control and contingency planning.

2. Development Description

2.1. MPW Stage 2 Development

The consent and approval for construction and operation of the Development was obtained progressively as follows:

- MPW EPBC (EPBC 2011/6086), approved on 27 September 2016 by DCCEEW (formerly Department of the Environment and Energy)
- MPW Stage 2 Development Consent (SSD 7709), approved on 11 November 2019 by NSW Independent Planning Commission (IPC)
- MPW Stage 2 Modification 1 (SSD 7709- MOD 1), approved on 24 December 2020 by IPC
- MPW Stage 2 Modification 2 (SSD 7709- MOD 2), approved on 30 September 2021 by IPC.

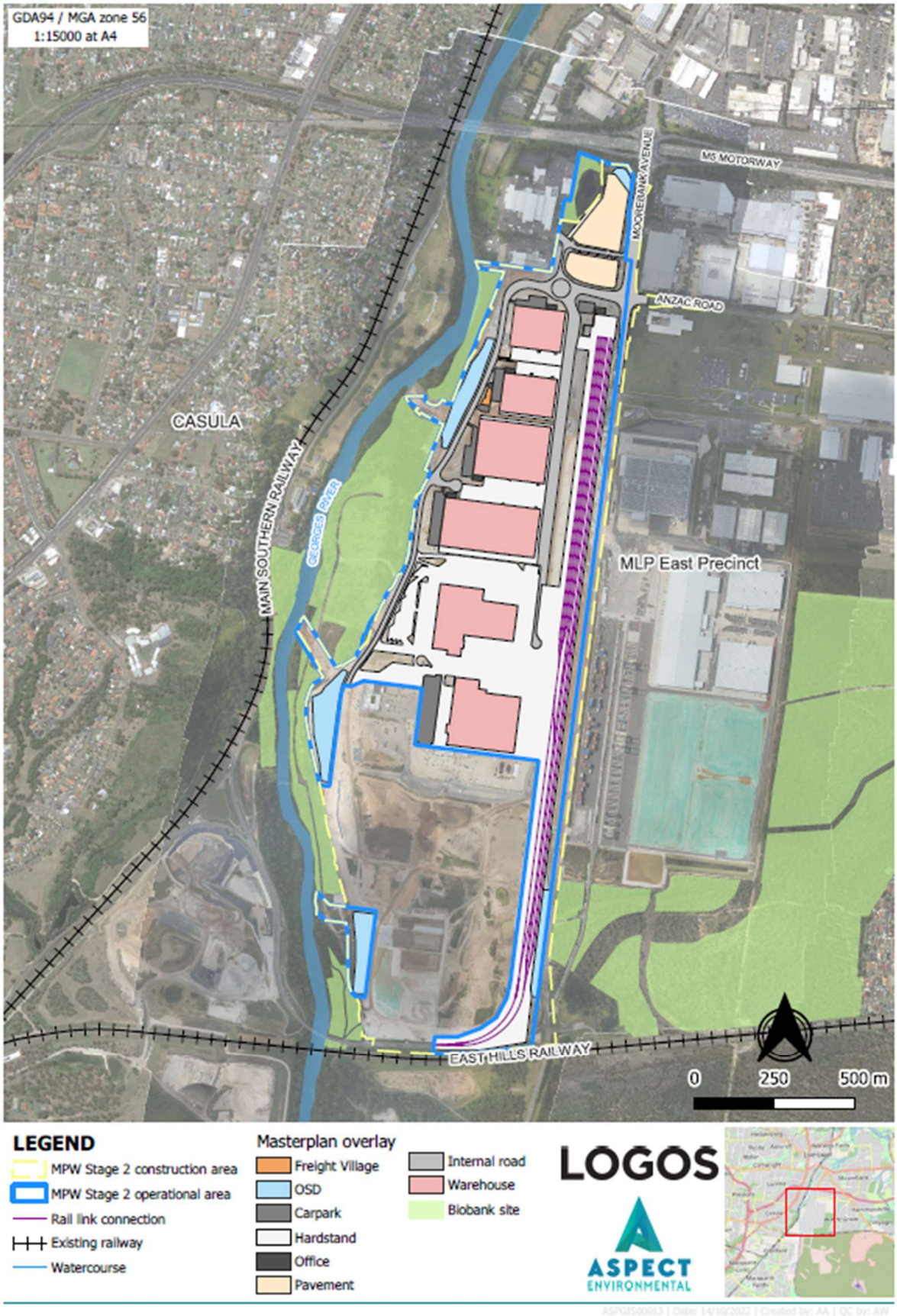
The MPW Stage 2 Development involves:

