HINDMARSH

# Construction Waste Management Sub-Plan (CWMSP)

## RNA Research and Pilot Manufacturing Facility

Revision 01

# Content Page

Hindmarsh would like to acknowledge the Traditional Custodians of the Land on which we live and work and pay our respects to their Elders past and present.

# 1. Document Control – Revision History

## 1.1 Revision Status

Approved revisions to this document may be independently issued.

| Date Issued | Revision | Details | Section | Page |
|---|---|---|---|---|
| 05/07/24 | Rev.1 | Initial CWMSP | All | All |
| | | | | |
| | | | | |

## 1.2 SSD Condition Satisfaction Table

| Condition | Condition Requirement | | Document / Sub-Plan Reference |
|---|---|---|---|
| B17 | **Construction Waste Management Sub-Plan** | | |
| | The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the procedures for the management of waste including the following: | | - |
| | (a) | the recording of quantities, classification (for materials to be removed) and validation (for materials to remain) of each type of waste generated during construction and proposed use for materials to remain; | Refer to Section 7 – Page 15 |
| | (b) | information regarding the recycling and disposal locations; and | Refer to Section 7 – Page 15 |
| | (c) | confirmation of the contamination status of the development areas of the site based on the validation results. | Refer to Section 8 – Page 15 |

## 1.3 Project Specifics

| | |
|---|---|
| **Company Name:** | Hindmarsh Construction Australia Pty Ltd |
| **ABN** | 15 126 578 176 |
| **Project:** | RNA Research and Pilot Manufacturing Facility |
| **Project No:** | 2056 |
| **Location:** | Cnr of Culloden Rd & Gymnasium Rd Macquarie Park |
| **Client:** | Health Infrastructure NSW |
| **Contract:** | GC21 |

## 1.4 Approval for Implementation

This revision of the Environmental Management and Sustainability Plan (EMP) has been reviewed by the Project Manager, it complies with environmental aspects of Compass and contractual obligations and is authorised for use. Draft versions of this document, although approved, are issued for comment \ feedback and should not be considered as finalised until a revision number \ letter is assigned.

## 1.5 Induction

Every Project Hindmarsh employee receives induction training into the purpose and use of this EMP. Each acknowledges that they fully understand this EMP's requirements and their roles \ responsibilities associated with it. This acknowledgement is recorded via Aconex or the *Acknowledgement Register*.

Key elements of this EMP may be extracted for inclusion in the project specific site induction training which is given to all employees, subcontractors, and site workers prior to commencing works on site.

## 1.6 Precedence

This Construction Waste Management Plan (CWMSP) does not in any way override any provisions of the Project Brief or brief issued by the Client. Where there is found to be a conflict in this CWMSP with any requirements of the Project Brief, the conflict is to refer the conflict to the Project Manager for direction.

## 1.7 Abbreviations Used

| | | | |
|---|---|---|---|
| AFC | Approved for Construction | AS | Australian Standard |
| BCA | Building Code of Australia | CC | Construction Certificate |
| CCD | Competition Concept Design | CD | Contract Documentation |
| CWMSP | Construction Waste Management Sib-Plan | D&C | Design and Construction |
| DA | Development Application / Approval | DD | Detailed Design |
| DM | Design Manager | DMP | Design Management Plan |
| DOS | Design Options Study | DR | Documentation Readiness (for tender) |
| ESD | Environmentally Sustainable Design | FDB | Functional Design Brief |
| FRD | Functional Relationship Diagram | PCA | Principle Certifying Authority |
| HCA | Hindmarsh Construction Australia | PM | Project Manager |
| PCG | Project Control Group | PSA | Professional Services Agreement |
| PDC | Principal Design Consultant | QS | Quantity Surveyor / Cost Planner |
| PMP | Project Management Plan | RL | Reduced Level |
| QA | Quality Assurance | SQE | Safety Quality and Environmental |
| R&O | Risk and Opportunity (Financial focus) | WOL | Whole of Life |
| SD | Schematic Design | Compass | Hindmarsh Management System |
| SoA | Schedule of Accommodation | | |
| VM | Value Management | | |
| ACONEX | Web-based Information Management System | | |

## 1.8 Purpose and Scope of CWMSP

This plan addresses the following conditions from the State Significant Development Application

B13 - Management plans required under this consent must be prepared having regard to the relevant guidelines, including but not limited to the Environmental Management Plan Guideline: Guideline for Infrastructure Projects (DPIE April 2020).

- The Environmental Management Plan Guideline is available on the Planning Portal at: https://www.planningportal.nsw.gov.au/major-projects/assessment/post-approval.
- The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

The purpose of this CWMSP is to:

1) Identify, quantity and classify waste streams to be generated during construction.
2) Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.
3) To ensure storage and collection of waste is designed and managed having appropriate regard to space, location, amenity, and ongoing management of waste management facilities.
4) Describe measures to be implemented to manage, reuse, and recycle and safely dispose of the waste.
5) To maximise reuse and recycling of demolition and construction materials and materials from development.
6) To encourage building design techniques in general which minimise waste generation.
7) To minimise the amount of waste being deposited to landfill with targets to reuse or recycle at least 90% of construction and demolition waste as per the EFSG DG02 2.7.1 Construction and demolition waste requirements.

# 2. Introduction

This CWMSP accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 51811548). The SSDA is for the RNA Research and Pilot Manufacturing Facility

Furthermore, this report addresses the requirements for Construction Environmental Management Plan required by SSD Condition B15, more specifically, B17. Refer to the Conditions Satisfaction Table on page 5 for the requirements of B17.

# 3. Proposal

The RNA Research and Pilot Manufacturing Facility will be a new build in the Ryde City Council on Macquarie University Land to serve as a facility for Research and Manufacturing capabilities. This facility includes a new manufacturing facility with a floor area of around 4,500sqm and Design, equipment and fit-out of facility to produce RNA-based products for clinical trials.

The project will commence construction in August of 2024 with a projected completion date in February 2026. The project milestones are as follows:

- Project Milestone 1 – Early Works Site Possession – Site Establishment, Fencing (Enabling Works). (August 2024)
- Project Milestone 2 – Site Demolition after CC1 approval (November 2024)
- Project Milestone 3 – Structure Complete (February 2025)
- Project Milestone 4 - Fit out completion (November 2025)
- Project Milestone 5 – External works completion (November 2025)
- Project Milestone 6 - Commissioning Completion (February 2026)

The project generally includes the following works:

- Removal of trees and demolition of Asphalt from the existing carpark
- Construction of the new facility with Cleanroom Labs, Office space, Mezzanine plantroom and walkable ceiling space
- Construction of an internal road
- Carpark alterations and provision of bicycle parkin
- Utility works
- Landscaping works

Refer to the Appendix A. Site Establishment to gain a better understanding of the proposed site.

## 3.2 Hours of Operation

Site operating hours for construction activities will be in accordance with the approved SSD Conditions of Consent, except as agreed with HINSW, Planning Secretary and local authorities for any out of hours work. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

- Between 7:00 am and 6:00 pm, Mondays to Fridays inclusive.
- Between 8:00 am and 1:00 pm, Saturdays.
- No work may be carried out on Sundays or public holidays.

Notwithstanding the above, provided noise levels do not exceed the existing background noise level plus 5dB, works may also be undertaken during the following hours:

- Between 6:00pm and 7:00pm, Mondays to Fridays inclusive; and
- Between 1:00pm and 4:00pm, Saturdays.

Construction activities may be undertaken outside of the hours (as per the above) in accordance with the approved SSD Condition C4 and C5 if required:

- By the Police or a public authority for the delivery of vehicles, plant, or materials; or
- In an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
- Where the works are inaudible at the nearest sensitive receivers; or
- For the delivery, set-up, and removal of construction cranes, where notice of the crane-related works is provided to the Planning Secretary and affected residents at least seven days prior to the works; or
- Where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

Notification of such construction activities as referenced above for works outside of the normal hours must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving, and similar activities may only be carried out between the following hours:

- 9:00am to 12:00pm, Monday to Friday.
- 2:00pm to 5:00pm Monday to Friday; and
- 9:00am to 12:00pm, Saturday.

# 4. Site Description

The project is located within Macquarie University land within the Ryde City Council. The proposal involves the land involves the use of the current N3 Carpark on Culloden Road and Gymnasium Road.

The project is partly on the N3 carpark and within the vegetation area, north of the carpark. There will be trees being removed as part of the project with majority of them remaining and requiring tree protection during the project. For further information, please refer to the Tree Removal Plan in Appendix B. Tree Removal Plan

The surrounding area includes, low density residential developments to the north, Next Sense Facility to the west, Macquarie University Observatory to the East and the Macquarie Uni Campus on the south of the Facility.


*Figure 1: Proposed Site Plan (Source HDR Architects)*

# 5. NSW Legislation Requirements & Guidelines

Relevant key legislation and guidelines applicable to the project include:

- Protection of the Environment Operations Act 1997.
- Protection of the Environment (General) Operations Act 1998.
- Waste Avoidance and Resource Recovery Act 2014.
- Protection of the Environment Operations (Waste) Regulation 2014.
- Waste Classification Guidelines (EPA, 2014).
- NSW Department of Planning and Environment.

# 6. Servicing Arrangements

The current legislation determines that the generator of waste is the owner of the waste until the waste crosses a calibrated weighbridge into a licensed facility. Waste contractors to demolition and construction contractors are the primary transporters of waste off-site, accordingly, waste contractors are required to provide verifiable monthly reports on waste reused, reprocessed, or recycled (diverted from landfill) or waste sent to landfill. These reports have a direct bearing on the generator's compliance with the relevant regulations. This CWMSP will be implemented onsite throughout including singularly or collectively the demolition, excavation, construction and fit out phases.

A Waste Data File must be maintained on-site, and all entries are to include:

- The classification of the waste.
- The time and date of material removed.
- A description of and the volume of waste collected.
- The location and name of the waste facility that the waste is transferred to.
- The vehicle registration and the name of the waste contractor's company.

The Waste Data File will be made available for inspection to any authorized officer at any time during the life of the site works. At the conclusion of site works, the designated person will retain all waste documentation and make this validating documentation available for inspection.

Arrangement's will be made with the Waste Contractor to increase bin supply if there is an unexpected increase in waste generation.

## 6.1 Waste Management Equipment, Bin Sizes & Collection Frequency

All waste will be removed by a licensed waste contractor using up to 15-meter bins on site. The construction and demolition waste will be removed when bins are full and within construction site hours to reduce disturbance of the neighbours.

## 6.2 Roles and Responsibilities

The waste management strategy for the project will operate over the design, procurement, and construction including fit out of the project, and is detailed in Table 3 below.

