Bovis
Lend Lease

SYDNEY OLYMPIC PARK SITE 4B

Construction Management Plan

Including

Traffic & Pedestrian Management Plan
Noise and Vibration Management Plan
Waste Management Plan
Erosion and Sediment Control
Flora and Fauna Management Plan

DATE	REVISION	PURPOSE	APPROVED BY
11/1/07	A	Construction Certificate	VA

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Definitions

"BLL" Bovis Lend Lease
"Subcontractor" A company contracted to Bovis Lend Lease
"DA" Development application

1.0 CONSTRUCTION MANAGEMENT PLAN (DA Condition C4)

1.1 Description of Project

- Site 4 b is a seven storey commercial building situated in the central commercial district of Homebush Bay adjacent to the Sydney Olympic Aquatic Centre. The building will have a multi-storey below ground carpark.

1.2 Site Working Hours

- All demolition and construction works will be undertaken between the hours of 7.00am and 6.00pm Monday-Friday and between 8.00am and 1.00pm on Saturdays. No work will be undertaken on Sundays, public holidays, or other special event days when agreed by BLL and SOPA.

- Please note BLL will be applying for extended working hours.

1.3 Contact Details

- Site Manager – Craig Scannell

  Mobile No: 0411 437 957

1.4 Parking

- No on-site parking will be available for tradesman or site personnel

1.5 Security

- Site security will be limited to the provision of perimeter fencing/hoarding only.

- For safety and security reasons, all BLL and subcontractor personnel working in the building must be inducted before working on site

1.6 Site Sheds and Amenities

- Lunch, change and ablution facilities will be provided for the use of all site personnel

1.7 Safety Information

- BLL have a safety and environmental management system called "EH&S" (Environment, Health and Safety").

- All employees required to work on site must first complete the BLL site induction.

- In addition, the Subcontractor must induct their employees into their safe work procedures and submit to BLL a copy of the induction register.

- An EH&S meeting will be held weekly to deal with issues which may arise on site.

- The EH&S Meeting will be attended by one employee representative of each subcontractor and chaired by a representative of BLL.

- BLL will also periodically conduct its own internal safety audits. The audit team will consist of:

- BLL Safety Manager
- Site Safety Officer
- Subcontractor Representative

- An EH&S information board will be erected and a copy of the BLL EH&S policy will prominently be displayed on the board
- A Subcontractor's start on site will be conditional on the submission and approval of an Environmental Health and Safety plan. The plan must be submitted one week prior to their start date to allow sufficient time for BLL review

1.8 First Aid Facilities

- BLL will provide First Aid Facilities as specified by OH&S legislative requirements. All Subcontractors are required to provide their own First Aid Facilities in addition to this.
- Subcontractors are to provide a First Aid Officer for their company works.
- A nominated first aider will be on site whenever work is being carried out. This will be either a BLL or Subcontractor representative.

1.9 Approved plans to be on-site

- As per **provision D4** ("Approved plans to be on-site") of the conditions of consent, BLL will maintain a copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification on site at all times.

1.10 Site Notice

- In accordance with **provision D5** ("Site Notice") of the conditions of consent, BLL will display, at the boundaries of the site, BLL's details, PCA and Structural Engineer.