- 24/7 operation of an IMT facility to support a container freight throughout volume of 500,000 twenty-foot equivalent units (TEUs) per annum.
- Operation of the IMT facility includes operation of a connection to the MPE 1 rail link that connects to the SSFL and container freight movement by truck to and from the MPE Site.
- 24/7 operation of a warehousing estate on the northern part of the site servicing the IMT facility and including:
  - six warehouses with a total gross floor area (GFA) of 215,000m^2 and, for each warehouse, associated offices, staff amenities, hardstands and truck and light vehicle parking
  - 800m^2 freight village (operating from 7am to 6pm, 7 days/ week) including staff/ visitor amenities
  - internal roads, noise wall, landscaping, lighting and signage.
- Intersection upgrades on Moorebank Avenue at:
  - Anzac Road providing site access
  - Bapaume Road.

- Operation of on-site detention basins, bioretention/ biofiltration systems and trunk stormwater drainage for the entire site.

The MPW S2 operational layout is shown in Figure 2-1.

Figure 2-1 MPW Stage 2 operational layout



3. Implementation

The UDDR (Reid Campbell, 2021) established a set of detailed objectives and indicative design parameters, performance benchmarks and minimum standards for the development of the MPW Site.

This LVMP should be read in conjunction with the UDDR, which provides detailed landscape and architectural drawings, as well as a proposed plant schedule and typical landscape details.

Landscape maintenance of the conservation and riparian areas is outside the scope of this LVMP.

3.1. Landscape Planting

A proposed Landscape Plant Schedule for MPW (PIWW-GNK-LN-DWG-001) is detailed in Section 4.3 of the UDDR and is provided in Appendix A of this LVMP. The schedule identifies that landscape planting will incorporate a range of canopy trees, shrubs, grasses and groundcovers across the Site, including bioretention areas.

A mixture of proposed species, planting densities and spacings, including the incorporation of extensively endemic or native, tall, upright, trees, shrubs, and understory planting will contribute to the continuity of the surrounding native environment between the development, the streetscape and the public interface. Grouping of plants will be used to achieve the desired planting densities and spacings.

Proposed plant species have been selected for their site-suitability, with many species selected from Liverpool City Council's (LCC) recommended plant list (LCC Development Control Plan - Part 1, Appendix 2). Many of these species are consistent with the surrounding endemic plant community types, facilitating site integration with the surrounding environment and improving environmental connectivity and biodiversity.

In accordance with SSD 7709 CoC B68(b) a minimum rate of 1 canopy tree per 30m^2 will be provided across the MPW Site. Consistent with CoC B64, canopy tree planting will be provided around the perimeter of the site, including the southern fill area where future warehousing is proposed.

Landscape Details (PIWW-GNK-LN-DWG-400) (Section 4.3 of the UDDR) outlines the different soil horizons and provides typical specifications for proposed planting, and has been included in Appendix A. The plan prescribes the soil profile with a maximum depth of 600mm areas of potential mounding to successfully establish trees with a larger root ball at the time of installation. The top layer of soil will consist of approximately 75mm of mulch.

Garden bed planting of grasses, woody and herbaceous annuals and perennials that have high nutrient requirements, and that are not subject to compaction by foot traffic, will be planted within sandy loam to clay loam topsoil mix. Open granular well drained growing media is beneath the topsoil mix and will incorporate an aggregate drain with positive drainage connected to a site stormwater system. Planting will not be undertaken within the compacted site sub-base, as the depth of soil will be grown to

NATSPEC specifications and specific to the pot sizing and species as nominated within the typical plant schedule provided in Appendix A (PIWW-GNK-LN-DWG-001).

The typical proposed plant schedule includes:

- plant species (botanical name and common name)
- indication whether the plant is a native species
- expected canopy spread
- expected mature height
- install size
- density.

Additionally, and in accordance with CoC B75, the typical proposed plant schedule provides the following details:

- Pot size of trees will range from 140mm to 100L, shrubs will be 140 to 200mm, and groundcover will be a minimum of 150mm.
- Expected mature height of trees will range in height from 6m to greater than 15m, shrubs will range between 0.5 to 4m and groundcover will range from prostrate creeper to 1m.
- Expected canopy spread of trees will range from 3m to 18m.

A low-volume drip irrigation system will be installed (where required) to support establishment and maintenance of proposed site landscaping. Rainwater tanks will be provided for each warehouse area and the freight village and will store rainfall collected from the warehouses and freight village building roofs for landscaping irrigation.

