# Confidential Kemps Creek Data Centre Waste Management Plan

SYD05-06-07\_Y-R-0008

Revision 2 | 16 April 2021

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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# **Document verification**

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# **Executive summary**

This waste management plan has been prepared for the proposed data centre in accordance with the requirements of the NSW Department of Planning, Industry and Environment (DPIE), which has included consideration of the operational and construction phases of the development. This plan also considers the *Mamre Road Draft Development Control Plan (2020) (DCP)* where applicable.

This waste management plan has been prepared in line with the waste management hierarchy (Figure 2), which summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.

A summary of the potential construction waste generated during construction of the proposal as well as waste management is summarised in Section 4.2 and 4.3. Operational waste generation and management, including estimated operational waste quantities and collection requirements are summarised in Section 5.

The architectural plans used to produce this report for the proposal is attached in Appendix A. The swept paths for loading dock areas is provided in Appendix B.

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# 1 Introduction

Arup has been engaged to prepare a Waste Management Plan (WMP) in response to the Secretary's Environmental Assessment Requirements (SEARs) to support the Development Application (DA) for the proposed Kemps Creek Data Centre. This WMP will also address the requirements in the Mamre Road Precinct Draft Development Control Plan (DCP) specific to waste management. This WMP applies to waste generated from the site preparation, construction and operational stages of the Development and was prepared using architectural drawings provided by Greenbox (refer Appendix A). This WMP is subject to review pending further design development.

## **1.1** Site context

The identified site address that is the subject of this WMP is legally defined as 757-769 Mamre Road, Kemps Creek. The entire Site comprises a total area of approximately 17.38 hectares (ha) and is subject to the applicable provisions outlined within SEPP (WSEA) 2009. Access to the Site is currently obtained via the proposed Estate Access Roads (SSD 9522), which are accessed from Mamre Road. Access into the Site is made possible via Mamre Road, which is subject to future road widening as part of the Mamre Road Widening Project (Transport for NSW).

The Site is situated approximately 40.26 km west of the Sydney CBD, 22.11 km west of Parramatta and 11.97 km southeast of Penrith. It is within close proximity to transport infrastructure routes (predominantly the bus network), as well as sharing direct links with the wider regional road network, including Mamre Road and both the M4 & M7 Motorways. All of which provide enhanced connectivity to the Subject Site and immediate vicinity, as well as the wider locality.

Additionally, the Subject Site is located within close proximity to active transport links, such as bicycle routes, providing an additional mode of accessible transport available to the Subject Site. In its existing state, the Subject Site comprises an undeveloped land portion; however, is subject to bulk earthworks and infrastructure works under a concurrent State Significant Development (SSD) Application – SSD 9522.

The Proponent is proposing to construct and operate a Data Centre on the Subject Site. The Site is located within the Penrith Local Government Area (LGA) and is zoned IN1 General Industrial under the provisions of State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP (WSEA) 2009). Development for the purpose of a Data Centre is permissible with consent within the IN1 General Industrial zone pursuant to the provisions outlined with Part 3, Division 3, Clause 27 of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP).

The site and surrounding context are illustrated in Figure 1.







Aerial Imagery: DFSI, 2020

#### Site Context and Surrounding Area

	Meters		
100	200	300	400
1-03-03	ICD	LS	
Date	Ву	Chkd	Appd

# ARUP

Level 5, Barrack Place, 151 Clarence St, PO Box 76 Millers Point, Sydney NSW 2000 Tel +61 (2)9320 9320 www.arup.com Scale at A3 Figure Status 1:10,000 Draft

## Coordinate System

o o o raina to o yoto in		
GDA 1994 MGA Zone 56		
Job No	Figure No	
277863-00	Figure 01	

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# 1.2 Objectives

The purpose of this report is to outline management provisions for construction and operation waste generated by the development. This WMP provides an assessment of waste generation during the construction and operation of the proposal and outlines how these impacts will be minimised or mitigated. The objectives of this WMP are to:

- Identify potential wastes likely to be generated at the site during site preparation, construction works and operation.
- Encourage waste avoidance during design, construction and operation.
- Provide advice on how such wastes should be handled, collected, processed and disposed of, re-used or recycled in accordance with Council requirements, relevant Australian Codes and Standards and better practice waste minimisation principles.

# 1.3 **Review of WMP**

This WMP is a working document that required review and updates to ensure the ongoing suitability for the proposed operations at the site and reflects any changes to the design.

This WMP shall be reviewed and updated:

- To reflect any design changes.
- To remain consistent with waste and / or landfill regulations and guidelines.
- To take advantage of new technologies, innovations and methodologies for waste or recycling management where appropriate.

# **1.4 SEARs and DCP requirements relevant to this report**

Table 1 identifies the SEARs and DCP requirements which are relevant to this technical assessment and where these are addressed in the WMP.

SEARs relevant to this WMP	Where addressed in this WMP
Details of the quantities and classification of all waste streams to be generated on site during the development.	Section 4.2, Section 5.2 and Section 5.4 of this report.
Details of waste storage, handling and disposal during the development.	Section 4 and Section 5 of this report.
Details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and	Section 4 and Section 5 of this report.

Table 1: SEARs and DCP requirements for Waste

SEARs	s relevant to this WMP	Where addressed in this WMP
guidanc Strategy	e in the NSW Waste Avoidance and Resource Recovery 2014-2021.	
Agency	v comments	
The EIS prepared to support the state significant development application should provide a detailed and comprehensive description of the proposal. All environmental impacts of the proposal will need to be identified in the EIS and supported by technical assessment reports prepared by appropriately qualified persons and in accordance with applicable legislation, guidelines and standards. I note that the Report has committed to the preparation of several documents to support the application, including a Preliminary Risk Screening Report to address SEPP 33, a contamination investigation addendum, a Noise Impact Assessment, an Air Quality Impact Statement and a Waste Management Plan.		
DCP R	equirements (Waste – Section 4.7)	
Control 1: Applicants are to submit a Waste Management PlanThis report.when lodging a development application for Demolition or construction of buildings.This report.		
Control scaled w demonst	<b>2:</b> The Waste Management Plan must be supported by vaste management drawings that are to assist in trating compliance with the provisions of this Plan	Figure 6, Figure 7 and Figure 8
Control	5: Waste storage and collection areas should be:	Section 5.5
•	Flexible in their design so as to allow for future changes in the operation, tenancies and uses;	
٠	Located away from primary street frontages, where applicable;	
•	Suitably screened from public areas so as to reduce the impacts of noise, odour and visual amenity; and	
•	Designed and located to consider possible traffic hazards (pedestrian/vehicular) likely to be caused by the storage and collection of waste.	
<b>Control</b> the design	<b>6:</b> The following features will need to be considered in gn of waste storage and collection areas:	Section 5 Clinical waste is not
•	Mamre Road Precinct – DRAFT Development Control Plan (November 2020)	applicable to the proposed site
•	NSW Department of Planning, Industry and Environment	
•	Dry recyclables including containers, paper, cardboard and toners for printers and photocopiers should be separated from other waste, for recycling;	
•	Food scraps should be placed in specialised containment bins and collected on a regular basis (particularly where large volumes of perishable wastes are generated);	
•	Refrigerated garbage rooms should be provided where there are large quantities of perishable wastes and infrequent collections; and	