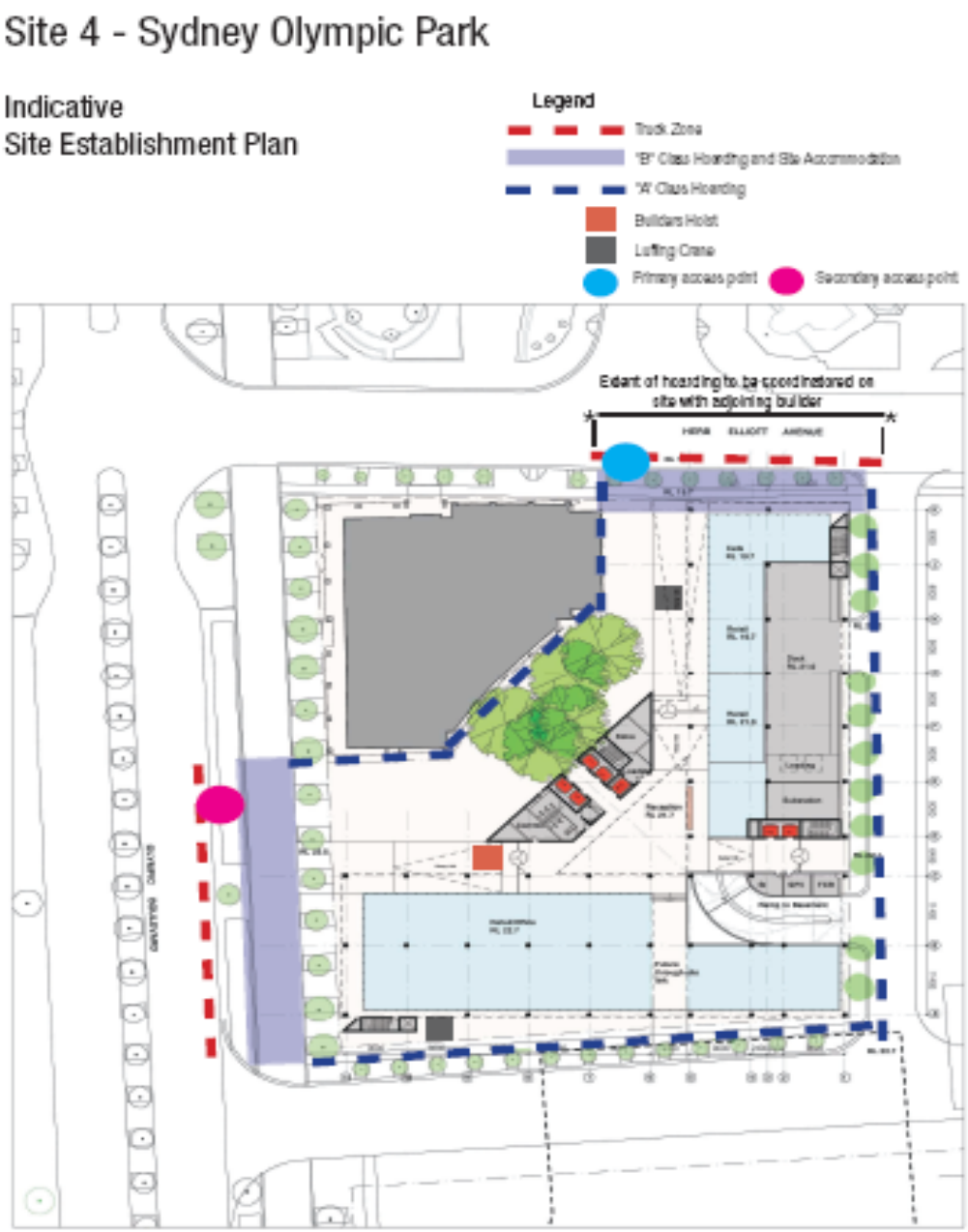
2.0 TRAFFIC & PEDESTRIAN MANAGEMENT PLAN (Provision C5)

2.1 Requirements of SOPA

- As per **provision AN8** ("Movement of Trucks Transporting Waste Material") of the conditions of consent, BLL will notify the RTA of the truck route(s) to be followed by trucks transporting waste material from the site, prior to the commencement of the removal of any waste material from the site

2.2 Ingress and egress of vehicles to the site

- All ingress and egress of vehicles will be via Herb Elliot Ave
- All construction traffic is to be coordinated with BLL prior to arrival on site.
- See diagram below



2.3 Loading and Unloading

- BLL will be applying for approval of a construction zone along Herb Elliot Drive (refer diagram above). All loading and unloading will be done within approved construction zone.
- All deliveries will be coordinated with BLL prior to arrival on site
- All loads are to be covered, securely fastened and reliably stacked on vehicles
- All materials will be unloaded either by hand, forklift, crane or other mechanical means
- All hazardous materials to be transported and stored as per codes and regulations
- A delivery register will be located on site for completion by subcontractors
- Only trade construction vehicles will be allowed on site

2.4 Hoardings

- BLL will be applying for approval to erect perimeter hoardings along Dawn Fraser Ave, Australia Ave, Herb Elliot Drive and the western park boundary.
- Architectural, construction and structural details of the hoardings will be in accordance with the relevant SOPA policy to ensure there is no obstruction to sightlines.
- Structural certification will be prepared and signed by a suitably qualified practicing structural engineer.

2.5 Marshalling of Trucks

- Proposed marshalling area for trucks will be along Bennelong Road. Further consultation with RTA and SOPA required.