Whilst achieving the primary function for any requirement for water filtration and bio-retention, the planting proposed to the onsite detention (OSD) basins are to remain consistent with the overarching site wide objectives of species use, endemic planting character, native landscape and a variety of experiences and visual amenity from sites across the Georges River. Increased treatment in the form of trees and planting will improve visual amenity, allowing the OSDs to act as a visual buffer for neighbouring sensitive receivers.

The indicative plant schedule is preliminary at this stage of the Development; with confirmation of total plant numbers to be provided at the landscape detailed design stage for each warehouse area and the freight village.

3.2. Monitoring and Maintenance

All monitoring and maintenance of common areas and the freight village will be managed by a singular entity (a maintenance contractor) to be appointed by LOGOS. Monitoring and maintenance requirements within the limits of individual warehouses will be the responsibility of individual tenants, unless an independent contractor has been appointed under lease agreements specific to that tenant.

Monitoring and maintenance obligations are documented in Table 3-1. It is the responsibility of individual tenants (for warehouses – unless otherwise agreed as part

of lease arrangement) and the appointed maintenance contractor (for common areas and the freight village) to implement the LVMP.

Table 3-1 Monitoring and maintenance schedule for the MPW Site

Maintenance Action	Task	Responsibility*	Nominated Frequency	Location
Inspections	Landscape maintenance inspections will be conducted to identify landscaping that requires rectification/repair or areas of landscape planting that are in poor health.	ESR	Every two months	Whole Development Site
	Arboreal and landscape health check, seeking advice from an AQF5 qualified arborist, where required as a result of inspections.	ESR	Annually	Whole Development Site
Watering	A low-volume drip irrigation system will be installed to allow for healthy plant growth. *Note: the majority of plants specified across the precinct are intended to be low water use, drought tolerant species which will be self-sufficient once established.*	ESR	20-25 L/m^2 of landscaped area, during plant establishment	Landscaped areas with canopy trees, shrubs and vegetation
Pruning vegetation	• Pruning work will maintain dense foliage conditions and encourage suitable growth habits. • Pruning of low tree branches 2m from the ground to prevent a ground fire from spreading into the tree canopy. • Any branches obstructing pathways and roads will be removed as directed by the Operations Manager, LOGOS Environmental Manager or Maintenance Contractor. • An approved wound dressing, such as 'Colgraft' will be applied to all cut surfaces in accordance with the manufacturer's instructions. • Pruning will be undertaken in accordance with Australian Standard AS4373 where applicable. • Separate and maintain tree crowns by at least 2m so that the canopy is not continuous and does not encroach closer than 5m to buildings.	ESR	Every three months	Landscaped areas with canopy trees, shrubs and vegetation

Maintenance Action	Task	Responsibility*	Nominated Frequency	Location
Weed / pest management	Manual removal or herbicide application before weeds are set, as identified by inspections.	ESR	Every two months in autumn/winter and every month in spring/summer.	Whole Development Site
	Insecticide and fungicide treatment will be undertaken in all occurrences of insect attack or disease in landscape vegetation as indicated by inspections.	ESR	As required	Whole Development Site
Rubbish removal	Remove all rubbish from car parks, access roads, outdoor eating areas, warehouse entry ways and freight village.	ESR Warehouse Tenant	Weekly	Whole Development Site
Removal of dead / dying plant material	Cut back and remove dead or dying plant material. Keep areas under fences, gates and trees raked and clear of combustible fuels and keep strip and stormwater drainage pits free of leaf litter and combustibles.	ESR	Every two months in autumn/winter and every month in spring/summer.	Landscaped areas with canopy trees, shrubs and vegetation
Replacement planting	Replace failed plantings with species and densities nominated in the Landscape Design, where possible, as identified by inspections.	Construction Contractor	As required	Landscaped areas with canopy trees, shrubs and vegetation
	Replace failed plantings with species and densities nominated in the Landscape Design, where possible, as identified by inspections.	ESR*	As required	Landscaped areas with canopy trees, shrubs and vegetation
	Replace plants lost due to vandalism or theft.	ESR	As required	Landscaped areas with canopy trees, shrubs and vegetation

