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Waste Management Plan
Oakdale South Development
Estate Road, Eastern Creek

Report Number 630.11166-R2

28 April 2017

Goodman Property Services (Aust) Pty Limited
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Version: Revision 0

Waste Management Plan

Oakdale South Development

Estate Road, Eastern Creek

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DOCUMENT CONTROL

| Reference | Status | Date | Prepared | Checked | Authorised |
|--------------|------------|------------------|--------------|--------------|--------------|
| 630.11166-R2 | Revision1 | 28 April 2017 | I-hui Waung | Lono Tyson | Lono Tyson |
| 630.11166-R2 | Revision 0 | 3 September 2015 | Tanya Henley | Gemma Dawson | Gemma Dawson |

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1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Goodman Property Service (Aust) Pty Ltd (Goodman) to prepare a Waste Management Plan (WMP) for the proposed construction and operation of the Oakdale South development, a warehousing facility to be located on Estate Road, Eastern Creek (the Development site). The WMP will form part of the overall Development Application (DA) to Penrith Council (Council).

This report has been prepared to inform a State Significant Development Application (SSDA) for the staged development of the Oakdale South Estate (OSE). The aim of the report is to assess the potential impacts of the proposed development with regard to the management of waste and has been prepared in accordance with the relevant waste legislation and guidance as per Section 3 of this report. The report responds to the Secretary's Environmental Assessment Requirements (SEARs) as they relate to waste generated both during the construction and ongoing operation of the development. This report supports an Environmental Impact Statement (EIS) prepared in respect of the proposal and should be read in conjunction with the EIS and development plans submitted with the SSDA.

1.1 Scope

The SSDA for the OSE seeks approval for:

- An overarching planning framework to guide the staged development of the OSE including:
 - An Indicative Master Plan and Structure Plan;
 - Development Controls for the OSE;
 - A Biodiversity Offset Strategy.

Stage 1 Development of the Estate including:

1. A package of estate-wide site preparation works to be implemented in stages including:

- Subdivision;
- Bulk earthworks (including construction of detention basins);
- Construction of retaining walls, road and utility infrastructure/services; and
- Environmental management measures and protocols for the site.

2. Development for the purposes of warehousing and distribution including:

- The construction of warehouse buildings in Precincts 1, 4 and 5;
- The construction of hardstand, loading, car parking and landscaping in Precincts 1, 4 and 5; and
- The fit out and use of buildings in Precincts 1, 4 and 5 for generic warehousing and distribution uses.

This WMP applies to the demolition, construction and on-going operation of the proposed development.

The provisions contained in the WMP must be implemented at all stages of the development, and may be subject to review upon expansion or changes in operational procedures.

- See page 10 for the Construction WMP.
- See page 20 for the Operational WMP.

1.2 Objectives

The principal objective of this WMP is to identify potential wastes likely to be generated at the site during the demolition, construction and operational stages of the proposed redevelopment, including a description of how waste would be handled, processed and disposed of (or re-used/recycled), in accordance with Council requirements.

2 BETTER PRACTICE FOR WASTE MANAGEMENT AND RECYCLING

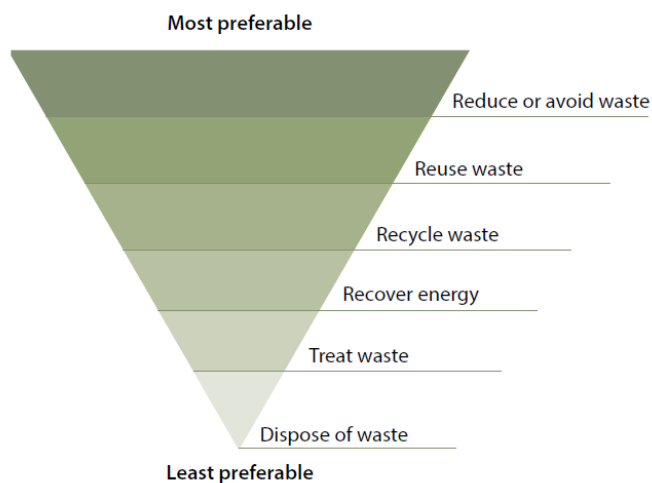
2.1 Waste Management Hierarchy

This WMP has been prepared in line with the following approaches of the waste management hierarchy, as established under the *Waste Avoidance and Resource Recovery Act 2001*:

- Waste avoidance through prevention or reduction of waste generation. Waste avoidance is best achieved through better design and purchasing choices.
- Waste reuse, without substantially changing the form of waste.
- Waste recycling through the treatment of waste that is no longer usable in its current form to produce new products.
- Energy recovery through thermal treatment of residual waste materials and from green waste processing.
- Waste disposal, in a manner that causes the least harm to the natural environment.

The order of preferences of approaches of the waste management hierarchy is shown in **Figure 1**.

Figure 1 Waste Hierarchy



Source: NSW EPA (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*.

2.2 Benefits of Implementing Better Practice for Waste Management and Recycling

Benefits of adopting better practice principles in waste management and recycling include:

- enhanced social and environmental reputation of an organisation;
- reduced costs associated with waste disposal;
- benefits to all stakeholders and the wider community; and
- improved environmental outcomes.

3 WASTE LEGISLATION AND GUIDANCE

The legislation and guidance outlined in **Table 1** below should be referred to during the demolition, construction and operational phases of the development.