**Table 3: Breakdown of Tasks and Responsibilities**

| Management Strategies | Responsibilities |
|---|---|
| <u>Design:</u> | |
| Design for materials to standard sizes. | Architect, Subcontractors. |
| Design for operational waste minimisation. | Architect & Builder. |
| Consider ways to avoid, reuse and recycle construction wastes. | Subcontractors. |
| <u>Procurement:</u> | |
| Select recycled and reprocesses materials. | Architect, Engineer, Builder & Subcontractors. |
| Select components that can be reused after deconstruction. Prioritise suppliers that take back offcuts and unused product. | |
| Encourage contractors and subcontractors that use unneeded offcuts and unused product for use on other jobs. | Architect, Engineer, Builder & Subcontractors. |
| Ordering the right quantities of materials (Purchasing Policy); include prefabrication of materials. | Subcontractors. |
| <u>Pre-construction:</u> | |
| Waste management plan to be reviewed & approved prior to construction. | Builder. |
| Contract a Waste Contractor. | Waste Contractor. |
| <u>Construction on-site:</u> | |
| Use the avoid, reuse, reduce, recycle principles. Minimisation of recurring packaging materials. Returning packaging to the supplier. | Builder, Waste Contractor & Subcontractors. |
| Separation of recycling for materials, off-site audit & monitor the correct usage of bins. | Builder, Waste Contractor & Subcontractors. |
| Audit and monitor the Waste Contractor. | Builder & Waste Contractor. |
| <u>Avoiding construction waste:</u> | |
| Reduce extraneous packaging use reusable padding and careful packing. | |
| All packaging generated on site should be captured for reuse or recycling wherever possible. | Builder. |
| Reuse formwork. | |
| Use reuse non-returnable containers on the job site to the maximum extent possible. | |

# 7. On-Site Waste Management Requirements

There will be a designated waste storage area for the disposal and storage of construction waste prior to collection. This area will be located conveniently for demolition and construction work team to use the bins as well as for waste contractors to collect. An indicative location has been provided in Appendix C – Waste Location. Other requirements include:

- The routes for movement of waste between work site and waste storage area are to be kept obstruction-free.
- The routes for movement of bins and waste between storage and collection points are marked in the site drawing and will be kept obstruction-free (if waste is moved between the waste storage area(s).
- The waste bin collection point provided will be accessible for waste collection vehicles. There are no obstructions to turning or reversing, pulling up vehicles and lifting bins.
- Access for waste collection vehicles will not be compromised by construction-related activities vehicles or other consequences of construction staging.
- All waste not being reused on site will be removed during, or at the completion of, the construction stage.
- No waste will be left on site unless it is part of valid reuse on site, which is integral to and in place in the design.
- In order to manage noise levels, collection of waste from the construction site will only occur during hours approved for construction work.
- All vehicles entering or leaving the site must have their loads covered.
- All vehicles, before leaving the site, to be cleaned of dirt, sand, and other materials, to avoid tracking these materials onto public roads.
- At the completion of the works, the work site is left clear of waste and debris.

Through out the construction phase Hindmarsh will engage a waste contractor such as Just Skips or Equivalent to provide waste bins for the collection and separation of waste on site bins expected to be onsite include:

- 3m3 food waste bin (collected weekly)
- 660L cardboard and paper recycling bin (collected fortnightly)
- Concrete slurry bin for the collection of concrete pump excess concrete
- 1.5m3 general site waste bins
- 660L general site waste bins
- 240L general site waste bins

All the site general site waste bins will be used to collect all site waste from the building area. These smaller site bins will then be tipped into the appropriate large site bins ready for truck collection and transportation to a recycling facility. Our contracted waste collection contractor will be contracted to ensure a minimum of 90% of all waste is recycled. It is anticipated that our construction waste will be taken to:

KLF Camelia - being a Green star certified waste recycling facility
The facility will separate our waste into such categories:

- Metals
- Cardboard
- Timber
- Concrete

- Plasterboard
- Soils
- Plastics
- Landfill

Every month the facility will provide a log and waste recycling report on all the materials delivered from our site to the facility.

No waste will be conveyed to or deposited at any place that cannot lawfully be used as a waste facility for that waste.

The Waste management plan is in line with the JBS&G Waste Management Plan rev.5 dated 21 July 2023

# 8. Contamination / Remediation Reports

A Detailed Site Investigation was completed by JBS&G for Health Infrastructure dated the 14th of December 2022 confirming no asbestos found within the proposed site location. Any asbestos found will be classified as unexpected finds and be remediated inline with

The above-mentioned documentation can be found under Appendix C – JBS&G Waste Management Report and the '2056 – RNA Research and Pilot Manufacturing Facility' project.

# 9. Construction

Waste building materials generated from demolition or construction activities will be recycled as far as practicable. Hindmarsh will comply with the requirements of all relevant Authorities in relation to the disposal of all waste material. The following measures will be adopted to encourage the management and reduction of waste to minimise the loss of natural resources and landfill space:

- Emphasise the importance of recycling and waste reduction.
- Encourage the use of recycled materials where it is reasonably practical.
- Minimise the use of packaging materials and recycle packaging materials where possible.
- Waste concrete to be sent to a concrete recycling plant where possible.
- Separate removed native vegetation from general construction waste, mulch, and stockpile for re-use.
- Dispose of any non-recyclable general waste at approved waste disposal facilities.

Reference will be made to Local Council's and Waste Management Plan created by JBS&G dated 21/7/2023 to comply with any specific requirements.

Reference will also be made to Dangerous Goods requirements in line with the Preliminary Hazardous Analysis created by Riskcon Engineering dated 20/07/2023 and further with the engagement of Riskcon Engineering as the Dangerous Goods Consultant. The Dangerous Goods scope will be win accordance with relevant Codes of Practice and Standards. Copies of all relevant Material Safety Data Sheets is retained on site as required.

A project-specific resource recovery and waste management plan will be developed, detailing the following:

- Efforts to minimise waste on site by avoiding over-estimation of purchasing requirements, minimising packaging materials, and buying environmentally approved and recycled content products.
- Procedures for the collection and sorting of recyclable construction materials.
- The type and quantity of materials that are to be re-used or recycled.
- Provision of containers for recyclable materials, including cardboard, glass, metal, plastic, and green waste.
- The re-use of timber, glass, and other materials.
- The recycling of asphalt, metal, bricks, tiles, masonry, concrete, plasterboard, plastic, batteries, cardboard, carpet, and other materials.
- Provision for collection of daily rubbish from workers.
- Procedures for removal of waste (materials that cannot be re-used or recycled) from the site.
- Procedures for removal of hazardous or dangerous materials from the site.
- Buying environmentally approved and recycled content products.

Removal of hazardous and dangerous materials from the site shall be in accordance with State and Federal legislation, including WorkSafe requirements and further Health Infrastructure Design Guidance Notice no.015 Asbestos and Hazardous Materials. Asbestos / soil waste will be removed (if applicable) according to WorkSafe Guidelines and placed in double-lined bins before being disposed of at a licensed landfill by a licensed transporter.

Waste material shall be stored on site neatly, in appropriate bins or stockpiles, in such a manner that stormwater run-off does not come into contact with waste. Waste segregation areas and temporary storage locations for skips / waste for recycling / re-use / disposal shall be selected so as to minimise safety risks to site workers and to minimise adverse impact on the visual amenity of the site. For external bins, self-closing lids shall be installed to ensure waste does not become airborne.

Waste collection shall only occur during permitted hours.

Litter and debris trapped against the site fence shall be regularly cleaned away. Burning off on site will be prohibited.

All waste disposed of (whether it be for recycling / re-use or landfill disposal) will be recorded on forms which will be part of the project records. Recycler and landfill disposal dockets will be used for confirmation of tonnages and proof of lawful disposal.

Hindmarsh shall be responsible for reporting any incident which causes, or threatens to cause, material environmental harm or breaches approval requirements to relevant project stakeholders as soon as possible.

# 10. Regulatory Reporting Requirements - EPA

An Environmental Incident is an unexpected event that may result in harm to the environment and requires some action to minimise the impact or restore the environment. An Environmental incident can include (but not be limited to) the following:

- spills of waste, fuels, oils, chemicals, and other hazardous materials.
- overflow of sediment basin or other containment devices.
- failure of temporary erosion and sediment controls.

- contamination of waterways or land.
- accidental starting of fire or fire breaking out of containment.
- breach of licence, permit or approval requirement.
- breach of legislative requirements.
- illegally dumped waste.
- unplanned disturbance of acid sulphate soils (or subsequent pollution).
- accidental harm to vegetation, fauna, or habitat (e.g., hollow logs).
- accidental harm to heritage items or locations (Aboriginal and non-Aboriginal).
- public complaints arising from activities (relating to environmental issues).

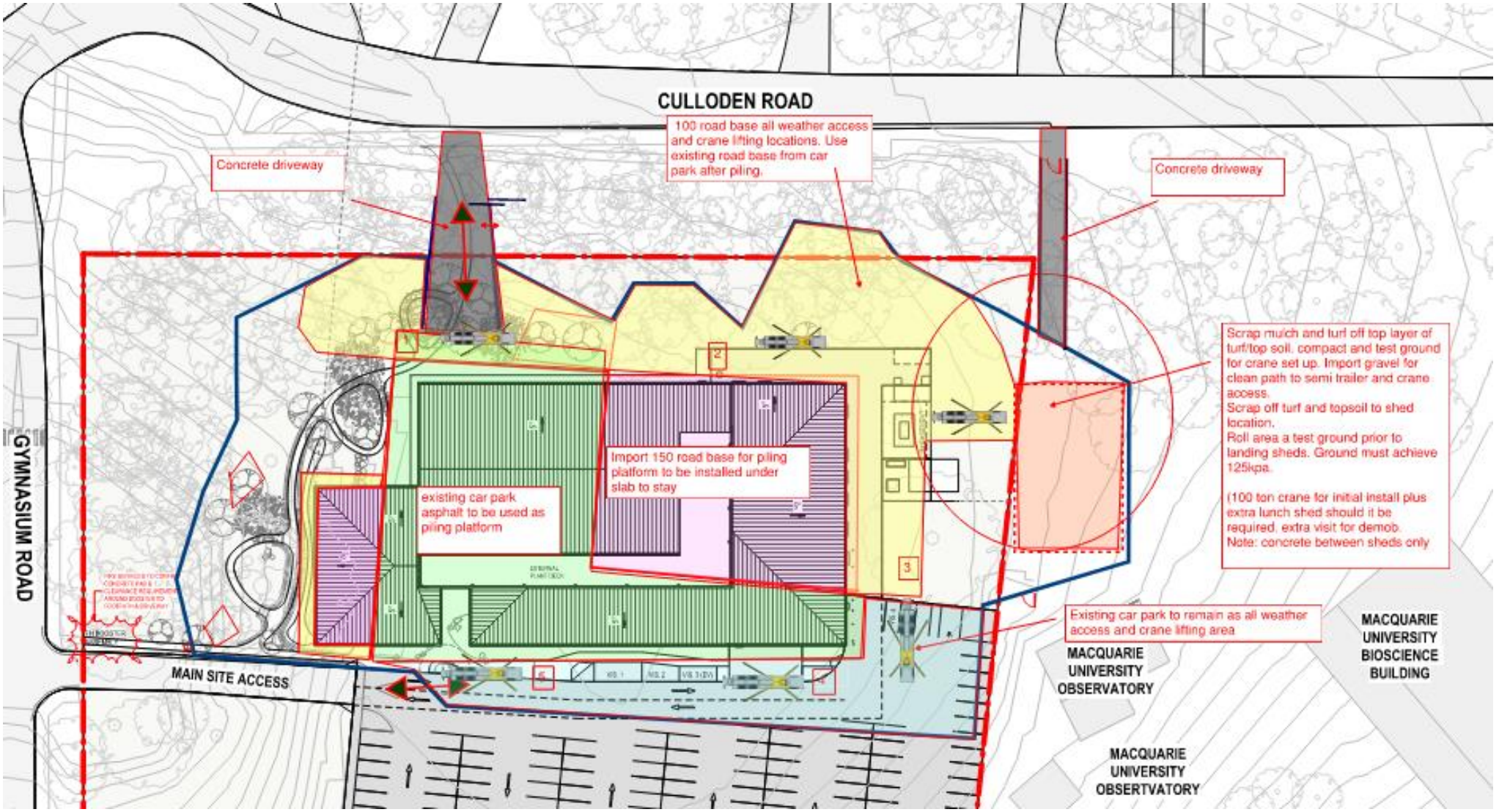
There is a duty to report pollution incidents under section 148 of the Protection of the Environment Operations Act 1997 (POEO Act). Pollution incidents causing or threatening material harm to the environment must be notified. A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur. 'Pollution incident' is defined in the Dictionary to the Act as an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