Maintenance Action	Task	Responsibility*	Nominated Frequency	Location
Mulched surfaces	Mulched surfaces to be kept in a clean and tidy condition. Mulch will be swept from other paved surfaces.	ESR	Every two months	Landscaped areas
	Mulch will be periodically reinstated to the depths of approximately 75 millimetres, as identified by inspections.	ESR	As required	Landscaped areas
Specified soil / mulch levels	Specified levels of mulch will be maintained by lifting mulch, removing or adding topsoil mix and/or replacing mulch to the required levels.	ESR	Annually	Landscaped areas
Soil quality	Fertilizers (i.e. organic matter and nutrients) to be added as required for improvement of soil quality.	ESR	Annually	Landscaped areas
Drainage	Any areas of poor drainage as identified by inspections, will be rectified.	ESR	As required	Whole Project Site
Stakes and ties	Stakes and ties will be adjusted and replaced as required.	ESR	As required	Landscaped areas
Raingardens	Regular ongoing and post-large rainfall inspections and maintenance of raingardens will be undertaken in line with measures outlined in the *Stormwater Infrastructure Operation and Maintenance Plan* (SIOMP), a subplan of the OEMP. Maintenance activities will include: litter collection, minor replanting, repair of localised scouring, spot weeding, testing for contaminants and any other minor rectification works that are required.	ESR	As nominated in the *Stormwater Infrastructure Operation and Maintenance Plan*	OSDs
Grass cutting	Grass should be kept short and maintained in a clean and tidy condition, especially when adjacent to buildings. *Note: clippings to be disposed of properly in offsite (or on site if there is one) composting/green waste*.	ESR	Every two weeks in spring/summer/autumn and every month in winter.	Landscaped areas

* Responsibility for management and maintenance activities may be reallocated depending on the specific needs of each warehouse tenant. In those cases, where LOGOS/Warehouse Tenant is nominated, LOGOS is responsible for common areas and the freight village, while the Warehouse Tenant is responsible for those activities within warehouse limits.

3.3. Weed and Pathogen Control

The approach to weed and pathogen control for landscaped areas is outlined below:

- Insecticide and fungicide treatment: all significant occurrences of insect attack or disease in landscape vegetation will be treated.
- Incorrect application of insecticide and fungicide treatment has the potential to impact upon surrounding areas of native vegetation including Moorebank Offset Area and Casula Offset Area, potentially resulting in the killing of native vegetation in these Offset Areas. Therefore, insecticide and fungicide treatment will be undertaken in accordance with the following requirements:
  - *Pesticides Act 1999* (PA) and *Pesticides Regulation 2017* (PR), covering
    - control of herbicides
    - prescribed pesticide work/licensing requirements of maintenance contractors (PR s7)
    - use of registered herbicides by qualified persons (PR Part 3)
    - record keeping (PR Part 4 and Part 6)
    - notification of use of herbicides (PR Part 5).
- Weeding and rubbish removal: Weeds will be removed from around the base of trees, planting areas, mulched areas and paths regularly, in response to outcomes of site inspections. All weeds, debris, and clippings will be bagged and removed off site as soon as practicable by the landscape contractor. Under no circumstances will the landscape contractor either burn off or stockpile weeds or clippings on site.

3.4. Biobanking Agreement 341

Environmental management of the conservation, riparian and offset areas in the western portion of the MPW Site as identified in SSD 7709, is covered by an executed Biobanking Agreement (ID number BA341) under Division 2 of Part 7A of the *Threatened Species Conservation Act 1996* (NSW). The Biobank Sites under BA341 include three identified offset areas: Moorebank Offset Area, Casula Offset Area and Wattle Grove Offset Area.

Responsibility for the environmental management of areas covered by the Biobanking Agreement sits outside of the operational area of the Development and corresponding landowner obligations, and as such, is not covered by this LVMP.

3.5. Contingencies

Where site inspections determine that landscaping has failed, i.e. vegetation perished, then it will be removed and replaced with vegetation that will provide a similar landscape function as soon as practicable, noting seasonal dependencies.

Where there have been multiple failures in the same area, soil testing (or other investigations as deemed appropriate) would be undertaken to help assist cause identification. Appropriate treatments to the soil and/or alternative cause of the failure will be considered and implemented as appropriate.

3.6. Graffiti Management

With restriction on access, active surveillance and opportunities for passive surveillance, the risk of graffiti within the Development is considered to be low. There is the potential for external signage and the noise wall to be subject to graffiti, however, the CCTV monitoring of the 24/7 site activity and accessibility will reduce this risk. Regardless, if graffiti of external signage is identified during the course of site inspections, the Site Supervisor will be responsible for managing the clean-up of the graffiti.

Consistent with the principle of maintaining well-cared for spaces outlined in Crime Prevention Guidelines (NSW Department of Justice) and the assessment of development applications under section 4.15 of the EP&A Act, graffiti will be removed soon after it is identified.