SEARs relevant to this WMP	Where addressed in this WMP
<ul> <li>Clinical or hazardous and liquid waste should be placed in specialised containment bins and collected by specialised services.</li> </ul>	
<b>Control 7:</b> Grease traps must be provided where there is a likelihood of liquid waste entering the drainage systems (contact Sydney Water to obtain trade waste requirements).	Not applicable to this development.
<b>Control 8:</b> Communal storage/collection facilities are recommended where:	Section 5.6.1
• The design makes it difficult for all tenants to have ready access to a collection point; or	
• The site characteristics restrict vehicle entry.	
<b>Control 9:</b> Where a communal facility exists, each tenant should have a designated area which is clearly signposted.	Section 5.5.1
<b>Control 10:</b> Should a collection vehicle be required to enter the property the driveway and manoeuvring area must be suitable for a collection vehicle in terms of both its strength and design	Section 0
<b>Control 11:</b> The system for waste management must be compatible with the collection service(s) to be used whether Council or private contractor.	Section 5.6
<b>Control 12:</b> Swept paths demonstrating adequate manoeuvring area are to be provided with the application.	Appendix B
DCP Requirements (Aviation safeguarding – Section 2.1.1)	
<b>Control 10:</b> Development must not attract wildlife which would create a safety hazard in the operations of the Airport.	Section 5.5.3
<b>Control 11:</b> All waste bins are to be designed and installed with fixed lids.	Section 5.5.3
<b>Control 12:</b> Any bulk waste receptacle or communal waste storage area must be contained within enclosures that cannot be accessed by birds or flying foxes.	Section 5.5.3

# 2 Waste Policy and Best Practice

## 2.1 Waste Policy, Guidelines and Plans

This WMP has been prepared in accordance to the following policy, standards, guidelines and plans:

- The National Waste Policy: Less Waste More Resources 2018
- Australian Standards, Mobile waste containers (AS 4123.1—2008)
- NSW Protection of the Environment Operations Act (POEO Act) 1997
- NSW Waste Avoidance and Resource Recovery Act (WARR Act) 2001
- NSW Waste Avoidance and Resource Recovery Strategy 2014-2021 (WARR Strategy)
- NSW Protection of the Environment Operations (Waste) Regulations 2014
- NSW Waste Classification Guidelines 2014
- NSW EPA Resource Recovery Orders and Resource Recovery Exemptions
- NSW EPA Waste Levy Guidelines 2015
- Standards for Managing Construction Waste in NSW 2019
- Draft Mamre Road Precinct Development Control Plan (DCP) 2020
- Penrith City Council Industrial, Commercial and Mixed-Use Waste Management Guidelines 2019 (Penrith Guidelines)
- City of Sydney's Guidelines for waste management in new developments 2018

# 2.2 Best Practice

#### 2.2.1 Waste Hierarchy

This WMP has been prepared in line with the waste management hierarchy (Figure 2), which summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.

The waste management hierarchy comprises the following principles, from most to least preferable:

- Avoid and Reduce: prevention or reduction of waste generation and is the preferred option on the waste hierarchy.
- **Reuse:** using a project for the same or a similar use without substantially changing the form of the waste.
- **Recycle:** recovery and processing of waste that is no longer usable in its current form to produce new products.

- **Energy recovery:** processing of residual waste materials to recover energy.
- Treat: to reduce potential environmental, health and safety risks.
- **Disposal:** removing waste and transporting to a licensed disposal facility, such as a landfill.



Most preferable

Figure 2: Waste management hierarchy

## 2.3 Sustainability

#### 2.3.1 LEED rating

The proposal is targeting a LEED Gold rating. The requirements for achieving a LEED Gold rating which are related to waste are identified in Table 2. These requirements are addressed in this WMP where possible. Updates will be required subject to detailed design.

Credit	Credit requirements	Section of Report
Construction and demolition waste planning	<ul> <li>Integrate the contractor into the early design phase, develop and implement a construction and demolition waste management plan:</li> <li>Establish waste diversion goals for the project by identifying at least five materials (both structural and non-structural) targeted for diversion. Approximate a percentage of the overall project waste that these materials represent.</li> </ul>	Detailed information regarding construction and demolition phase is not available at this stage of design. The preparation of a detailed construction waste management plan will be the responsibility of the contractor, and will be subject to detailed design.

Table 2: Requirements for LEED Gold Star rating for waste

Credit	Credit requirements	Section of Report
	• Specify whether materials will be	
	separated or commingled and	
	describe the diversion strategies	
	planned for the project. Describe	
	where the material will be taken	
	and how the recycling facility will	
	process the material.	
	allemative daily cover (ADC) does not qualify as material diverted from disposal	
	L and clearing debris is not considered	
	construction, demolition, or renovation	
	waste that can contribute to waste	
	diversion.	
	Provide a final report detailing all major	
	waste streams generated, including disposal	
	and diversion rates.	
Construction and	Reduce construction and demolition waste	Refer to Section 4.1
management	facilities by recovering reusing and	Detailed information
management	recycling non-hazardous materials.	regarding construction and
	Credit requirements:	demolition phase is not
	• Recycle and/or salvage non-	available at this stage of
	hazardous waste	design.
	• Divert 75% of construction and	
	demolition waste	The preparation of a
	• Four Material Streams -	construction waste
	concrete/asphalt; scrap metals;	the responsibility of the
	cardboard: etc	contractor, and will be
	<ul> <li>Calculations can be by weight or</li> </ul>	subject to detailed design.
	volume	
	For projects that cannot meet credit	
	requirements using reuse and recycling	
	methods, waste to energy systems may be	
	considered waste diversion if	
	• The European Commission Waste	
	and Waste Incineration Directive	
	2000 76 /FC are followed	
	Waste to Energy facilities meet	
	applicable European Committee	
	for Standardization (CEN) 303	
	standards	
	Exclude:	
	Excavated soil, land clearing debris,	
	Include: Wood waste converted to fuel	
	(biofuel) in the calculations	
	Other types of waste to energy are not	
	considered diversion for this credit	
Storage and	Provide dedicated areas for the collection	Section 5.5 and 5.6
collection of	and storage of recyclable materials meeting	
recyclables	the following	
	• accessible to waste haulers and	
	building occupants	
	• sare, minimizing any nearm and environment risk	

