BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

Combined Projects (Westmead) Pty. Ltd.

Construction Management Plan

Lot 4 158-164 Hawkesbury Road & 2a Darcy Road, Westmead

Our Ref: SY160028
December 2016

PLANNING
PROJECT MANAGEMENT
ENGINEERING
CERTIFICATION

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1 Introduction

Barker Ryan Stewart have been engaged by Combined Projects (Westmead) to prepare a Construction Management Plan (CMP) in accordance with the requirements of Parramatta City Council in support of a development application for the residential unit development on Lot 4 DP 1202362, 158-164 Hawkesbury Road & 2a Darcy Road, Westmead.

This CMP outlines the excavation and building process for the proposed development and how the builder and contractors will manage potential impacts caused by the excavation and building works.

This CMP is to be adjusted as required by the builder/contractor during the progress of works. Where this plan conflicts with the requirements of the builder/contractors Safe Work Method Statements (SWMS) or Work Health and Safety (WHS) Policy then the SWMS's and WHS and their safety and environmental obligations of the builder/contractors shall override this CMP.

The CMP includes a description of the project, outlines the process and addresses mitigation measures relating to the potential impacts of construction on the environment and the public, including noise and vibration, air pollution, water pollution, waste and recycling measures and traffic management.

2 Project Overview

2.1 Existing Development

The site has been cleared and the circulation roads are being constructed as per the Stage 1 DA for the subdivision of the overall site by the University of Western Sydney. The only remaining building on the whole (subdivision) site is the International English Language Testing System Testing Centre which is located on Lot 1 on the corner of the railway line and Hawkesbury Road.

2.2 Proposed Development

The proposal is for a residential development comprising 355 units. The development includes a 6m-wide right of access along the northern boundary. There is proposed to be 439 car parking spaces throughout 5 parking levels, including 71 visitor spaces, and 36 disability accessible spaces.

3 Project Staging and Program

3.1 Project Staging

This CMP covers the excavation and the construction of the new building.

Staging of the development can be broken up into the following components:

- Excavation
- Shoring of the excavation
- Piling
- Residential building 355 residential units.

3.2 Project Program

The indicative project milestone dates pending DA approval are outlined below:

1. DA Submission – December 2016
2. DA Approval – June 2017 (estimated 6 months)
3. Commencement of excavation and building works – September 2017 (3 months after item 2)
4. Substantial completion of building works – March 2019 (18 months after item 3)

3.3 Building and Construction Works

All excavation and building works are to be undertaken in accordance with the conditions of development consent once it is issued.

The following items summarise the aspects of the excavation and building works that need to be considered in relation to the application of this Construction Management Plan;

- The estimated time frame to complete the excavation and building works is 18 months.
- All construction vehicle access is to be from the internal circulating road as shown in the Site Management Plan in Appendix A.
- Construction Traffic is not to detrimentally impact on the existing retail and commercial premises fronting Hawkesbury Road and Darcy Road, or the residential areas on the surrounding road network in the vicinity of the site.
- The proposed crane and hoist locations for are shown on the Site Management Plan in Appendix A.
- The work zone and loading/unloading zone locations are to be provided on site for concrete pours & deliveries to be lifted by crane. The locations of the work zone and loading/unloading zone areas are shown on the Site Management Plan in Appendix A.
- Truck and dog vehicles will be used to export excavated material from the site, with a combined length of 17m. The swept paths are shown in the Construction Traffic Management Plan in Appendix D.
- Cranes and other machines will be floated on trucks approximately 19m in length (Articulated vehicle (AV)).
- The crane is to be located as shown on the Site Management Plan at Appendix A.
- The estimated maximum heavy vehicle movements (at peak time) is 50 per day.
- Waste materials are to be removed off site and recycled where possible to approved facilities.
- The Deicorp building team will have approximately 10-15 direct employee crew members onsite at any one time (peak) to undertake the works. Daily averages will be in the vicinity of approximately 10 direct employees.
- There will be approximately 150 excavation and building contractors onsite at peak times to undertake the works. Daily averages will be in the vicinity of approximately 100 people.

- It is anticipated that stockpile sites are not required as the material will be progressively loaded and removed from site on a daily basis.
- Two (2) shaker pads will be constructed at the site access/egress point in the circulating internal road for erosion sediment control as per Site Management Plan.
- Waste and recycling containers are to be located within storage area shown on the Site Management Plan in Appendix A.
- Concrete pumping is to be from within the site or from the works zones adjacent to the internal circulating road. Refer to the Site Management Plan.
- Mobile Crane will be utilised for the erecting and dismantling of tower cranes. Necessary approvals will be sought for exact locations.
- Two (2) construction/work zones are to be created within the site adjacent to the circulating road as shown on the Site Management Plan at Appendix A. This will be subject to separate applications: the Work Zone Application and Hoarding Application.
- B class hoardings are to be erected across the frontage of the site as shown on the Site Management Plans.
- Cleaned and filtered stormwater will be pumped from the site into Council's existing stormwater system that is then protected by silt arresting devises. Overland run off will be contained as per the Soil and Water Management Plans at Appendix B.
- Council's footpaths and roadways will not be utilised for any storage whatsoever.
- Piling and Excavation is to be managed in accordance with the Safe Work Method Statements and Management Plans prepared by the contractors undertaking the building works.

Please note that all the excavation and building works, including the removal of hazardous materials and site establishment are to be carried out in accordance with relevant Australian Standards and Work Health and Safety requirements.

4 Construction staff, amenities and machinery

The excavation and building site requires detailed management of staff, facilities and services. It is important to understand the number and type of staff on site to ensure appropriate facilities, services, parking and training are provided.

The following table outlines potential issues and the measures adopted by the builders, contractors and construction workers to ensure an adequate and safe working environment for staff.

4.1 Construction staff and amenities

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Staff numbers	**Staff** • Approximately 4 Deicorp staff will be onsite during excavation works. • Approximately 15 building contractor's staff will be onsite during the excavation works	Ongoing	Supervisor
Provide sufficient amenities for both male and female staff	**Staff Amenities** • The site will contain a staff amenities block which will be located at the eastern setback (refer to the Site Management Plan at Appendix A). • The staff amenities block will include the main office, meeting rooms, induction room, office toilet amenities, first aid facilities and a lunch room.	Ongoing	Supervisor
Staff Parking	**Staff parking** • Staff parking areas will be located off site.	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** • Monitoring of the staff amenities cleanliness, security, etc to ensure their effectiveness, safety and compliance is to be carried out by the Supervisor and recorded during a weekly Inspection.	Ongoing	Supervisor

4.2 Construction machinery

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Location, operation and security of cranes	**Crane location** • The crane location is to be contained within the site as shown on the Site Management Plan at Appendix A. • The crane location is shown on the Site Management Plan at Appendix A. • The crane is to be secured during non-operating times. • The tower crane area is to be secured with fencing. • All crane operators are to have undertaken training with appropriate accreditation in the use of the cranes.	Ongoing	Supervisor
Use of machinery resulting in a negative impact on neighbouring properties	**Machinery** • The unloading of machinery to occur within the site adjacent to the internal circulating road in the location shown on the Site Management Plan at Appendix A. • The machinery will be secured during non-operating times. • All staff are to have undertaken training with appropriate accreditation in the use of the machinery. • When using cranes or mobile lifting equipment, the following steps are to be taken to prevent disruption to public areas: o Ensure equipment does not restrict public thoroughfares and pedestrian access or, where restricted access is unavoidable, use gantries or other overhead protection. o Determine lifting zones for medium to long term use of the equipment. o Protect pavements and streets and conduct dilapidation surveys before and after works have taken place. o Implement procedures and lifting techniques to ensure safety on adjoining streets and footpaths. o Use traffic management controls and signage.	Ongoing	Supervisor
Concrete pumping location	**Concrete pumping** • Concrete pumping will be commonly pumped from on site or the construction/work zone within the site adjacent to the internal circulating road.	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** • Monitoring of the crane, hoist and concrete pouring facilities to ensure their effectiveness, safety and compliance is to be carried out by the Supervisor and recorded in the daily and weekly Inspection.	Ongoing	Supervisor

5 Construction Traffic Management

Appropriate access to and from the site by staff, contractors, deliveries and the general public is to be managed through the implementation of a Construction Traffic Management Plan (see Appendix D).

The following table summarises the potential issues and how they are to be controlled.

IMPACT	CONTROL MEASURES	TIMING	OFFICER
Increased traffic congestion	**Construction Traffic Management Plan** • Refer to Construction Traffic Management Plan at Appendix D for measures to address increase traffic in the local road network.	Ongoing	Supervisor
Altered traffic conditions	**Control Measures** • A range of traffic control measures will be implemented to provide safe movement of traffic. • Truck control on the site and surrounding streets will be signed to control operation. • RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at Appendix D.	Ongoing	Supervisor and RMS accredited traffic controllers
Vehicular queueing at entrances	**Access** • RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at Appendix D. • Access into and out of the site will be via the designated entrance, refer to Appendix D, Traffic Management Plan. • Adjacent public roads will be maintained free of construction material. • Loaded trucks leaving the site will have tray covers and tailgates closed to prevent dust during transport.	Ongoing	Supervisor and RMS accredited traffic controllers
Limited access and parking impacting traffic and parking on the local road network	**General Public** • No general admission will be provided during the works. • Appropriate fencing and gates will be provided to restrict access. • Pedestrians will be protected by Class B hoardings in the locations shown on the Site Management Plans in Appendix A.	Ongoing	Supervisor
Reduced safety due to altered traffic conditions and increased rates of heavy vehicles	**Safety** • RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at Appendix D. • Loading and unloading is to be undertaken on site within the construction/loading zone. • The use of mobile phones will be banned on site whilst operating machinery.	Ongoing	Supervisor and RMS accredited traffic controllers
Dispersal of dust from site	**Cleanliness** • Shaker pad on exit will be maintained to ensure wheel cleanliness. • The roads surrounding the site shall be regularly swept to ensure pavements are kept clean and safe.	Ongoing	Supervisor