In most instances, it is anticipated that any graffiti to external signage will be removed by the Site Supervisor within 48 hours of the incident. If graffiti has offensive content, more immediate removal will be organised. The OEMP has been updated to further detail the procedure for reporting and removal of graffiti (refer to Section 4.5 of the OEMP).

Appendix A Plant Schedule and Landscape Specification

PROPOSED PLANT SCHEDULE

BOTANICAL NAME	COMMON NAME	NATIVE	EXPECTED CANOPY SPREAD	EXPECTED MATURE HEIGHT	INSTALL SIZE	DENSITY
Trees						
Acacia decurrens	Black Wattle	✓	3-7m	8-10m	140mm-100L	5m centres
Acacia parramattensis	Parramatta Green Wattle	✓	3-7m	8-10m	140mm-100L	5m centres
Acer truncatum x platanoides	Keithsform Norwegian Sunset		6m	8-10m	140mm-100L	5m centres
Allocasuarina littoralis	Black She-Oak	✓	5-10m	8-10m	140mm-100L	5m centres
Angophora bakeri	Narrow Leafed Apple	✓	8-13m	8-10m	140mm-100L	5m centres
Angophora floribunda	Rough-barked Apple	✓	10-15m	15m	140mm-100L	6m centres
Corymbia ficifolia	Flowering Gum	✓	3-7m	8-10m	140mm-100L	6m centres
Corymbia maculata	Spotted Gum	✓	6-10m	>15m	140mm-100L	6m centres
Callistemon salignus	White Bottlebrush, Pink-tips	✓	3-7m	9m	140mm-100L	5m centres
Eucalyptus amplifolia	Cabbage Gum	✓	5-10m	>15m	140mm-100L	6m centres
Eucalyptus baueriana	Blue Box	✓	8-13m	>15m	140mm-100L	6m centres
Eucalyptus bosistoana	Coast Grey Box	✓	8-13m	>15m	140mm-100L	6m centres
Eucalyptus eugenioides	Thin-leaved stringybark	✓	8-13m	>15m	140mm-100L	6m centres
Eucalyptus crebra	Narrow-leafed Ironbark	✓	3-7m	10-15m	140mm-100L	6m centres
Eucalyptus moluccana	Grey Box	✓	13-18m	>15m	140mm-100L	6m centres
Eucalyptus racemosa	Snappy Gum, Scribbly Gum	✓	5-10m	10-15m	140mm-100L	6m centres
Eucalyptus sideroxylon	Mugga, Red Ironbark	✓	3-6m	>15m	140mm-100L	6m centres
Eucalyptus punctata	Grey Gum	✓	6-9m	>15m	140mm-100L	6m centres
Eucalyptus tereticornis	Forest Red Gum	✓	3-6m	>15m	140mm-100L	6m centres
Melaleuca decora	White Cloud Tree	✓	6-10m	6-10m	140mm-100L	6m centres
Melaleuca linariifolia	Flax-leaved Paperbark	✓	3-7m	10m	140mm-100L	5m centres
Pittosporum undulatum	Pittosporum	✓	3-7m	10m	140mm-100L	5m centres
Shrubs						
Acacia brownii	Golden Prickly Moses	✓	N/A	1m	140-200mm	2m centres
Acacia floribunda	White Sally	✓	N/A	3.5m	140-200mm	2m centres
Acacia falcata	Sickle Wattle	✓	N/A	4m	140-200mm	2m centres
Banksa spinulosa 'Birthday Candles'	Birthday Candles	✓	N/A	0.5m	140-200mm	0.5m centres
Bursaria spinosa	Sweet Bursaria	✓	N/A	1.5-3m	140-200mm	2m centres
Callistemon citrinus 'White Anzac'	Bottlebrush	✓	N/A	1m	140-200mm	2m centres
Callistemon linearis	Narrow-leaved Bottlebrush	✓	N/A	3m	140-200mm	2m centres
Callistemon viminalis' 'Macarthur'	Red Bottlebrush	✓	N/A	1.8m	140-200mm	2m centres
Crowea exalata	Small Crowea	✓	N/A	0.5m	140-200mm	0.5m centres
Crowea saligna	Willow-leaved Crowea	✓	N/A	1m	140-200mm	0.5m centres
Dillwynia sieberi	Prickly Parrot Pea	✓	N/A	0.5-2m	140-200mm	2m centres
Eriostemon australasius	Pink Wax Flower	✓	N/A	1.5m	140-200mm	1m centres
Kunzea ambigua	Tick-bush	✓	N/A	2.5m	140-200mm	1m centres
Leptospermum polygalifolium	Tantoon	✓	N/A	0.5-3m	140-200mm	1m centres
Melaleuca nodosa	Ball Honey-myrtle	✓	N/A	4m	140-200mm	2m centres
Philotheca buxifolius	Box-leaf Waxflower	✓	N/A	0.5m	140-200mm	1m centres