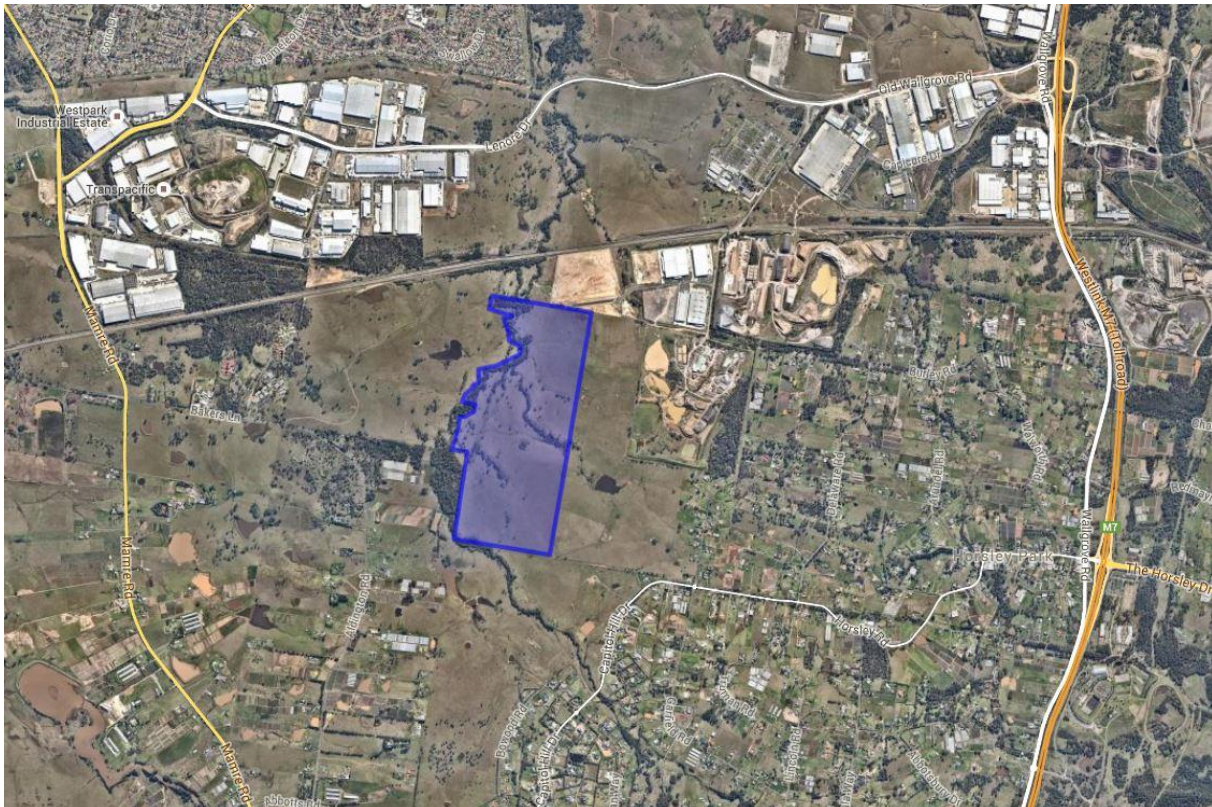
Table 1 Waste Legislation and Guidance

| Legislation | Objectives |
|--|--|
| Waste Avoidance and Resource Recovery Act 2001 | To promote extended producer responsibility in place of industry waste reduction plans. Specific objectives include: <ul style="list-style-type: none"> To encourage efficient use of resources. To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste. To ensure that industry shares with the community the responsibility for reducing and dealing with waste. To ensure the efficient funding of waste and resource management planning, programs and service delivery. |
| Protection of the Environment Operations Act (POEO) 1997 & Amendment Act 2011 | Administered by the Environmental Protection Authority (EPA) to enable the Government to establish instruments for setting environmental standards, goals, protocols and guidelines. The owner of a premises, the employer or any person carrying on the activity which causes a pollution incident is to immediately notify the relevant authorities when material harm to the environment is caused or threatened. A list of each relevant authority is provided in the POEO Amendment Act and will be noted in the site's incident register. |
| POEO (Waste) Regulation 2014 | Contains provisions relating to the waste levy, waste tracking, management requirements for certain waste types, payment schemes for councils, consumer packaging recycling and other miscellaneous provisions. |
| NSW EPA's Waste Classification Guidelines (Part 1) 2014 | To assist waste generators to effectively classify, manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the POEO Act and its associated regulations. |
| Building Code of Australia (BCA) and relevant Australian Standards (AS) | The BCA (and AS) have the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently. |
| Blacktown Development Control Plan (DCP) 2006 | Part O, Site Waste Management and Minimisation of the DCP contains general provisions for new developments in the Blacktown Local Government Area (LGA). Relevant provisions to this WMP include: <ul style="list-style-type: none"> Performance criteria for development (pg 6 of the DCP). A copy of Council's WMP template is provided in Appendix A of the DCP. |
| NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012 | The EPA's Better Practice Guidelines (2012) encourage efficient waste minimisation and resource recovery for commercial and industrial facilities and is used as a benchmark document when assessing waste production rates within Australia and details a range of waste management provisions. |
| NSW EPA's Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21 | A key component of the State Government's vision for the environmental and economic future of the state that will be supported financially by the <i>Waste Less, Recycle More</i> funding initiative providing long-term targets for 6 key result areas including reduced illegal dumping. |
| Australian Packaging Covenant | Each building should be encouraged to establish an Action Plan to demonstrate their contribution to the achievement of the Australian Packaging Covenant's (APC) goals. The three main performance goals of the APC are: <ul style="list-style-type: none"> Design: Optimise packaging to use resources efficiently and reduce environmental impact without compromising product quality/safety. Recycling: Efficiently collect and recycle packaging. Product Stewardship: Demonstrate commitment of all signatories. |

4 SITE DESCRIPTION

The Oakdale South Development site is located on Estate Road, Eastern Creek, in the Local Government Area (LGA) of the City of Blacktown Council. The development site is approximately 117 hectares (ha) and is currently a rural property primarily consisting of paddocks for livestock. The primary access route to the site is via Old Wallgrove Road. The site is located approximately 3.5 km west of the M7 Motorway. The development site is depicted in blue in **Figure 2**.

Figure 2 Oakdale South Development Site Location



Aerial courtesy of Google Earth 2015

Note: Project site depicted in blue.

The Oakdale South Development consists of six precinct areas totalling approximately 70 ha of developable area. The total warehouse and office spaces are approximately 317,500 m² and 13,500 m² respectively.

A copy of the current masterplan is appended to this document (**Appendix A**).

5 CONSTRUCTION WASTE MANAGEMENT PLAN

Demolition and construction stages of developments have the greatest potential for waste minimisation.

At this stage of the project, specific details of construction activities are not yet known, so general construction scenarios have been assumed and are outlined below:

- site clearing and earthwork;
- paving works;
- construction of roadways and lead-in services including electricity, sewer and potable water;
- construction of warehouse and office structures; and
- landscaping and finishing works.

5.1 Targets for Resource Recovery

Estimated tonnages for both demolition and construction phases demonstrate that a significant proportion of waste (more than 50%) can be diverted from landfill during the proposed development.