If you observe a major pollution incident that presents an immediate threat to human health or property, such as toxic fumes or a large chemical spill, call 000 to report it to emergency services. As first responders, Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are responsible for controlling and containing incidents. Then all matters must be reported to the EPA NSW:

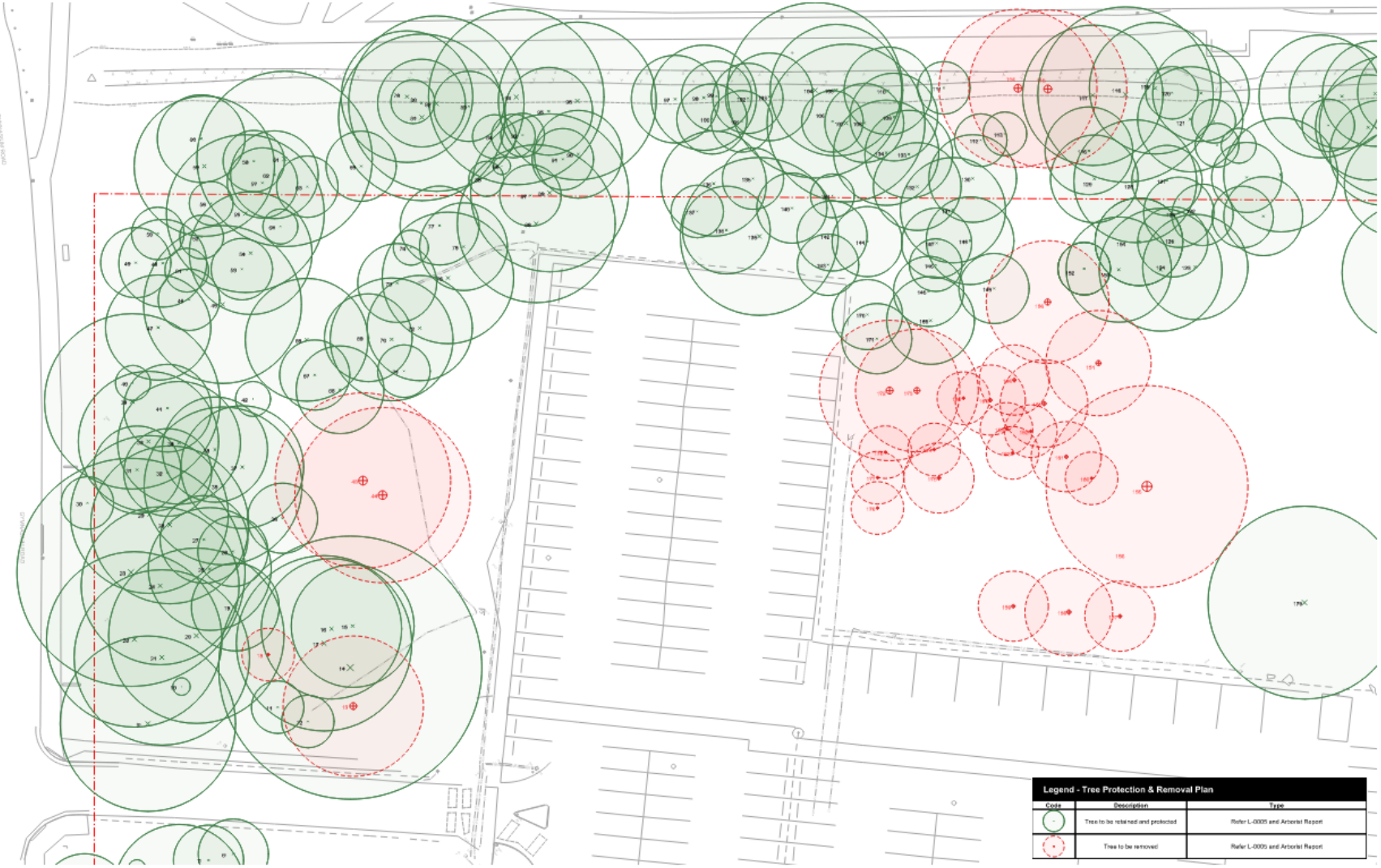
- EPA State Name: EPA New South Wales
- Telephone: 131 555
- Fax: N/A
- Email: info@epa.nsw.gov.au

In the event of a reportable environmental incident the Project Manager (PM) must refer to the *Injury, Illness and Incident Management and Reporting* flow chart for detailed guidance regarding the management and reporting of environmental incidents.

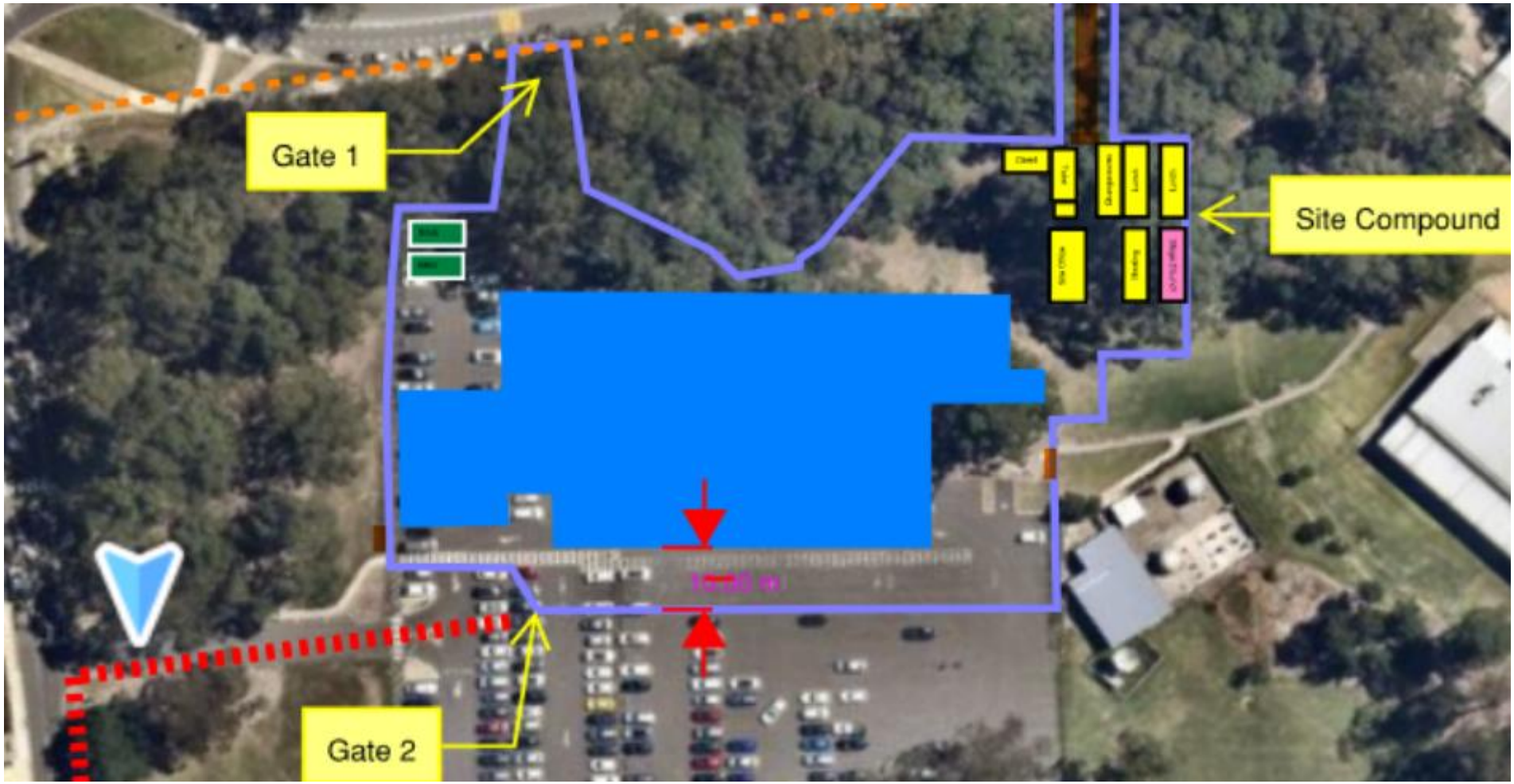
# Appendix A – Site Establishment



# Appendix B - Tree Removal



# Appendix C – Waste Locations



# Appendix D – JBS&G Waste Management Plan

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Health Infrastructure

# Waste Management Plan

RNA Pilot Research and Manufacturing Facility
Gymnasium Road,
Macquarie Park, NSW

21 July 2023

63920/148,654 (Rev 5)

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Health Infrastructure
Waste Management Plan

RNA Pilot Research and Manufacturing Facility
Gymnasium Road,
Macquarie Park, NSW

21 July 2023

63920/148,654 (Rev 5)
JBS&G

**CONSULTANT DECLARATION**

| | |
|---|---|
| **PROJECT DETAILS** | |
| Project name | RNA Pilot Research and Manufacturing Facility |
| Application number | SSD-51811458 |
| Address of subject land | Macquarie University |
| Lot / DP | Part of Lot 70 DP127681 (formerly Lot 220 DP1266103) |
| **APPLICANT DETAILS** | |
| Applicant name | Health Administration Corporation |
| Applicant address | 1 Reserve Road, St Leonards, NSW 2065 |
| **REPORT DETAILS** | |
| Name of report this declaration relates | Waste Management Plan |
| Report reference no. | 148,654 |
| Report date | 21/07/2023 |
| Company name (inc. ABN / ACN) | JBS&G Australia Pty Ltd<br>ABN 62 100 220 479 |
| Author name | Juliette Willis |
| Author qualifications | Bachelor of Life Sciences, Master of Environmental Science |
| Author address | Level 1, 50 Margaret Street, Sydney NSW 2000 |
| **DECLARATION BY CONSULTANT** | |
| Name | Juliette Willis |
| Registration no. | jwillis |
| Organisation registered with | JBS&G |
| Declaration | The undersigned declares that the Waste Management Plan:<br>• has been prepared in accordance with the following **policy, guidelines, or** legislative requirements:<br>- NSW Waste Avoidance and Resource Recovery Act 2001<br>- NSW Protection of the Environment Operations Act 1997<br>• contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates;<br>• does not contain information that is false or misleading;<br>• identifies and addresses the relevant Planning Secretary's environmental assessment requirements (SEARs) for the project;<br>• identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments;<br>• contains a consolidated summary of the proposed or necessary mitigation measures |
| Signature |  |
| Date | 21/07/2023 |

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## Appendices

# 1. Introduction

JBS&G Pty Ltd (JBS&G) has been engaged by Health Infrastructure (the client) to prepare a waste management plan for the redevelopment of B04 (Macquarie University Concept Plan), Macquarie Park, NSW 2113 (the site). The application associated with the waste management plan seeks consent for the construction of a Ribonucleic Acid (RNA) Pilot Research and Manufacturing Facility.