BOTANICAL NAME	COMMON NAME	NATIVE	EXPECTED CANOPY SPREAD	EXPECTED MATURE HEIGHT	INSTALL SIZE	DENSITY
Grasses and Groundcovers						
Anigozanthos 'Bush Gold'	Kangaroo Paw	✓	N/A	1m	150mm	6/m²
Arthropodium milleflorum	Pale Vanilla Lily	✓	N/A	0.3-1m	150mm	6/m²
Austrodanthonia fulva	Wallaby Grass	✓	N/A	0.7m	150mm	6/m²
Austrodanthonia racemosa	Clustered Wallaby Grass	✓	N/A	0.6m	150mm	6/m²
Dianella caerulea	Blue Flax-lily	✓	N/A	0.6m	150mm	6/m²
Dianella revoluta	Blue Flax-lily, Spreading Flax-lily	✓	N/A	0.8m	150mm	6/m²
Dichondra repens	Kidney-weed, Mercury Bay Weed	✓	N/A	0.3m	150mm	4/m²
Grevillea juniperina 'Prostrate Gold'	Juniper-leaf grevillea	✓	N/A	0.15m	150mm	3/m²
Hardenbergia violacea	False Sarsaparilla	✓	N/A	Creeper	150mm	3/m²
Hibbertia diffusa	Wedge Guinea Flower	✓	N/A	0.3m	150mm	4/m²
Lomandra longifolia	Spiky-headed Mat-rush	✓	N/A	0.7m	150mm	6/m²
Lomandra longifolia 'Lime Tuff'	Spiky-headed Mat-rush	✓	N/A	0.8m	150mm	6/m²
Lomandra longifolia 'Tanika'	Spiky-headed Mat-rush	✓	N/A	0.5m	150mm	6/m²
Lomandra hystrix	Spiny-headed Mat-rush	✓	N/A	1m	150mm	6/m²
Microlaena stipoides	Weeping Grass, Meadow Rice-grass	✓	N/A	0.7m	150mm	6/m²
Myoporum parvifolium 'Yareena'	Myoporum	✓	N/A	0.1m	150mm	3/m²
Poa labillardieri	Tussock Grass		N/A	0.8m	150mm	4/m²
Themeda australis	Kangaroo Grass	✓	N/A	0.8m	150mm	6/m²
Wahlenbergia gracilis	Australian Bluebell	✓	N/A	0.2m	150mm	9/m²

BIO-RETENTION SPECIES LIST				
BOTANICAL NAME	NATIVE	EXPECTED MATURE HEIGHT	INSTALLATION SIZE	DENSITY
Baumea articulata (Jointed Twig-rush)	✓	1-2m	150mm	4/m²
Bolboschoenus fluviatilis (Marsh Club-rush)	✓	1m	150mm	4/m²
Carex appressa (Tall Sedge)	✓	0.8m	150mm	4/m²
Dichondra repens (Kidney-weed, Mercury Bay Weed)	✓	0.3m	150mm	4/m²
Gahnia clarkei (Tall Saw-sedge)	✓	1.5m	150mm	4/m²
Goodenia hederacea (Ivy Goodenia)	✓	0.5m	150mm	4/m²
Imperata cylindrica (Blady grass)	✓	1.5m	150mm	4/m²
Isolepis (Ficinia) nodosa (Knobbly Club-rush)	✓	1m	150mm	4/m²

HYDROSEED GRASS MIX		
BOTANICAL NAME	NATIVE	EXPECTED MATURE HEIGHT
Imperata cylindrica (Blady grass)	✓	1.5m
Isolepis (Ficinia) nodosa (Knobbly Club-rush)	✓	1m
Lomandra hystrix (Green Mat-rush)	✓	1m
Lomandra longifoilia (Spiny-headed Mat-rush)	✓	1.2m
Microlaena stipoides (Weeping Grass, Meadow Rice-grass)	✓	0.7m
Poa labillardieri (Common Tussock Grass)	✓	1.2m
Rhynchospora corymbosa (Matamat)	✓	1.2m
Themeda australis (Kangaroo grass)	✓	1.5m