2.6 Predicted traffic volumes, types and routes

Expected Delivery	Type	When	Route
6200 Trucks	Excavation Machinery	Oct 07 – Mar 08	Australia Ave
3500 Trucks	Concrete	Feb 08 – Sept 08	Australia Ave
420 Trucks	Formwork	Feb 08 – Sept 08	Australia Ave

105 Trucks	Reinforcement	Feb 08 – Sept 08	Australia Ave
30 Trucks	Steel	Feb 09 – Dec 08	Australia Ave
130 Trucks	Facade	Oct 08 - Dec 08	Australia Ave
15 Trucks	Glazing (Ground)	Jul 09 – Dec 08	Australia Ave
800 Trucks	Internal finishes	Nov 08 – Apr 09	Australia Ave
10 Trucks	Landscaping	Jan 09– Apr 09	Australia Ave

2.7 Traffic management methods

- All vehicles are to be directed by appropriate contractor to the nominated work areas
- All vehicles prior to leaving site must be checked by a contractor representative for cleanliness and washed down if required
- Construction vehicles are not permitted on site without approval from BLL
- All extracted material, such as excavation spoils or rubbish, is to be covered prior to leaving site
- Transportation of hazardous materials will be carried out in accordance with Authority Requirements, Contractor's Safety Plan and BLL Safety Requirements
- The maintenance and cleaning of vehicles and construction plant will not be carried out in areas from where oil or washing may be discharged into a watercourse, street gutter or stormwater drainage system. Waste arising from such activities will be collected and disposed of off-site in a manner approved by the EPA
- A truck wheel washing facility will be maintained for the effective cleaning of wheels prior to trucks leaving site
- Fuelling of vehicles, earthmoving plants and mobile equipment will not be carried out without an operator or driver being in attendance at all times
- To restrict traffic and noise impacts, trucks transporting materials from the site will be confined to the main road system and avoid local roads as far as is practicable

2.8 Pedestrian Management methods

- All pedestrians have the right of way, especially within the site.
- Pedestrian thoroughfares around exterior of site to be maintained and clearly marked
- All visitors will report to the BLL site office to sign visitor register (Appendix 1, Page 16)
- All visitors must sign out on leaving the site
- All visitors must be suitably attired to enter the site eg; proper footwear, hardhat etc
- An inducted person must accompany all visitors to the site
- No private car parking will be available within the site. Visitors will be advised to park in the surrounding public car parks

- The construction area will be suitably segregated from the public and adjoining pedestrian areas
- Access to, from and around the workface is to be via defined access routes detailed in the induction process

3.0 NOISE AND VIBRATION MANAGEMENT PLAN

3.1 Compliance with DA Conditions

- In accordance with **Provision D11** ("Hours of Work") of the conditions of consent, BLL will comply with the hours of works and the conditions in which works may be undertaken outside these hours

- In accordance with **Provision H7** of the conditions of consent BLL will put in place a vibration monitoring system to monitor vibration levels on the adjoining rail corridor for the duration of the works. Vibration caused by construction at any residence or structure outside the subject site must be limited in accordance with German Standard DIN 4150 Part 3 Structural Vibration in Buildings. Effects on Structures.

3.2 Noise Receivers

- The table below identifies potentially affected sensitive receivers and provides a brief assessment of the likely affect on that receiver:

Potential Noise Receiver	Proximity to Site	Type of Property	Sensitivity
Site 5	Close	Commercial	Low
Novotel Hotel	Close	Residential	High
Sydney Olympic Park Railway Station	Far	Public Transport	Low
QUAD 2	Far	Commercial	Low
Peregrine	Close	Commercial	High

As shown above, all the affected receivers are commercial properties and most are at a moderate distance from the site. The sensitivity for most of the receivers is therefore considered low.

3.3 Construction Noise Objective

- BLL will make all reasonable endeavours to manage noise from construction activities in accordance with **provision D12.**

- BLL Noise & Vibration Management Plan (Appendix 2) & Assessment of Noise Levels (Appendix 3) identify activities potentially exceeding the objectives noise emissions and how they will be managed.

3.4 Construction Vibration Criteria

BLL acknowledge the following vibration criteria detailed in **Provision D14** ("Vibration Criteria") of the conditions of consent.

Vibration Activity	Standard
Structural Damage Vibration	German Standard DIN 4150 Part 3 Structural Vibration in building. Effect on Structures

Human Exposure to Vibration	British Standard BS6472

3.5 Noise and Vibration Objectives for Receivers

Receiver	Noise & Vibration Objective
Site 5	o Refer Project Tabitha Noise and Vibration Management Plan (Appendix 2)
Novotel Hotel	o Refer Project Tabitha Noise and Vibration Management Plan (Appendix 2)
Sydney Olympic Park Railway Station	o Refer Project Tabitha Noise and Vibration Management Plan (Appendix 2)
QUAD 2	o Refer Project Tabitha Noise and Vibration Management Plan (Appendix 2)
Peregrine	o Refer Project Tabitha Noise and Vibration Management Plan (Appendix 2)

3.6 Noise and Vibration Monitoring, Reporting and Response Procedures

- Refer Site 4B Noise and Vibration Management Plan (Appendix 2)

3.7 Assessment of potential noise and vibration

- Appendix 3, Page 20 provides a comprehensive list of the specific activities that will be carried out and an assessment of its effect on local receivers.