The site is located at the corner of Gymnasium Road and Culloden Road, approximately 13km from the Sydney CBD. The site is within a much larger development lot that is legally described as Lot 220 DP 1266103 and comprises a rectangular portion of the existing Macquarie University Campus.

This report accompanies a State Significant Development Application that seeks approval for Construction and operation of an RNA research and manufacturing facility, including:

- Site establishment
- Site preparation including earthworks, tree removal, cut and fill;
- Construction of internal road and car park alterations and upgrades
- Inground building services works and utility adjustments; including service diversions
- Building foundation works
- Signage, and
- Landscaping

For a detailed project description refer to the Environmental Impact Statement prepared by Ethos Urban.

## 1.1 Scope

This WMP has been developed to address the industry-specific Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment. **Table 1.1** presents the SEARs required to be addressed to support the project:

**Table 1.1: Relevant SEARs Requirements**

| Item | SEARs Requirement | Relevant Section of Report |
|---|---|---|
| ***18. Waste Management*** | | |
| 18.1 | Identify, quantify and classify the likely waste streams to be generated during construction and operation. | Waste streams associated with the construction phase of the project are presented in **Section 4**. Waste streams associated with the operation phase of the project are presented in **Section 5.** |
| 18.2 | Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. | Hazardous material handling, transport and disposal requirements are detailed in **Section 4** and **Section 5**. |
| 18.3 | Identify appropriate servicing arrangements for the site. | Servicing arrangements are presented in **Section 4** and **Section 5.** |
| 18.4 | If buildings are proposed to be demolished or altered, provide a hazardous material survey. | Hazardous building materials survey provided separate to this report. |

In addition to the SEARs, the City of Ryde Development Control Plan (DCP) requires all development applications be accompanied by a Site Waste Minimisation and Management Plan (SWMMP), as per Part 7.2 Waste Minimisation and Management of the DCP.

In accordance with the DCP the SWMMP is written to address:

- Objectives of legislation in relation to waste obligations and minimisation (including Environmental Planning and Assessment Act 1979, Waste Avoidance and Resource Recovery Act 2001 and Protection of the Environment and Operations Act 1997).

- Principles of how to reduce and manage waste during demolition and construction phases.
- Requirements for on going waste minimisation and management during operation.

These DCP requirements are consistent to those in the SEARs and therefore this document will be referred to as Waste Management Plan (WMP).

### 1.2 Objectives

The key objectives of this WMP are to support the client in their project through identifying the types and quantities of potential waste streams and to establish management measures to prevent environmental harm, minimise waste and maximise resource preservation.

Specifically this WMP addresses the Secretary's Environmental Assessment Requirements (SEARs) as part of the State Significant Development (SSD) planning requirements has the following requirements associated with waste:

- SEARs Requirement 9.1, requires Ecological Sustainable Design (ESD) principles to be incorporated into the design, construction and ongoing operation of the development. Specifically in regards to "Intergenerational Equity" principles are demonstrated via:
    - Reduced waste to landfill
        - during demolition and construction by at least 90%
        - during building operation by provision of storage areas for recycling streams (paper and cardboard, glass, plastic) as well as at least one other stream such as e-waste, batteries, etc.
- SEARs Requirement 9.3, requires the development to minimise greenhouse gas emissions and minimisation of resources used by managing "Materials and Circular Economy" via:
    - Recycling waste streams (paper and cardboard, glass, plastic) as well as at least one other stream such as e-waste, batteries, etc.
    - At least 90% of construction and demolition waste to be diverted from landfill

In addition to the SEARs, the requirements from the City of Ryde DCP have been used as a guideline to inform this WMP and the associated waste management practices for this project. Although not necessary, this WMP specifically aims to address the following objectives from the DCP:

<u>Waste minimisation:</u>

1. To minimise resource requirements and construction waste through reuse and recycling and the efficient selection and use of resources.

2. To minimise demolition waste by promoting adaptability in building design and focussing upon end of life deconstruction.

3. To encourage building designs, construction and demolition techniques which minimise waste generation.

4. To maximise reuse and recycling of household waste and industrial/commercial waste.

5. To assist in achieving Federal and State Government waste minimisation targets in accordance with regional waste plans.

6. To minimise the overall environmental impacts of waste and foster the principles of ecologically sustainable development (ESD).

Waste management:

1. To assist applicants in planning for sustainable waste management, through the preparation of a site waste minimisation and management plan.

2. To assist applicants to develop systems for waste management that ensure waste is transported and disposed of in a lawful manner.

3. To require source separation, design and location standards which complement waste collection and management services offered by the relevant service providers.

4. To provide guidance in regards to space, storage, amenity and management of waste management facilities.

5. To ensure waste management systems are easy to use and access.

6. To minimise risks associated with waste management at all stages of development.

These objectives have been considered within this WMP.

# 2. Project Description

The site (noted as B04 in the Macquarie University Concept Plan) is currently an outdoor carpark. Planned works will result in the construction of a single-storey building with a mezzanine plant room to be used as an RNA Pilot Research and Manufacturing Facility

## 2.1 Location and Site Layout

Information relating to the site are provided in **Table 2.1** below. The site location is illustrated in **Figure 1.**

**Table 2.1: Site Details**

| | |
|---|---|
| **Site address** | B04 (Macquarie University Concept Plan), Macquarie Park, NSW 2113 |
| **Local Government** | City of Ryde |
| **Zoning** | B4 – Mixed Use City of Ryde Local Environmental Plan (LEP) 2014 |
| **Surrounding Land Use** | The site is located within the campus of Macquarie University. Specifically, it is in the north-western portion of the campus, somewhat isolated from the main grouping of buildings that make up the campus. To the north-west of the site, directly across Culloden Road, is a residential area. |

## 2.2 Project Scope of Works

The site will be transformed from its current state (carpark) to a medical facility (an RNA Pilot Research and Manufacturing Facility) with a gross floor area (GFA) of 2,195m$^2$. Construction works will include construction of a one-storey building with mezzanine including an office area, production lab and supporting amenities.

Detailed design drawings are included in **Appendix A**.

## 2.3 Existing Environment

### 2.3.1 Topography

A review of the regional topography (LPMA[1]) identified that there is a gradient towards the northeast. The site has an elevation of between approximately 70 to 74 m Australian Height Datum (AHD).

### 2.3.2 Buildings, Structures and Roads

The site is located on Gymnasium Road in the north-western area of the Macquarie University main campus.

To the north-east of the site is the Macquarie University Observatory and further north beyond that the Macquarie University Bioscience Building. To the south of the site, across Gymnasium Road, is the Macquarie University Sport and Aquatic Centre with other Macquarie University buildings existing beyond that. A new Centre of Excellence for the Royal Institute for Deaf and Blind Children is currently in construction across Gymnasium Road from the site.

The entrance to the site is located on Gymnasium Road and is accessed from outside the campus via Culloden Road.

### 2.3.3 Vegetation

The area allocated to the site through the Macquarie University Precinct Masterplan is currently occupied by a carpark. This carpark occupies roughly half the site. Vegetation surrounding the carpark

[1] Land and Property Information, Spatial Information Exchange website, http://maps.six.nsw.gov.au/ accessed 18 November 2022

largely occurs in the northern, southern, south-eastern and south-western regions of the site. From an aerial view, vegetation is largely limited to grass/lawn and trees.

### 2.3.4 Presence of Chemical Storage, Hazardous and Fill Material

Due to the nature of the previous use of the site (carpark) it is unlikely that hazardous chemicals etc. were contained onsite. A detailed site investigation (DSI) completed by JBS&G in 2022 found that fill material had been used to level the site. This DSI found no evidence of other contamination at the site.

# 3. Legislative Requirements and Guidelines

## 3.1 Legislation

This WMP has been prepared in accordance with the requirements of the *NSW Waste Avoidance and Resource Recovery Act 2001* (WARR Act), and the NSW *Protection of the Environment Operations Act 1997* (POEO Act). These and other key legislation relevant to waste management at the site are provided in **Table 3.1.**

**Table 3.1: NSW Waste Legislation Summary**

| Legislation | Purpose |
|---|---|
| *Protection of the Environment Operations Act 1997*<br><br>Protection of the Environment Operations (Waste) Regulation 2014<br><br>Protection of the Environment Operations (General) Regulation 2009 | The Act is the key piece of environment protection legislation administered by the NSW Environment Protection Authority (EPA). The object of the Act is to achieve the protection, restoration and enhancement of the quality of the NSW environment.<br>The Act enables the Government to establish policy instruments for setting environmental standards, goals, protocols and guidelines. |
| *Waste Avoidance and Resource Recovery Act 2001* | The WARR Act promotes waste avoidance and resource recovery to achieve a continual reduction in waste generation, provides for development of a state-wide Waste Strategy, and introduces a scheme to promote extended producer responsibility for the life cycle of a product. Objectives of the Act include:<br>• To encourage the most efficient use of resources and to reduce environmental harm;<br>• To ensure that resource management options are considered against the waste hierarchy (see **Section 3.3**);<br>• Provide for the continual reduction in waste generation;<br>• To minimise the consumption of natural resources and the final disposal of waste;<br>• To ensure that industry shares with the community the responsibility for reducing and dealing with waste; and<br>• To assist in the achievement of the objectives of the *POEO Act.* |
| *Environmental Planning and Assessment Act 1979*<br><br>Environmental Planning and Assessment Regulation 2000 | The Act and the Regulation provide the overarching structure for planning in NSW. They provide for a number of other statutory documents to support the planning structure, including State Environmental Planning Policies and Local Environmental Plans. The objectives include:<br>• The proper management, development and conservation of natural and artificial resources; and<br>• To encourage ecologically sustainable development. |
| *Environmentally Hazardous Chemicals Act 1985* | The Act provides for control of the effect on the environment of chemicals and chemical wastes. The EPA is responsible for administering this legislation, in partnership with other state government agencies.<br>It is the primary legislation for specifically regulating environmentally hazardous chemicals throughout their life cycle. The Act sets out requirements for:<br>• Chemical Control Orders (CCOs) which are used to manage specified hazardous chemicals and chemical wastes;<br>• Technology assessments, which ensure that premises treating or destroying chemicals are safe and appropriate for their purpose; and<br>• Licensing of individuals or industries who manage chemicals that are subject to a CCO. |
| *Contaminated Land Management Act 1997*<br>Contaminated Land Management Regulation 2013 | The Act establishes a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation. |