Client

LOGOS

ASPECT

Issue	Date	Description	Drawn	Checked
A	04.10.19	FOR APPROVAL		
B	01.11.19	FOR APPROVAL		
C	25.08.21	FOR APPROVAL		
D	03.09.21	FOR APPROVAL		
E	31.08.22	FOR APPROVAL		
F	25.11.22	FOR OPERATIONAL MANAGEMENT PLAN		

Landscape Architect

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Project

MOOREBANK PRECINCT WEST STAGE 2

Project Address

Moorebank Avenue, Moorebank, NSW

Date	Job Number	Drawing Number
25.11.22	20150728	**PIWW-GNK-LN-DWG-001**

Scale

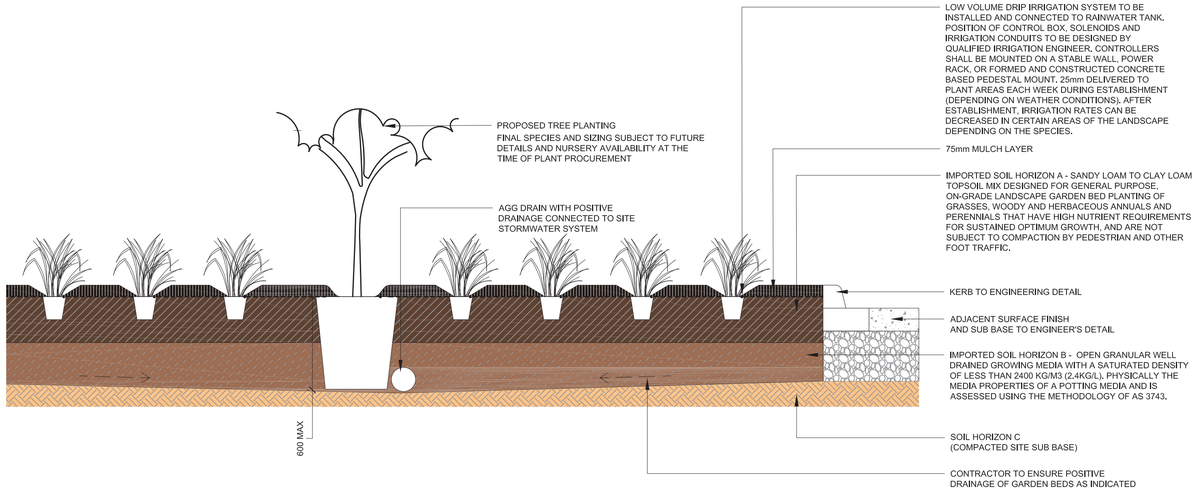
Not Applicable

Drawing Name

LANDSCAPE PLANT SCHEDULE

Revision

F



PLANTING TYPICAL DETAIL

SCALE: 1:20 @ A1 (1:40 @ A3)

0 1M 2M

OUTLINE LANDSCAPE SPECIFICATION

General
Maintenance shall mean the care and maintenance of the landscape works by accepted horticultural practice as rectifying any defects that become apparent in the landscape works under normal use. The landscape contractor shall attend the site on a weekly basis to maintain the landscape works for the full term approved at CC stage of the maintenance period (commencing from practical completion).

Rubbish Removal
During the term of the maintenance period the Landscape Contractor shall undertake rubbish removal from the site on a weekly basis to ensure the site remains in tidy condition.

Weed Eradication
Weed growth that may occur in, planted or mulched areas is to be removed using environmentally acceptable methods i.e. non-residual glyphosate herbicide, (e.g. 'Round up', applied in accordance with the manufacturer's directions) or hand weeding.

Tree Replacement
Trees shall show signs of healthy vigorous growth and be free from disease and not exhibit signs of stress prior to handover to the client. Any trees or plant that die or fail to thrive, or are damaged or stolen will be replaced. Replacement material shall have the maintenance period extended in accordance with the landscape contract conditions. Trees and plant materials shall be equal to the minimum requirements of species specified and approved material delivered to site. Should the condition decline from the approved sample the Superintendent reserves the right to reject the tree / plants.
Frequency: as required.

Pruning
Selective pruning may be required during the establishment period to promote a balanced canopy structure. These activities shall be carried out to the best horticultural and industry practice. All pruned material is to be removed from site.