Credit	Credit requirements	Section of Report
	separate locations	
	<ul> <li>An environmental consultant/expert must be appointed to provide guidance on: <ul> <li>estimated volumes/weights generated and required waste size/areas.</li> <li>suitable and oriented strategy for segregation (at source), storage and collection of the main waste types generated within the new data control</li> </ul></li></ul>	This WMP provides this guidance.
	Minimum storage and collection requirements: Recyclable materials (minimum): • Mixed paper • Corrugated cardboard • Glass • Plastics • Metals Hazardous material (minimum two): • Batteries • Mercury-containing lamps	Section 5.2

# **3 Development Description**

# 3.1 Overview

The proposal site is currently undeveloped land that is inactive therefore the proposal site does not currently generate waste. Site preparation including clearing and earthworks for installation of services, foundation slabs etc. will be undertaken.

The proposed development is anticipated to include construction of the following:

- A ground floor (Level 1) including carparks, plant, a substation yard, three admin blocks each including its own loading dock, a small outdoor recreation facility and ten data halls with circulation corridors between; and
- A second floor (Level 2) with ten data halls with circulation corridors between.

The proposed layout is shown in Figure 3. Refer to Appendix A for full architectural drawings.



Figure 3: Proposed Layout

# 4 **Construction and Demolition Waste**

## 4.1 Waste Diversion Targets

Waste diversion for the site should follow the NSW EPA WARR Strategy and the LEEDs gold star minimum requirements. These targets include:

- Minimum 75% diversion of construction and demolition waste; and
- Separation of a minimum of four Material Streams such as concrete/asphalt; scrap metals; brick and masonry; drywall; wood; cardboard; etc

Waste reporting and audits can be used to determine the actual percentage of wastes that are being, or have been, recycled during the site preparation and construction stages of the development. It is anticipated that the waste minimisation measures detailed in the following sections will assist the Project in meeting these targets.

# 4.2 **Potential Waste Streams**

The site preparation and construction activities are anticipated to generate the following broad waste streams:

- Site clearance and excavation wastes
- Construction waste
- Packaging waste
- Construction work compound waste from on-site employees

The majority of the site will be excavated, vacant land therefore demolition waste will be minimal.

Initial site testing results do not indicate soil contamination on site as per JBS&G Phase 2 Contamination report (2019) for SSD 9522.

A summary of likely waste types generated from site preparation and construction activities, along with their waste classifications and proposed management methods, is provided in Table 3. For further information for the determination of a waste's classification refer to the *NSW EPA Waste Classification Guidelines* (2014).

#### Table 3: Potential construction waste types and management

Waste stream	Expected waste classification under NSW Waste Classification Guidelines	Expected management pathway
	Waste Classification Guidelines	
Site clearance and excavation wastes		
Green waste	General solid waste (non-putrescible) (garden waste)	Off-site recycling
"Clean" fill	To be classified subject to the results of testing	Beneficial re-use on-site or off-site, if assessed to be suitable
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or Virgin excavated natural material (VENM)	To be classified subject to the results of testing	Beneficial re-use on-site or off-site, if assessed to be suitable
Construction	·	
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Off-site recycling. Cleaned for reuse, rendered over or crushed for landscaping or driveway use
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling. Treated: reused for formwork, bridging, blocking, propping or second hand supplier. Untreated: reused for floorboards fencing, furniture, mulched second hand supplier
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second hand supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling; glazing or aggregate for concrete production

Waste stream	Expected waste classification under NSW Waste Classification Guidelines	Expected management pathway
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal
Paint	Hazardous waste	Off-site recycling or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Packaging		
Packaging materials, including wood, plastic (including stretch wrap or LLPE), cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates / pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers where possible, or off-site recycling.
Construction work compound and associate	ed offices	
Food Waste	General solid (putrescible) waste	On-site processing (composting or similar) or off-site licensed processing facility
Recyclable beverage containers (glass and plastic bottles, aluminium cans), steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or at a local NSW container deposit scheme off-site licensed facility
Clean paper and cardboard	General solid (putrescible) waste	Paper and cardboard recycling at off-site licensed facility
Confidential paper	General solid (putrescible) waste	Shredding and recycling at off-site licensed facility
General domestic waste generated by workers (soiled paper and cardboard, food stuffs, polystyrene)	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill
Sanitary waste	General solid (putrescible) waste	Collection from point of generation by a specialised waste collection contractor and disposed to landfill.

# 4.3 Estimated Quantities

The following Table 4 details estimates for construction waste to be produced during construction of the proposal. This data has been pro-rated from construction industry reference metrics<sup>1</sup> based on the total site area.

Construction waste type	Total (tonnes)
Bricks / Tiles	485
Concrete	1422
Soil / Sand / Rubble Fines	1024
Metals (ferrous)	991
Metals (non-ferrous)	176
Timber	3630
Green Waste	45
Cardboard / Paper	1035
Plastic	916
Plasterboard	779
Landfill	973
Total	11471

Table 4: Construction waste estimates for the proposal

# 4.4 Construction Waste Management

The primary goal for waste management in the construction, demolition and excavation phase is to ensure the highest possible proportion of waste is recycled or reused. Waste will be generated at the site during the construction and demolition (C&D) phase of the proposal. C&D waste will be managed in line with standard industry practice, to prevent environmental damage and, where possible, recover materials for reuse and recycling.