3.8 Proposed Mitigation treatments, management methods and procedures

The following mitigation treatments, management methods and procedures are proposed:

- Construction works will only commence unless a subcontractor has submitted and received approval for a schedule of equipment which describes the equipment types to be used, noise levels, expected time and duration of use, and any measures required to ensure the noise levels are acceptable

- No loading or unloading of any trade equipment or building materials associated with construction works will only take place inside the approved construction areas

- Personnel safety measures, such as ear muffs, ear plugs, shall be implemented wherever noise exceeds 85db (A)

- Operating noise limits are to be implemented to achieve the construction noise objective

- All subcontractors will be requested to use silenced equipment where applicable

- All subcontractors, as part of their site safety plans, are to ensure ear/eye protection is available for all employees on demand and monitor daily

- Bored piles have been used in lieu of driven piles

3.9 Construction Timetabling

- Refer Site 4B Noise and Vibration Management Plan (Appendix 2)

3.10 Notification procedures

- BLL will notify occupants of nearby building of construction activities that are likely to affect their amenity through noise and vibration, prior to the activity occurring.

3.11 Contingency plan

- BLL have a system of recording non-compliances and/or noise complaints through its information technology system – "ProjectWeb". The system logs the non-conformance and details the corrective measures required.

4.0 WASTE MANAGEMENT

4.1 Compliance with DA Requirements

- In accordance with **provision B18** ("Recycled Water") of the Conditions of Consent, the building will be connected of the Water Recycling and Management System (WRAMS).

- In accordance with **provision C9** ("Removal of Hazardous Materials") of the conditions of consent, all hazardous materials removed from the site will be disposed of at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines.

- In accordance with **provision D20** ("Recycling of Concrete") of the conditions of consent, and detailed below in the BLL Waste Management Plan, any existing concrete of suitable volume will be taken to a concrete recycling works.

4.2 BLL Waste Management Plan

- See Appendix 4 for the BLL Waste Management Plan

5.0 EROSION AND SEDIMENT CONTROL

5.1 Compliance with DA

- In accordance with **provision B10** ("Erosion and Sedimentation Control") of the conditions of consent, BLL has designed the soil erosion and sediment control measures in agreement with the document *Managing Urban Stormwater – Soils & Construction* Volume 1 (2004) by Landcom

These measures will include:-

- Construction of truck entry/exit points including truck cleaning facilities. The truck entry/exit points will be managed by a full time gate controller.

- The site will be fenced with a B Class Hoarding, a 2400mm high plywood A Class hoarding and a 2.4 m high 3 barb chainwire fence, constructed in accordance with council requirements to control dust and prevent the public from entering the site. At the base of this hoarding silt fencing will be installed to catch any silt laden runoff and prevent it from leaving the site. The silt fence is to be anchored at the base by either embedment or weighted down with sand bags.

- All existing on-site stormwater drainage pits will be cleaned of rubbish and silt. All drainage grates shall then be covered with suitable geotextile fabric securely fixed in position.

- On going dust suppression will be by use of a water spray.

6.0 FLORA AND FAUNA MANAGEMENT

In accordance with the DA, BLL will comply with the following requirements:

D8: Protection of Trees – Street Trees
"All street trees shall be protected at all times during construction. Any tree on the footpath, which is damaged or removed during construction, shall be replaced, to the satisfaction of SOPA"

D9: Protection of Tress – On-site Trees
"All trees on the site that are not approved for removal are to be suitably protected by way of tree guards, barriers or other measures as necessary are to be provided to protect roof system, trunk and branches, during construction"

Appendix 1

Visitor Register

Visitor Register					
Date	Name	Company	Security Pass No.	Signature In	Out

Appendix 2

BLL Noise and Vibration Management Plan

Site 4B
Noise and Vibration Management Plan

Objectives

To minimise the generation of noise and vibration from construction activities occurring on site and its impact on site operations and workers.

To minimise the generation of noise and vibration from construction activities occurring on site and its impact on the rail tunnel, neighbouring residents, businesses and associated building structures.

Establish and maintain good relations with community and neighbouring sites.

Key Management Issues

Noise generated during construction of Project Tabitha will be primarily associated with vehicle movements, generators, heavy machinery (eg: Excavators) and hand-held machinery and tools. Some additional vehicle noise may be generated by the thoroughfare of vehicles using transport corridors to and from the site.

As the works will be conducted within the hours detailed by the condition of consent, potential noise impacts are predicted to be small and expected to pose a minor impact to the nearest residences adjacent to the site. In view of this, the following management issues have been identified:

- Noise and vibration generated during construction and demolition works affecting nearby properties (Environmental Class P2 Risk).
- Vibration generated during construction and demolition works affecting surrounding structures/infrastructure (Environmental Class P1 Risk).
- Establish and maintain good relations with community and neighbouring sites.