IMPACT	CONTROL MEASURES	TIMING	OFFICER
Staff movements impact traffic and parking on the local road network	**Construction workers parking** • During the works construction staff will park off site	Ongoing	Supervisor
Regular deliveries impacting traffic and safety on the local road network.	**Delivery of goods and materials** • Construction vehicles will enter the site via the Darcy Road access, through the internal circulating road (See Appendix A). • Loading and unloading will occur on site in the location shown on the Site Management Plan (See Appendix A).	Ongoing	Supervisor
Increased traffic congestion impacting movements into and out of the neighbouring properties	**Adjacent properties** • Appropriate traffic management procedures will be in place to minimise the impact of increased traffic and queueing vehicles on neighbouring properties. • Special attention is to be given to not detrimentally impacting on the operation of the neighbouring residents and commercial premises. Refer to the Construction Traffic Management Plan at Appendix D.	Ongoing	Supervisor
	Crane and Hoist Locations **NOTE: outlined in other sections**		
Ongoing supervision	**Measurement and Monitoring** Monitoring of the traffic control measures to ensure their effectiveness and compliance with TMP's is to be carried out by the Supervisor and recorded in the daily and weekly Inspection	Ongoing	Supervisor

6 Public Safety, Amenity and Site Security

The excavation and building works raises a number of concerns and potential risks. These risks include damage to neighbouring properties, injury to local residents, a decrease in amenity for locals and site security for the builders and contractors.

The following table outlines potential impacts and mitigation measures adopted by the builders, sub-contractors and construction workers to ensure a safe and secure working site for the community and workers.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Restricting public access to the site.	**Hoarding/Fencing** • The site will be secured by B class hoardings and A class hoardings around the entire perimeter as shown in the Site Management Plan in Appendix A. • Gates will be secured after work hours to prevent unauthorised entry. • The excavation and building site will be fenced to prevent entry. • All fencing and hoardings will screen public view of the site to minimise any impact on pedestrian traffic flow.	Ongoing	Supervisor
Impacts of Piling	**Piling** • The Impacts of piling are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement prepared by the contractors that will undertake the building works.	Ongoing	Supervisor
Impacts of Excavation	**Excavation** • The Impacts of excavation are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement and Management Plan prepared by the contractors that will undertake the building works.	Ongoing	Supervisor
Reduced way finding and unauthorised access to the site	**Safety & Security** • Lighting will be provided across the site at night. • The site will be fully secured outside of working hours. Security measures will include fencing, locks, surveillance systems, security lighting and motion detectors. • Site equipment and materials will be fully secured at night. • Site materials and equipment will be located away from neighbouring properties to limit the potential use as climbing aids. • All chemicals will be securely stored aware from emergency exits and stormwater pits.	Ongoing	Supervisor
Security signage	**Signage** • Contact and procedural details will be provided, at entrances and exits, in case of an emergency or security breach. • Safety, traffic control and restricted access signage will be located on fencing and at entrances to the site.	Ongoing	Supervisor

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Damage to public areas	**Public Areas** • Any damage to public areas and assets will be rectified. • The construction team will ensure there are no trip hazards from the hoarding or fencing on adjacent footpaths. • Any utilities or services that cross the path will be covered with ramps in accordance with the relevant standards. • Public areas will be protected from construction activities including vehicle loading and unloading. • All bins will be stored on site in secure areas away from public access. • All materials and machinery will be stored onsite, away from public areas.	Ongoing	Supervisor
Use of street and pathway	**Street Space Occupation** • All necessary permits will be obtained from the Council permitting occupation of the footpath. • Pedestrian walkways will be clear of any materials or machinery, and be adequately protected by hoardings and barriers.	Ongoing	Supervisor
Reduced visual amenity and outlook for neighbouring properties	**Prevent Unsightly Premises** • Trucks will be washed down to prevent soil, dust or debris falling on the adjacent road way and footpaths. • Hoardings must be designed to reduce the potential for posters and graffiti through the use of wire mesh guards, signage and/or public art. Graffiti and posters will be removed on a regular basis.	Ongoing	Supervisor
General Site Management	**General Management** • Deicorp will provide written notice prior to commencement of works in accordance with the Conditions of Consent. • Existing pedestrian and traffic signs will be retained. • Additional safety signage will be in accordance with requirements.	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** Monitoring of public safety, amenity and site security to ensure their effectiveness and compliance is to be carried out by the Supervisor and recorded in the daily and weekly Inspection.	Ongoing	Supervisor

7 Operating Hours, Noise and Vibration Controls

A Noise and Vibration Assessment report has been prepared to identify noise emissions which will be generated by the site (mechanical plant noise and increased vehicle noise) and recommends acoustic and management controls in order to reduce noise impacts on nearby properties. Construction vibration control and mitigation measures to be implemented to manage these potential vibrations is also covered by the report.

The following table outlines operating hours and the noise and vibration controls and mitigation measures to be adopted by the builders, sub-contractors and construction workers to meet the compliance requirements of the Council and the relevant Australian Standards.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Noise impacts on neighbouring residents and businesses	**Hours of Operation** • Hours of onsite work operation will be limited to 7am to 6pm, Monday to Friday and 8am to 3pm on Saturdays. • No onsite work operations will be undertaken on public holidays. • Any proposed onsite work outside of these hours will be required to be approved by Council or the private certifier.	Ongoing	Supervisor
Noise nuisance Noise pollution caused by loud noise from site disturbing workers	**Noise - Plant and equipment** • All practical precautions are to be taken to minimise the impact of noise emissions from the site. • Equipment and machinery will be selected to meet the noise emissions requirements outlined in the Noise and Vibration Assessment report. Where practical equipment will be fitted with silencers. • Regular monitoring of equipment will be undertaken to ensure all equipment meets requirements. • Vehicles and machinery will be turned off when not in use.	Ongoing	Supervisor
Vibration damage to structures and potential impacts to nearby business, residents and public infrastructure	**Vibration – Plant and equipment** • The major sources of vibration caused by the project during construction will include the use of excavators with rock breakers (or grinding heads attached), bulldozers and vibratory rollers. • Unless stated otherwise in the Noise and Vibration Assessment the following vibration mitigation measures will be adopted during site project activities: • Staging of site works to maximise use of the existing site features/facilities as barriers where possible. • All site personnel must adhere to the site OH&S requirements in relation to use of appropriate personal protective equipment (PPE) when operating, or in the vicinity of noise/vibration generating plant/equipment. • Noise and vibration awareness training for all site staff including subcontractors as part of general site induction and tool-box talk activities. • Strict adherence to approved works times. In the event that out of hours delivery activities are	Ongoing	Supervisor

	required, the approval process will be completed via consultation with the Project Managers office. Any specific additional mitigation measures requested by Noise and Vibration Assessment will also be adhered to. • Works will be scheduled, where practical, to avoid simultaneous vibration causing activities occurring on site. • Vehicles, plant and machines/equipment used intermittently during construction activities (i.e. cranes, excavators, bobcats, lifting equipment, etc) will be shut down, as practicably achievable, in the period between works activities rather than allowed to idle. • The duration of noise/vibration intensive works will be minimised through a regular review of the program and construction methodologies during project team meetings. • Piling/piering works will be undertaken using non-percussive piling methods where achievable given the subsurface conditions. Reference will be made to the geotechnical site assessment report for advice on suitable protection distances from heritage structures for the use of moderate to heavy impact machinery. • Regular and effective plant/equipment maintenance will be completed and documented throughout the project period and documentation will be maintained on site demonstrating completion of maintenance logs and associated checklists in order to ensure all machinery is in good working order and use does not generate excess noise/vibration. • Plant, equipment and vehicles will not be operated in the event that excessive noise/vibration is produced at start up as a result of maintenance being required. • Care will be taken by site personnel to ensure materials will not be dropped from a height either onto or from vehicles or from the roof or other raised location. Power drills, saws, planers, nail guns etc will be used inside where possible to achieve acoustic muffling or where possible, to the south of buildings to provide shielding between the user and sensitive receptors. • The quietest and least vibration causing suitable plant reasonably available will be selected for each works activity. This will include review of documentation provided by manufacturers, suppliers, hire companies in relation to equipment prior to delivery to site.		
Construction noise impacting the amenity of neighbouring properties	**Neighbours** • Neighbouring properties will be notified about potentially noisy construction works. • Activities which may impact on the amenity of neighbouring properties will only be conducted for short durations. • Refer to the Noise and Vibration Assessment Report further details on noise and vibration mitigation measures.	Ongoing	Supervisor

Ongoing supervision	**Measurement and Monitoring** Noise effects shall be observed and recorded on the daily inspection report in accordance with any requirements of the Noise and Vibration Assessment Report. Where monitoring of site conditions and activities indicates the potential or actual occurrence of noise/vibration exceedances at nearby sensitive receptors, the effectiveness of installation of temporary shielding options, including portable noise walls in the form of timber hoarding, compressed fibre board panels, steel sheeting etc (with no gaps between panels) will be evaluated prior to ongoing noise generation activities, etc.	Ongoing	Supervisor

8 Environmental Management

8.1 Air and dust management

The following table outlines the air and dust management items that are to be considered.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Generating dust pollution	**Dust** • Fencing will be designed to minimise the impact of dust on neighbouring sites. • Soil and other materials stored onsite will be covered to prevent dust.	Ongoing	Supervisor
Dust pollution generated by machinery	**Machinery** • Equipment used on site shall not emit visible exhaust fumes for no more than 10 seconds after power has been applied.	Ongoing	Supervisor
Dust pollution generated by machinery	**Excavation** • Excavation will be avoided during high wind conditions. • Exposed or excavated soils will be regularly rehabilitated where possible to minimise dust. • Exposed areas will be watered down to prevent dust, especially on windy days and in close proximity to dwellings and public areas.	Ongoing	Supervisor
Dust pollution generated due to vehicular movements into and out of the site	**Traffic/Vehicular Movement** • Loaded trucks leaving the site will have tray covers to prevent dust during transport. • Two (2) shaker pads will be located at exits to remove soil from vehicle tyres. • Internal driveway near the boundaries will be watered down to minimise airborne particles. • Construction traffic will be confined the specified entry/exit(s).	Ongoing	Supervisor
Impacts of Piling	**Piling** • The Impacts of piling are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement prepared by the contractors that will undertake the building works.	Ongoing	Supervisor
Impacts of Excavation	**Excavation** • The Impacts of excavation are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement and Management Plan prepared by the contractors that will undertake the building works.	Ongoing	Supervisor
	Other • No burning will be undertaken on site. • Waste and scrap materials will be stored to prevent dust emissions.	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** Continual visual monitoring by the Supervisor. Any evidence of dust shall be recorded	Ongoing	Supervisor

8.2 Geotechnical

All works are to be undertaken in accordance with the Geotechnical Report which covers the following:

- Assessment of the subsurface conditions over the site,
- Site classification to AS2870,
- Provides recommendations regarding the appropriate foundation system for the site including design parameters,
- Provides parameters for the temporary and permanent support of the excavation,
- Provides recommendations regarding vibration control during rock excavation and,
- Comment on the impact of the development on the adjacent rail corridor.