The performance of each development contributes to overall NSW State recycling targets, which for the commercial and industrial (C&I) sector, is 80% of total C&I waste recycled by the year 2021 (see NSW Waste Avoidance and Resource Recovery Strategy 2014-21).

Waste minimisation measures that can be implemented to assist in achieving this resource recovery target are provided in the following sections. Waste audits will determine the actual percentage of wastes that were recycled and disposed of at landfill during the Project.

5.2 Waste Streams and Classifications

The development is likely to generate the following broad waste streams:

- demolition wastes;
- excavation material;
- construction wastes;
- plant maintenance waste;
- packaging waste;
- work compound (on-site employee) waste; and
- waste water.

Possible waste types along with their waste classification are provided in **Table 2**.

Table 2 Potential Waste Generation and EPA Classifications

| Waste Types | NSW Classification | Proposed Reuse / Recycling / Disposal Method |
|---|--|--|
| Site Preparatory & Excavation / Demolition & Construction | | |
| Cleared vegetation | General solid (non-putrescible) waste | Re-use on site, reuse for similar projects and/or disposal for composting at landfill |
| Excavated material (VENM, ENM) | General solid (non-putrescible) waste | Reuse on-site where possible or reuse for similar projects. Sandstone may be incorporated in design or sold. |
| Sediment fencing, geotextile materials | General solid (non-putrescible) waste | Reuse at other sites where possible or disposal to landfill |
| Concrete (solids and washouts) and asphalt | General solid (non-putrescible) waste | Reuse on-site where possible or recycled off-site |
| Steel reinforcing, other metals (eg wire mesh and bulk electrical cabling) | General solid (non-putrescible) waste | Off-site recycling |
| Conduits and pipes | General solid (non-putrescible) waste | Off-site recycling |
| Timber formwork | General solid (non-putrescible) waste | Reuse on-site or off-site recycling |
| Plasterboard | General solid (non-putrescible) waste | Off-site recycling or disposal |
| Bricks | General solid (non-putrescible) waste | Off-site recycling |
| Glass | General solid (non-putrescible) waste | Off-site recycling |
| Light bulbs | Hazardous waste | Off-site recycling |
| Plant Maintenance | | |
| Tyres | Special waste | Off-site recycling or disposal |
| Empty oil and other drums / tins (e.g. fuel, chemicals, paints, spill clean ups) | Hazardous waste if the containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and from which residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if the containers have been cleaned by washing or vacuuming. | Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with Sydney Water.) |
| Air and oil filters and rags | General solid (non-putrescible) waste | General solid (non-putrescible) waste |
| Batteries | Hazardous waste | Off-site recycling |
| Packaging | | |
| Packaging materials, including wood, plastic (including stretch wrap or LLPE), cardboard and metals | General solid (non-putrescible) waste | Off-site recycling |
| Wooden crates | General solid (non-putrescible) waste | Reused for similar projects, returned to suppliers, or off-site recycling |
| Work Compound and Associated Offices | | |
| Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans | General solid (non-putrescible) waste | Co-mingled recycling at off-site licensed facility |
| Clean paper and cardboard | General solid (non-putrescible) waste | Paper and cardboard recycling at off-site licensed facility |
| General domestic waste generated by workers (soiled paper and cardboard, food stuffs, polystyrene) | General solid (non-putrescible) waste mixed with putrescible waste | Disposal at landfill |
| Pump-out waste and septage (sewage) | Liquid (trade) waste | Off-site disposal at licensed facility or disposal direct to sewer where arranged with Sydney Water. |

For further information on how to determine a waste's classification, refer to the EPA's *Waste Classification Guidelines* (2014).

5.3 Construction Waste Generation Rates

The Construction Site Manager will need to record the types and quantities (including the volume in cubic metres and weight in tonnes) of wastes produced during the site preparatory and construction stages of the development. On this basis, the numbers and capacity of skips/bins can be determined.

A guide/estimate of the potential waste percentages is provided based on published waste generation rates for construction and demolition projects, as indicated in **Table 3**.

Table 3 Guideline to Waste Composition and Volumes - Construction

| Material | Estimated Waste % | Conversion Factors (tonne per m ³) |
|-----------------------------|-------------------|--|
| Hard material | 32% | 1.2 |
| Timber | 24% | 0.3 |
| Plastics | 15% | 0.13 |
| Cement sheet | 9% | 0.5 |
| Gypsum material | 6% | 0.2 |
| Metals | 6% | 0.9 |
| Paper/cardboard | 4% | 0.1 |
| Vegetation | 3% | 0.15 |
| Soil | 1% | 1.6 |
| Other (e.g chemicals/paint) | 0.3% | 0.3 |

Source: UK WRAP

The UK Department of Environment, Food and Rural Affairs (DEFRA) and the UK Building Research Establishment (BRE) have developed a number of benchmark indicators to help determine approximate tonnages of waste produced during various construction projects including civil engineering and commercial retail works. The benchmarks include Environmental Performance Indicators (EPI) which measure the volume (cubic metres, m³) of waste produced per 100 square metres (m²).

The EPI indicators provided in **Table 4** have been used for the purposes of this WMP to estimate the amounts of demolition and construction wastes that could be generated by the development.

Table 4 Environmental Performance Indicator for Waste Volumes from New Developments

| Project Type | Average Volume (m ³) of Waste per 100m ² |
|----------------------|---|
| Industrial Buildings | 14.0 |
| Commercial Offices | 20.4 |
| Civil Engineering | 28.1 |

Source: UK BRE

5.3.1 Estimation of Waste Volumes

The estimated waste volumes for the overall development area are presented in **Table 5** and **Table 6**. The waste arisings are based on the EPI estimates presented above in **Table 4**. Actual waste tonnage and composition will vary however this estimate is provided to inform potential on-site or off-site re-use and recycling opportunities.