Irrigation
A low volume drip irrigation system may be installed at the discretion of the Developer. Position of control box, solenoids and irrigation conduits to be designed by qualified irrigation engineer at CC stage. Controllers shall be mounted on a stable wall, power rack, or formed and constructed concrete based pedestal mount. Performance specification to be provided by landscape architect, nominally 25mm delivered to plant areas each week during establishment (depending on weather conditions). After establishment, irrigation rates can be decreased in certain areas of the landscape depending on the species.

Watering
Implement an appropriate hand watering regime in areas not irrigated in association with current watering programme to maintain plant health and vigour. The program shall reflect seasonal conditions and plant species.
Frequency: Weekly or as required.

Drainage
All landscape areas are to have positive drainage to SW systems. If areas of poor drainage are identified on site then this should be brought to the site superintendents attention. Install agg lines if required.

Soils
Horizon A - Garden beds on natural ground
A sandy loam to clay loam topsoil mix designed for general purpose, on-grade landscape garden bed planting of grasses, woody and herbaceous annuals and perennials that have high nutrient requirement for sustained optimum growth, and are not subject to compaction by pedestrian and other foot traffic. Heavier textured soils in this specification may require engineered solutions where excessive wetness is anticipated. Note that organic soil variant should not be chosen for low P plantings and should not be used below 300mm.

Horizon B - Garden beds on slab
This specification describes the formulation of an open granular well drained growing media with a saturated density of less than 2400 kg/m3 (2.4kg/L) for use in on-slab applications, including green roofs with an expectation of longevity. It is a topsoil formulation to be used in the surface 300mm of all on-slab installations including planter boxes, containers and garden beds. In order to maintain structure and porosity over extended periods, and to avoid slumping and volume loss over time, the formulation must employ low density mineral components such as ash, perlite, scoria, pumice and diatomaceous earth, or artificial components such as urea formaldehyde and styrofoam. Physically the media properties of a potting media and is assessed using the methodology of AS 3743.

Cultivation
All garden beds to be cultivated to a minimum depth of 150mm and tree pits to the depth of the root ball only. If additives such as gypsum are required conduct this after cultivation into the top 100mm of soil.

Planting
All planting to be grown to NATSPEC specifications. Contractor to prepare site for planting including watering, handling, setting out and excavation. Excavate a hole for each plant large enough to provide not less than 100mm all around the root system of the plant. For tree planting each hole shall be dug with a shovel, backhoe or similar tool. Individual holes shall be excavated to allow root system to sit flat on the excavated hole and 400mm to each side of the root system. Backfill planting holes with existing site soil and topsoil as described in section 'Soil', plant / Tree shall be set plumb, with the root ball set slightly below the final soil level.

Mulching
The Landscape Contractor shall supply and install 10mm Pine Bark Mulch to all garden beds shown on the landscape plans, to a minimum depth of 75mm. All mulch is to be free of deleterious matter such as soil, weeds and sticks. Mulched surfaces are to be kept clean and tidy and free of any deleterious material and foreign matter. Reinstate depths to a uniform level of 75mm with mulch as specified, mulch to be free of any wood material impregnated with CCA or similar toxic treatment. Maintain watering rings around trees. Top up mulch levels prior to handover to client.

Turfing
Requires a sandy loam 'turf underlay' topsoil mix designed to provide moderate resistance to compaction in public and other amenity turf areas subject to moderate levels of pedestrian traffic. The blend provides superior water holding capacity but is not suited for active recreational or sports field use.

Pest and Disease Control
The Landscape Contractor shall spray for pests and disease infestations when the pest and fungal attack has been positively identified and when their populations have increased to a point that will become detrimental to plant growth. Apply all pesticides to manufacturer's directions.
Frequency: weekly inspection

Fertilising
Pellets shall be in the form intended to uniformly release plant food elements for a period of approximately nine months equal to Shirleys KOKEI pellets, analysis 6.3:1.8:2.9 or similar approved. KOKEI pellets shall be placed at the time of planting to the base of the plant, 50mm minimum from the root ball at a rate of two pellets per 300mm of top growth to a maximum of 8 pellets per tree. Generally check for signs of nutrient deficiencies (yellowing of leaves, failure to thrive), and adapt fertiliser regime to suit. Fertiliser should be applied at the beginning and the end of the (summer) growing season.

Client: LOGOS

ASPECT

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Project
MOOREBANK PRECINCT WEST STAGE 2

Project Address
Moorebank Avenue, Moorebank, NSW

Date	Job Number	Drawing Number
25.11.22	20150728	**PIWW-GNK-LN-DWG-400**

Scale: As Shown

Drawing Name: **LANDSCAPE DETAILS**

Revision: **F**