Council's DCP requires architectural drawings to show details of the storage areas for demolition and construction waste. This includes the size and location of areas, heavy vehicle access to the areas, excavation areas, storage bins and signage. At the time of developing this plan, estimated waste quantities and construction staging drawings were not available. C&D waste management for the proposal is routine and adequately managed through standard industry practice. The information required by the DCP will be documented in the construction environmental management plan (CEMP) prior to starting onsite works. The WMP within the CEMP will outline:

- Types and volumes of waste likely to be generated and areas to be excavated.
- The procedure for assessing, classifying and storing waste in line with the NSW EPA Waste Classification Guidelines.

<sup>&</sup>lt;sup>1</sup> Provided by Linesight on 11/03/21

- On-site storage areas, sorting areas and treatment of waste, including proposed storage bins, stockpiles and signage.
- Access for waste collection vehicles.
- Methods of transport and disposal of wastes, including waste that possesses hazardous characteristics, so that any waste leaving the site is transported and disposed of lawfully and does not pose a risk to human health or the environment.
- Opportunities for reducing waste, reusing materials and increasing recycling.
- Requirements for compliance with the Waste Avoidance and Resource Recovery Act 2001.
- The Resource Recovery Orders and Exemptions requirements applicable to the waste on site.

#### 4.4.1 Waste Avoidance

In accordance with Penrith Council's DCP and better practice waste management recommendations to promote waste avoidance during the construction phase include:

- Ensure the development is designed to minimise site disturbance and eliminate unnecessary excavation;
- Detailed estimates of material requirements to reduce over ordering of materials;
- Incorporate modular or refabricate components where possible;
- Minimise packaging of materials by ordering in bulk and specify the use of cardboard rather than plastic packaging;
- Ensure materials arrive "as needed" to avoid long term storage of materials that may become damaged due to weather or moisture damage;
- Explore opportunities to return used materials to the supplier or manufacture; and
- Select materials that do not require finishes and have a longer lifespan.

#### 4.4.2 **Re-use and Recycling**

In accordance with Penrith Council's DCP and better practice waste management, recommendations to promote re-use and recycling during the construction phase include:

- Where applicable, stripping topsoil from areas subject to excavation and storing it on site for re-use;
- Ensuring that separated materials are to be kept uncontaminated to guarantee the highest possible reuse value;

- Choose materials with low embodied energy properties and/or materials that have been salvaged/recycled for the construction/fit out of the development;
- Design for deconstruction;
- Sort and segregate site preparation and construction wastes to ensure the recycling of wastes is efficient and prevent cross contamination of streams.
- Choose low volatile organic compound (VOC) materials, including low/no VOC paints and coatings, floor coverings and underlays;
- Return packaging, such as wooden pallets, to suppliers where possible;
- Re-use construction formwork where possible;
- Centralising wet areas and minimising the use of piping where possible; and
- Utilisation of materials with a high potential for use, materials that include recycled content and use recycled products such as fittings and furnishings where possible.

#### 4.4.3 Waste Segregation and Storage

Waste materials produced during excavation and construction will be managed within allocated on-site storage, stockpile and sorting areas. These areas will be clearly signed to minimise contamination of separated streams. The following waste types are expected to be sorted and stored on-site during the construction phase:

- Excavated material and topsoil (uncontaminated);
- Bricks and concrete;
- Scrap metal and steel;
- Timber;
- Glass;
- Excavation spoil (uncontaminated, if present);
- Contaminated excavation spoil and hazardous waste (if present);
- Paper/cardboard and other packaging wastes;
- Recyclable general waste; and
- Non-recyclable general waste.

All waste storage areas and stockpiles areas should be of a sufficient size for manoeuvring of any waste bins/skips, provide unimpeded access and allow access for waste collection vehicles. Appropriate environmental controls should be implemented with consideration of slope, drainage and proximity relative to waterways/stormwater and outlets/vegetation to prevent the occurrence of windblown litter, dust and stormwater pollution.

#### 4.4.4 Waste Servicing and Record Keeping

It is the responsibility of the Contractor to ensure that:

- Licensed contractors are arranged for the transport, processing and disposal of waste and recycling;
- Any bins or skips utilised are not overfilled and that waste receptables are covered when leaving the site;
- Maintain records of waste disposal, on-site reuse and off-site recycling. This could include evidence, such as weighbridge dockets and invoices for waste disposal or recycling services;
- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA; and
- Remove waste during hours approved by Council.

#### 4.4.5 **Contaminated/Hazardous Waste**

The NSW Environment Protection Authority (EPA) regulates the management of hazardous waste. If unexpected contaminated / hazardous waste materials are identified the NSW EPA and Council may need to be notified. All contaminated/hazardous waste must be transported by a NSW EPA licensed contractor and treated or disposed of at an appropriate licensed facility. Site testing to date indicates that no contaminated or hazardous materials are expected on site.

However, if a material is suspected of being contaminated or hazardous, Work should be halted, with all potentially contaminated or hazardous waste handled in accordance to appropriate legislation and regulation including the Work Health and Safety Regulation 2011.

#### 4.4.6 Signage

As per the Penrith guidelines, administrative arrangements for ongoing waste management must be provided, including signs. Waste storage, collection areas and all containers should be clearly signed and labelled to identify stored materials and ensure appropriate use. It is the responsibility of the Contractor to ensure appropriate signage is secured prior to construction commencing.

Signs approved by the NSW EPA for labelling of waste materials are available online and should be used where applicable. A selection of signs prepared by NSW EPA is provided in Figure 4.



Figure 4: Examples of NSW EPA waste signage

### 4.4.7 Monitoring and Reporting

The volumes or tonnages of materials to be re-used, recycled or disposed to landfill are to be recorded and maintained by the by the Building Contractor. Evidence to verify that the Construction Waste Management Plan has been adhered to must be retained and presented to the regulatory authorities if required.

# 5 **Operational Waste and Recycling**

# 5.1 Waste Diversion Targets

There are no specific diversion targets for operational waste for the development. However, the operational waste management system should support the NSW EPA WARR Strategy to increase commercial and industrial recycling from 57% (in 2010–11) to 70% by 2021-2022. In addition to this, the minimum requirements as per the LEEDS Golds Rating include storage and collection of the following waste streams as a minimum:

- Recyclable materials including but not limited to mixed paper, corrugated cardboard, glass, plastics and metals; and
- A minimum of two hazardous materials including but not limited to batteries, mercury-containing lamps and electronic waste (e-waste).