## 3.2 Guidelines

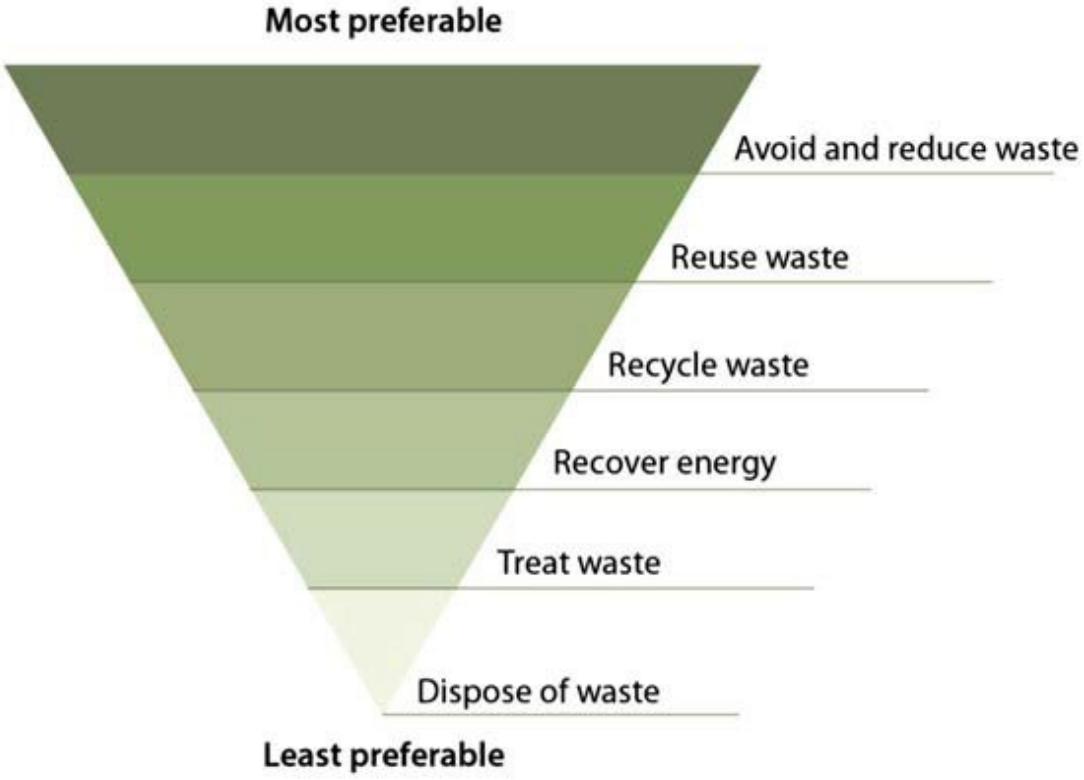
Guidance documents and policies considered in the preparation of this WMP are included in **Table 3.2.**

**Table 3.2: NSW Guidance Summary**

| Guideline | Purpose |
|---|---|
| NSW Environment Protection Authority (EPA) Waste Classification Guidelines 2014 (EPA 2014) | The Waste Classification Guidelines have been established by the NSW EPA to assist waste generators to classify wastes. Wastes are classified into groups that pose similar risks to environment and human health. Waste classifications are discussed further in **Section 4.1** and **Section 5.1**. |
| Building Code of Australia (BCA) | The BCA contains technical provisions for the design and construction of buildings and other structures, covering such matters as structure, fire resistance, access and egress, services and equipment, and energy efficiency as well as certain aspects of health and amenity. |
| NSW EPA's Waste and Sustainable Materials (WSM) Strategy 2041, Stage 1: 2021-2027 | The WSM strategy aims to continually improve the state's policies and targets for waste reduction and landfill diversion. Stage 1 of the strategy sets the following targets:<br>• reduce total waste generated by 10% per person by 2030;<br>• have an 80% average recovery rate from all waste streams by 2030;<br>• significantly increase the use of recycled content by governments and industry;<br>• phase out problematic and unnecessary plastics by 2025;<br>• halve the amount of organic waste sent to landfill by 2030. |
| NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012 | The guide provides advice to assist architects, developers, council staff and building managers to incorporate better waste management practice into the design, establishment, operation and ongoing management of waste services in commercial and industrial developments. |
| How to manage and control asbestos in the workplace, SafeWork NSW Code of Practice, 2016 (NSW Government) | The Code of Practice is an approved code of practice under the *Work Health and Safety Act 2011*.<br>The code provides guidance on how to manage risks associated with asbestos and asbestos containing material at the workplace and thereby minimise the incidence of asbestos-related diseases such as mesothelioma, asbestosis and lung cancer. |
| How to safely remove asbestos, SafeWork NSW Code of Practice, 2016 (NSW Government) | The Code of Practice is an approved code of practice under the *Work Health and Safety Act 2011*.<br>The code provides practical guidance on how to safely remove asbestos from all workplaces including structures, plant and equipment and is to be read in conjunction with *How to manage and control asbestos in the workplace* Code of Practice. |
| Australian Government Construction and Demolition Waste Guide, 2011 | The aim of the guide is to help develop effective markets for materials diverted or derived from the construction and demolition waste stream. |
| Australian Government Sustainable Procurement Guide, 2018. | The guide aims to reduce the adverse environmental, social and economic impacts of purchased products and services throughout their life through considerations such as waste disposal and the cost of operation and maintenance over the life of the goods. The guide was developed to assist Australian Government purchasers to include sustainability considerations in all stages of the procurement process, from identifying the business need to disposal of goods. |
| Sampling Design Guidelines – Contaminated Sites. NSW EPA, 1995 | The Sampling Design Guidelines were established by the NSW EPA to:<br>• Encourage the use of a statistically based approach to the design and sampling for contaminated sites and the interpretation of these samples for assessing and validating contaminated sites; and<br>• Provide a convenient summary of statistical methods. |

### 3.3 Waste Hierarchy

Waste management for the project will be undertaken in accordance with the waste hierarchy, which underpins the objectives of the *Waste Avoidance and Resource Recovery Act 2001*. The waste hierarchy shown in the following figure demonstrates preferred approaches to waste management to ensure sustainable development and use of resources.




The hierarchy also aims to maximise efficiency and avoid unnecessary consumption of resources. This WMP seeks to implement the waste hierarchy to minimise waste disposal and promote waste reduction in order of preference:

- Reduce or avoid waste through selection of items and design;
- Reuse materials without further processing;
- Recycle and process waste for reuse as a new product;
- Recover energy through combustion of materials where acceptable and in accordance EPA Regulations;
- Treat waste to stabilise the waste product for disposal or reuse; and
- Dispose of waste when no other management options are appropriate.

# 4. Construction

## 4.1 Waste Streams and Classification

### 4.1.1 EPA Waste Classification

The NSW EPA Waste Classification Guidelines (EPA 2014) provides for the classification of wastes into groups that pose similar risks to the environment and human health, which are defined in the POEO Act. Classes of waste described in the guideline are described in **Table 4.1.**

**Table 4.1: Summary of NSW EPA Waste classifications**

| Waste Classification | Description |
|---|---|
| Special waste | Special wastes are wastes that pose specific regulatory requirements due to the risks of harm to the environment and human health. These wastes include clinical and related waste, asbestos waste, waste tyres, and anything classified as special waste under an EPA gazettal notice. |
| Liquid waste | Liquid waste is classified as any waste (other than special waste) that meets the following criteria:<br>• Has an angle of repose of less than 5 degrees above horizontal;<br>• Becomes free flowing at or below 60 degrees Celsius or when it is transported;<br>• Is generally not capable of being picked up by a spade or shovel; and/or<br>• Is classified as liquid waste under an EPA gazettal notice. |
| Pre-classified waste:<br>• Hazardous waste<br>• Restricted solid waste<br>• General solid waste (putrescible)<br>• General solid waste (non-putrescible). | Where the waste is neither liquid nor special waste; the EPA has pre-classified other commonly generated waste types, as defined in Schedule 1 of the POEO Act. This includes hazardous waste, restricted solid waste, general solid (putrescible) and general solid (non-putrescible) waste. Putrescible waste is the component of the waste stream that is liable to become putrid, and usually refers to vegetative, food and animal products.<br>A list of all currently gazetted waste classifications is provided on the EPA website at: www.epa.nsw.gov.au/waste/wastetypes.htm.<br>Where material is classified as hazardous waste, it is noted that such materials cannot be directly disposed of and must be treated prior to disposal by an appropriately licensed facility/operator. |
| Wastes classified via chemical assessment:<br>• Hazardous waste<br>• Restricted solid waste<br>• General solid waste (putrescible)<br>• General solid waste (non-putrescible). | Where the waste does not fall into one of the above categories, chemical assessment of the material is required to finalise a waste classification as per the procedures outlined in detail in EPA (2014) and/or consideration of General or Specific Waste immobilisation approvals as approved under the *Protection of the Environmental Operations (Waste) Regulation* (2014). |

### 4.1.2 Waste Streams and Classification

A variety of waste types are expected be generated during the construction phase of the project. Potential waste types and corresponding EPA classifications for the proposed site are summarised in **Table 4.2**.

**Table 4.2: Potential Waste Types and Classification during Construction**

| Waste Type | EPA Classification | Generated |
|---|---|---|
| Fill material (soil) | General solid waste (non-putrescible) | ✓ |
| Metals (including from packaging) | General solid waste (non-putrescible) | ✓ |
| Wood waste (including partitions and joinery offcuts) | General solid waste (non-putrescible) | ✓ |
| Blockwork | General solid waste (non-putrescible) | ✓ |
| Glazed bricks | General solid waste (non-putrescible) | Potential |
| Concrete (including building frames, cores & roof; external works; slab) | General solid waste (non-putrescible) | ✓ |
| Plasterboard | General solid waste (non-putrescible) | ✓ |
| Glass | General solid waste (non-putrescible) | ✓ |
| Carpet tiles | General solid waste (non-putrescible) | Potential |
| Vinyl flooring | General solid waste (non-putrescible) | Potential |
| Plastic and foam packaging | General solid waste (non-putrescible) | ✓ |

| Waste Type | EPA Classification | Generated |
|---|---|---|
| General refuse | General solid waste (putrescible), and General solid waste (non-putrescible) | ✓ |
| Electrical (HV and LV) | General solid waste (non-putrescible) | ✓ |
| Optic fibre wiring | General solid waste (non-putrescible) | Potential |
| Fluorescent light bulbs | Hazardous waste | ✓ |
| Batteries | Hazardous waste | Potential |
| Asbestos | Hazardous waste | Unlikely |
| PVC pipes (water, electrical, optic fibre) | General solid waste (non-putrescible) | Potential |

### 4.1.3 Waste Quantities

#### 4.1.3.1 Construction

Indicative waste volumes have been provided for context based on benchmark data developed by the UK Building Research Establishment Group (BRE 2012[2]), see **Table 4.3**, which is based on waste generation at various construction projects including healthcare, commercial, industrial and public buildings.

A value of 19.1m$^3$ per 100m$^2$ has been adopted to estimate waste generation for the construction phase of this project.

Indicative waste composition information shown in the **Table 4.4** below (derived from the Sustainability Victoria Waste Wise Tool Kit (2013 [3])) provides an estimate of quantities for each waste stream during construction of a healthcare building. **Table 4.5** shows approximate quantities of each waste type to be produced during the construction phase of the project, based on the Sustainability Victoria Waste Wise Tool Kit (2013) values. These values are an estimation and may vary from actual amounts of waste produced during construction.