The following table outlines the Geotechnical management items that are to be considered.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Geotechnical requirements and excavation support and Structural Engineering Design.	**Geotechnical requirements** • During construction, should the subsurface conditions vary from those inferred in the Geotechnical Report, then the Geotechnical Consultant should be contacted to determine if any changes should be made to their recommendations. • It is important the excavation is inspected regularly by the Geotechnical Consultant as it progresses. • The exposed bearing surfaces for footings should be inspected by the Geotechnical Consultant • Permanent shoring of excavations is required.	Ongoing	Supervisor / Geotechnical consultant
Road and Rail Authorities	**Road and Rail Authority requirements** • Detailed documents and geotechnical reports relating to excavation adjacent any road reserves or the rail corridor and support structures are submitted to the Council/RMS or Rail Authority for approval prior to the issue of a construction certificate.	Ongoing	Supervisor / Geotechnical consultant
Ongoing supervision	**Measurement and Monitoring** Measuring and monitoring is to be undertaken in accordance of the requirements of the Geotechnical Report.	Ongoing	Supervisor / Geotechnical consultant

8.3 Contamination Management

The following table outlines the contamination management items that are to be considered.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Pollution of soils on the site and pollution of ground waters by chemical, organic or physical contamination	**General** • All staff will be aware of proper handling procedures and appropriate measures will be taken to minimise the potential for contamination. • Chemical spillage kits will be kept on site, staff will be made aware of the appropriate use of kits.	Ongoing	Supervisor
Contamination from machinery	**Machinery** • High risk activities, including refuelling and servicing, will be undertaken allocated areas, controlled to reduce environmental impact. • Fuel and oil storage areas will be bunded with a 120% capacity. • Machinery will be inspected on a regular basis for leaks. Repairs will be undertaken immediately.	Ongoing	Supervisor
Contamination from chemicals/materials	**Chemicals/materials** • All contaminants shall be handled in a manner so as to confine the material completely and prevent any fugitive emission. Material will be kept on segregated, covered, bunded areas and then disposed of by removal to a registered waste depot. • Paint and slurry will not be discharged into the stormwater. A designated paint brush and roller washing area will be located near each building to prevent contaminating the stormwater. • Construction materials and chemical will be stored appropriately to prevent leakages into surrounding water ways.	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** • Waste product will be assessed and categorised as contaminated or non-contaminated and disposed of accordingly • If contaminated material is encountered then it will be monitored for each type of material and the method of disposal recorded in the Contaminated Material Register. • All hazardous materials will be removed from site and correctly disposed on completion of the works.	Ongoing	Supervisor

9 Stormwater Management and Sediment Control

The site has the potential to result in a negative environmental impact on water quality if not appropriately addressed. Impacts could include increased runoff, run off erosion with sediment removal from site. A Soil and Water Management Plan is attached at Appendix B.

The following table outlines potential impacts as well as appropriate erosion and sediment control and stormwater measures to control sediment and reduce runoff generally.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Erosion and sediment control	**Erosion Sediment Control Measures** • All control measures will be installed prior to commencing works in accordance with the Soil and Water Management Plan, refer to Appendix B. • Works will be appropriately staged where possible to minimise potential for erosion and sedimentation during the project. • Silt fencing will be erected along batter slopes, stockpiles, and any disturbed surfaces that may drain into any adjacent water bodies and stormwater systems. • Sandbags and other sediment controls shall be installed around stormwater inlets and outlets to prevent dirty discharge from works area entering stormwater systems. • Soil and waste stores will be located in designated areas to prevent run off into drains. • On project completion, the site will be left protected by temporary measures as required. Once permanent measures (i.e. revegetation) have been established the temporary measures may be removed. • All sediment basins and traps will be managed in accordance with the requirements of the Soil and Water Management Plan at Appendix B.	Ongoing	Supervisor
Stockpile locations	**Stockpiles** • Stockpiles for loose materials such as soil, sand and gravel are to be located in areas clear of overland flow paths. Sediment barriers are required around the stockpiles.	Ongoing	Supervisor
Reduced water quality	**Water Quality** • The site is not identified as having Acid Sulfate Soil issues. • Temporary diversion drains will be installed to divert clean run-off around the works area. • Drainage system outlets will be directed to temporary or permanent retention basins.	Ongoing	Supervisor
Sediment runoff due to excavation	**Excavation** • Disturbance onsite will be minimised by clearly marking boundaries and designating areas for construction activities and traffic movements. • Exposed surfaces will be stabilised as soon as possible by hydro mulching or other means.	Ongoing	Supervisor
Sediment washed into the stormwater network	**Stormwater** • Stormwater measures will be put in place during construction. • The entrances/exit be stabilised with rock.	Ongoing	Supervisor

	• Shaker pads will be installed to collect mud from exiting vehicles. • Shaker pads will be cleaned on a daily basis and link to the designated stormwater outlets.		
Dispersal of sediments during the transportation of material	**Traffic** • Trucks transporting materials will be inspected before leaving or entering the site to prevent spillage of soil and other materials on roads and footpaths. • The wash down area is identified in the Soil and Water Management plan at Appendix B.	Ongoing	Supervisor
Excessive use of water during construction	**Water Saving Measures** • All hoses will be in good condition and fitted with a trigger nozzle. • Any wash down areas will utilise high pressure water nozzles.	Ongoing	Supervisor

Ongoing Supervision	**Measurement and Monitoring**
	• Ensure the soil erosion and sediment control devices are installed and maintained accordance with the Soil and Water Management Plan (See Appendix B)
	• Weekly site inspections by the Supervisor with appropriate corrective actions taken immediately.
	• Additional inspections after each rain event by the Supervisor
	• Maintenance of control measures:
	  • Repair damaged or blocked sections
	  • Remove silt from fencing where built up
	• Records shall be kept of all ESC device installations, inspections and maintenance activities
	• The quality and quantity of water released from site must be recorded
		Ongoing	Supervisor

10 Waste & Material Reuse Management

On an excavation and building site there are numerous opportunities to reduce, reuse and recycle waste through the implementation of the Waste Management Plan (WMP) attached at Appendix C. Potential impacts resulting from construction include excessive waste, missed opportunities for reusing and recycling materials and contamination of recycled waste with non-recyclable waste materials.

The following table outlines potential impacts as well as appropriate waste management measures reduce, reuse and recycle waste, as well as education and training for staff.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
General Site Management	**Site management** • The construction site will be kept free of rubbish, waste material and debris. • Waste will be disposed of in accordance with the WMP at Appendix C.	Ongoing	Supervisor
Waste storage and removal	**Waste Management Plan** • Chemical waste will be removed from site and disposed of at licenced facilities. • Procedures for removal of other hazardous or dangerous materials from the site in accordance with State and Federal legislation including WorkSafe requirements. • Waste collection shall only occur during permitted hours. • For outside bins, self-closing lids must be installed to ensure waste does not become airborne. • Litter and debris 'trapped' against site fencing must be regularly cleaned. • Procedures for removal of waste (materials that cannot be reused or recycled) from the site. • Demolished concrete will be reused on site for construction driveways where possible, or sent to a concrete recycling plant. • General waste will be stored in the designate bin/skip and removed by the waste contractor on a regular basis. • Recyclable waste will be stored in a designated bin/skip and removed by the waste contractor on a regular basis. • The waste bins will be stored in the designated areas, refer to the Site Management Plan at Appendix A.	Ongoing	Supervisor
Excess waste	**Reduce** • Efforts to minimise waste on site by avoiding over-estimation of purchasing requirements, minimizing packaging materials, and buying environmentally approved and recycled content products • Minimise use of packaging materials and recycle packaging products where possible. • Utilise quantity surveyor estimates to order materials, to prevent wasted materials.	Ongoing	Supervisor
Not re-using material on-site	**Reuse** • Native vegetation will be mulched and reused onsite. • Weeds and contaminated mulch will be disposed of separately. • The office will utilise recycle waste paper bins.	Ongoing	Supervisor

	• The re-use of timber, glass and other materials • The type and quantity of materials that are to be re-used are to be detailed in the WMP at Appendix C.		
Not separating recycle material from general waste	**Recycle** • Procedures are to be put in place for the collection and sorting of recyclable construction materials • Training will be provided to all staff outlining the appropriate recycling procedures. • Recycled waste bins will be appropriately sign posted. • The type and quantity of materials that are to be recycled are to be detailed in the WMP at Appendix C.	Ongoing	Supervisor
Construction staff and contractors waste	**Staff waste** • Provision of containers for recyclable materials including cardboard, glass, metal, and plastic and green waste • Provisions for collection of daily rubbish from workers	Ongoing	Supervisor
Ongoing supervision	**Measurement and Monitoring** Waste monitoring will be recorded on the daily and weekly Inspection report.	Ongoing	Supervisor

11 Management Responsibility

11.1 Accountabilities

11.1.1 Project Manager

The Project Manager is responsible for construction management and shall establish and maintain the Company's policies for this project and shall be responsible for their effectiveness.