# 5.2 **Potential Waste Streams**

Due to the expected operation of data centres, it is not anticipated that data centre rooms will produce any general or recycling waste. Waste that will be generated in the data halls and corridor areas including electronic waste and packaging waste. This will be handled either through a separate contract for e-waste collection and recycling or by returning packaging materials to the product suppliers. Small amounts of operational waste are anticipated to be generated from the site admin areas and maintenance works, these streams are summarised as the following:

- General waste
- Commingled recycling

- Cardboard and paper
- Confidential paper
- Food and organic wastes
- E-waste
- Bulky waste items, such as furniture
- Ad hoc waste, such as batteries, plant and general maintenance wastes.

Table 5 outlines the expected waste materials, expected classification and management pathways. For additional information on waste classification, refer to the *NSW EPA Waste Classification Guidelines (2014)*.

#### Table 5: Potential operational waste types and management

Waste stream	Expected waste classification under NSW Waste Classification Guidelines	Expected management pathway
Offices		
Clean office paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard / bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility
Recyclable beverage containers (glass and plastic bottles, aluminium cans), tin cans	General solid (non-putrescible) waste	NSW container deposit scheme 'Return and Earn'; container recycling at off-site licensed facility
Food waste	General solid (putrescible) waste	Donate, if suitable; alternatively compost on or off-site or dispose to landfill with general garbage
Glass (other than containers)	General solid (non-putrescible) waste	Off-site recycling
General waste	General solid (putrescible and non-putrescible) waste	Disposal at landfill
E-waste	Hazardous waste	Off-site recycling
Batteries	Hazardous waste	Off-site recycling
Printer toners and ink cartridges	Hazardous waste	Off-site recycling; free disposal box or bags and pickup service exists for printer toners and ink cartridges
Mobile Phones	Hazardous waste	Off-site recycling
Stationery	General solid (non-putrescible) waste	Off-site recycling or disposal to landfill
Bulky polystyrene	General solid (non-putrescible) waste	Off-site recycling or disposal to landfill
Furniture / bulky waste	General solid (non-putrescible) waste	Off-site reuse or disposal to landfill
Light bulbs / fluorescent tubes	Hazardous waste	Off-site recycling or disposal
Sanitary waste	General solid (non-putrescible) waste	Disposal to landfill

Waste stream	Expected waste classification under NSW Waste Classification Guidelines	Expected management pathway
Plant and Maintenance		
Air-conditioning parts and filters	General solid (non-putrescible) waste	Off-site recycling or disposal to landfill
Cleaning chemicals, solvents, area wash downs, empty oil / paint drums / chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers 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. Discharge to sewer likely to be subject to Trade Waste Agreement with Sydney Water.
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	<ul><li>Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming.</li><li>General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.</li></ul>	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 local Council
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous waste	Off-site recycling
E-waste (including server racks and associated electronic equipment)	Hazardous waste	Off-site management as part of a planned refurbishment, reuse and recycling scheme.

## 5.3 Waste Management System

The proposed development includes three office areas (SYD05, SYD06 and SYD07). Each office area has a loading dock that includes a central waste storage area. It is assumed each office area will be serviced independently. The waste management system described in Figure 5 will be applied for all three offices within the development.



#### \*Mobile Garbage Bins

It is assumed sanitary waste will be collected directly from the point of generation by a specialist waste collection contractor.

Figure 5: Overview of proposed waste management system

# 5.4 Estimated Quantities

The development is located within Penrith City Council, therefore the Penrith City Council's guidelines for waste management in *Industrial, commercial and mixed-use waste management guidelines (2019)* apply. These guidelines provide waste generation rates for estimating operational general waste and recycling quantities in offices:

- General waste: 10L / 100m<sup>2</sup> of floor area per day
- Recycling: 10L / 100m<sup>2</sup> of floor area per day

However, the *City of Sydney Guidelines for Waste Management in New Developments (2018)* (CoS Guidelines) includes rates for organic waste generation and is considered best practise for commercial waste generation rates. To provide a conservative estimate of waste generation and to include organic waste generation the CoS Guidelines waste generation rates for commercial office have been applied:

- General waste:  $15L / 100m^2$  of floor area per day
- Recycling: 25L / 100m<sup>2</sup> of floor area per day
- General waste:  $5L / 100m^2$  of floor area per day

The estimated quantities of operational waste generated by the three offices in the development are shown in Table 6. The waste generation estimates, and waste management requirements are based on the following key assumptions:

- Office floor areas provided by the Greenbox Architecture Pty Ltd as part of 'Coordination issue 2021-02-19'
- All waste generation is assumed to be 'commercial office' waste as per CoS Guidelines.
- City of Sydney Council's waste and recyclable material generation rate (listed above)
- A week of waste generation comprising seven days of 24/7 operation
- Waste storage estimates are based upon collection frequencies as shown in Table 8.
- Waste generation volume estimates for e-waste, bulky waste, ad hoc waste and confidential paper were not able to be determined due to the limited data available.
- The following areas were not included to calculate operational waste generation estimates and were assumed to generate no waste:
  - Loading docks and receiving staging areas
  - Data halls
  - Circulation areas
  - Storage areas
  - Lavatories

- Utility rooms (electrical)
- Any other areas not classified as 'Administration' or 'Admin Block'
- MGB wash area sized to accommodate washing 2 x 660L MGBs at a time
- Bulky waste area requirements are estimated from CoS Guidelines Section D Space (1.1). As per these guidelines, 4m<sup>2</sup> of space must be dedicated for bulky waste for developments between 100m<sup>2</sup> and 2000m<sup>2</sup>
- Sanitary waste will be collected directly from the point of generation by a specialist waste collection contractor
- Confidential paper, e-waste and other ad hoc waste streams will be stored in MGBs located within each office area as required.
- Any hazardous or liquid waste are to be placed in specialised containment MGBs and collected by specialised services.

Table 6: Waste Generation Estimates

Waste Generation	SYD05	SYD06	SYD07
Office Area (m2)	710	240	525
General waste (L/day)	107	36	79
Comingled recycling (L/day)	7	2	5
Paper and Cardboard recycling (L/day)	171	58	126
Food waste (L/day)	36	12	26

The proposal is likely to generate a significant quantity of e-waste in the form of server racks and associated data storage equipment reaching the end of their service life. For this reason, a waste collection and recycling contract should be established to collect all e-waste for refurbishment, reuse or recycling and ensure it is not disposed of to landfill.