Strategies that will be implemented to minimise waste generation and maximise reuse and recycling are outlined in **Section 4.2.**

**Table 4.3: Average Volumes of Waste Produced during Construction by Different Project Types**

| Project Type | Average volume (m$^3$) of waste per 100m$^2$ |
|---|---|
| Residential | 18.1 |
| Public buildings | 20.9 |
| Leisure | 14.4 |
| Industrial Buildings | 13.0 |
| Healthcare | 19.1 |
| Education | 20.7 |
| Commercial Other | 17.4 |
| Commercial Offices | 19.8 |
| Commercial Retail | 20.9 |

Source: BRE (2012)

[2] Building Research Establishment Group. *Smartwaste - BRE Waste Benchmark Data* (BRE 2012)
[3] Sustainability Victoria Waste Wise Tool Kit (2013)

**Table 4.4: Guide to Waste Composition and Volumes – Construction**

| Material | Estimated Waste % | Conversion Factor (Density) (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 / card | 4% | 0.1 |
| Vegetation | 3% | 0.15 |
| Soil | 1% | 1.6 |
| Other | 0.3% | 0.3 |

Source: Sustainability Victoria Waste Wise Tool Kit (2013)

**Table 4.5: Approximate Quantities of Waste Generated During Construction Phase**

| Waste Type | Approximate quantity ($m^3$) |
|---|---|
| Hard material | 161.0 |
| Timber | 30.2 |
| Plastics | 8.2 |
| Cement sheet | 18.9 |
| Gypsum material | 5.0 |
| Metals | 22.6 |
| Paper / card | 1.7 |
| Vegetation | 1.9 |
| Soil | 6.7 |
| Other | 0.4 |
| **TOTAL** | **257** |

Source: Sustainability Victoria Waste Wise Tool Kit (2013)

## 4.2 Waste Management

Site specific waste management measures have been developed in line with the waste hierarchy outlined in **Section 3.3** and in accordance with the relevant legislative requirements and guidelines.

The implementation of the following measures will provide the principles of the development achieving its waste targets of 90% reduction of waste to landfill during construction as required for planning (refer to Section 1.2).

### 4.2.1 Avoidance and Reduction of Waste

The construction contractor will be required to avoid waste generation, and endeavour to reuse materials where possible, thereby minimising waste generation.

During the construction phase, waste generation will be avoided through strategic selection of materials during design and purchasing, considering options to reduce waste generation for the project. This includes consideration of procurement of materials which are prefabricated, use minimal packaging, and are suitable for reuse. Selection of construction materials will also consider the use of recycled items where practicable.

Opportunities to avoid wastes generated by construction include:

- Demolition is to be carried out in a manner that deconstruction (strip out) works are carefully dismantled and sorted.
- Develop a procurement policy which considers waste avoidance measures such as:
    - Order site specific or prefabricated items where practicable to minimise surplus material;
    - Consider packaging material provided by suppliers during purchasing and reduce this requirement where possible, or consider returnable packaging;
    - Material selection to consider recycled items;

- Refine waste stream estimates to ensure adequate on-site storage and segregation; and
- Refine estimated volumes of materials for construction.

### 4.2.2 Reuse and Recycling

For waste materials onsite, measures to separate waste streams will be implemented. This includes segregating wastes into appropriate dedicated bins or areas for reclamation on site or transportation to a designated recycling facility.

If material containing asbestos is identified and cannot be safely removed/encapsulated, then off-site disposal is the most appropriate option. The construction contractor will then liaise with a licensed asbestos removalist to determine a suitable disposal facility. Measures for dealing with hazardous waste (including asbestos) are discussed in **Table 4.6.**

Procedures to manage the reuse and recycling of waste materials during construction include:

- Incorporation of waste management into development staging to promote reuse of materials across the site;
- Ensure areas for waste segregation are easily accessible and clearly defined;
- Ensure contractors are familiar with onsite waste storage areas for appropriate waste segregation; and
- Consider opportunities for materials reuse in areas in proximity to the site or local construction activities where practicable.

### 4.2.3 Treatment and Disposal

Project wastes may require treatment to stabilise them for appropriate disposal to reduce the risk of harm to human health or the environment. These materials are not suitable for reuse or recycling and must be segregated and disposed of via a suitably qualified contractor.

Wastes will only be sent to landfill or disposal facilities where the prioritised management methods in the hierarchy cannot be effectively implemented. The construction contractor will liaise with the local council to determine appropriate disposal locations for potential waste streams.

Measures to manage the treatment and disposal of waste materials during construction include:

- Ensure wastes which cannot be reused or recycled and require disposal are clearly segregated from those which have the potential to be reused.
- Provide segregated bins for subcontractors to dispose of construction waste (i.e., metal, plastics and cardboard).
- Contractors and staff to be inducted into site waste management practices.
- Hazardous materials including asbestos (if identified) to be disposed of in accordance with the handling and disposal requirements of SafeWork NSW and NSW EPA.
- General wastes to be disposed of in accordance with NSW EPA/local council requirements.
- Toilet facilities must be regularly serviced and emptied by a licensed contractor.

### 4.2.4 Waste Stream Management Options

The waste management measures outlined in **Table 4.6** will be implemented for each waste stream generated as part of the project. Key waste streams identified for this project have been discussed in more detail in this section to ensure appropriate waste handling for each type of waste.

Each waste stream will be separated and stored appropriately to ensure each type of waste is handled in the most appropriate and efficient way. The numbers and size of waste storage bins, containers, stockpile areas and loading zones on site will be determined by the construction contractor.

The construction contractor appointed by the client may implement their own waste management systems but will align with this plan.

**Table 4.6: Construction Waste Stream Management**

| Waste Stream | Project Phase | Management |
|---|---|---|
| **Fill/Soil** | Construction | Fill material may need to be disposed of off site during the construction of the RNA Pilot Facility. Disposal off site will be minimised wherever possible using the methods outlined in **Section 4.2.1.**<br><br>Options for re-use of fill on site should be investigated. If disposal off site is required then the appropriate waste classification is required for disposal at a licensed waste facility. |
| **Concrete/Masonry** | Construction | Concrete and masonry waste may be generated from construction of the RNA Pilot Facility, although this will be minimised wherever possible using the methods outlined in **Section 4.2.1**.<br><br>Concrete can be reprocessed and re-used on site but general practice is to break up/crush the concrete and arrange for disposal to a recycling facility or disposal offsite. |
| **Metals** | Construction | There is a possibility that metal waste may be generated from excess materials purchased for the site as part of construction work, although this will be minimised wherever possible using the methods outlined in **Section 4.2.1**.<br><br>Construction contractor appointed by the client will investigate and determine appropriate storage and recycling of metals to reduce waste, including location and signage of skip bins onsite.<br><br>Where recycling of metal is not feasible the contractor will organise disposal to a licensed waste facility. |
| **Wood Waste** | Construction | It is possible that wood waste (timber) may be generated from excess materials purchased as part of construction works, although this will be minimised wherever possible using the methods outlined in **Section 4.2.1**.<br><br>Construction contractor appointed by the client will investigate and determine appropriate storage and recycling of timber to reduce waste, including location and signage of skip bins onsite. |
| **Plasterboard** | Construction | Plasterboard will possibly be generated during the construction of the RNA Pilot Facility (e.g. new partitions and infill walls), although this will be minimised wherever possible using the methods outlined in **Section 4.2.1**.<br><br>Construction contractor appointed by the client will investigate and determine appropriate storage and recycling of plasterboard to reduce waste, including location and signage of skip bins onsite.<br><br>Uncontaminated plasterboard (e.g. offcuts) or material with low levels of contamination such as nails and screws is completely recyclable and can be recycled for use in new plasterboard or the gypsum used in agricultural soil conditioners. |
| **Plastics** | Construction | Plastic wastes associated with packaging for construction materials can be recycled or in some cases returned to the supplier of the materials for reuse. Where possible, plastic (non-durable) wastes will be reduced using the methods outlined in **Section 4.2.1**. |

| Waste Stream | Project Phase | Management |
|---|---|---|
| **General Waste** | Construction | Wastes such as food waste, organics and biodegradable material will be created as a result of worker activity on site. Non-putrescible wastes are generally inert, or solid, and are not able to be composted, recycled, reprocessed or reused.<br><br>Construction contractor appointed by the client will ensure adequate bins are provided on site for putrescible waste. This is particularly important around worker congregation areas, site office areas and toilet facilities.<br><br>It is likely that general waste will increase at times of internal and service fit out during construction, primarily associated with excess packaging materials and workers on site. Construction contractor will determine the location of skip bins and specify waste stream separation measures across the site.<br><br>Where possible, co-mingled recycling bins will be provided in common areas at work sites for plastic and glass bottles, soft drink cans, aluminium and tin cans to avoid these items being disposed to landfill. Specialised bins for cigarette butts will also be provided in designated smoking areas. |
| **Hazardous Waste – General** | Construction | Hazardous waste could be generated during construction of new facilities at the site (e.g. light bulbs, batteries, chemicals or paint).<br><br>Separate containers for the safe storage of these wastes will be provided where applicable, prior to removal offsite by an appropriately licensed contractor for recycling or disposal at a licensed facility.<br><br>If identified in soil, asbestos containing materials should be removed and disposed of by a suitably licenced contractor. |

### 4.3 Roles and Responsibilities

This WMP forms the basis of waste management on site for the construction phase of the redevelopment works.

It is expected that all construction personnel will commit to the WMP and be responsible for their own actions in adhering the waste management objectives. Waste management criteria (such as those contained in this report) is to be contractually binding for all contractors working on the site.

A Construction Site Manager will be the key person responsible for implementation of the WMP and adherence to applicable legislation, guidelines, licensing and project conditions outlined herein.

**Table 4.7** presents suggested responsibilities for waste management.

**Table 4.7: Roles and Responsibilities**

| Role | Responsibility |
|---|---|
| Environmental Management Representative | • Compliance with applicable environmental licences, legislation and project conditions. Ensure environmental management plan(s) across the site are adhered to and accurate to site conditions.<br>• Undertake inspections to ensure compliance. |
| Construction Site Manager | • Ensuring workers and subcontractors are inducted into the WMP along with other applicable management plans.<br>• Responsible for undertaking procurement of construction materials in accordance with the waste management hierarchy.<br>• Segregation of waste streams where required to ensure appropriate use, treatment and/or disposal. |
| Health and Safety Manager | • Safety inductions for all staff, workers and visitors.<br>• Work with Construction Site Manager to determine safe handling of asbestos waste (if found) in compliance with regulatory requirements. |
| Site Workers | • Responsible for acting in accordance with the WMP and site inductions.<br>• Informing the Construction Site Manager of any waste management incidences and Health and Safety Manager of any safety issues associated with on-site activities. |

#### 4.3.1 Training and Awareness

Staff present on site during the construction stage of the project will be required to undertake induction and awareness training inclusive of the WMP and site-specific waste management. This includes:

- Induction to the waste management hierarchy and use across the site; and
- Details of responsibilities for waste management and key personnel;
- Site specific waste management practices relevant to the project stage such as:
    - Waste storage and stockpiling locations;
    - Waste disposal requirements;
    - Hazardous or special wastes;
    - Record of waste disposal details and receipts; and
- Knowledge of emergency response procedures and contacts; and
- Asbestos Awareness Training.