Site Actions – Noise

All noisy construction or demolition activities are to be performed in accordance with hours stipulated by the conditions of consent as outlined below:

- 7:00am to 6:00pm on Mondays to Fridays, inclusive;
- 8:00am to 1:00pm on Saturdays; and
- at no time on Sundays, public holidays or agreed SOPA event days.

Any noisy activities proposed outside the hours detailed above require prior written consent from SOPA.

Noise limits during the demolition and construction works are to meet the Maximum Allowable Noise Contribution as specified in the conditions of consent.

A Noise Monitoring Equipment Diagram will be prepared prior to site activity and Bulk Earthworks, detailing the locations and type of equipment.

No construction works shall commence unless the Subcontractor has submitted a Work Method Statement which details the schedule of demolition / excavation equipment which describes the equipment types to be

used, noise levels these will generate, expected time and duration of use, and any measures required to ensure the noise levels are acceptable (such as screen mufflers).

BLL will ensure traffic access to and from the site will be via designated entry/exit points.

Fit and maintain appropriate mufflers on construction and earth-moving equipment as required.

BLL will utilise existing Noise Impact Assessment data, where required, to determine noise sources and confirm ambient background levels or will conducting baseline noise monitoring prior to construction work commencing and will engage an acoustic consultant to monitor construction noise level during its activities.

Personnel safety measures shall be implemented wherever noise exceeds 85dB(A).

All typical plant and equipment used during the construction and demolition works will be within the maximum noise levels specified (at 7 metres) refer to Table 18.8.1.

Site Actions - Vibration

When planning for construction work that will include vibration work BLL will make all practical efforts to protect vibration sensitive buildings and the amenity of the occupier's of buildings. Follow the ANZECC guidelines `*Technical Basis for Guidelines to minimise Annoyance to Blasting Over pressure and Ground Vibration'*

During leisure hours, vibration disturbance from construction operation must be kept to a minimum. The basis for this vibration management strategy will be to limit the times that certain vibration producing activities may be carried out.

No pile driving or blasting will be performed as part of the proposed construction works program.

TABLE 18.8.1: TYPICAL NOISE LEVELS

ITEM	TYPICAL PLANT OR EQUIPMENT	MAX NOISE LEVEL (at 7 metres)
Bulldozer	Caterpillar D7, D9	88
Bulldozer	Caterpillar D10	93
Front End Loader	Wheeled	90
Jack Hammers	With silencing bags	85
Air Track Drill	800 CFM Compressor	96
Scraper	Caterpillar 631	89
Scraper	Caterpillar 651	85
Grader	Caterpillar 16	85
Compactor	Caterpillar 825	85
Compactor	Vibrating Plate	92
Vibratory Roller	10-12 Tonne	89
Water Cart		88
Dump Trucks	35 Tonne	96
Excavator	Kato 750	86
Rock Breaker	Hydraulic on Kato 750	97
Truck		80
Crane	Truck Mounted	85
Compressor	600 CFM	75
Compressor	1500 CFM	80
Backhoe		88
Spreader	Asphalt, concrete	70
Asphalt Truck		92
Asphalt Paver		89

Tip Truck		83
Generator	Diesel	79
Spraying Machine		75
Mechanical Broom		83
Piling Hammer	For piles and casing	93
Concrete truck		83
Concrete Pump		84
Concrete Vibrators		80
Drill	Air	85
Drill	Pneumatic	85
Welders		85
Concrete Saw		93
Concrete Leveller		90
Cherry Picker	On Truck	80

Training

Communication and education material on the noise and vibration controls and procedures will be part of the Site Environmental Awareness Program that will be incorporated into the site induction program.

Performance Measures

- Non exceedance of specified noise limits during monitoring event
- No noise or vibration complaints received from adjoining operations or from the community.
- The maximum noise level (LA max), when measured at a distance of 7 metres from any item of plant or equipment and must not exceed the following maximum noise level.
- Assessment of performance by number of complaints received from adjoining operations or from statutory Authorities.
- No warnings/notices received from statutory authorities for exceeding noise levels or work outside the approved work hours as set out in the conditions of consent.

Monitoring and Reporting

BLL will put in place a vibration monitoring system to monitor vibration levels on the adjoining rail corridor for the duration of the works.

Bulk earthworks subcontractors shall submit noise monitoring compliance certificate or monitoring results for all major plant and equipment on the project within one month of use on site demonstrating conformance with operational licence.