Table 5 Estimated Construction Waste Generation for the Development

| Proposed Land Use | Area (m ²) | Estimated Waste Generation (m ³) |
|--|------------------------|--|
| Total Office | 13,431 | 2,740 |
| Total Warehouse | 316,321 | 44,285 |
| Roads (Estate and Regional) | 79,300 | 22,283 |
| Hard Landscaping (Easements and Amenity Lot) | 51,400 | 14,443 |
| Other Industrial Precinct Areas | 379,148 | 53,081 |
| Total | 839,600 | 136,832 |

Note: Assumes no waste generated by soft landscaping

Table 6 Estimated Waste Volumes and Materials for the Development

| Material | Split (%) | Waste (m ³) | Conversion factor | Waste (tonnes) |
|-----------------|-------------|-------------------------|-------------------|----------------|
| Hard material | 32% | 15,048 | 1.2 | 18,058 |
| Timber | 24% | 11,286 | 0.3 | 3,837 |
| Plastics | 15% | 7,054 | 0.13 | 917 |
| Cement sheet | 9% | 4,232 | 0.5 | 2,116 |
| Gypsum material | 6% | 2,821 | 0.2 | 564 |
| Metals | 6% | 2,821 | 0.9 | 2,539 |
| Paper/cardboard | 4% | 1,881 | 0.1 | 188 |
| Vegetation | 3% | 1,411 | 0.15 | 212 |
| Soil | 1% | 470 | 1.6 | 752 |
| Other | 0.3% | 141 | 0.3 | 42 |
| Total | 100% | 47,166 | - | 29,226 |

It is estimated that more than 70% of the predicted construction waste arisings from the total development can be re-used (on-site or at another development) or recycled off-site. (The NSW target for construction and demolition waste recycling is 75%, increasing to 80% by 2021-22)¹.

See **Appendix B** for an example WMP template.

5.4 Waste Avoidance Measures

When selecting building materials, the building designer should consider:

- using recycled steel;
- reducing the use of PVC;
- preferentially using paints, floor coverings and adhesives with low VOC (volatile organic compound) content;

¹ NSW Waste and Avoidance Resource Recovery Strategy 2014-21

- using low formaldehyde wood products, post-consumer reused timber and/or Forest Stewardship Council (FSC) certified timber;
- using fittings and furnishings that have been recycled, are made from or incorporate recycled materials and have been certified as sustainable or environmentally friendly by a recognised third party certification scheme; and
- preferentially using building materials, fittings and furnishings (including structural framing, roofing and façade cladding) that have longer life and better re-use and/or recycling potential.

The building contractor should:

- apply practical building designs and construction techniques;
- sort and segregate demolition and construction wastes to ensure efficient recycling of wastes;
- store wastes on site appropriately to prevent cross-contamination and/or mixing of different waste types;
- exercise a preference for long lifespan and/or high potential for re-use in selecting construction materials;
- re-use formwork where appropriate;
- reduce packaging waste by:
 - returning packaging to suppliers where possible and practicable;
 - purchasing in bulk;
 - requesting cardboard or metal drums rather than plastics;
 - requesting metal straps rather than shrink wrap;
 - using returnable packaging such as pallets and reels;
- ensure subcontractors are informed of and implement site waste management procedures.

5.5 Re-use, Recycling and Disposal

The building contractor is to implement the following with respect to re-use, recycling and disposal of construction waste:

- framing timber will be reused on-site or recycled off-site;
- materials such as timber, metal, brick, concrete will be recycled by an appropriately licensed recycling facility for processing and reuse;
- all solid waste timber, brick, concrete, rock that cannot be reused or recycled will be taken to an appropriate landfill site and disposed of in an approved manner;
- all metals will be recycled where economically viable;
- waste oil will be recycled or disposed of in an appropriate manner;
- windows, doors and joinery will be recycled off-site (where possible);
- all asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with Workcover Authority and EPA requirements;
- washdown equipment/plant/machinery and concrete delivery trucks within a specified, appropriately bunded, washdown bay or return to the batching plant before washing out. Liquid waste is often produced from the washing down of plant and apparatus. There may be a local sewer that this waste water can be connected to; alternatively, this could be transferred into a localised waste water treatment facility or plant;

- completion of refuelling activities in designated areas with appropriate spill containment measures to avoid overspill to sensitive areas;
- provision for the collection of fluorescent tubes, smoke detectors and other recyclable resources will be provided on site;
- co-mingled/cardboard recycling will be provided on-site for employee use or these items will be sorted recycling at an appropriately licensed facility; all garbage will be disposed of via a council approved system; and
- investigate any opportunities for materials exportation and reuse with other local construction operations. This will have two benefits: minimising energy through reduction of material reprocessing, encouraging material reuse.

5.5.1 Site Specific Procedures

In addition to the above, the Construction Site Manager will consider implementation of the following procedures:

- all used crates will be stored for reuse unless damaged;
- all cardboard waste is to be recycled via on-site recycling compactors which shall be collected by an appropriate recycling contractor;
- all glass and metals that can be economically recycled will be;
- all re-enforcing mesh to be utilised within the construction stages of the construction;
- colour bond roof material off cuts to be stockpiled on site for reuse or recycling;
- waste concrete will be disposed of at a crushing/recycling plant where practicable;
- waste bricks will be crushed and utilised on site. All half/damaged bricks and blacks will be stored on site to be removed for offsite crushing and recycling;
- excavation material will be reused on-site where possible with all excess reused on other projects or sold;
- all other solid waste including bitumen paving, tile, timber, rock and soil will be taken to an appropriate materials recycling facility/landfill site and processed in an approved manner; and
- all garbage will be disposed of via a council approved system.

5.6 Waste Storage and Servicing

For construction stages, consider minimum dedicated skips for:

- timber;
- plasterboard/gyprock;
- concrete;
- bricks;
- steel/scrap metal;
- general waste; and
- other waste (i.e. for the collection of materials that may be re-used on future projects).

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided where applicable.

Where possible, employee co-mingled recycling bins will be provided nearby common areas at work compounds/work sites for plastic and glass bottles, soft drink cans, aluminium and tin cans to ensure these items do not end up at landfill. Specialised bins for cigarette butts should also be provided outside lunchrooms and nearby common areas at work compounds/work sites.

5.6.1 Space and Amenity

Waste storage areas will be accessible and allow sufficient space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the development.

Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting. The positions of the designated waste holding areas on site will change according to building works and the progression of the development, but must consider visual amenity, OH&S and accessibility in their selection.

All waste placed in stockpile areas/skips for disposal or recycling shall be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Appropriate siting of waste stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

Waste containers are to be kept clean and in a good state of repair.

