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RANDWICK CAMPUS REDEVELOPMENT INTEGRATED ASB (IASB) ADDITION MANAGEMENT SUB-PLAN - WASTE

20/08/2019 | Revision No: 2.8

Sub Plan Revision Status				
Date	Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/01/17	2	General update including LLB GMR and legislative amendments	[redacted]	
30/11/17	2.1	References to Enablon changed to FOOTPRINT		
05/09/18	2.2	Clarification of waste recovery targets and project review of waste targets		
4/12/18	2.3	New Project		
5/07/19	2.4	Updating the plan to reflect comments received		
16/0719	2.5	Updating the plan to reflect comments received		
22/07/19	2.6	Updating the plan to reflect comments received		
05/08/19	2.7	Updating the plan to reflect comments received		
20/01/20	2.8	Updated fro CC1		

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1. SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	This Waste Management Sub Plan provides strategies and measures to minimise, manage and track solid and liquid waste generation. It outlines appropriate measures to ensure that solid and liquid wastes are managed appropriately during site establishment, construction and commissioning of the project. This may include solid construction washes (soil, concrete ,masonary, steel, timber, packaging and various plastics) and liquid wastes (washout waste water) produced during site establishment and construction of the project. It describes measures to be implemented during relevant construction activities, which enables minimisation and reduction of construction wastes. Refer to Section 1.1 and 3.1 of the Project Enviornmental Health and Safety (EHS) Management Plan for clarification on how the EHS Sub Plans form part of the Lendlease Building (LLB) EHS management system.
Objectives of the Sub Plan	• To facilitate consideration of waste reduction and handling during all stages of the project from design to hand-over. • To maximise the beneficial re-use of excavated materials and construction wastes to reduce disposal to landfill. • The Green Building Council of Australia Green Star Rating Tool provides for up to 3 credit points to be achieved for better than 90% recovery (by weight) to landfill. • To recover through reuse and recycling a minimum of 80% (by weight) of all (excluding soil) waste generated on the site. • To ensure reduction, reuse, recycling and disposal data is captured, reported and tracked to ensure compliance with relevant legislation • To prevent environmental pollution associated with waste handling and disposal.
Scope of Works	This Sub Plan has been prepared, for the Integrated Acute Services Buildng (IASB) Addition. The core scope elements of the IASB Addition are: • The UNSW Eastern Extension (base building only) • Associated modifications within the ASB • Lowering of Hospital Road • Landscaping

Key Issues and Risks	This Sub Plan is based on the hierarchy of waste avoidance, reuse, recycling, treatment and disposal. Waste must be managed in a way that ensures reuse and recycling is maximised and the volume of waste transported to landfill is minimised. The works described above will result in the generation of waste materials that may include: ● Vegetation ● Timber ● Metal ● Concrete ● Soil ● Cardboard and paper ● Paint and chemicals ● Plasterboard ● Waste water including washout water ● Co-mingled materials. Compliance with the Project EHS Plan and this Waste Management Sub Plan is intended to mitigate the risks and potential impacts of construction activities and waste generation on the environment. The key risks have been identified as: ● Over-ordering or inaccurate estimation of material requirements resulting in waste; ● Identification of contaminated soil or hazardous materials requiring testing, treatment, specialist disposal and validation; ● Inappropriate handling and storage of solid waste, liquids, contaminated or hazardous materials resulting in loss or pollution; ● Inappropriate transport and disposal of waste to non-licenced or approved facilities; ● Uncontrolled discharge of paint waste, concrete slurry, wet trade washout or litter into the stormwater system or off-site resulting in pollution; ● Loss of resources and materials of value due to weather events, physical damage or vandalism; ● Disposal of materials due to lack of awareness and behavioural factors; and ● Missing or inaccurate tracking and verification of waste removed from site.
Legislation and Guidelines	**Federal/National:** Work Health and Safety Act 2011 Work Health and Safety Regulations 2011 Environment Protection and Biodiversity Conservation Act 1999 National Greenhouse and Energy Reporting Act 2007 Chain of Responsibility Heavy Vehicle Transport Laws 2014 Waste Classification Guidelines (Relevant State Government)