Routine inspections of plant and equipment will include reference to acoustic performance. Subcontractors to provide details of acoustic performance of plant and equipment on site.

Any noise complaints or feedback from adjoining properties or from the operational facility on site to be recorded, reported and monitored.

The SM may require the Subcontractor to carry out additional noise monitoring if a complaint regarding construction noise is received.

The SM in consultation with the EM will advise the monitoring location and the monitoring required will be manned monitoring.

Corrective Actions

Non-conformances are to be recorded by way of the System Defects.

The Subcontractor (and EM/ CM/ SM if applicable) shall review and analyse the cause of detected non-conformance and develop a corrective action to prevent recurrence. Details of the non-conformance including any immediate corrective actions undertaken are to be recorded, reviewed and accepted by the CM.

It is the responsibility of the EM to immediately initiate corrective actions following approval. The non-conformance and corrective action must include details of the action proposed, desired performance target and action close out date. The system defects report should be signed, dated and filed.

All corrective and preventative action taken by the Subcontractor will be carried out by and at the cost of the Subcontractor.

If such corrective and preventative action leads to further non-conformance, any further action shall be subject to approval by the CM in consultation with the EM.

Appendix 3

Assessment of Noise Levels

Trade / Activity	Item	Maximum Noise Level LA Max dB (A) at 7m	Proximity to Receiver	Assessment of Effect
Civil works	Bulldozer	88	Peregrine – Close	Moderate
	Bulldozer	93	Peregrine – Close	Moderate
	Front End Loader	90	Peregrine – Close	Moderate
	Air Track Drill	96	Peregrine – Close	Moderate
	Scraper	85	Peregrine – Close	Moderate
	Grader	85	Peregrine – Close	Moderate
	Compactor	85	Peregrine – Close	Moderate
	Compactor	89	Peregrine – Close	Moderate
	Compactor	92	Peregrine – Close	Moderate
	Water Cart	88	Peregrine – Close	Moderate
	Dump Trucks	96	Peregrine – Close	Moderate
	Excavator	86	Peregrine – Close	Moderate
	Backhoe	88	Peregrine – Close	Moderate
	Truck	80	Peregrine – Close	Moderate
	Spreader	70	Peregrine – Close	Moderate
Various	Crane	85	Moderate	Low
Various	Compressor	75	Moderate	Low
Various	Compressor	80	Moderate	Low
Asphalt	Asphalt Truck	92	Moderate	Low
Various	Tip Truck	83	Moderate	Low
Various	Jack Hammers	85	Moderate	Low
Various	Generator	79	Moderate	Low
Piling	Piling Hammer	93	Moderate	Low
Concrete Works	Mechanical Broom	83	Moderate	Low
	Concrete Truck	83	Moderate	Low
	Concrete Pump	84	Moderate	Low
	Concrete Vibrators	80	Moderate	Low
	Concrete Saw		Moderate	Low
Various	Drill	85	Moderate	Low
Various	Air Compressor	75	Moderate	Low
Various	Welders	85	Moderate	Low
Various	Cherry Picker, Truck Mounted	80	Moderate	Low

Appendix 4

BLL Waste Management Plan

Bovis
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Site 4B
Waste Management Plan

Objectives

The objectives of the Waste Management Plan are based on the hierarchy of avoidance/reduce, re-use, recycle, treat and dispose as outlined in the National Waste Minimisation and Recycling Strategy.

To re-use and/or recycle a minimum of 80% of all Hard Waste Material, and Soft Waste Material generated on the construction site, thus achieving up to 80% reduction/avoidance in waste to landfill.

Best Practice should be adopted wherever possible, to achieve waste minimisation and reduction. Key areas that will be targeted in the Waste Management Plan are:

- To avoid, whenever possible, the generation of wastes
- Demolition Materials (including hazardous building materials i.e. asbestos)
- Construction Materials
- Excavated Fill Materials
- Domestic & Human Waste
- Wastewater
- Litter generation due to construction activities

In addition the project will:

- liaise with Subcontractors to identify areas where they can reduce waste and reuse materials in their respective trades;
- meet local, state and federal waste minimisation legislation and environmental standards;
- prevent pollution and damage to the environment; and
- protect the safety and health of our employees, site personnel and the public.

Key Management Issues

The waste management strategy has been developed from best practice models. Waste Materials generated on site are to be managed such that recycling is maximised and the volume of waste transported to landfill is minimised.

Construction waste minimisation requires early planning and establishment of "Waste minimisation Culture" by all participants in the Design, Construction and End User process. Waste minimisation is a key element in life cycle analysis, material selection and specification.

Materials selected must be fit for use. The use of building materials that are fully recycled and/or include recycled material in their production will be maximised where practicable.