5.6.2 Servicing and Transport

The frequency of the waste removal will, in most cases, be dictated by the volume of material being deposited into each of the dedicated skips. Skips are to be checked on a daily basis by the Site Manager to ensure that skips do not overflow. If skips and/or bins are reaching capacity, removal and replacement should be organised for the next 24 hours.

All skips/bins leaving the site will be covered with a suitable tarpaulin to ensure that the spillage of wastes from the skips whilst in transit is eliminated.

All waste collection for construction works are to be conducted between 7am and 6pm daily. All site generated building waste collected in the skips and/or bins will leave the site and be deposited in the approved and appropriately licensed recycling centre, transfer station or landfill site.

5.6.3 Contaminated / Hazardous Waste

During the construction phases of the development, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g. asbestos) and dispose of all contaminated/hazardous waste at an appropriately licenced facility, where applicable.

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Construction Site Manager is to stop work immediately and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HD polythene liner, in a bunded location which is protected from inclement weather. Sediment fences should also be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal.

Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials, to prevent windblown emissions and spillage.

Decontamination of all equipment prior to demobilisation from the site is important in order that contaminated materials are not spread off-site. This should be achieved using dry cleaning methods as far as practicable and collection of material for disposal. The following additional measures should be employed on site:

- as far as possible, all tracked surfaces to be kept free of contaminated material; and
- all equipment should be cleaned in an area contained contaminated soils so that they remain within the area, or on a lined surface and collected spoil should be treated as contaminated material.

Reference should be made to the Construction Environmental Management Plan (CEMP) for further details on contamination and hazardous materials management.

5.6.4 Liquid Waste Management

Any liquid wastes or dangerous goods wastes generated by the construction activities (e.g. due to damage or leakage of containment) will be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.

Waste water storage tanks (where applicable) will be carefully monitored to ensure overflow does not occur and no liquid wastes or wash down waters will be disposed of via the stormwater drainage system.

5.6.5 Spills Management

Spills on the worksite are most likely to involve fuel, hydraulic oil or engine oil spilled from plant items, and paints and solvents.

If a spillage occurs, site staff will immediately identify the spilled materials and notify the Construction Site Manager. Then contain the spill as soon as possible so it doesn't spread.

Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main development work areas (e.g. a spill kit containing non-combustible absorbent material).

Material Safety Data Sheets (MSDS) will also be located nearby spill kit areas for advice on spillage clean-up and disposal.

5.7 Signage

Standard signage will be posted in all storage/waste collection areas and all skips/drums/bins are required to be labelled correctly and clearly to identify materials stored within.

Refer to the EPA's website for construction and demolition waste and recycling signs <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

5.8 Training and Awareness

All staff (including sub-contractors and labourers) employed during the demolition and construction phases of the development must undergo induction training regarding waste management for the development site.

Induction training is to cover, as a minimum, an outline of the WMP including:

- legal obligations;
- emergency response procedures on site;

- waste storage locations and separation of waste;
- litter management in transit and on site;
- the implications of poor waste management practices;
- correct use of general purpose spill kit; and
- responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

5.9 Monitoring and Reporting

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, dockets/receipts verifying recycling/disposal in accordance with the WMP must be kept and presented to Council when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists/logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

All environmental incidents are to be dealt with promptly to minimise potential impacts. An incident register must be maintained on-site at all times and include the contact details of the 24 hour EPA Pollution line. Likely incidents to occur during the construction phase of the development may involve fuel or chemical spills, seepage of mishandling of hazardous waste, or unlicensed discharge of pollutants to environment.

5.10 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation.

It will be the responsibility of the Construction Contractor to implement the WMP, and an employee responsibility to ensure that they comply with the guideline at all times.

Where possible, an Environmental Management Representative (EMR) should be appointed for the development. Suggested roles and responsibilities are provided below.

Table 7 Recommended Roles and Responsibilities

| Role | Responsibility |
|---------------------------|---|
| Construction Site Manager | <ul style="list-style-type: none">- Ensuring plant and equipment are well maintained.- Ordering only the required amount of materials.- Keeping materials segregated to maximise reuse and recycling.- Ultimately responsible for routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP. |

| | |
|---|---|
| Environmental Management Representative (EMR) | <ul style="list-style-type: none">- Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical.- Establishing separate skips and recycling bins for effective waste segregation and recycling purposes.- Training and awareness of the requirements of the WMP and specific waste management strategies adopted for the development.- Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements.- Approval of off-site waste disposal locations and checking licensing requirements.- Assessment of suspicious potentially contaminated materials, hazardous materials and liquid wastes.- Monitoring, inspection and reporting requirements. |
|---|---|

Daily visual inspections of waste storage areas may be delegated to other on site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the site induction and contract engagement process.

It is the responsibility of the Construction Contractor (or site operative) to notify Council of the appointment of waste removal, transport or disposal contractors.

6 OPERATIONAL WASTE MANAGEMENT PLAN

Ineffective waste management for commercial premises can lead to environmental pollution, offensive odours, litter, attraction of vermin and occupational safety and hygiene problems.

Effective waste management reduces costs through the reuse of resources and minimisation of fees associated with removal, transportation and disposal of waste, and improves environmental outcomes locally, regionally and globally.

Effective waste management is achieved through the implementation of a WMP for the operational life of the development.

6.1 Targets for Resource Recovery

The performance of each development contributes to overall NSW State recycling targets, which for the commercial and industrial (C&I) sector, is 70% of total C&I waste recycled by the year 2021 (see NSW Waste Avoidance and Resource Recovery Strategy 2014-21).

6.2 Waste Streams and Classifications

The operation of the site will generate the following broad waste streams:

- general waste;
- packaging wastes (ie cardboard, paper, plastic / shrink wrap, pallets);
- office wastes;
- amenity wastes; and
- maintenance wastes.

Potential waste types along with their waste classification are provided below in **Table 8**.