	National Packaging Covenant **State:** Work Health and Safety Act 2011 Work Health and Safety Regulation 2017 Protection of the Environment Operations Act 1997 Environmental Planning and Assessment Act 1979 Water Management Act 2000 Water Act 1912 SSDA 10339 **Local:** Local Government Act 1993 LLB Requirements: • GMR: 4.13 Degradation or Pollution of the Environment • GMR: 4.15 Uncontrolled Release of Stored Energy (non-electrical)) • LLB Workplace Delivery Code (WDC)
Summary of Site Controls	Works must be planned, implemented and monitored in accordance with the LLB GMRs, the Project EHS Plan, this Sub Plan and the LLB WDC. These documents detail LLB approach and commitment to pro-active and responsible site management. A waste management contractor (if project is of appropriate size/type) will be engaged to provide skip bins for waste storage and on-site segregation, and to undertake waste collection for off-site separation, recycling and disposal. The objectives of this Sub Plan and details of the LLB waste recovery targets and FOOTPRINT reporting requirements will be communicated to the contractor who will be required to prepare a detailed, monthly waste breakdown for the project. FOOTPRINT is a web based portal that tracks and reports the amount of waste, power, water and fuel usages for the reporting period. Site specific waste management controls, monitoring, reporting and performance measures have been identified in this Sub Plan. These include but are not limited to: ● The establishment of designed waste handling areas; ● The correct storage and handling of waste materials including liquids; ● On and off-site separation of wastes for reuse and recycling; ● Identifying external opportunities for reuse to achieve mutually beneficial outcomes; ● Appropriate disposal and verification of all waste leaving site; and

	• Monthly reporting of waste and recycling data. Waste reduction, storage, separation (for reuse and recycling) and disposal requirements must be included in relevant specifications, contractual agreements, supply agreements, quality assurance documents, and subcontractor work method statements. Criteria for the selection and use of recycled and recycled content products must also be specified. Site inspections, monitoring and reporting will be undertaken by LLB and subcontractors as detailed in the EHS Plan and the following implementation table.
Waste Management	The works will require disposal of waste to licensed facilties throughout the duration of the project. The facilties currently proposed include: General Waste – Bingo Auburn, Greenacre Recyling Waste – MET recycling Silverwater Vegetation Waste - Bingo Auburn, Greenacre Refer to Appendix 2 for the proposed transport routes. These will be communicated to TMC as per Consent Conditions.

2. IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Respons bilty	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Identify major waste streams associated with the works.	Prior to commencing	Review construction program and identify waste streams. Engage waste contractor service provider/s.	Construction Manager (CM)	Monthly waste reports from waste contractor.	Achieve minimum 80% recovery (excluding soils).
Key waste streams and recovery are captured and monitored (i.e. landfill and recovered)	Whole of Project	Key waste streams are analysed using Footprint	CM	Six Weekly	Outlined in the Project Review and discussed
Undertake in-situ sampling and testing of proposed spoil to determine waste classification. Coordinate with Contaminated Land Sub Plan if appropriate.	Prior to works commencing	After consultation with specialised environmental consultant a sampling grid is to be established. Identify any excavated material for reuse on site. Subject to waste classification categories	Proejct Manager (PM) / CM	Report to be supplied by specialised environmental consultant.	Waste classifications and quantities (m3) confirmed with various options available to project team.
Identify hazardous building materials and options for treatment, reuse and/or disposal.	Prior works commencing	Obtain a Hazardous Building Materials Survey. Prepare a Hazardous Building Materials Survey.	CM / Site Manager (SM)	Survey available and reviewed. Waste Management Strategy (WMS) to address findings of survey.	Hazardous Materials Register maintained. Materials treated for reuse where feasible.
Request major subcontractors and suppliers submit waste minimisation, take back and recycling details.	At tender and contract finalisation	Identify major subcontractors and suppliers with the largest potential waste impact. Identify practical measures associated with their scope of work or product supply to reduce waste entering the site (eg reduced or alternative packaging,	SM	Inspection of incoming materials and packaging to identify new opportunities. Periodic checks of waste skips and	Reduced waste generation and costs. Alternative products identified and used. Bulk handling and reusable/returnable transport containers encouraged.