All disposal documentation from construction processes should be supplied to BLL and filed in the site records for verification purposes.

Site Controls

Planning

A Waste Management Contractor will be involved in the early stage of the project to ensure effective planning for the waste management.

Major Subcontractors will be asked to submit prior to commencement on site waste minimisation details including as a minimum the following:

- practical measures associated with their works to prevent waste entering on site;
- waste streams resulting from their works which can be recycled and will be actively managed as part of their waste reduction plan; and
- alternative products containing recycled material that could be utilised in their works, in place of more traditional materials, which conform and meet with the design specification.

All suppliers of building materials will be encouraged to nominate packaging minimisation and reuse initiatives, which have been implemented, as part of product supply to the project.

Bulk handling and reusable/returnable transport containers will be encouraged.

Site set up will include measures to prevent litter entering the stormwater drains and waterways feeding to the adjacent parks, roadways and waterways.

Waste Management will be addressed at the design coordination meetings.

A Waste storage and Handling Diagram Waste will be prepared for the site showing details of the designated storage locations of Segregated waste, water / washout waste etc.

Pre Construction Phase:

Demolition

Specialist subcontractors will be used to remove classified material identified in the Douglas Partners Contamination Assessment Report. These materials will be removed separately first and disposed of in accordance with relevant Authority requirements.

Demolition of the remaining components of the existing pavements, etc., will be conducted in a manner to maximise material recycling.

Construction Phase:

Excavated Fill Materials

Any fill materials identified as requiring excavation from within development footprints will, where suitable, be re-used on the site as part of the site engineering or landscape works.

In the event that excavated soils are deemed unsuitable for re-use on site, the excavated fill materials will require initial waste classification testing in accordance with relevant authorities. Depending on the outcome of the waste classification, a suitably licensed landfill will be chosen to receive and dispose of the soils. Appropriate waste documentation and permits will be maintained throughout this process.

Options for either re-use or off-site disposal of excavated soil materials will be assessed at the design stage of the project.

Refer to *Contaminated Waste (soils/water) Management Plan*.

Waste Bins

The Subcontractors will be responsible for the daily cleaning of their respective work areas and placing of their waste in the bins.

Adequate number of litter bins be made available within the construction site areas, including work and lunch areas. These bins will be regularly emptied.

The Subcontractors working on site will place all their waste in the bins on site.

Waste Water / Washout Areas

Washout processes and facilities for paint and/or finishing trades are to be minimised and water recycling for these activities are encouraged where possible.

Utilisation of BLL guidelines/management plan for disposal of paint and associated wastes are to be implemented.

Finishing trades washout facilities will NOT be plumbed to any building services and will be of a stand-alone nature. The maintenance of these facilities should be the subcontractor's responsibility and should comply with all appropriate Environmental Legislation and local authority guidelines.

Packaging

All suppliers of building materials will be encouraged to nominate packaging minimisation and reuse initiatives, which have been implemented, as part of product supply to the project. Bulk handling and reusable transport containers will be encouraged.

Recycled Materials

Suppliers will be encouraged to nominate products that include a recycled component and ability/opportunity for recycling of unused components in accordance with the specified 80% waste reduction target. Product selection will include a selection factor associated with recyclability and percent of recycled product.

Domestic & Human Waste

All domestic waste including litter will be managed via a similar bin system that will be provided in the vicinity of designated eating areas, kiosks and kitchen. Materials collected for recycling will include:

- Paper/Cardboard
- Food waste
- Aluminium Cans
- Drink containers: Glass & co-mingled
- General waste

Construction and demolition waste bins and domestic waste bins will be located in separate designated areas on the site to ensure appropriately safe storage and collection of waste. Waste areas will be clearly signposted and colour coordinated to define acceptable waste types suited for each bin and secured where required. The location of the waste bins and recycling areas will be marked on the site waste management plans.

All human waste and associated waste water will be collected via the provision of portable toilet and sanitary systems during the construction and demolition period. Where practicable, temporary connection will be made to the existing sewer services on site. Where these facilities are too remote to prevent connection, a licensed waste contractor will be appointed to manage the waste collection and disposal in addition to general maintenance and cleaning of the toilets.

Training

Communication and education material on the waste management system will be part of the Site Environmental Awareness Program that will be incorporated into the site induction program.

Additional third party training will be investigated when a waste contractor is nominated.

The responsibility to ensure that waste materials go into the correct bins will be with everyone on site.

Performance Measures

A Waste Management Contractor will be involved in the early stage of the project to ensure effective planning for the waste management.

The Waste Management Contractor will coordinate waste recycling, recovery and disposal of all waste during all stages of the project.

The waste system (bins / signage / training) is in place prior to any major waste generation works.