Table 8 Potential Waste Generation and EPA Classifications – Operational

| Waste Types | NSW Classification | Proposed Reuse / Recycling / Disposal Method |
|--|---|--|
| General Operations | | |
| General garbage (including non-recyclable plastics) | General solid (putrescible and non-putrescible) waste | Disposal at landfill |
| Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans | General solid (non-putrescible) waste | Co-mingled recycling at off-site licensed facility |
| Paper | General solid (non-putrescible) waste | Off-site secure shredding and recycling |
| Food waste | General solid (putrescible) waste | Option to compost on site. Alternatively, off-site recycling or dispose to landfill with general garbage |
| Bulk cardboard | General solid (non-putrescible) waste | Cardboard recycling at off-site licensed facility |
| Plastic packaging materials (including stretch wrap or LLPE) | General solid (non-putrescible) waste | Baled and sent for off-site recycling |
| Bulk polystyrene | General solid (non-putrescible) waste | Recycling at off-site licensed facility or disposal at landfill |
| Wooden crates / pallets | General solid (non-putrescible) waste | Reused for similar projects, returned to suppliers, or off-site recycling |

| Waste Types | NSW Classification | Proposed Reuse / Recycling / Disposal Method |
|--|--|--|
| Maintenance | | |
| E-waste, batteries, printer toners and ink cartridges | Hazardous waste | Off-site recycling |
| Spent Smoke Detectors ¹ | General solid (non-putrescible) waste OR Hazardous waste (some Commercial varieties) | Disposal at landfill OR offsite disposal at licensed facility |
| Glass (other than containers) | General solid (non-putrescible) waste | Off-site recycling |
| Light bulbs | Hazardous waste | Off-site recycling |
| Maintenance waste (i.e. empty oil / paint drums, chemicals, solvents, area wash downs etc) | Hazardous waste if the containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and from which residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if the containers have been cleaned by washing or vacuuming. | Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility. (Note: Discharge to sewer subject to Trade Waste Agreement with Sydney Water.) |
| Air-conditioning parts and filters | General solid (non-putrescible) waste | Disposal to landfill |
| Garden organics (lawn mowing, tree branches, hedge cuttings, leaves etc) | General solid (non-putrescible) waste | Reuse on site or contractor removal for recycling at licensed facility |
| Amenities | | |
| Grey water (from bathrooms) | Liquid waste | Discharge to sewer |
| Sewage | Liquid (trade) waste | Discharge to sewer |
| Sanitary Waste | General solid waste (putrescible) | Contractor disposal at licensed facility |

Source: <http://www.environment.nsw.gov.au/waste/envguidlns/index.htm>

Note 1: The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's *Code of practice for the near-surface disposal of radioactive waste in Australia (1992)* must be met. Contact ARPANSA for more information. http://www.arpansa.gov.au/radiationprotection/factsheets/is_smokedetector.cfm

For further information on how to determine a waste's classification, refer to the EPA's *Waste Classification Guidelines* (2014).

6.2.1 Operational Waste Generation Rates

Estimated commercial and retail waste generation rates are published in the EPA's Better Practice Guidelines. Waste generation rates have also been sourced from additional publicly available and published sources where relevant.

Table 9 Estimated Waste Generation Rates for Different Types of Premises

| Type of Premises | Average L per 100m ² per day | |
|-------------------------|---|-----------|
| | Waste | Recycling |
| Offices | 8 | 6 |
| Warehouses ¹ | 30 | 30 |

Note 1: Sourced from Randwick City Council's Waste Management Guidelines (Appendix A Waste Generation Rates)

The above waste generation rates for Offices and Warehouses have been applied to estimate waste arisings associated with the operation of the development site.

6.2.2 Estimation of Waste Volumes / Tonnages

The actual amount and composition of waste generated by the development will be influenced by the nature of the businesses that occupy each of the buildings. The following waste arisings are an indication of typical waste generation volumes that can be expected during the operational phase of the development site.

Table 10 Anticipated Weekly Waste Generation

| Type of Premises | Site Area (m ²) | Average L per day | | Average L per week | |
|--------------------|-----------------------------|-------------------|---------------|--------------------|----------------|
| | | Waste | Recycling | Waste | Recycling |
| Total Office | 13,431 | 1,074 | 806 | 5,372 | 4,029 |
| Total Warehouse | 316,321 | 94,896 | 94,896 | 474,482 | 474,482 |
| Total Waste | | 95,971 | 95,702 | 479,854 | 478,511 |

Table 11 provides a breakdown of the anticipated typical weekly waste generation by development Precincts.

Table 11 Anticipated Weekly Waste Generation

| Precinct | Area (ha) | % of Total Development Area | Waste (L) | Recycling (L) |
|--------------|--------------|-----------------------------|----------------|----------------|
| Precinct 1 | 16.46 | 23.2 | 111,481 | 111,169 |
| Precinct 2 | 7.31 | 10.3 | 49,510 | 49,371 |
| Precinct 3 | 18.94 | 26.7 | 128,278 | 127,919 |
| Precinct 4 | 14.26 | 20.1 | 96,581 | 96,311 |
| Precinct 5 | 6.46 | 9.1 | 43,753 | 43,630 |
| Precinct 6 | 6.84 | 9.7 | 46,327 | 46,197 |
| Amenity Lot | 0.58 | 0.8 | 3,929 | 3,918 |
| Total | 70.85 | 100% | 479,859 | 478,515 |

It is recommended that scheduled waste audits be undertaken approximately one month into the operational phase of the development to quantify actual waste composition and generation rates produced by each building occupant.

The assessment of generated waste volumes will also be influenced by management and employee attitude to recycling and disposal.

See **Appendix B** for an example WMP template.

6.3 Waste Avoidance, Re-use and Recycling Measures

The reduction, re-use and recycling of waste can be achieved by incorporating measures such as the below.

6.3.1 Waste Avoidance

Waste avoidance measures may include:

- provision of take-back services to clients to reduce waste further along the supply chain;
- re-work/re-packaging of products prior to local distribution to reduce waste arisings;
- review of packaging design to reduce waste but maintain 'fit for purpose';

- providing ceramic cups, mugs, crockery and cutlery rather than disposable items;
- presenting all waste reduction initiatives to staff as part of their induction program; and
- investigating leased office equipment and machinery rather than purchase and disposal.

6.3.2 Re-use

Establish systems with in-house and with supply chain stakeholders to transport products in re-useable packaging where possible.

6.3.3 Recycling

Recycling opportunities include:

- use of a plastic baler for the collection of all plastic stretch wrapping and general plastic products for ease of recycling;
- flatten or bale cardboard to reduce number of bin lifts required;
- paper recycling trays provided in office areas for scrap paper collection and recycling;
- printer toners / ink cartridges are collected in allocated bins for appropriate contractor disposal;
- development of 'buy recycled' purchasing policy; and
- providing recycling collections within each of the offices (e.g. plastics, cans and glass).