### 5.5 Central Waste Storage

#### 5.5.1 Storage Requirements

Waste storage area requirements were calculated using the daily waste generation volumes, and considers the additional requirements as stipulated by the Penrith City Council Guidelines and Draft Mamre Road DCP requirements. These requirements are provided in Section 5.5.3 and include the following:

- Rooms are to be large enough to accommodate the entire fleet of bins plus 0.2m between bins to allow adequate manoeuvrability.
- 1.8m unobstructed clearance zone between the stored bins and the entrance to waste rooms to permit access and manoeuvrability.

- The rooms are to provide suitable dual door access for the service of bins with a minimum width of 1.8m and accessed by a minimum 1.8m unobstructed access corridor.
- The rooms are to be fully enclosed, walled and not permit through access to other on-site waste infrastructure.
- Rooms are to be flexible in their design so as to allow for future changes in the operation, tenancies and uses.
- Rooms are to be located away from primary street frontages, where applicable.
- Rooms are to be suitably screened from public areas so as to reduce the impacts of noise, odour and visual amenity.
- Rooms are to be designed and located to consider possible traffic hazards (pedestrian/vehicular) likely to be caused by the storage and collection of waste.
- Where a communal facility exists, each tenant should have a designated area which is clearly signposted.

To allow for sufficient manoeuvring and accessibility of the MBGs within the area, a MBG scaling factor of 1.5 has been applied. The area requirement estimation for central waste and recycling storage areas are shown in Table 7. These estimates are based on collection frequencies as detailed in section 5.6.2.

Waste stream	Ste	orage Requirement	S
	SYD05	SYD06	SYD07
General waste	2 x 660L	1 x 660L	1 x 660L
Comingled recycling	1 x 660L	1 x 660L	1 x 660L
Paper and Cardboard recycling	2 x 660L	1 x 660L	2 x 660L
Food waste	1 x 240L	1 x 240L	1 x 240L
E-waste	1 x 1100L	1 x 1100L	1 x 1100L
Manoeuvring Factor	1.5	1.5	1.5
MGB Storage (m <sup>2</sup> )	9	6	8
Bulky Waste (m <sup>2</sup> )	4	4	4
Bin Wash (m <sup>2</sup> )	3	3	3
Estimated Storage Space Required (m <sup>2</sup> )	16	13	15

Table 7: Storage requirements for central waste storage areas in SYD05, SYD06 and SYD07

#### 5.5.2 Location

The central waste storage areas for recycling and general waste will be located away from public access to minimise visual, odour, and safety impacts. The proposed central waste storage areas and proposed collection points will be located within close proximity to the on-site loading bays and are in a convenient location for cleaning staff to access, as shown in Figure 6, Figure 7 and Figure 8 below. This placement follows the requirement from the Penrith City Council guidelines:

• The room is to be located within close proximity to the on-site loading bay.

### 5.5.3 Design

As per the Penrith City Councils *Industrial, commercial and mixed-use waste management guidelines (2019)*, all developments are required to provide a waste collection room integrated wholly within the developments built form to permit a safe and efficient waste collection service. The central waste storage areas must be designed in accordance with the following:

• Rooms are to be large enough to accommodate the entire fleet of bins plus 0.2m between bins to allow adequate manoeuvrability.

- 1.8m unobstructed clearance zone between the stored bins and the entrance to waste rooms to permit access and manoeuvrability.
- The rooms are to provide suitable dual door access for the service of bins with a minimum width of 1.8m and accessed by a minimum 1.8m unobstructed access corridor.
- The room is to be located within close proximity to the on-site loading bay.
- The rooms are to be fully enclosed, walled and not permit through access to other on-site waste infrastructure.
- The floors are to be waterproofed, non-slip and sealed in accordance with the Building Code of Australia to permit the use of wash facilities.
- The floors are to be graded to a central drainage point connected to the sewer, enabling all waste to be contained and safely disposed of.
- The rooms are to be partitioned and enclosed with a minimum 2.7m unobstructed internal room height in accordance with the Building Code of Australia.
- The rooms are to be provided with an adequate supply of water through a centralised mixing valve and hose cock.
- The rooms are incorporate adequate lighting and natural/mechanical ventilation in accordance with the Building Code of Australia.

Further to this, the Mamre Road Draft DCP contains requirements for waste storage areas, these must be designed for in addition to the requirements stated above:

- The design of waste rooms must not attract wildlife which would create a safety hazard in the operations of the (Sydney) Airport
- All waste bins are to be designed and installed with fixed lids.
- Any bulk waste receptacles or communal waste storage areas must be contained within enclosures that cannot be accessed by birds or flying foxes.

# 5.6 Collection

#### 5.6.1 Location and Access

The central areas for storing waste and recycling will be located on the ground floor. This position is convenient for staff and facilities management. Prior to collection, nominated staff/building management will move waste and recycling receptacles from the central waste storage area to the temporary MBG storage space within the collection point as shown in Figure 6, Figure 7 and Figure 8.



Figure 6: Location of SYD05 central waste storage area and collection point



Figure 7: Location of SYD06 central waste storage area and collection point



Figure 8: Location of SYD07 central waste storage area and collection point

## 5.6.2 Collection Frequency

Waste collection services for each waste stream are yet to be confirmed however Table 8 presents the recommended collection frequency for operational waste streams.

Waste stream	Collection frequency
General waste	Weekly
Comingled recycling	Weekly
Paper and Cardboard recycling	Weekly
Food waste	To be collected daily. If food waste is unable to be collected daily then it must be stored in a refrigerated waste room until collection. <sup>2</sup>
E-waste	As required
Bulky waste	As required
Ad hoc Streams	As required

Table 8: Waste collection frequency for operational waste streams

<sup>&</sup>lt;sup>2</sup> City of Sydney Guidelines for Waste Management in New Developments (2018)

### 5.6.3 Collection Vehicle

The route for waste contractor access to the internal loading zones for each building is via Bakers Lane and Mamre Road. The loading zone in the development currently caters for an articulated vehicle<sup>3</sup>, this is sufficient for an MRV sized waste vehicle which typically are 10.5m in length. At the time of writing, a specific private waste contractor has not been appointed. The waste vehicle has not been confirmed however the vehicle access to the loading dock has been designed to accommodate an MRV rear or front loading waste collection vehicle specifications as per the Penrith City Council waste guidelines (outlined below in Table 9 and Table 10).

Penrith City Councils *Industrial, commercial and mixed-use waste management guidelines (2019)* details the standard dimensions for typical rear loaded waste collection vehicles as well as front loaded waste collection vehicles, these are detailed in Table 9 and Table 10 respectively.