		take back, use of recycled materials, hire arrangements etc)		subcontractor waste management activities. Monthly waste reports.	Waste and recovery targets tracked.
Based on the identification of key waste types, identify skip requirements for on-site separation, collection, off-site recycling and disposal.	Prior to works commencing	Discuss requirements and targets for waste management with waste contractors. Provide source (ie on-site) separation options/facilities. Provide colour coded bins/signage for recyclable and non-recyclable wastes (eg lunch, office areas). Provide skips for the collection of mixed construction wastes for off-site separation. Classify waste that cannot be reused or recycled for disposal at approved facilities.	CM/SM	Weekly inspection checklist (to identify cross contamination, condition of handling areas, bin capacity) Monthly waste report from contractor (meeting requirements of FOOTPRINT). Monthly waste reporting by subcontractors (ie power, water and waste receipts)	Adequate number and type of litter bins available. Contractors made accountable for placing waste in the correct bins. Cross-contamination traced to responsible subcontractor to rectify. Waste recovery targets met.
Include information in the Site Induction about waste minimisation and management and the conservation of resources including paper, electricity and water.	Prior to works commencing	Revise LLB induction package to include site specific risks and information. Deliver induction material.	CM/SM	WMSs prepared by subcontractors address waste minimisation and management and the use of recycled products.	Site induction delivered to all workers on site.
Establish suitably located and designed stockpile, waste and material storage and handling areas.	Prior to works commencing	Mark details of waste handling and new material storage areas on the Environmental Management Diagram (Appendix 1). Protect stored materials from damage (eg weather).	CM/SM	Weekly/monthly inspection checklist.	Reuse and on-site separation of waste maximised. Loss of materials and resources of value due to damage, prevented.

Identify wet trade washout requirements and establish appropriately designed and located facilities.	Prior to works commencing	Identify an area of the site away from drains and waterways. Establish suitable facilities. Identify a licenced liquid waste transporter. Incorporate water recycling. Document a procedure for the wash out and disposal of acrylic and solvent based paints. (Third party proprietary system preferred)	CM/SM	Weekly/monthly inspection checklist. Daily monitoring of waste area operation. Waste/recycling reports.	Facilities should be stand-alone. (ie **NOT** connected to stormwater or sewer). No uncontrolled discharge of washout. Facilities maintained in good condition with capacity.
Establish a suitably designed and located concrete waste washout facility.	Prior to works commencing	Identify an area of the site away from drains and waterways. Maintain the facility so that dried concrete/slurry can be removed for recycling.	SM	Weekly/monthly inspection checklist. Daily monitoring of waste area operation. Waste/recycling reports.	No excess concrete left on site. No hardened spills/ pours left on site.
Establish a suitably designed and located Wet trades washout facility.	Prior to works commencing	Specifically design plant to enable recycling of water from solid wastes (slurry) which maximises water reuse and minimises solid waste generation.	SM	Weekly/monthly inspection checklist. Daily monitoring of waste area operation. Waste/recycling reports.	Washout area kept clean and drains/sumps operating.
Implement the requirements of the Sustainable Site Setup checklist.	Prior to commencing works	Implement energy, water and waste sustainability initiatives to achieve agreed levels.	CM/SM	Six monthly audits.	Agreed level achieved and maintained during construction.
Planning for Waste Minimisation					
Identify major suppliers and material requirements and identify opportunities to minimise packaging.	Prior to and during construction	Review supply agreements, contractor materials and packaging proposals with the view of minimising waste to site.	CM/SM	Inspect material deliveries. Specifications met.	Proven examples of packaging reduction. Use of recycled materials and recycled content products.