The Project Manager ensures that the Project Team understands and implements the requirements of the Construction Management Plan for the course of the project.

11.1.2 Supervisor

The Project Supervisor is responsible to the Project Manager for the day to day co-ordination and site control of direct labour, plant, subcontractors and suppliers for construction works.

The Project Supervisor is responsible for the correct implementation of the controls and their on-going monitoring and maintenance and correction of non-conformances.

11.1.3 QA Manager

The QA Manager reports to the Project Manager and is responsible for the preparation and implementation of the management system for a project. The QA Manager shall ensure that all work be carried out in accordance with the Management System procedures.

The QA Manager shall establish audit schedules in consultation with the Project Manager and assign personnel to carry out planned audits. Any deviation from the Management System will be reported to the Project Manager for rectification. Trends and cumulative effects from all projects shall be assessed and corrective actions determined.

11.1.4 Geotechnical Consultant + Structural Engineer

The Geotechnical consultant and Structural Engineer are engaged by the client to manage Geotechnical/Structural Engineering issues onsite. The Geotechnical/Structural consultant is to liaise with the site supervisor to ensure that all excavation, stabilisation and shoring is undertaken in accordance with the requirements of the Geotechnical Report.

11.2 Subcontractors

The Project Manager shall clearly define the scope of subcontracted work including the subcontractor's duties for:

- Planning, installation and monitoring of the controls outlined in the Construction Management Plan
- Record keeping

The subcontractor may only enter the site from the designated access points shown on the relevant Construction Traffic Management Plan.

The subcontractor cannot proceed without the approval of the Project Manager.

11.3 Deicorp's Group Responsibility

Deicorp's Project Manager shall review the proposed controls outlined in the Construction Management Plan.

Subcontractor's personnel will be given Deicorp's site induction before starting work.

Deicorp's Project Supervisor will monitor the subcontractor's compliance with the approved environmental controls and report any deficiency or non-conformance to the Project Manager

11.4 Communication Protocols

Both formal and informal communication systems are in place on this project to ensure that information regarding the Construction Management Plan is circulated effectively to relevant personnel both internal and external to the project. Also that information is distributed to other Deicorp workplaces that might benefit from system improvements.

Subcontractors shall be included in communications to ensure the compatibility and effectiveness of their systems.

Communication with the community shall be done through the Project Manager. The Project Manager is responsible for the timing and effectiveness of all communications.

Deicorp Group promotes the following initiatives for communication and encourages all personnel to participate enthusiastically:

- Induction
- Tool box talk
- Risk assessment
- Pre-start briefing
- Site inspection and reporting
- Incident reporting and corrective action
- Complaint Procedure
- Incident Procedure

11.5 Work Site Monitoring and Inspection

Deicorp's principal contact person with regard to implementation of the Construction Management Plan on this project is the Project Manager.

The Supervisor shall carry out regular inspections of all work areas to ensure that the following standards and processes are being maintained. All controls of the site shall be monitored at least weekly by the Project Supervisor and the results recorded.

After each rain event site soil erosion and sediment controls shall be inspected by the Supervisor and any necessary maintenance done as soon as practicable. A record of the inspection and maintenance shall be kept on site.

The Project Supervisor has authority to initiate emergency response procedures. If a potentially environmentally hazardous situation is identified and cannot be rectified immediately, a Non-Conformance Report shall be made and, if needed, work in the area shall cease until the situation is rectified.

The Project Manager shall determine appropriate corrective action to address the immediate consequences of the non-conformance including containment, clean up and restoration work.

The Project Manager shall regularly review reports to confirm that clean up, restoration and corrective actions have been completed and are effective. The Project Manager shall review all non-conformances and report significant findings to monthly management review meetings.

Any damage to areas outside the work site shall be immediately reported to the Supervisor who may advise on the nature of appropriate corrective action.

11.6 Training

A Project Management Plan should be prepared to outline the expected qualifications and training requirements for project personnel. It shall be kept current with any additional training that may become necessary during the course of the work. Records of training done on site shall be kept in the project file system including dates, personnel attending and trainer details.

All site staff and workers undergo a site specific site induction or other training which includes:

- Environmental aspects relevant to their working on site
- Description of control measures used, their construction & maintenance
- The potential impacts from ineffective controls
- Monitoring and reporting procedures
- Emergency and incident response

Any alteration to the CMP relevant to site personnel shall be immediately communicated via updated inductions and tool box talks.

Subcontractors shall be inducted into the Deicorp system, and if their works require such, they shall be required to submit relevant work method statements with associated environmental protection measures.

11.7 Complaint Procedure

A complaints procedure plan will be implemented for the construction site. All complaints will be directed to, acknowledged and actioned by the Site Manager. Appropriate opportunities will be made available to the public to direct complaints to the Site Manager. All staff will be made aware of the appropriate complaints handling procedures.

- Response: All details of the complaint should be recorded and logged with the appropriate Site Manager to be investigated.
- Action: Any complaint should be immediately notified to the Site Manager. Appropriate action should be taken to stop the related activity or rectify the issue. An emergency procedure should be implemented where there is a danger to the individuals, property or the environment.
- Investigation: Significant complaints/issues will be investigated by the Site Manager and remedial action identified.
- Corrective Action: The Site Manager will implement the remedial action and monitor its effectiveness. Where the remedial action is not effective, the Site Manager and other managers should make adjustments.
- Follow up: The Site Manager will be responsible for following up with the complainant by providing feedback and explaining the outcomes or remedial action.

11.8 Incident Procedure

Deicorp employ an integrated Work Health and Safety Site Plan (WH&S Site Plan) for each project. The WH&S Site Plan details various risk and incident management procedures.

11.9 Specific Emergency Responses, Contact Details, Emergency Preparedness

Any specific Emergency Response procedures required to be implemented are to be outlined by the Project Manager/Site supervisor.

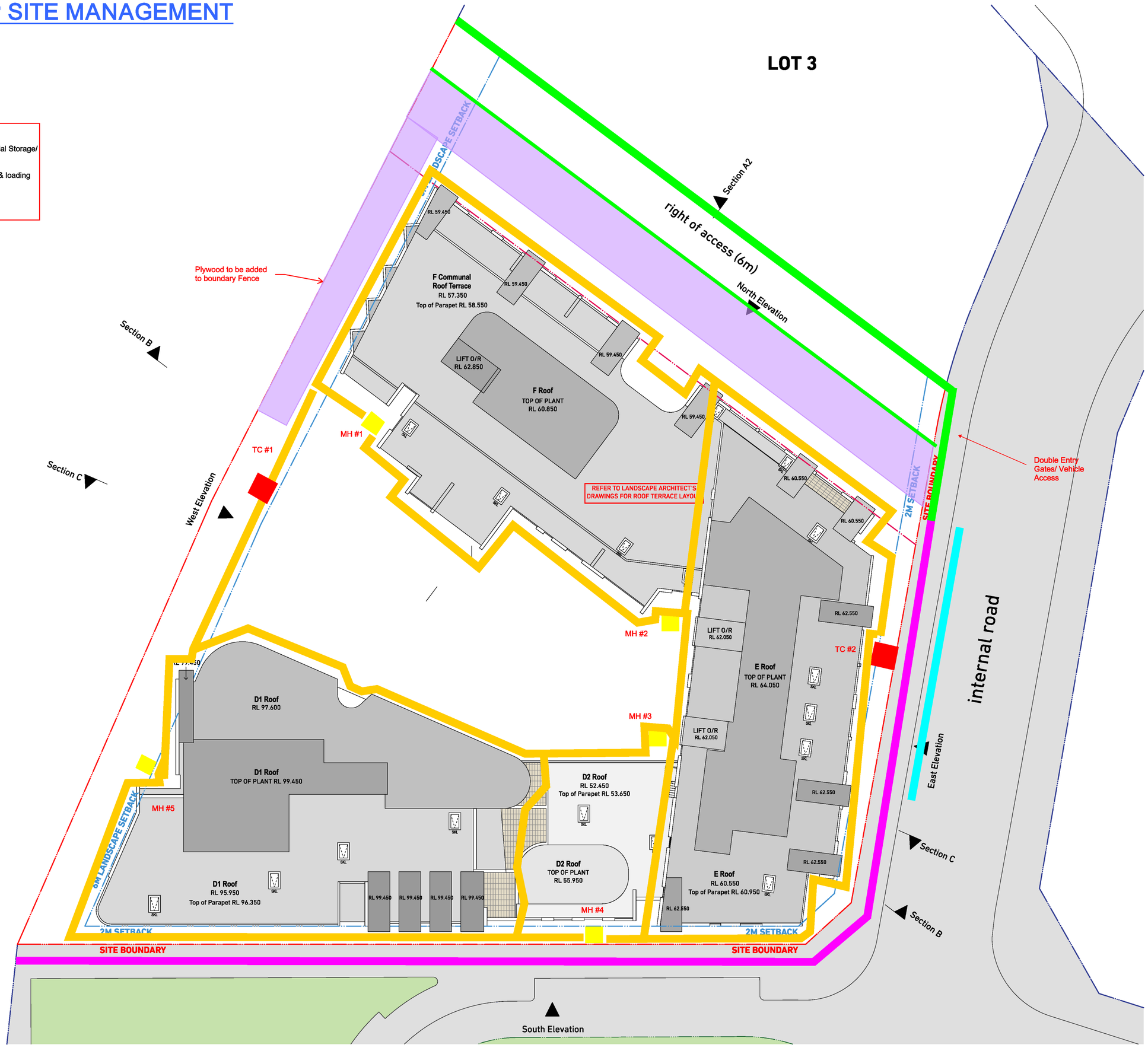
The Contact detailed of the emergency services are to be located on site at a location that is easily accessible to all.