6.4 Waste Storage and Servicing Requirements

6.4.1 Waste Storage Area Requirements

Each Precinct will have its own waste and recycling storage area where the recycling bins, garbage bins, and cardboard and plastic bales will be stored prior to collection. Appropriate waste storage areas will be identified by the operator of each building. The construction of the storage areas will comply with the below requirements.

The construction of garbage areas, rooms and equipment/bins are to comply with BCA (Building Code of Australia) requirements and Australian Standards. Refer to Section 2.6.3 of the EPA's *Better Practice Guidelines* (2012) for bin storage area specifications.

Waste/recycling storage areas will be constructed of an adequate size to accommodate all waste bins and recycling bales associated with the development.

Doors/gates to the storage area will be able to be opened from both the inside and outside and wide enough to allow for easy passage of waste/recycling containers.

Sufficient space will be provided for the segregation and storage of varying waste types including provision for the collection of fluorescent tubes, smoke detectors, e-wastes and other recyclable resources.

Sufficient space will also be provided for reuse items such as crates and pallets for occupational safety purposes.

6.4.2 Waste Servicing

Sufficient clearance will be provided to enable collection vehicles to access the bin storage area. Where possible, collection times should not coincide with peak operational delivery schedules.

Section 2.6.4 Collection Points of the EPA's *Better Practice Guidelines* (2012) provides general guidelines for collection points which are reproduced below.

Collection points should:

- not be near intersections, ramps, roundabouts, pedestrian crossings, on busy roads or in narrow lanes;
- not be near awnings, overhead wires, trees or other overhead structures;
- be clear of air-conditioning and other service ducts and pipes, sprinklers, CCTV cameras, movement sensors;
- smoke detectors and other ceiling fixtures if located inside a building;
- be on level surfaces rated for heavy vehicles;
- have plenty of room for trucks to manoeuvre and reverse if necessary;
- have enough room for bins to be manoeuvred by the driver for servicing;
- be away from public areas;
- be well clear of vehicle, pedestrian, public, staff and visitor traffic areas;
- not be restricted by parked cars or vehicle loading or unloading;
- not be restricted by bollards, signs, plants, bins, seats or other street furniture;
- not require vehicles to reverse;
- not block the normal operations of the building; and
- be accessible at the times the collections are scheduled to take place and not behind locked gates.

6.5 Special Wastes

6.5.1 Contaminated / Hazardous Wastes

- All contaminated and hazardous wastes (i.e. fluorescent tubing, batteries, e-wastes and smoke detectors) should be recycled at an appropriately licensed facility.
- E-waste (electronic waste such as computers, mobile phones, printer toners and ink cartridges) and batteries contain heavy metal contaminants and should be recycled at an appropriately licensed recycling facility.
- Commercial-use smoke detectors should be returned to the supplier for disposal (it is a condition of the supplier's licence to sell smoke detectors) and not disposed of with general landfill waste as they contain small amounts of radioactive material. Contact the supplier and/or the EPA for information on how to return used smoke detectors.

6.5.2 Liquid Waste

- Liquid, semi-liquids or moist substances will not be placed in waste containers, unless securely wrapped or contained to prevent the substance from leaking.
- Any liquid wastes or dangerous goods wastes generated by the development (e.g. due to damage or leakage of containment) should be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.
- No liquid wastes or wash down waters should be disposed of via the stormwater drainage system. Wastewater storage tanks (including stormwater collection tanks) should be carefully monitored to ensure overflow does not occur.

6.5.3 Stormwater Treatment

Car parking areas must drain to a stormwater treatment device capable of removing litter, oil, grease and sediment prior to discharge to the stormwater system.

All wastewater and stormwater treatment devices are required to be regularly maintained and cleaned to ensure these devices remain effective, with all solid and liquid wastes collected from these devices disposed of in accordance with this WMP and the POEO Act.

6.5.4 Spills Management

Containment measures for spillages should be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main warehouse operation areas (e.g. a spill kit containing non-combustible absorbent material). Material Safety Data Sheets (MSDS) should also be located nearby spill kit areas for advice on spillage clean up and disposal.

6.5.5 Signage

Education and communication must be regular and ongoing to overcome the transient nature of contractors and visiting staff members. The main signage aspects to consider are:

- garbage and recycling bins must be clearly and correctly labelled at all times;
- waste storage areas must have clear signage instructing cleaners and tenants how to correctly separate (if required);
- the location of, and directions to, waste storage areas must be well signposted;
- all hazards or potential dangers associated with the waste facilities should be clearly identified, especially those linked to compaction or other waste handling equipment; and
- emergency contact information should be displayed in case there are any issues with the waste and recycling systems/services in the building.

Coloured and labelled bin lids are necessary for identifying bins. All signage should conform to the relevant Australian Standard and the EPA's standard recycling signs. Refer to the EPA's website for commercial use waste and recycling signs <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

The design and use of safety signs for waste rooms and enclosures should comply with AS 1319 Safety signs for the occupational environment. Australian Standards are available from the SAI Global Limited website (www.saiglobal.com).

6.5.6 Contract Clauses

Waste collection contracts and cleaning contracts should include clauses relating to waste servicing requirements. Lease agreements should also outline and enforce proper use of waste facilities.

Refer to Appendix H of the EPA's *Better Practice Guidelines* (2012) for example clauses.

6.6 Roles and Responsibilities

It should be the responsibility of Site Management to implement the WMP and a responsibility of the employees and cleaners to ensure that they comply with the guideline at all times.

Site Management should routinely check waste sorting and storage areas for cleanliness, hygiene and OH&S issues, and also ensure all monitoring and audit results are well documented and carried out as specified in the WMP.

An outline of waste management responsibilities are presented in **Table 12**.