		Subcontractor WMS to address waste minimisation.			
Encourage the identification and procurement of recycled materials and recycled content products (eg timber, concrete, road base, asphalt etc)	Prior to works commencing	Request input from subcontractors and suppliers to nominate products that include a recycled component. Subcontractor WMS to address. Check compliance with specifications and ensure the material is fit for purpose. Obtain clearance certificates for all imported fill/products.	PM / CM	Tabled in design and pre-contract meetings. Sign off on product selection.	Material received with clearance certificates (ie no contamination) and fit for purpose.
Raise worker awareness of environmental conservation matters.	Prior to and during works.	Display posters and signage and deliver toolboxes addressing the conservation of resources and waste minimisation.	SM	Waste data. Feedback on resources.	Toolboxes delivered. Positive feedback received.
Planning for Waste Reuse and Recycling					
Maximise the reuse and recycling of construction materials.	Prior to works commencing	Subcontractor to prepare a waste strategy addressing waste segregation and identifying was reuse and recycling opportunities. Provide suitable skips to enable on-site waste separation.	CM/SM	Waste types identified. Watse strategy reviewed and agreed. Waste facility reports/ dockets.	Waste reused, recycled and disposed tracked against projected targets.
Segregate waste building materials (eg concrete, timber, steel, etc) on site and store in separate bins.	At all times	Discuss project requirements with the waste contractor. Maintain waste storage areas and provide bins and clear signage. Maintain a materials reuse area to divert materials of value from recycling and disposal skips.	SM	Weekly/monthly inspection checklist. Monthly waste reports.	Clean and tidy waste management area. Nil to minimal cross contamination of waste types.

Ensure imported fill and recycled road products and landscape materials are accompanied by a clearance certificate.	At all times	Verify the type and content of all materials delivered to site.	CM/SM	Inspection of deliveries. Clearance Certificate	Certificate provided prior to materials being placed on site. No ex-situ site contamination.
Co-ordinate the sharing and reuse of raw materials, excess products, and building materials including plywood, hoarding, fencing, concrete and formwork where possible.	During construction	Establish a dedicated material reuse area for the collection of materials suitable for reuse. Ensure materials are compliant to specification and fit for purpose. Document reuse and recycling options in subcontractor WMS (eg formwork and concrete contractor).	CM/SM	Discussed in project and subcontractor meetings. Reinforced through toolbox talks. Weekly/monthly inspection checklist. Recycling facility dockets.	Documentation of actual examples as a case study. Quantified in project reviews.
Storage of Waste					
Maintain waste handling and storage areas for solid and liquid wastes in good condition.	At all times	Store liquids/liquid waste in secure, well ventilated, covered, bunded areas. Store materials in original containers (label intact). Seal containers securely and do not stack unless secured. Provide a spill control kit and clean up spills immediately. Maintain washout facilities.	SM	Weekly inspection of waste areas to assess condition of storage and waste collection areas and identify maintenance requirements.	Nil to minimal cross contamination of wastes. No spillage or loss of wastes from collection containers in storage areas. No 'orphaned' drums identified on site during inspections (ie drums/containers left outside of a bunded area)
Chemical wastes protocols developed to ensure these wastes are stored correctly (in sealed drums) in designated, bunded areas.	All times	Dedicated bunded area with 110% capacity of stored goods. Area should be covered if possible.	Foreman/ supervisor SM / Foreman)	Weekly inspection of Waste Collection Areas.	Correct covers and containers for waste No spillages/loss of waste during storage.
Encourage good site 'housekeeping' in material handling and storage areas to prevent damage and the loss to	At all times	Communicate material handling and storage requirements to subcontractors. Address in subcontractor WMS.	SM	Weekly inspection checklist to identify inappropriate storage or	No loss due to poor storage.

materials due to physical impact and weather events.				the waste of materials and resources.	
Disposal of Waste					
Dispose of waste using licensed contractors to appropriately licensed or approved facilities.	At all times	Consider reuse and recycling options before disposal. Develop WMS for the transportation of waste. Check EPL/approval for facilities receiving waste and recyclables.	SM	Inspection of waste transport licenses and vehicles. Monthly waste report. Disposal dockets.	No waste disposed to unlicensed facilities. Copies of disposal documentation maintained and tracked in FOOTPRINT. No illegal placement of waste on land or in water. Waste, reuse, recycling and recovery data tracked in FOOTPRINT.
Where spoil cannot be reused, dispose of excavated materials off-site.	At all times	Use a licensed waste contractor to transport spoil to an appropriately licensed or approved facility. Complete required checks and forms and seek approval for disposal off-site to a non-licenced property.	CM/SM	Tracking of materials transported off-site (ie through dockets etc). Waste classification reports. Subcontractor energy and waste reporting form (submitted monthly with progress claim)	Reconciliation of tracking registers and dockets. Soil quantities tracked in FOOTPRINT.
Immobile hazardous waste prior to removal off site for disposal.	At all times	Engage specialist consultant. Identify appropriate licensed contractor to remove and transport waste to licensed landfill.	CM/SM	Written approval received from specialist and relevant environment authority. Waste sampling and classification reports. Clearance Survey/report.	Reconciliation of tracking registers and dockets.