Appendix A
Site Management Plan

DEICORP SITE MANAGEMENT PLAN

Legend:

- B Class Hoarding/Material Storage/ Site Amenities
- Work Zone
- Storage zone/unloading& loading
- Tower Crane
- Man & Materials Hoist
- Scaffold
- A Class Hoarding



NOTES

DLCG Quality Endorsed Company: ISO 9001:2008, Registration Number 35476
Nominated Architect: Nicholas Turner: 6895, ABN 86 064 094 911

KEY PLAN

Rev A- 9.12.12

LEGEND

- STUDIO
- 1 BEDROOM UNIT
- 2 BEDROOM UNIT
- 3 BEDROOM UNIT
- LOBBY AREAS
- LOBBY ENTRY
- CARPARK ENTRY
- EXISTING TREE TO BE REMOVED
- EXISTING TREE
- PROPOSED TREE
- SILVER LEVEL LIVABLE UNIT
- ADAPTABLE UNIT
- RL — RELATIVE LEVEL - TO AHD

Rev.	Date	Approved by	Revision Notes
A	02.12.16		Development Application

CLIENT
Deicorp
Level 3, 161 Redfern Street, Redfern
NSW 2016, Australia

Project Title
WSU - Lot 4
156-164 Hawkesbury Road, 2a Darcy Road Westmead NSW 2145 Australia

Drawing Title
Site Management Plan
Overall Roof Plan

Scale	Project No.	Drawn by	North
1:200 @A1, 50%@A3	16001	DEI	
Status: For Information	Dwg No. DA-110-220	Rev A	

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Appendix B
Soil and Water Management Plan

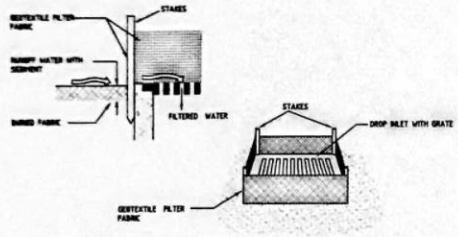
LEGEND

- SEDIMENT CONTROL FENCE
- GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP

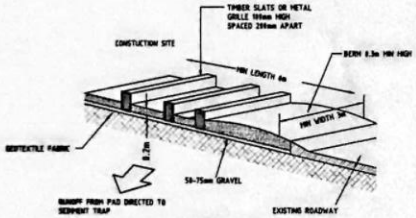
NOTES:

1. ALL STRUCTURES TO BE CLEANED ONCE WEEKLY OR AFTER STORM EVENT OR OTHER SPILLAGE ON SITE THAT MAY CAUSE SILT TRANSPORTATION.
2. PROTECT ALL NEWLY CONSTRUCTED PITS PROGRESSIVELY AS REQUIRED BY SITE WORKS.

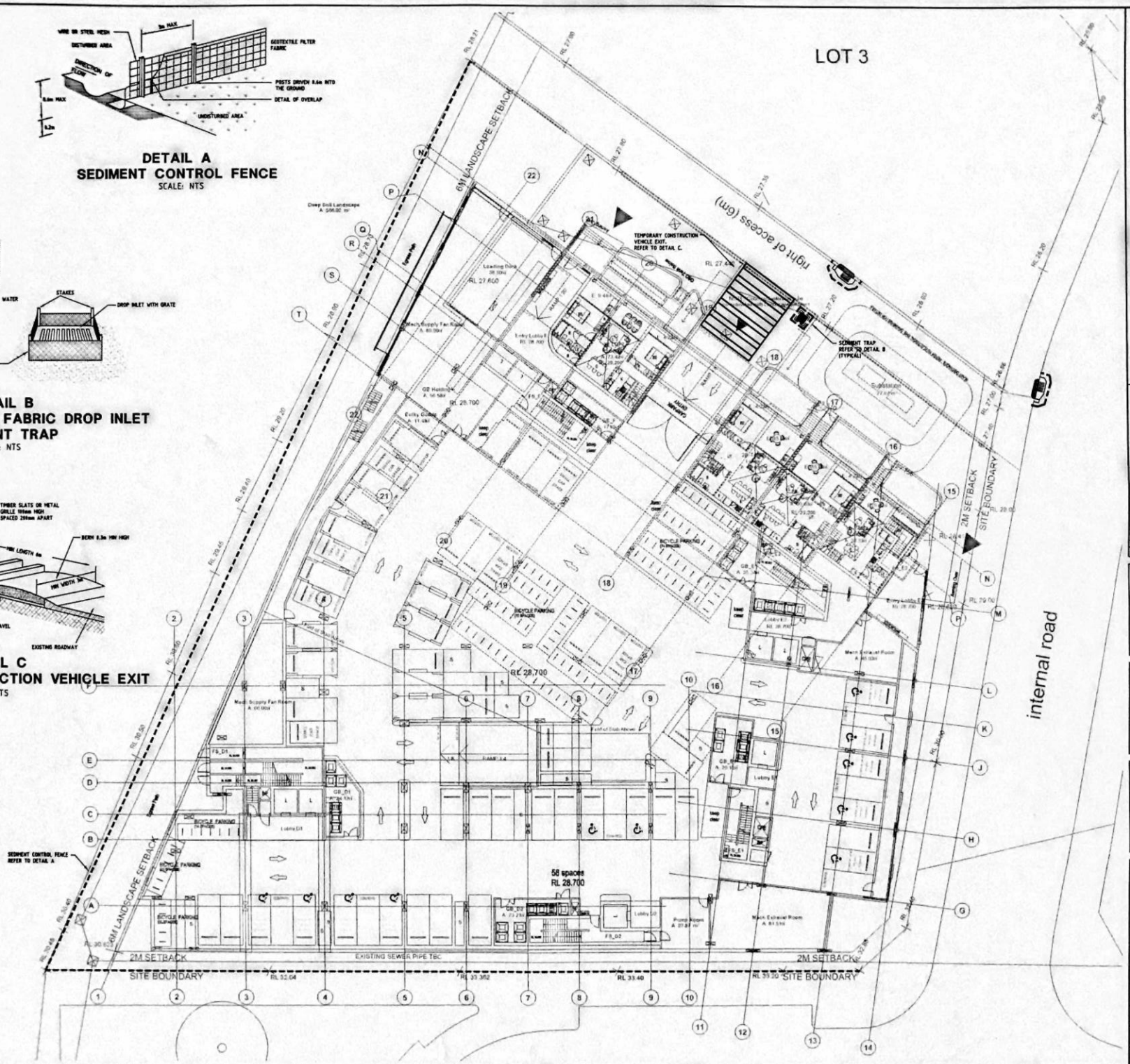
DETAIL A
SEDIMENT CONTROL FENCE
SCALE: NTS



DETAIL B
GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP
SCALE: NTS



DETAIL C
TEMPORARY CONSTRUCTION VEHICLE EXIT
SCALE: NTS



DEVELOPMENT APPLICATION

No.	REVISION/ISSUE	DATE	BY	CHECKED
A	DEVELOPMENT APPLICATION ISSUE	xx.12.16	NL	NL

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Neil Lowry & Associates Pty Ltd ABN 72 101 872 984

PROJECT
WSU - LOT 4
DARCY ROAD &
HAWKESBURY ROAD
WESTMEAD

DRAWING
STORMWATER CONCEPT
SEDIMENT CONTROL PLAN

DRAWN	DESIGNED	CHECKED	DATE	SCALE
KJ	NL		DEC '16	1:200@A1

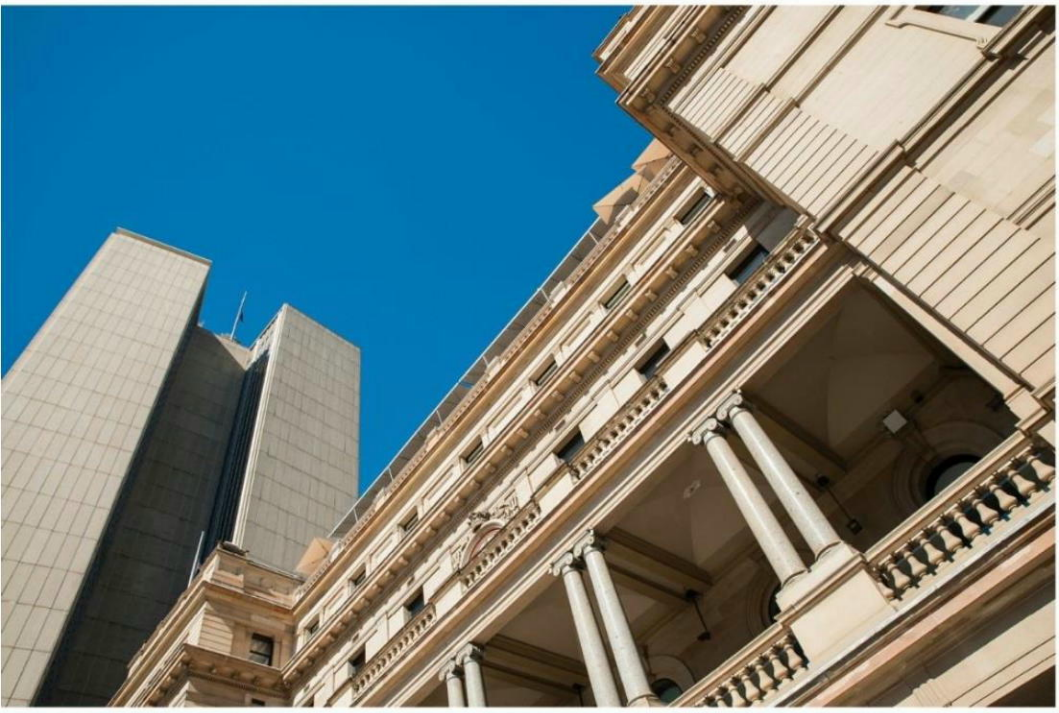
PROJECT	DWG No.	REV	STATUS
0789	SC20.4	A	DA