Table 12 Waste Management Responsibility Allocation

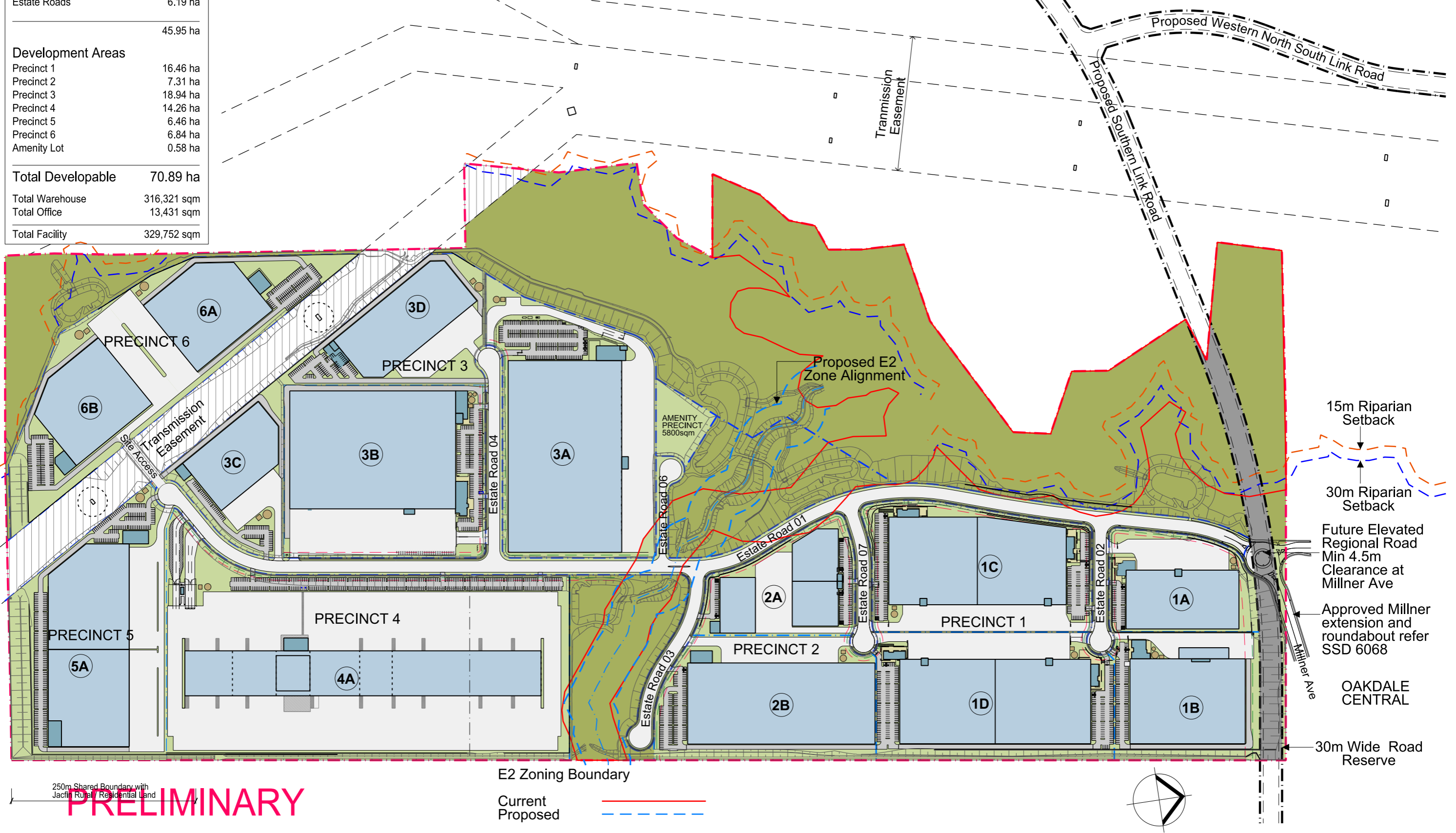
| Responsible Person | General Tasks |
|----------------------|--|
| Management | <p>Ensure the WMP is implemented throughout the life of the operation.</p> <p>Update the WMP on a regular basis (e.g. annually) to ensure the Plan remains applicable.</p> <p>Undertake liaison and management of contractor collections.</p> <p>Organise internal waste audits on a regular basis.</p> <p>Manage any complaints and non-compliances reported through waste audits etc.</p> <p>Perform inspections of all waste storage areas and waste management equipment on a regular basis.</p> <p>Organise cleaning and maintenance requirements for waste equipment.</p> <p>Monitor bins to ensure no overfilling occurs.</p> <p>Ensure effective signage, communication and education is provided to alert employees / cleaners about the provisions of this WMP and waste management equipment use requirements.</p> <p>Monitor and maintain signage to ensure it remains clean, clear and applicable.</p> <p>Ensure garbage holding area and storage rooms are kept tidy.</p> <p>Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.</p> |
| Cleaners | <p>Removal of general waste, recyclables, cardboard waste and hazardous waste from offices and locations around the warehouse for transfer to centralised waste and recycling collection rooms or holding area as required.</p> <p>Transport of all bins to the holding areas / collection areas as required.</p> <p>Cleaning of all bins and waste and recycling rooms on a weekly basis or as required.</p> |
| Gardening Contractor | <p>Removal of all garden organics waste generated during gardening maintenance activities for recycling at an offsite location or reuse as organic mulch on landscaped gardens.</p> |

Site Area Schedule

| | |
|--------------------------|--------------------|
| Total Site Area | 117.117 ha |
| Less: | |
| Non Developable Land | 33.46 ha |
| Easements | 4.56 ha |
| Regional Roads | 1.74 ha |
| Estate Roads | 6.19 ha |
| | 45.95 ha |
| Development Areas | |
| Precinct 1 | 16.46 ha |
| Precinct 2 | 7.31 ha |
| Precinct 3 | 18.94 ha |
| Precinct 4 | 14.26 ha |
| Precinct 5 | 6.46 ha |
| Precinct 6 | 6.84 ha |
| Amenity Lot | 0.58 ha |
| Total Developable | 70.89 ha |
| Total Warehouse | 316,321 sqm |
| Total Office | 13,431 sqm |
| Total Facility | 329,752 sqm |

| | | |
|-------------------|---------------------|---------------------|
| Precinct 1 | | |
| | Approved MP03 Rev M | Proposed MP03 Rev P |
| Precinct 1 | 104,739 sqm | 93,230 sqm |
| Total | 331,311 sqm | 329,752 sqm |

OAKDALE WEST
LOT 1
DP 120679



250m Shared Boundary with Jacin Rural Residential Land
PRELIMINARY

E2 Zoning Boundary
Current ———
Proposed - - - - -