Appropriate disposal of all wastewater from site operations (i.e. paint washing) or temporary facilities (i.e. toilets).	At all times	Collection and disposal of wastewater by approved licensed contractor	SM	As required	Waste disposal dockets correspond to waste types/ volumes.
Track the disposal of chemical and hazardous wastes in accordance with authority requirements.	At all times	Arrange transport in consultation with specialised contractor and consultant.	SM/ SF	Random inspection of waste transport licenses and vehicles.	Correct covers and containers for waste transfer. No spillages/loss of waste during transport.

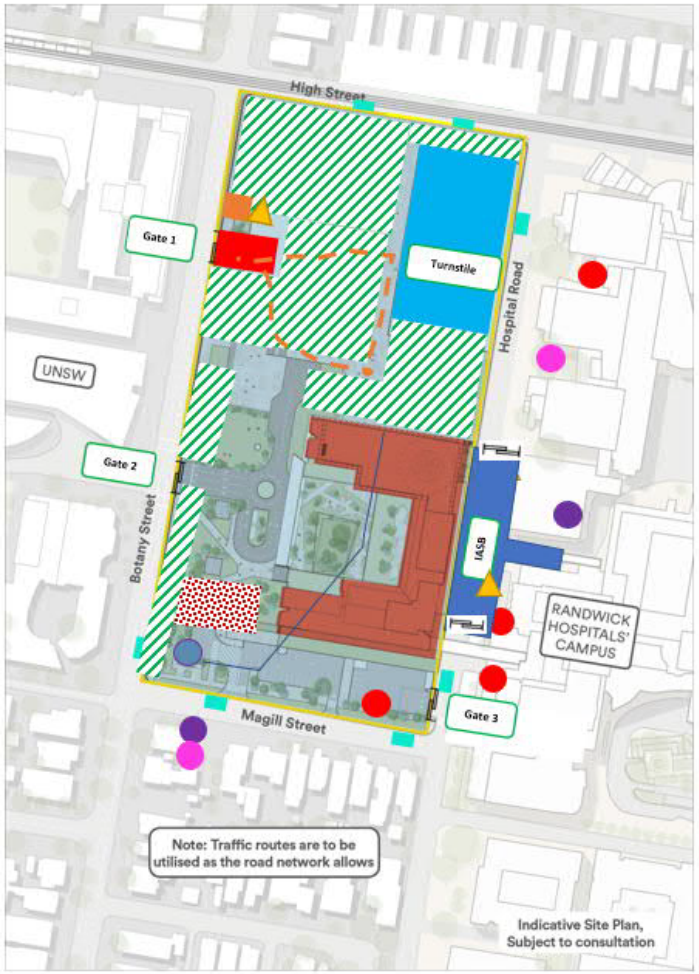
APPENDIX 1: Key Waste Streams

Waste Type & approx. Volumes	Common Handling Options and Bin Sizing	Methods Available for Management
Asphalt – *100m3*	10m^3 bins / bogie truck removal.	Reused in temporary works or site levelling or to establish walkways, driveways or stabilised areas. Transported off site for recycling.
Cables and parts – *50m3*	10m^3 bins comingled with construction wastes	Any metal components are to be segregated and the remainder taken off-site to landfill
Concrete (liquid slurry) from washout. *n/a*	Appropriately designed and located dedicated washout facility	Off-site recycling of solids (slurry). On site recycling of waste water if possible.
Concrete (solid) – *250m2 kerbs, 600m2 pavements*	10m^3 bins	Reused to establish walkways, driveways or stabilised areas. Reused in temporary works or site levelling. Transported off site for recycling.
Drums and containers (empty and containing no residue) – *n/a*	Stored in bunded areas for collection	Removal off-site by a licensed contractor for rinsing, recycling or disposal at a licensed landfill.
Excavated spoil (clean soil, rock etc) – *7000m3*	Bogie Trucks	Reuse on site if possible. Reuse off-site under a resource recovery exemption or licence(beneficial reuse). Disposal off-site.
Excavated spoil contaminated – *500m3*	Stockpiles Bogie Trucks	Approved treatment and reuse on site if possible. Reuse of treated material off-site (where permissible). Disposal off-site to an appropriately licenced facility.
Green waste – *trees as per approval – 2 bogies*	Bogie Trucks or large skip	Chipped on site. Transported to off-site centre for recycling