A1 SHEET

Appendix C
Waste Management Plan

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

PLANNING
PROJECT MANAGEMENT
ENGINEERING
CERTIFICATION



Combined Projects (Westmead) Pty Ltd

Waste Management Plan

Residential Flat Building

Lot 4 158-164 Hawkesbury Road & 2a Darcy Road, Westmead

December 2016

Project No.	SY160028
Author	GB
Checked	EA
Approved	GB

Rev No.	Status	Date	Comments
1	DA Submission	19/12/16	

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BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

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3 Excavation and Building Works 5
4 Building (Design) 6

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1 Project Details

DEVELOPMENT DETAILS	
Project Details	Residential Flat Building
Address of Development	Lot 4 DP 1202362, 158-164 Hawkesbury Road & 2a Darcy Road, Westmead
Existing Buildings and other structures currently on the site	The site has been cleared of existing structures.
Description of proposed development	The proposal is for a residential development comprising 355 units. The development includes a 6m-wide right of access along the northern boundary. There is proposed to be 439 car parking spaces throughout 5 parking levels, including 71 visitor spaces, and 36 disability accessible spaces.

2 Demolition

The site has been cleared of existing buildings and vegetation. No further demolition works are proposed as part of the development application.

3 Excavation and Building Works

Table 1: Construction waste generation.

TYPE OF WASTE GENERATED	REUSE	RECYCLE	DISPOSAL	COMMENT
	Estimate Volume (m^3)	**Estimate Volume (m^3)**	**Estimate Volume (m^3)**	**Specify method of on-site reuse, contractor and recycling outlet and/or waste depot to be used**
Excavation material		66,750m^3		Excavated materials will be reused as fill on other development sites.
Timber		3.5m^3	1m^3	Transferred to waste management facility or recycling facility.
Gyprock / Cladding		12.5m^3	2.2m^3	Transferred to waste management facility or recycling facility.
Concrete		9m^3	1.5m^3	Any excess concrete will be retained in the truck and used elsewhere.
Masonry (Hebel Block/Fibre cement sheeting/ Pavers)		10.6m^3	2m^3	Transferred to waste management facility or recycling facility.
Tiles (roof)				NA
Metal (roofing / framing / façade)		5.25m^3	1m^3	Transferred to waste management facility or recycling facility.
Glass				All glass will be made to order
Furniture				Not at this stage.
Fixtures / fittings		5.3m^3	1m^3	Fixtures will be made to order.
Floor coverings		17.5m^3	3.2m^3	Transferred to waste management facility or recycling facility.
Packaging (used pallets / pallet wrap)		26.5m^3	5m^3	Pallets will be transferred to a Material Recovery Facility. Wrap and packaging will be a transferred to Councils Waste Management Facility.
Garden organics		1.6m^3	0.4m^3	Organics will be ordered to size in accordance with the quantity survey.
Containers (cans / plastic / glass)		10m^3	1.8m^3	Containers will be a transferred to Councils Waste Management Facility.
Paper / cardboard		9m^3	1.5m^3	Transferred to waste management facility or recycling facility.
Residual waste		27m^3	4.8m^3	Residual waste will be transferred to Councils Waste Management Facility.
Hazardous / special waste				No hazardous materials will be utilised in the construction.
Other				NA

4 Building (Design)

Table 2: Construction waste reduction measures.

CONSTRUCTION DESIGN
The following outline waste avoidance measures. • All fixtures and fittings will be made to measure; • All materials will be ordered in accordance with a bill of quantities; • Recycled materials will be utilised where ever possible; • Measures will be taken to ensure the demolition contractor appropriately disposes of waste and where possible recycles materials; and • Measures will be taken to ensure the construction contractor is aware of the waste management procedures and adheres to appropriate guidelines.

Appendix D
Construction Traffic Management Plan

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

PLANNING
PROJECT MANAGEMENT
ENGINEERING
CERTIFICATION

Combined Projects (Westmead) Pty Ltd

Construction Traffic Management Plan

Lot 4 158-164 Hawkesbury Road & 2a Darcy Road, Westmead

Our Ref: SY160028
December 2016

Project No.	SY160028
Author	EA
Checked	GB
Approved	GB

Rev No.	Status	Date	Comments
1	DA Submission	19/12/16	

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BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS

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3.2 Potential Traffic Impacts 6
3.3 Traffic Control Plans 6
3.4 Traffic Management Plan 7
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4.2 Records 9
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Appendix A – Traffic Control Plan (TCP)
Appendix B – Vehicle Movement Plan (VMP)
Appendix C – Swept Path Analysis

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1 Introduction

Barker Ryan Stewart has been engaged by Combined Projects (Westmead) Pty Ltd to prepare a Construction Traffic Management Plan (CTMP) to detail traffic management procedures and systems for the excavation and building stages for the proposed residential development at Lot 4 DP 1202362 158-164 Hawkesbury Road & 2a Darcy Road, Westmead, in accordance with the requirements of:

- Parramatta City Council Development Control Plan;
- RMS's *"Traffic Control at Worksites"* document; and
- AS1742.3 2009 *"Manual of uniform traffic control devices"*

The purpose of this plan is to ensure the safe and controlled movement of traffic at the site during the excavation and building works to address potential traffic, access, car parking and pedestrian issues generated by the works.

In preparing this CTMP the following items have been considered/undertaken:

- An inspection of the site and surrounding road network to determine any constraints that may impact on the safe and controlled movement of traffic during excavation and building works.
- Determination of appropriate traffic/haul routes,
- Provision of a swept path analysis to ensure safe access/egress from the site,
- Traffic Control Plan (TCP) and Vehicle Movement Plan (VMP), and
- A brief outline of the excavation and building works in relation to traffic management.

2 Project Overview

2.1 Proposed Development

The site has been cleared and the circulation roads are being constructed as per the initial DA for the subdivision of the overall site. The only remaining building on the site is the International English Language Testing System Testing Centre which is on the corner of the railway line and Hawkesbury Road.

The proposal is for a residential development comprising 355 units. The development includes a 6m-wide right of access along the northern boundary. There is proposed to be 439 car parking spaces throughout 5 parking levels, including 71 visitor spaces, and 36 disability accessible spaces.

2.2 Building and Construction Works

This CMP covers the excavation and the construction of the new building.

Staging of the development can be broken up into the following components:

- Excavation
- Shoring of the excavation
- Piling
- Residential building containing 355 residential units.

The project milestone dates are outlined below:

1. DA Submission – December 2016
2. DA Approval – June 2017 (estimated 6 months)
3. Commencement of excavation and building works – September 2017 (3 months after item 2)
4. Substantial completion of building works – March 2019 (18 months after item 3)

3 Traffic Management

3.1 General

Traffic management for the site shall be configured to ensure that workers can undertake excavation and building works safely at all times by separating workers and public road users. Contractors are responsible for the excavation work and the building contractor is responsible for construction management and shall establish and maintain the Construction Traffic Management Plan for this project and shall be responsible for its ongoing effectiveness, including the control of all quality, environmental and safety aspects that may apply to traffic control measures.

The TCP prepared by Safeway Traffic Management Solutions shall be implemented by appropriately qualified and authorised traffic controllers only. Traffic controllers must have completed RMS (formerly RTA) accredited courses for traffic controllers and must wear a yellow vest with the words Authorised Traffic Controller. Reflective white overalls with reflective bands must be worn at night.

All signs and devices shall be placed in accordance with the TCP prior to works starting and in clear view of public road users to inform and guide road users to pass the site. All devices and signs shall then be removed upon the completion of the works.

The road reserves bordering the site must not be obstructed by any materials, vehicles, refuse, skips or the like without prior approval of Council.

3.2 Potential Traffic Impacts

A summary of potential traffic impacts for the site are listed below:

- Construction sites within the vicinity of the site,
- Duration of the project,
- Short term activities such as floating machinery to the site,
- Access, egress and parking in and near the worksite by employees and visitors,
- Pedestrian movements,
- Heavy vehicles parking in and around worksite,
- Vehicles depositing spoil on public roads,
- Loading and unloading, including construction zones,
- Truck/vehicle turning movements,
- Disruption of established traffic movements or patterns,
- Traffic interference in peak times (morning and afternoon),
- Interference to public transport services,
- Interference to the neighbouring residents and commercial premises
- Traffic volumes including nearby school, industrial, commercial, retail and residential developments

3.3 Traffic Control Plans

The Traffic Control Plans (TCPs) within Appendix A show the proposed Construction Zone on the internal circulation road adjacent to the site. Arrangements for warning traffic and guiding traffic around and/or past the worksite.

They also show a proposed truck/crane hoist parking bay within the site adjacent the internal circulation road.

The Vehicle Movement Plan (VMP) shows vehicles are to enter the Construction Zone via the intersection of the main access/Hawkesbury Road then travel south on the internal road through to the circulating road adjacent to the site. Vehicles will then continue clockwise on the circulating road and continue north toward the main access towards Hawkesbury Road.

The VMP is attached at Appendix B of this report.

In the implementation of the TCPs the following steps should be undertaken;

1. Place all signs, devices and control measures,
2. Complete a Location Risk Assessment (as per Traffic Control at Work site (TCAW) manual) and identify any modifications that may be required,
3. Drive through and around the site to make sure the TCP is effective,
4. Record implementation, risk assessment and any modifications, and
5. Monitor conditions and record observations.