Signage will be provided on site to ensure waste management measures are communicated across the subject site, particularly for contractors and visitors who are not regularly on site. Signage will highlight correct procedures for separating wastes where required, locations of bins and waste storage areas, labelling of designated bins, potential hazards associated with the waste streams and handling, and contact details should any issues be encountered.

Signage will be prepared and located on site in accordance with the Australian Standard (AS 1319) for safety signs, and the NSW EPA and Australian Standard for recycling signage.

### 4.4 Monitoring and Reporting

The following activities will be undertaken to inform future onsite waste management and to determine the success of the WMP:

- Ensure waste quantities generated are recorded, including tracking of receipts from waste recycling or disposal via the appointed waste contractor;
- Record waste classification and testing results;
- Review the WMP in light of any changes to construction activities or further information which may alter waste management practices;
- Undertake auditing of waste management across the site as a component of broader environmental site audits;
- Undertake visual inspections daily to ensure waste management controls are implemented and maintained across site; and
- Undertake final review of the WMP upon project completion to ensure information accurately reflects site activities, and to assist future waste management.

Outcomes of audits and waste tracking will be reported to the client or the construction contractor, potentially through weekly or monthly reporting to ensure waste management objectives are adhered to.

#### 4.4.1 Corrective Action

Where formal auditing, daily visual inspections or incident reporting identify incorrect storage or disposal procedures, or maintenance or waste management issues, observations will be promptly reported to the Construction Site Manager and recorded. The Construction Site Manager will determine appropriate measures to rectify the issues in a timely manner in consultation with the Environmental Management Representative and Health and Safety Manager where required.

# 5. Operation

## 5.1 Waste Stream and Classification

### 5.1.1 Site Specific Waste Streams

Potential waste types and corresponding EPA classifications for the operation of facilities constructed on the site are summarised in **Table 5.1**.

**Table 5.1: Potential Waste Types and Classifications During Operation**

| Waste Type | EPA Classification | Waste Stream |
|---|---|---|
| Paper including all types of recyclable paper but excluding paper towels, toilet paper and tissues. | General solid waste (non-putrescible) | Paper recycling |
| Cardboard, excluding waxed cardboard. | General solid waste (non-putrescible) | Cardboard recycling |
| Metals (steel, aluminium, stainless steel, and copper piping or wire) | General solid waste (non-putrescible) | Co-mingled recycling, specific recycling or general waste |
| Wood (timber, wooden pallets) | General solid waste (non-putrescible) | Specific recycling or general waste |
| Plastics (recyclables) | General solid waste (non-putrescible) | Co-mingled recycling |
| Plastics (non-recyclables) | General solid waste (non-putrescible) | General waste |
| Soft plastics | General solid waste (non-putrescible) | Soft plastic recycling |
| Glass including bottles and containers. | General solid waste (non-putrescible) | Co-mingled recycling |
| Light bulbs, batteries, e-waste | Potentially hazardous waste | Specific recycling |
| General refuse such as food scraps and non-recyclable plastics. | General solid waste (putrescible) or<br>General solid waste (non-putrescible) | General waste |
| Clinical/Medical waste | Special waste | Special waste |

## 5.2 Waste Generation Quantities

### 5.2.1 Estimated Waste Quantities during Operation

The gross internal floor area of the operational site is 2,195m². However, much of the GFA consists of room uses that are unlikely to produce waste, e.g. rainwater tanks, air compressors, fire pumps, plant etc. For the purposes of waste estimates during operation, only areas that are likely to produce waste have been used in the calculation.

Schedule 3 of the Part: 7.2 Waste Minimisation and Management of the City of Ryde DCP does not have waste rates for the proposed premise type. Therefore, indicative waste generation quantities for the site are based on rates provided in Appendix A of the EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.

These rates are provided in in **Table 5.2** and uses "medical and optical" and "offices" as the primary premise types.

**Table 5.2: Estimated Average Waste and Recycling Generation Rates during Operation**

| Premises Type | Average Waste Generation | Average Recycling Generation |
|---|---|---|
| Medical and optical | 35 L / per day / per 100m$^2$ | 10 L / per day / per 100m$^2$ |
| Offices | 8 L / per day/ per 100m$^2$ | 6 L / per day / per 100m$^2$ |

As above, waste production during operation has been estimated based on occupied spaces as follows:

- Medical = 1,359m²
- Office = 417m²

From the rates in the table above, it is estimated that the site will produce approximately the following amount of waste:

- 2,546L of waste per week
- 805L of recycling per week

These calculations presume that the buildings are used Monday to Friday only (normal working and educational week) so are based on five days.

It is also assumed that up to half of the waste produced will be medical waste (1,273L per week) refer to **Table 5.3**.

Strategies that will be implemented to minimise waste generation and maximise reuse and recycling are outlined in **Section 5.3.1**

## 5.3 Waste Management during Operation

The implementation of the following measures will provide the principles of the development achieving its waste targets of 90% reduction of waste to landfill during operation as required for planning (refer to Section 1.2).

### 5.3.1 Reduction of Waste following the Waste Hierarchy

#### 5.3.1.1 Avoidance and Reduction of Waste

The ongoing site users will be required to minimise waste generation, and endeavour to reuse waste where available. Waste will be avoided through strategic selection of materials during purchasing which takes into account options which may reduce waste generation during ongoing operation of the site. This includes considering procurement of materials which use minimal packaging and are suitable for reuse. Selection of operational materials will also consider the use of recycled items where practicable.

Opportunities to avoid wastes generated by operation include:

- Develop a procurement policy which considers waste avoidance measures such as:
    - Order site specific or prefabricated items where practicable to minimise surplus material.
    - Consider packaging material provided by suppliers during purchasing and reduce this requirement where possible or consider returnable packaging.
    - Material selection to consider recycled items.
- Refine waste stream estimates to ensure adequate on-site storage and waste segregation, and to inform future procurement policies.

#### 5.3.1.2 Reuse and Recycling

Measures to separate waste streams will be implemented to maximize re-use and recycling. This includes segregating wastes into appropriate dedicated bins or areas for reclamation on site or transportation to a designated recycling facility.

Procedures to manage the reuse and recycling of waste materials during operation include:

- Incorporate waste management into site management procedures to promote reuse and/or recycling of materials.
- Ensure areas for waste segregation are easily accessible and clearly defined.
- Ensure staff are familiar with onsite waste storage areas for appropriate waste segregation.

- Consider opportunities for materials reuse and/or recycling where practicable.

#### 5.3.1.3 Treatment and Disposal

Operational wastes may require treatment to stabilise them for appropriate disposal to reduce the risk of harm to human health or the environment. These materials may not be suitable for reuse or recycling and will be segregated and disposed of via a suitably qualified contractor for the waste stream.

All clinical and medical waste will be removed from site by a licenced contractor and incinerated at an approved facility.

Wastes will only be sent to landfill or disposal facilities where the prioritised management methods in the hierarchy cannot be implemented in a cost effective or practical manner. The site manager will liaise with the local council to determine appropriate disposal locations for potential waste streams.

Measures to manage the treatment and disposal of waste materials during operation include:

- Ensure wastes which cannot be reused or recycled and require disposal are clearly segregated from those which have the potential to be reused.
- Provision of segregated waste bins for each waste type.
- Maintenance staff to be inducted into site waste management practices.
- Hazardous materials to be disposed of in accordance with the handling and disposal requirements of SafeWork NSW and NSW EPA.
- General wastes to be disposed of in accordance with local council requirements.

### 5.3.2 Waste Storage Area

A centralised waste storage area is located on the ground floor of the building – refer to **Appendix A**.

The operational site will have localised bins for waste segregation (including general waste, recyclables and medical waste). It is expected that these will be emptied at least once a day and decanted into the centralised waste storage area.

All waste facilities must comply with the Building Code of Australia (BCA) and all relevant Australian Standards (AS) in accordance with the requirements of City of Ryde DCP. This will include a locally accessible tap at the centralised waste storage area for washing bins and cleaning the general area.

Clinical and medical waste bins will be routinely cleaned and sterilised. Gloves are to be worn when moving bins.

### 5.3.3 Waste Storage Systems

Based on the volumes of waste calculated in **Section 5.2.1**, it is estimated that as a minimum the following bins are required as provided in **Table 5.3.**

**Table 5.3: Operational waste storage requirements**

| Type | Storage Vessels | Volume of Storage | Calculated Waste Volumes | Adequate Storage |
|---|---|---|---|---|
| General Waste | 1 x 1,100 L mobile garbage bin (MGB)<br>1 x 240 L wheelie bin | 1,100 L<br>240 L<br>**1,340 L** | 1,273L | Yes |
| Medical Waste | 1 x 1,100 L mobile garbage bin (MGB)<br>1 x 240 L wheelie bin | 1,100 L<br>240 L<br>**1,340 L** | 1,273L | Yes |
| Recycling | 1 x 1,100 L mobile garbage bin (MGB) | 1,100 L | 805L | Yes |

### 5.3.4 Waste Collection

Waste collection vehicles shall not obstruct access to adjacent premises, roadways or the footpath. In addition, waste collection must be carried out with due care for public safety including other road users, cyclists and pedestrians.

The centralised waste room is located on the ground floor of the building with an exit directly to the outside, allowing for bins to be easily wheeled out to an area accessible by vehicles. These bins are then emptied by the waste contractors into the collection vehicles and disposed of offsite.

A licensed waste contractor will need to be engaged in order to ensure waste is correctly removed from the facility. All potential waste streams must be accounted for when hiring a waste collection contractor. Written evidence of the contract with the licensed collector for waste and recycling collection is to be provided to the client and the City of Ryde Council and held on site.

## 5.4 Ongoing Management

Having suitable waste management systems in place is only one element of an effective waste management system at a large facility such as the one this site is located in. Compliance by the administrative manager, staff, cleaning contractors and waste collection contractor is essential to ensure the efficacy of the overall system.

### 5.4.1 Roles and Responsibilities

It is expected that all personnel will commit to the WMP and be responsible for their own actions in adhering to the waste management objectives.

An Administrative Manager will be the key person responsible for implementation of the WMP and adherence to applicable legislation, guidelines, licences and project conditions. The Administrative Manager will also be responsible for maintenance of the cleaning infrastructure such as the service doors, locks, lighting, signage, colour coding and repair/replacement of MGBs.