Liquid from wet trades (eg paint, dry walls, renderers, tilers etc)	Dedicated washout facility/treatment system.	Off-site recycling of solids (slurry) On-site recycling of water.
Oily rags and filters	200L bins	Off-site recycling by licensed waste oil recycler
Organic food scraps	240L bins	Off-site to landfill with other non-recyclable municipal waste
Paper and office based wastes	240L bins	Off-site recycling
Printer Cartridges	Special collection bin	Off-site recycling
Scrap metal/steel	10m^3 bins	Off-site recycling
Sediment controls	Stored on site	Reuse controls where possible on the site or at other local sites.

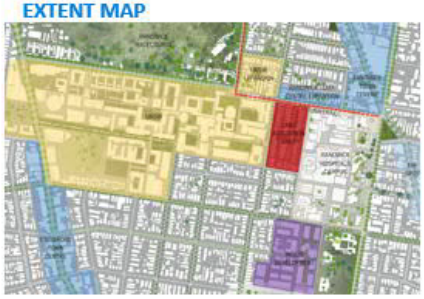
Sediment build up behind control structures	Stockpile Immediate reuse on site	Respread on site, unless obvious contamination is present (colour/smell)
Spill control materials (eg absorbent pads/booms containing hydrocarbons, chemicals	Containers, bins and/or tanks that have been suitably bunded	Taken off-site to landfill.
Timber	$10m^3$ bins	Segregated and recycled off-site or disposed
Waste oil, grease, lubricants	Sealed and stored in original container in bunded areas for collection.	Off-site recycling by licensed contractor.
Plastic wrapping/containers	240L bins	Off-site recycling or landfill as appropriate.

Appendix 1: Environmental Management Diagram

ENVIRONMENTAL MANAGEMENT DIAGRAM– RANDWICK CAMPUS REDEVELOPMENT PROJECT



EXTENT MAP



KEY ENVIRONMENTAL ISSUES

- Dust both within site and leaving the site perimeter
- Unexpected finds
- Noise to general public
- Water Run Off
- Sediment Run Off

SENSITIVE RECEPTORS

- UNSW
- Randwick Hospital Campus (including Sydney Children's Hospital, Royal Women's Hospital, Prince of Wales Public & Private Hospital
- Local Residents (High Street & Magill Street)

KEY CONTROL MEASURES

- Soil is to be managed in accordance with the RAP
- Silt barriers consisting of geotextiles with secondary filtering material will be established at one meter offsets from drains
- Geotextile to cover over drains to filter water along with sand bags when required
- Additional dust monitors in place within the Hospital Buildings along Hospital Road
- Sprinklers and water carts to reduce dust
- Dirt Glue to be used for unconsolidated material
- ASB footprint to be rolled with roller to compact ground prior to Christmas shutdown
- Ring main water around inside of hoarding with hose connections to control workzones