Table 9: Standard dimensions of rear loaded waste collection vehicle as presented in
Penrith City Councils Industrial, commercial and mixed-use waste management
guidelines (2019)

Vehicle classifications	Heavy rigid vehicle dimensions	Units
Overall length	10.5	m
Operational length	12.5	m
Design width	2.8	m
Design height	3.7	m
Turning circle	22.5	m
Travel height	4.5	m
Maximum roadway/ramp grade	1:6.5 (15.4%)	-
Maximum rate of change of grade	1:16 (6.25%) in 7.0m of travel	-
Maximum gross weight	28.0	tonnes
Front chassis clearance	13	° (degrees)
Rear chassis clearance	16	° (degrees)

<sup>&</sup>lt;sup>3</sup> Articulated vehicles approximately 19m in length



Figure 9: 10.5m rear loading heavy rigid waste collection vehicle specifications

Table 10: Standard dimensions of front loading loaded waste collection vehicle as presented in Penrith City Councils *Industrial, commercial and mixed-use waste management guidelines (2019)* 

Vehicle classifications	Heavy rigid vehicle dimensions	Units
Overall length	10.5	m
Operational length	12.5	m
Design width	2.8	m
Design height	4.1	m
Operational height	>4.5 (specific to bins proposed)	m
Turning circle	22.5	m
Travel height	4.5	m
Maximum roadway/ramp grade	1:6.5 (15.4%)	-
Maximum rate of change of grade	1:16 (6.25%) in 7.0m of travel	-
Maximum gross weight	28.0	tonnes
Front chassis clearance	13	° (degrees)
Rear chassis clearance	16	° (degrees)





# 5.7 Monitoring and Reporting

Monitoring is recommended to ensure waste and recycling is being managed effectively for the Development.

Monitoring of bins and bin storage areas should be conducted, at minimum:

- Every week, within the first two months of operation and
- Every six months, thereafter.

Any deficiencies identified in the waste management system, including unexpected waste volumes or new waste streams, are to be rectified by the Development's management as soon as practicable.

Quantities of waste and recycling, including dockets and/or receipts associated with disposal of waste and recycling, should be recorded by the Development's management to assist reviews of waste and recycling management. Records of waste disposal, including written evidence of a valid contract with a licenced waste contractor, should also be available if required by regulatory authorities, for example, Penrith City Council, NSW EPA and SafeWork NSW.

## 5.8 Signage

Appropriate signage is to be installed to clearly identify waste management procedures and provisions to staff and visitors. Key signage considerations are:

- Clear and correct labelling on all waste and recycling bins, indicating the correct type(s) of waste that can be placed into a given bin.
- Signposts and/or directions to location of waste storage areas.
- Clear signage in all waste storage areas to instruct users how to correctly source separate waste and recycling.
- Maintaining a consistent style colour scheme and system for signs throughout the Development.

• Emergency contact information for reporting issues associate with waste or recycling management.

Coloured and labelled bin lids are necessary for identifying bins. All signage should conform to the relevant Australian Standard (AS 4123) and, for bins, use labels provided by the NSW EPA.

# 6 References

Australian Government, 2018. The National Waste Policy: Less Waste More Resources 2018

Australian Standards, 2008. Mobile waste containers. (AS 4123.1–2008)

City of Sydney, 2018. Guidelines for waste management in new developments

NSW EPA, 2014. NSW Waste Avoidance and Resource Recovery Strategy 2014–21

NSW EPA, 2014. Waste Classification Guidelines

NSW EPA, 2015. Waste Levy Guidelines

NSW EPA, 2019. Standards for Managing Construction Waste in NSW 2019

NSW EPA, Various. *Resource Recovery Orders and Resource Recovery Exemptions* 

NSW Government, 2020. Protection of the Environment Operations (Waste) Regulation 2014

NSW Government, 2020. Waste Avoidance and Resource Recovery Act 2001

NSW Government, 2021. NSW Protection of the Environment Operations Act 1997

Penrith City Council, 2019. Industrial, Commercial and Mixed-Use Waste Management Guidelines

Penrith City Council, 2020. Draft Mamre Road Precinct Development Control Plan.

WillowTree Planning, 2020. Request for Secretary's Environmental Assessment Requirements – Proposed Data Centre: 707-711, 713-755 & 757-769 Mamre Road, Kemps Creek (Lots X & Y DP 421633 and Lot 22 DP 258414) Appendix A