Where required the TCPs may be changed/updated as necessary to reflect changes in traffic flow or work practices by an appropriately qualified traffic control designer only.

Minor modifications to the TCPs which have been identified in a Location Risk Assessment can be made by a person with a current certificate in TCAW Planning (red card). Should the TCPs be changed all relevant permits and details are to be forwarded to the PCA/Council as required.

Note that the TCP does not relate to works within the road reserves. These TCPs will be prepared once the Public Infrastructure Engineering Design plans have been approved by the Road Authorities.

3.4 Traffic Management Plan

Table 3.4 on the following page summarises the identified potential traffic impacts for this worksite and describes the control measures to be implemented to address each impact.

A swept path analysis was undertaken to check vehicles can safely manoeuvre in and out of the Construction Zone for an Articulated Vehicle (AV) and a Heavy Rigid Vehicle (HRV). The swept path analysis is contained within Appendix C of this report.

It is recommended that an Emergency Plan is considered by the project manager of the site in case of emergency, including the response of traffic emergencies such as accidents or unplanned disruptions.

The local community, road users and other stakeholders shall be kept informed of changed traffic conditions where required by Council.

Seven (7) days notification must be provided to adjoining property owners prior to the implementation of any temporary traffic control measures.

Table 3.4: Traffic Management Plan

Potential Impact	Impact Assessment	Control Measure
On the neighbouring residential and commercial properties in the vicinity of the site. Duration of project	Heavy vehicle traffic movement through the following local streets: • Hawkesbury Road • Darcy Road	Any potential conflicts in the local road network are to be minimised by having Traffic Controllers providing right of access to existing residents as required over other traffic movements including construction traffic. Location Risk Assessment are to be undertaken to enable safe access and from the site.
Floating machinery to the site	In/out of the site.	Swept path analysis shows turning movements are assessed as being satisfactory (See Appendix C). All loading and unloading will be done on site in designated area on site or via the construction/work zone.
Parking in and around worksite by employees and visitors	Possible impact on residents, visitors and commercial/industrial developments in the vicinity of the site.	Parking for construction workers will occur off site.
Vehicles leaving the site	Depositing spoil on roadways	Truck shaker grids with a minimum length of 6m will be installed at the Construction Zone in the internal subdivision road for erosion sediment control and all loads are to be covered. Where sediment is tracked onto the road it is to be swept up immediately.
Pedestrian management	Pedestrians walking around construction zone	Set up delineation by way of no go zones and signage. There is no need to cut off current walkways along the permitter of the site. Pedestrians will be protected by Class B hoardings. Refer TCP's in Appendix A
Disruption of established traffic movements or patterns, Traffic interference in peak times (morning and afternoon)	Heavy vehicle traffic through the following local streets, particularly in morning and afternoon peaks with residents entering and exiting: • Hawkesbury Road • Darcy Road	Where possible construction vehicle movements are to be restricted during peak times to minimise the impact on the existing traffic.
Interference to public transport services	Traffic movements blocking bus routes	This should be kept to a minimum as there is a dedicated bus lane at the access with its own phasing. Where possible, construction vehicle movements should be minimised during peak bus services.

4 Monitoring and Performance

4.1 General

Routine monitoring of the performance of the Construction Traffic Management Plan (CTMP) to confirm the effectiveness of methods, equipment and controls shall be undertaken. Observations shall be recorded by the supervisor/contractor's and opportunities for improvement recommended to the Project Manager.

It is recommended that the CTMP including the Traffic Control Plans (TCPs) be formally reviewed every 4 weeks during the excavation and building works. Please refer to section 3.3 for the modification of TCPs.

Audits of the excavation and building works are to be carried out by a suitable qualified person as required.

4.2 Records

The following records shall be kept as evidence of the design, implementation and performance of the CTMP:

1. Qualifications
   - RMS accredited Traffic Control Plan designers
   - RMS accredited Traffic Controllers

2. Principal Contractor's meetings minutes with Principal Contractor(s) from adjoining sites

3. TCP approval

4. Temporary speed zone approval (if applicable)

5. Community consultation (where required by Council) including provision of:
   - Letters
   - Handouts
   - Maps and plans

6. Location Risk assessment and any modifications

7. Confirmation of implementation and start of works

8. Monitoring reports

9. Incident reports and corrective action

5 Conclusion

This Construction Traffic Management Plan details traffic management procedures and systems for the proposed excavation and building of the residential development at Lot 4 158-164 Hawkesbury Road & 2a Darcy Road, Westmead.

Potential traffic impacts have been identified locally with control measures specified to address these impacts.

A Traffic Control Plan (TCP) has been prepared showing appropriate traffic control devices to be implemented for the duration of the proposed works.

A Vehicle Movement Plan (VMP) has been prepared showing the proposed truck haulage and delivery routes to and from the site.

A swept path analysis has been undertaken for the site and shows that articulated vehicles (AV), truck and dogs and Heavy Rigid Vehicles (HRV) can safely manoeuvre in and out of the site to/from the Construction Zone in circulating internal road adjacent to the site.

It is considered that if the control, monitoring and performance measures listed in this document are adhered to negative impacts of the site or surrounding properties will be minimised during the excavation and building works associated with the development.

Appendix A
Traffic Control Plan (TCP)

www.invarion.com

TCP- Construction.

SafeWay
Traffic Management Solutions

A: Suite 450, 29 Smith Street, Parramatta 2150 NSW
P: 1800 987 891
F: (02) 9823 0494
M: 0403 323 290
E: dennis.dandolo@safewaytms.com.au
w: www.safewaytms.com.au

Location : 158-164 Hawkesbury Rd & 2a Darcy Rd, Westmead.
Company : Barker Ryan Stewart.
Council : Holroyd City.
TCP Endorsed By : Dennis Dandolo
Prepare a Work Zone TMP # 0028376586
Expiry Date : 01.02.2019

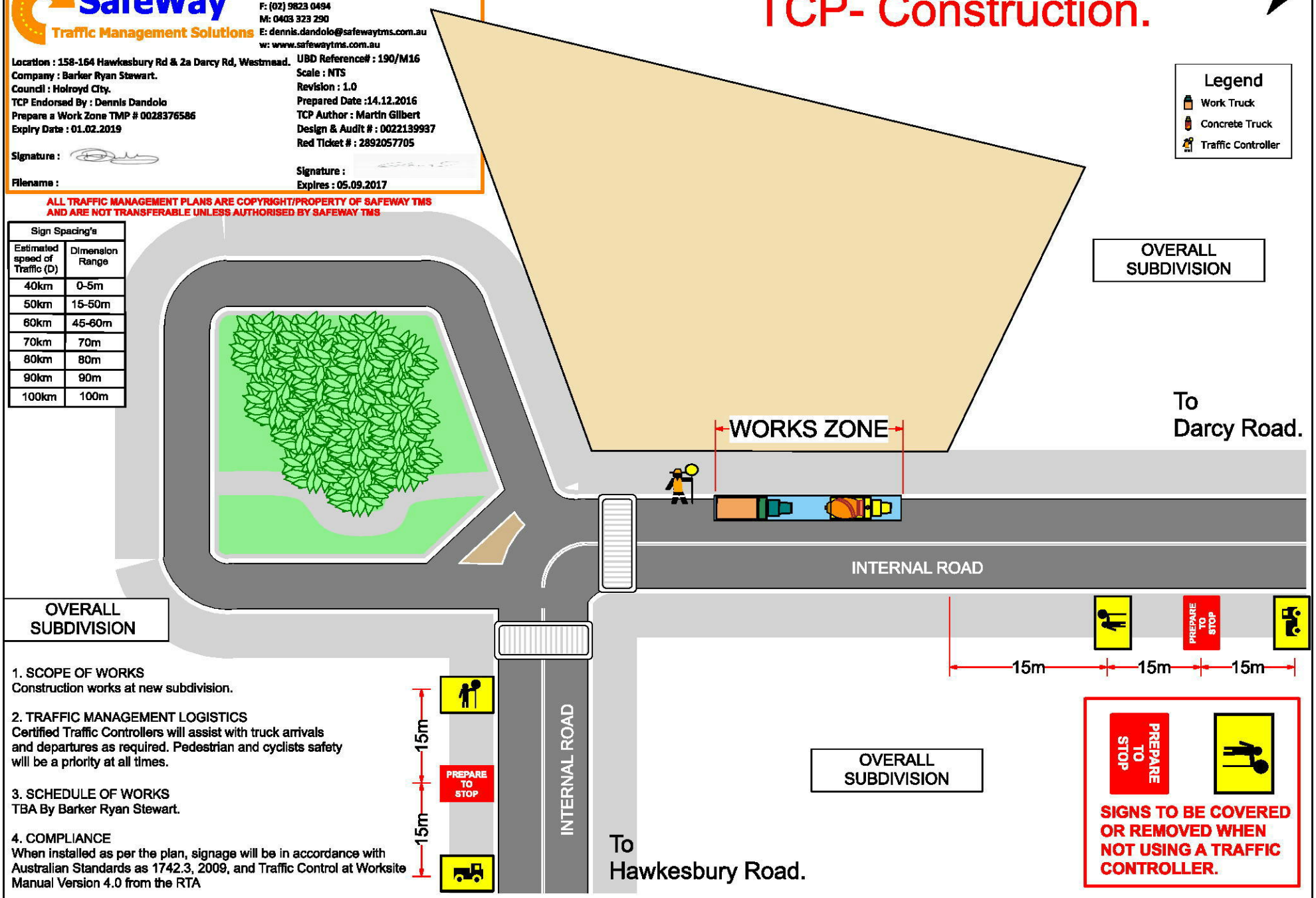
Signature :

Filename :

UBD Reference# : 190/M16
Scale : NTS
Revision : 1.0
Prepared Date :14.12.2016
TCP Author : Martin Gilbert
Design & Audit # : 0022139937
Red Ticket # : 2892057705

Signature :
Expires : 05.09.2017

Sign Spacing's	
Estimated speed of Traffic (D)	Dimension Range
40km	0-5m
50km	15-50m
60km	45-60m
70km	70m
80km	80m
90km	90m
100km	100m



1. SCOPE OF WORKS
Construction works at new subdivision.

2. TRAFFIC MANAGEMENT LOGISTICS
Certified Traffic Controllers will assist with truck arrivals and departures as required. Pedestrian and cyclists safety will be a priority at all times.