KEY CONTACTS PERSONS

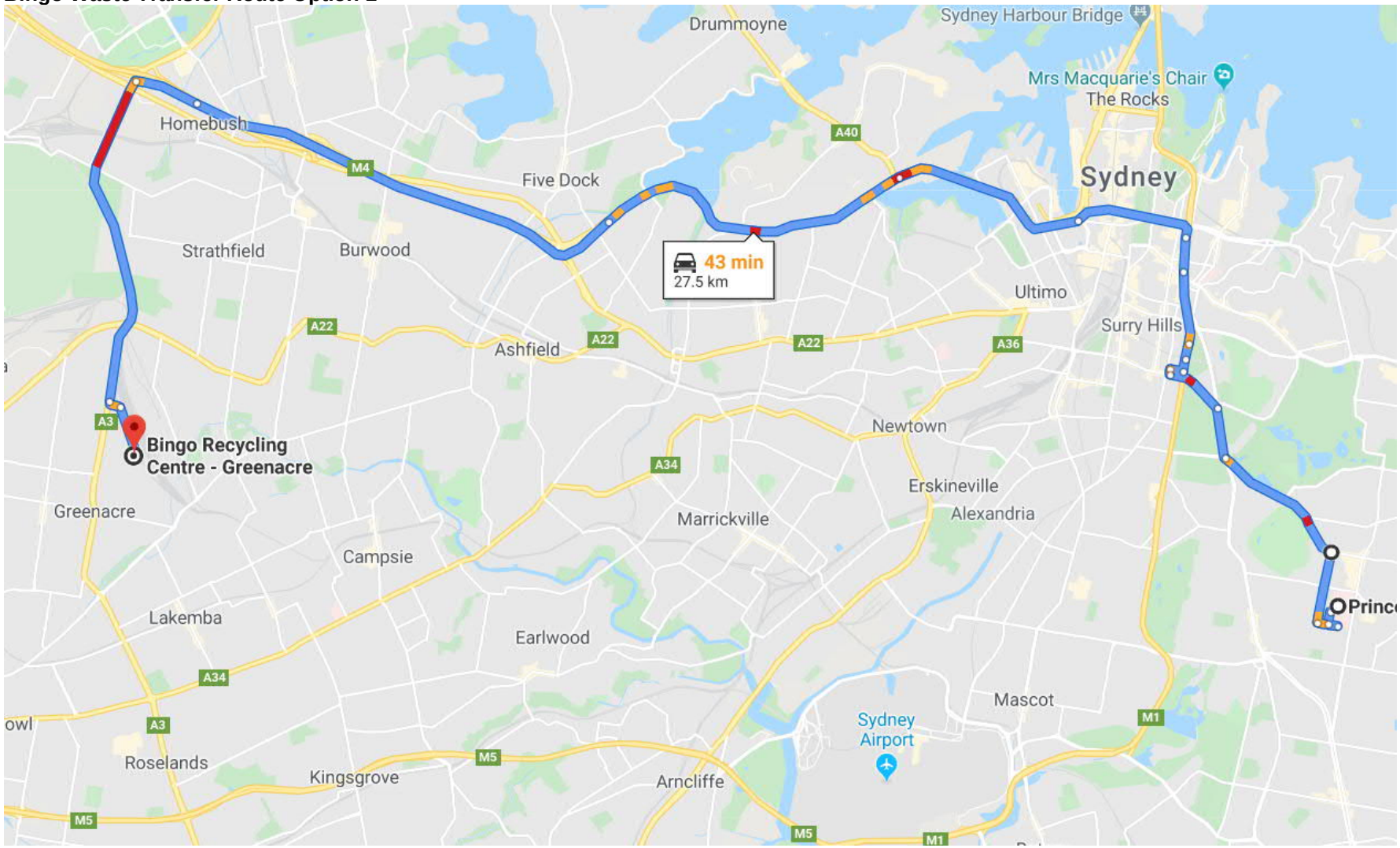
[redacted]