Architectural Drawings

# A1 Architectural drawings used in this report



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	MECHANICAL	
	EQUIPMENT YARD	
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	CIRCULATION	<ul> <li>B. All dimensions are in millimeters (mm) unless noted otherwise. All levels are in metres (m) unless stated otherwise.</li> </ul>
		C. Do not scale; work to figures dimensions only. This drawing shall be read in conjunction with building services documents and other relevant contract documents.
		D. Equipment and plant details are not manufacturer specific. Contractor selected equipment shall meet the given constraints and long lead equipment will be coordinated based on final equipment selection.
		E. All service penetrations through fire, acoustic, thermal, air and watertight compartments shall be sealed to achieve performance rating equivalent to the compartment and aball be designed to
		<ul> <li>F. All services penetrations through fire rated compartments shall be fire stopped to achieve a</li> </ul>
		<ul> <li>rating equivalent to the compartment and shall be designed to accomodate thermal movement.</li> <li>G. All services crossing the movement joints shall be installed to accomodate the movements as defined</li> </ul>
		in the Structural Engineers Contract documentation. H. The Contractor will produce fully coordinated installation drawings prior to installation for
		I. The Contractor will produce as built drawings prior to handover for approval.
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		Tel +61(02)9320 9320 www.arup.com
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		+61 2 8069 8930 LEVEL 25 25 BLIGH ST
		SYDNEY NSW 2000 AUSTRALIA GREENBOX ARCHITECTURE PTY LTD
		ISO 9001 CERTIFIED QUALITY SYSTEM
		Client CONFIDENTIAL
		Project Title SYD05-06-07 KEMPS CREEK
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5	19/02/2021	ISSUE FOR COORDINATION
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					<ul> <li>C. Do not scale; work to figures dimensions drawing shall be read in conjunction with services documents and other relevant condocuments.</li> <li>D. Equipment and plant details are not many specific. Contractor selected equipment is the given constraints and long lead equip be coordinated based on final equipment</li> <li>E. All service penetrations through fire, account thermal, air and watertight compartments sealed to achieve performance rating equipment.</li> <li>F. All services penetrations through fire rate compartments shall be fire stopped to accommodate movement.</li> <li>F. All services crossing the movement and designed to accomodate thermal movem</li> <li>G. All services crossing the movement joints installed to accomodate the movement sing the Structural Engineers Contract document.</li> <li>H. The Contractor will produce fully coordination for approval</li> </ul>	only. This building patract ifacturer shall meet ment will selection. istic, shall be ivalent to o d hieve a shall be ent. s shall be ent. s shall be as defined imentation.
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							General Notes:
							<ul> <li>A. This is not an installation drawing and shows design intent information only.</li> <li>B. All dimensions are in millimeters (mm) unless noted otherwise. All levels are in metres (m) unless stated otherwise.</li> <li>C. Do not scale; work to figures dimensions only. This drawing shall be read in conjunction with building services documents and other relevant contract documents.</li> <li>D. Equipment and plant details are not manufacturer specific. Contractor selected equipment shall meet the given constraints and long lead equipment will be coordinated based on final equipment selection.</li> <li>E. All service penetrations through fire, acoustic, thermal, air and watertight compartments shall be sealed to achieve performance rating equivalent to</li> </ul>
						-05/À -05/B	<ul> <li>F. All services penetrations through fire rated compartments shall be fire stopped to achieve a rating equivalent to the compartment and shall be designed to accomodate thermal movement.</li> <li>G. All services crossing the movement joints shall be installed to accomodate the movement joints shall be installed to accomodate the movements as defined in the Structural Engineers Contract documentation.</li> <li>H. The Contractor will produce fully coordinated installation drawings prior to installation for approval.</li> <li>I. The Contractor will produce as built drawings prior to handover for approval.</li> </ul>
MOVE-IN CLEAR	ZONE	MOVE-IN CLEAR ZONE	EXHAUST RISER FROM CEILING VOID	EXHAUŠT RISER FROM CEILING VOID	21000		Notes:
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MOVE-IN CLEAR	ZONE	MOVE-IN CLEAR ZONE	EXHAUST RISER FROM CEILING VOID	EXHAUST RISER FROM CEILING VÕID	5 CRD-00012		1       15/12/2020       ISSUE FOR COORDINATION         2       18/12/2020       ISSUE FOR STATUS UPDATE         4       14/01/2021       ISSUE FOR COORDINATION         5       19/02/2021       ISSUE FOR COORDINATION
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							Key Plan
8690	8690	6350	3075 2600	3075			Drawing Title
4 05	15 Q	5/16 05/		1905/20	R١		FLOOR PLAN - L1 - SYD05_06 - PART 1 Scale at A0       1 : 200       Drawn By       AG         Role       Architecture       Checked By       MP         Suitability       A3       Approved By       AO         Job No       200036       S       S         Sheet number       CRD311       Scale bar         Scale bar       Sc. 1:200 0 1 2 3 5 10m



# Appendix B

Swept Paths







Legend	Body Envelope 300mm Envelo	pe		
Design Vehicle	Wheel Envelop	ie he		
Single Articulated (19 m) Overall Length Overall Width Overall Sody Height The KW Width Overall Body Height The KW Width Overall Body Height Core to Lock Time Curb to Lock Time Curb to Lock Time	19.000 2.500m 2.500m 2.500m 0.0 sec 12.500m			
Note(s) 1. No permanent Site 2. Parking on the side the hatched area) r the sight distance r vehicle is not obstra	Obstruction in the h of the frontage road nay need to be rest equired to an appro loted	natched area d (in front of ricted so that aching		
A 04/03/21 For Informat Issue Date	LK SO ion By Chkd	SO Appd		
ARU	Р			
Arup, Level 5, 151 Clarence Sydney, NSW, 2000 Tel +61(02)9320 9320 Fax + www.arup.com.au Client Confidential	St -61(02)9320 9321			
Job Title SYD05 Data Centre				
<sup>Drawing Title</sup> Main Entrance Sight Distance	- Northwest Checks			
Scale at A3 Discipline Drawing Status For Informatic	on			
Job No 277863-00	Drawing No SKT002	Issue A		



	Legend Body Envelope 300mm Envelope 600mm Envelope
	Wheel Envelope Design Vehicle(s)
	HRV Fire Aerial Appliance Overall Length 12.500m Overall Widh 4500m Overall Body Height 4.500m Min Body Ground Clearance 0.418m Track Widh 2.500m Lock to Lock Time 6.00 sec Curb to Curb Turning Radius 12.500m
	<ol> <li>No permanent Site Obstruction in the hatched area</li> <li>Parking on the side of the frontage road (in front of the hatched area) may need to be restricted so that the sight distance required to an approaching vehicle is not obstructed</li> </ol>
	A 04/03/21 LK SO SO
	For Information Issue Date By Chkd Appd
	Arup, Level 5, 151 Clarence St Sydney, NSW, 2000 Tel+61(02)9320 9320 Fax +61(02)9320 9321 www.aru.com.au Client Confidential
	Job Title SYD05 Data Centre
	Drawing Title Fire trucks entry/exit Location Sight Distance Checks
7	Scale at A3 1:300 Discipline Transport Drawing Status For Information
	Job No         Drawing No         Issue           2777863-00         SKT003         A



	300mm	Envelope	
	600mm	Envelope	
	Wheel I	Envelope	
Design Vehi	cle(s)		
2.4 5.9	1.4		
HRV - Heavy Rigid V Overall Length Overall Width	/ehicle		12.500m 2.500m
Overall Body Height Min Body Ground Cle Track Width	earance		4.300m 0.417m 2.500m
LOCK-TO-IOCK time Curb to Curb Turning	g Radius		6.00s 12.500m
Note(s)			
<ol> <li>No permanent S</li> <li>Parking on the s the hatched are the sight distance vehicle is not ob</li> </ol>	tite Obstructic ide of the fror a) may need to be required to ostructed	n in the hatch ntage road (in to be restricted an approachi	ed area front of d so that ng
A 05/03/21	LK	SO	SO
A 05/03/21 For Inform Issue Date	LK nation <sup>By</sup>	SO	SO Appd
A 05/03/21 For Inform Issue Date Arup, Level 5, 151 Clarer Sydney, NSW, 2000 Tel +61(02)9320 9320 F: www.arup.com.au Client Confidential	LK mation By ICP acce St ax +61(02)9320	SO Chkd 9321	SO Appd
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