**Table 5.4** below presents suggested responsibilities for waste management.

**Table 5.4: Roles and Responsibilities**

| Role | Responsibility |
|---|---|
| Administrative Manager | Ensuring staff are inducted into the WMP and other applicable management plans.<br>Responsible for undertaking procurement of operational materials in accordance with the waste management hierarchy.<br>Segregation of waste streams where required to ensure appropriate use, treatment and/or disposal.<br>Compliance with applicable environmental legislation and project conditions.<br>Ensure environmental management plan(s) across the site are adhered to and accurate to site conditions.<br>Undertake inspections to ensure compliance.<br>Maintenance of waste-related signage, colour coding and MGBs.<br>Security of waste storage areas during day-to-day business.<br>Ensure no waste is placed on the public way. |
| Staff | Adherence to the WMP.<br>Placement of waste/recycling within correct bins.<br>Notify manager when bins are overfull and require transport to the MGBs.<br>Informing the Administrative Manager of any waste management incidences. |
| Licensed Waste Collection Contractor | Responsible for collection, disposal and/or recycling of waste in accordance with contract and relevant legislation and guidance.<br>Provide feedback on actual volumes of waste and recycling collected to enable waste volume evaluation by Administrative Manager. |

### 5.4.2 Training and Awareness

All staff and contractors will undertake awareness training of the WMP and site-specific waste management. This includes:

- Induction to the waste management hierarchy and use across the site.
- Details of responsibilities for waste management and key personnel.
- Site specific waste management practices such as:
    - Waste storage and stockpiling locations;
    - Waste disposal requirements;
    - Hazardous or special wastes; and
    - Record of waste disposal details and receipts.
- Knowledge of emergency response procedures and contacts.

Signage will be provided on site to ensure waste management measures are communicated across the site. Signage will highlight correct procedures for separating wastes where required, locations of bins and waste storage areas, labelling of designated bins, potential hazards associated with the waste streams and handling, and contact details should any issues be encountered.

Signage will be prepared and located on site in accordance with the Australian Standard (AS 1319) for safety signs, and the NSW EPA and Australian Standard for recycling signage.

## 5.5 Monitoring and Reporting

The following activities will be undertaken to inform future onsite waste management and to improve the efficiency in achieving the outcomes of the WMP:

- Review of waste streams and waste quantities.
- Review the WMP in light of any changes to operational activities or further information which may alter waste management practices.
- Undertake auditing of waste management across the site as a component of broader environmental site audits.
- Undertake visual inspections to ensure waste management controls are implemented and maintained across site.
- Undertake annual review of the WMP to ensure information accurately reflects site activities, and to assist future waste management.

Where formal auditing, general inspections or incident reporting identify incorrect storage or disposal procedures, or maintenance or waste management issues, observations will be promptly reported to the Administrative Manager and recorded. The Administrative Manager will determine appropriate measures to rectify the issues in a timely manner.

## 6. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

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## Figures


**Legend:**

Approximate Site Boundary

JBS&G

| | |
|---|---|
| Job No: 63920 | |
| Client: Health Infrastructure | |
| Version: R01 Rev A | Date 22/11/2022 |
| Drawn By: LJ | Checked By: HM |
| Scale 1:3,500 | |

0 50 100

metres

Coord. Sys. GDA 1994 MGA Zone 56

**Macquarie University mRNA Facility**
**Gymnasium Road**
**Macquarie Park, NSW**

**SITE LOCATION**

**FIGURE 1**

File Name: N:\Projects\Health Infrastructure\63920 Macquarie Uni RNA Facility Contamination\GIS\02_MapProjects\63920_Macquarie Uni RNA Facility Contamination_R01_RevA.aprx


**Legend:**
- Approximate Site Boundary
- NSW Cadastre (2022)

JBS&G

Job No: 63920

Client: Health Infrastructure

| Version: R01 Rev A | Date 22/11/2022 |
|---|---|
| Drawn By: LJ | Checked By: HM |

Scale 1:750

0 10 20
metres

Coord. Sys. GDA 1994 MGA Zone 56

**Macquarie University mRNA Facility**
**Gymnasium Road**
**Macquarie Park, NSW**

**SITE LAYOUT**

**FIGURE 2**

File Name: N:\Projects\Health Infrastructure\63920 Macquarie Uni RNA Facility Contamination\GIS\02_MapProjects\63920_Macquarie Uni RNA Facility Contamination_R01_RevA.aprx
Reference: Nearmap www.nearmap.com 20220912

# Appendix A Design Drawings



Level 24, 25 Martin Place, Sydney NSW, 2000, Australia
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|---|---|---|---|---|
| A | SSDA SUBMISSION | 16/12/22 | GS | |
| B | SSDA SUBMISSION | 14/06/23 | AC | YZ |

LEGEND

EXISTING CARPARK

**DEPARTMENT LEGEND**

- AMENITIES
- BOH
- CLEAN ROOM
- GENERAL CORRIDOR & CIRCULATION
- MATERIAL/PACKING/FINISHES GOODS
- QA/QC LAB
- SERVICES
- STORAGE
- WORKPLACE

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT

**RNA PILOT RESEARCH AND MANUFACTURING FACILITY**
Macquarie University Campus
Cnr Culloden Rd and Gymnasium Rd
Macquarie Park, NSW 2109

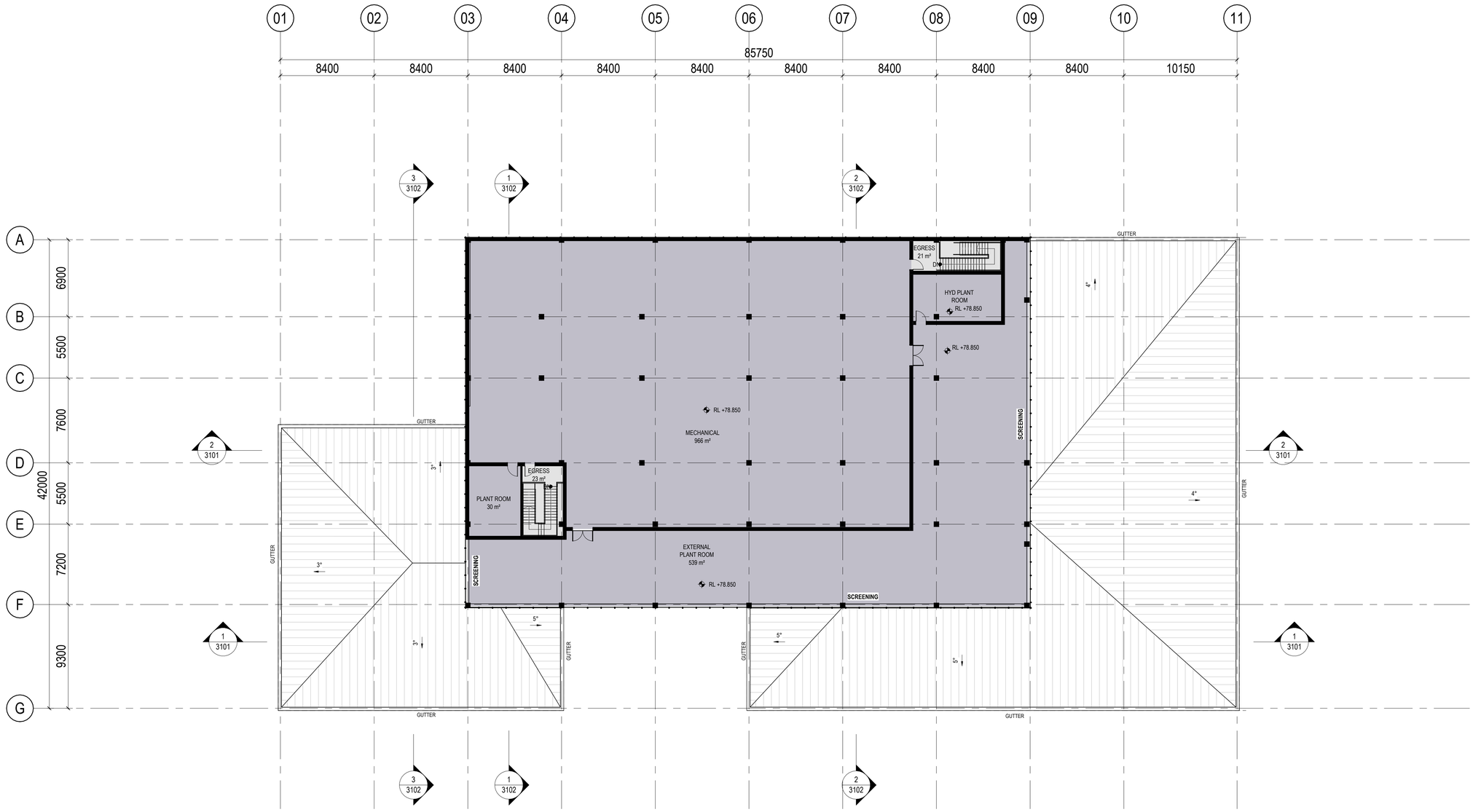
DRAWING TITLE

**PROPOSED FLOOR PLAN - GROUND**

SCALE: 1 : 200 @ A1
PROJECT NUMBER: 10354773
DRAWING NUMBER: **HDR-AR-SSDA-2101**
ISSUE: **B**
PROJECT STATUS: **PRELIMINARY**

15/06/2023 12:51:22 PM

Autodesk Docs://10354773 RNA Pilot MFG Facility_2022/RNA-HDR-AR-BLD.rvt





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LEGEND

**DEPARTMENT LEGEND**

- GENERAL CORRIDOR & CIRCULATION
- SERVICES

CLIENT

NSW GOVERNMENT Health Infrastructure

PROJECT

**RNA PILOT RESEARCH AND MANUFACTURING FACILITY**
Macquarie University Campus
Cnr Culloden Rd and Gymnasium Rd
Macquarie Park, NSW 2109

DRAWING TITLE

**PROPOSED FLOOR PLAN - MEZZANINE**

SCALE: 1 : 200 @ A1
PROJECT NUMBER: 10354773
DRAWING NUMBER: **HDR-AR-SSDA-2103**
ISSUE: **B**
PROJECT STATUS: **PRELIMINARY**

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# Appendix E – Environmental and Sustainability Policy

HINDMARSH
Leadership at work

## Environment and Sustainability Policy

Hindmarsh operates with full appreciation and awareness that environmental protection and sustainability are principle to our ongoing success. Operations in terms of both construction and completion are compassionate to the environment, the local community and aim to support the ongoing sustainability of the environment.

Hindmarsh seeks to meet its own environmental needs and the needs and expectations of clients, stakeholders, employees and the community by:

- Setting and continually reviewing measureable environmental objectives and targets. Backed by ongoing monitoring, reporting and analysis supporting continual improvement. Complimented by ongoing feedback at all levels.
- Prevent pollution and unnecessary resource consumption by setting targets and maintaining systems and processes which facilitate the more efficient use of energy and material resources and improved waste management, waste avoidance, re-use and recycling.
- Seek to minimise construction related aspects and impacts including noise, vibration, groundwater, air quality, land contamination, amenity and heritage.
- Promote a shared sense of ownership and responsibility for optimal environmental performance from board through to employees and contractors whilst developing a culture of environmental respect and appreciation.
- Encourage and support environmental awareness through ongoing training and development of competencies particular to specific environmental impacts related to individual activities.
- Comply with all legal requirements including environmental Legislation, Regulations, Codes of Practice, Applicable Australian and other standards specific to Hindmarsh.
- Implement and maintain the Hindmarsh Management System and its Environmental elements to ensure all potential aspects and impacts are identified, evaluated and suitably eliminated or controlled.
- Foster and support continuous improvement at all levels including the identification of key environmental initiatives.

Compliance with this policy will be monitored, audited and continually reviewed so as to remain effective and aligned with all of our operations.

**Rowan Hindmarsh**
**Chief Executive Officer**