LEGEND

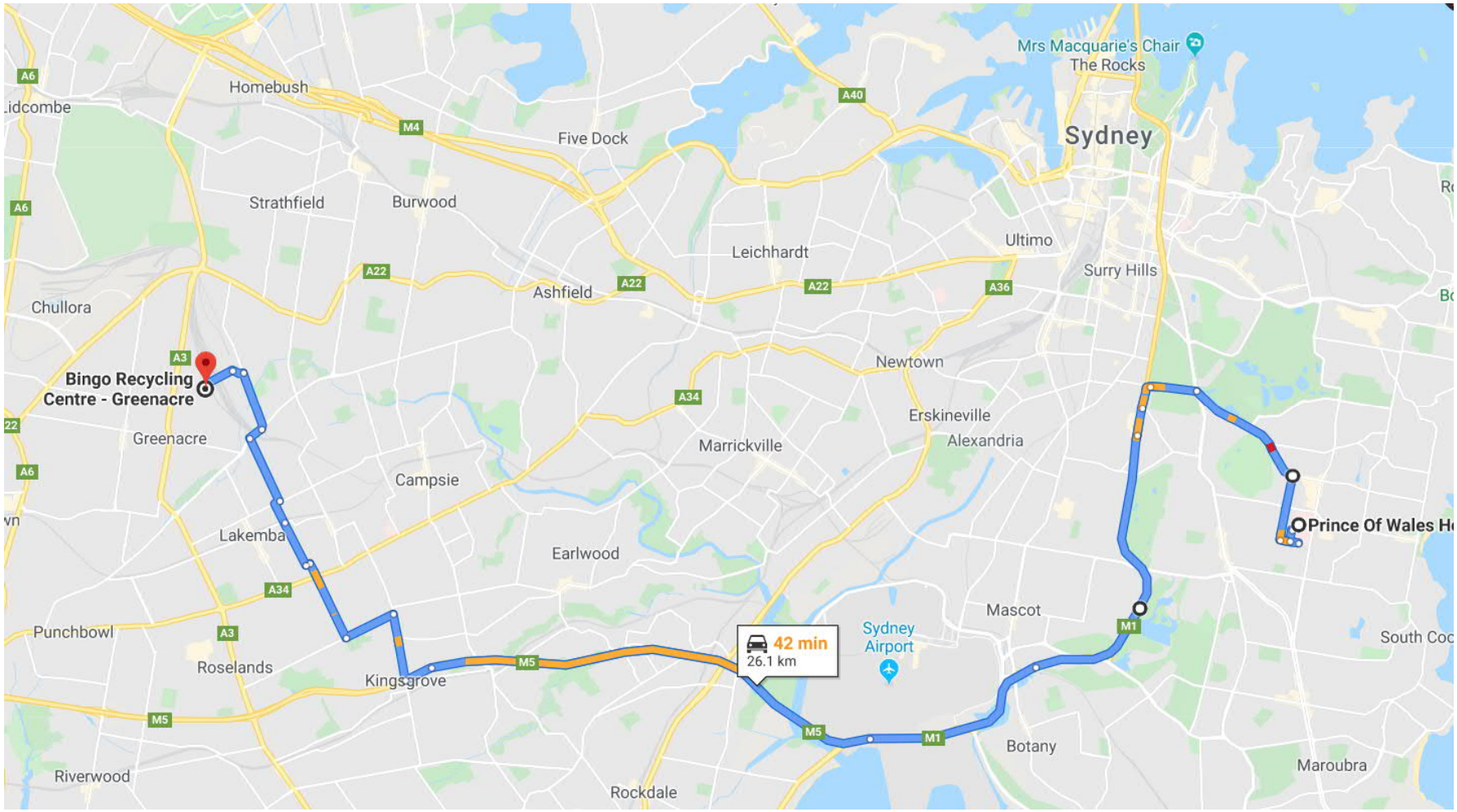
Icon	Descriptions
	Perimeter A-Class Hoarding
	Vehicle Entry Gate
	Site Accommodation and Offices
	Spill Kits
	RCS air monitors for duration of rock sawing works
	Vibration Monitors
	Acoustic Monitors
	Stormwater inlet
	Haul Road
	All Weather Gravel Layback
	Hazardous Materials and Dangerous Good Storage
	Dust Monitors
	Latex polymer dust control spray
	Geofabric covered stockpile
	Temporary sed pond with pumpline from north RW to sed pond. Pump on float switcth

Appendix 2: Waste Transfer routes

Bingo Waste Transfer Route Option 1



Bingo Waste Transfer Route Option 2



MET Recycling Silverwater proposed route