3. SCHEDULE OF WORKS
TBA By Barker Ryan Stewart.

4. COMPLIANCE
When installed as per the plan, signage will be in accordance with Australian Standards as 1742.3, 2009, and Traffic Control at Worksite Manual Version 4.0 from the RTA

Appendix B
Vehicle Movement Plan

www.invarion.com

SafeWay
Traffic Management Solutions

A: Suite 450, 29 Smith Street, Parramatta 2150 NSW
P: 1800 987 891
F: (02) 9823 0494
M: 0403 323 290
E: dennis.dandolo@safewaytms.com.au
w: www.safewaytms.com.au

Location : 158-164 Hawkesbury Rd & 2a Darcy Rd, Westmead.
Company : Barker Ryan Stewart.
Council : Holroyd City.
TCP Endorsed By : Dennis Dandolo
Prepare a Work Zone TMP # 0028376586
Expiry Date : 01.02.2019

Signature :

Filename :

UBD Reference# : 190/M16
Scale : NTS
Revision : 1.0
Prepared Date :14.12.2016
TCP Author : Martin Gilbert
Design & Audit # : 0022139937
Red Ticket # : 2892057705

Signature :
Expires : 05.09.2017

1. SCOPE OF WORKS
Construction works at new subdivision.

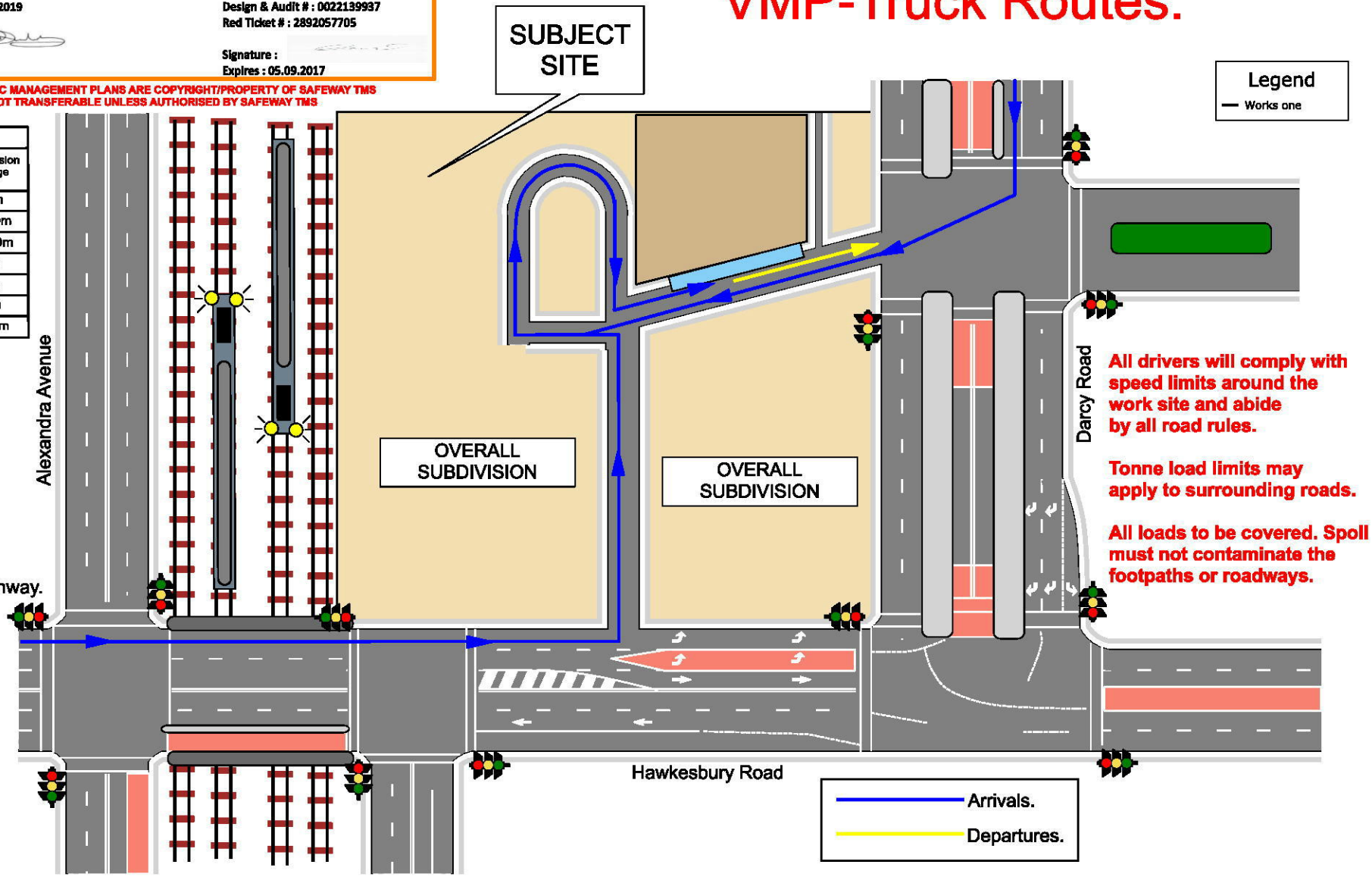
2. TRAFFIC MANAGEMENT LOGISTICS
Certified Traffic Controllers will assist with truck arrivals and departures as required. Pedestrian and cyclists safety will be a priority at all times.

3. SCHEDULE OF WORKS
TBA By Barker Ryan Stewart.

4. COMPLIANCE
When installed as per the plan, signage will be in accordance with Australian Standards as 1742.3, 2009, and Traffic Control at Worksite Manual Version 4.0 from the RTA

VMP-Truck Routes.

Sign Spacing's	
Estimated speed of Traffic (D)	Dimension Range
40km	0-5m
50km	15-50m
60km	45-60m
70km	70m
80km	80m
90km	90m
100km	100m



Appendix C
Swept Path Analysis

A4

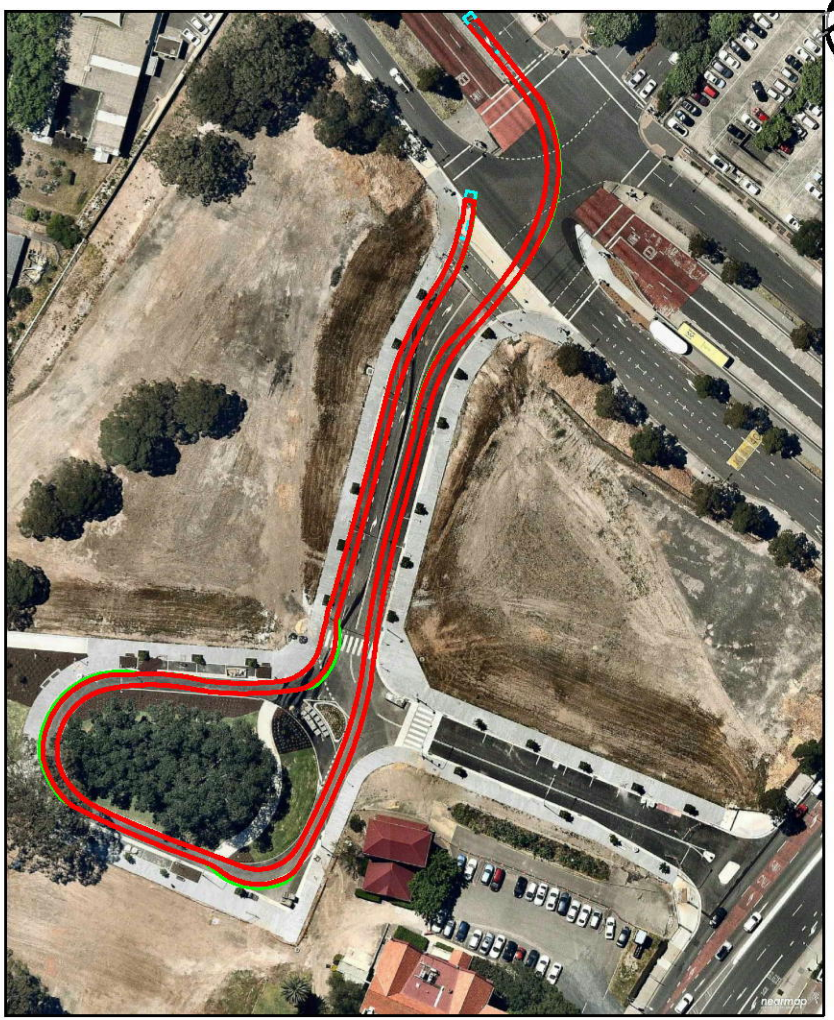
BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
PLANNING – PROJECT MANAGEMENT – ENGINEERING – CERTIFICATI
SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 6366
ABN: 26 134 067 842
barkerryanstewart.com.au
mail@barkerryanstewart.com.au

ArticulatedTruck

Swept Path

Plan No.
Scale: 1:2000

A4



HRV

Swept Path

Plan No.

Scale: 1:2000

BARKER RYAN STEWART
TOTAL PROJECT SOLUTIONS
PLANNING – PROJECT MANAGEMENT – ENGINEERING – CERTIFICATI
SYDNEY
P: 02 9659 0005
CENTRAL COAST
P: 02 4325 5255
HUNTER
P: 02 4966 6366
ABN: 26 134 067 842
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mail@barkerryanstewart.com.au