All waste transportation and disposal documentation to be maintained on-site and signed as received or disposed by the appropriate contractor or waste receiving facility.

Destination of all wastes to be approved by the receiving waste facility prior to the commencement of works.

Monitoring and Reporting

The Waste Management Contractor will be responsible for providing monthly reports to the SM: the number and size of bins taken away, tonnage's and m^3 taken away and tonnage's and m^3 recycled. This will include the final destination of materials for recycling.

The Waste Management Contractor will be responsible for providing dockets to the SM for the removal and appropriate disposal of scheduled waste from the project.

The SM will produce monthly reports and other statistic information as per BLL EH&S requirements.

The BLL Project EH&S Manager will formally audit the progress on waste management from the above monthly reports to ensure waste reduction targets are met and appropriate waste documentation maintained.

Correctives Actions

Non-conformances are to be recorded by way of the System Defects.

The Subcontractor and BLL SM/CM if applicable shall review and analyse the cause of detected non-conformance and develop a corrective action to prevent recurrence. Details of the non-conformance including any immediate corrective actions undertaken are to be recorded, reviewed and accepted by the CM.

It is the responsibility of the CM to immediately initiate corrective actions following approval. The non-conformance and corrective action must include details of the action proposed, desired performance target and action close out date. The system defects report should be signed, dated and filed.

All corrective and preventative action taken by the Subcontractor will be carried out by and at the cost of the Subcontractor.

If such corrective and preventative action leads to further non-conformance, any further action shall be subject to approval by the CM in consultation with the Project EH&S Manager.

Waste Management Implementation Plan

Control	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measure
Waste Identification					
A Waste storage and Handling Diagram Waste will be prepared for the site showing details of the designated storage locations of Segregated waste, water / washout waste etc.	Prior to works commencing	In accordance with the Waste Management Plan.	CM/SM	Review of Diagram prior works commencing.	Diagram Map prepared & containing all relevant details.
Hazardous building materials to be identified in Hazardous Materials Building Survey	prior demolition works commencing	Independent surveyor to prepare a Hazardous Materials Register	CM	To be reviewed by PM and incorporated into WMP.	Preparation of a functioning HazMat Register for building materials.
Project waste types to be identified and quantified.	Prior to works commencing	Coloured bins will be supplied for the nominated waste streams in accordance with the Waste Management Plan.	CM/ PM	To be reviewed by PM and incorporated into Waste Management Plan.	List of relevant waste streams and volumes from construction & demolition.
Waste Disposal					
Remove all hazardous building materials off-site.	Prior demolition works	Appropriately licensed contractor to remove and transport waste to licensed landfill	SM	Air quality monitoring daily. Clearance Survey by hygienist as required.	Non detect asbestos during ambient air monitoring. Landfill disposal dockets.
Segregation and storage construction/ demolition and domestic waste prior off site disposal.	At all times	Waste contractor to address and follow legislative requirements.	SM	Weekly inspection of Waste Collection Areas.	No cross contamination of wastes. No spillage or loss of wastes from collection containers in storage compound. Waste Dockets.
Transport and handling of demolition/ construction waste and domestic waste by licensed contractors.	At all times	Only approved contractor to be used. Appropriate SWMS for transportation of waste	SM	Random inspection of waste transport licenses. Random inspection of waste transport vehicles.	Correct covers and containers for waste transfer. No spillages/loss of waste during transport.
Demolition/ construction and domestic waste disposal to correct licensed waste receiving facilities.	All times	Only approved waste receiving facilities to be used.	SM	Waste classification reports. Inspect as required.	Waste disposal dockets correspond to waste types/ volumes.

Control	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measure
Disposal of excavated fill materials deemed for off-site disposal.	Prior construction	Waste soils (if any) classified in accordance with relevant authority Guidelines (eg: DEC, EPA etc). Licensed waste contractor and landfill used	SM	Waste classification reports. Inspect as required.	Waste disposal dockets correspond to waste types/ volumes.
Collection and storage of wastewater from site operations (i.e. paint washing) or temporary facilities (i.e. toilets).	At all times.	Design and installation of appropriate wastewater collection/storage system.	SM	Weekly inspection of bunds, drains and sumps.	No wastewater spills or uncontrolled discharges.
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.
Recycling					
Waste building or demolition materials (i.e. concrete, timber, steel, etc) to be segregated and stored in separate site bins.	All times	Appropriately designed waste storage areas with designated recycling bins.	SM	Weekly inspection	Clean waste bin area. No cross contamination of waste types.
Segregated waste building/demolition materials are appropriately recycled.	All times	Approved waste recycling contractor to collect bins for recycling.	SM (Environment Manager if appropriate)	Established collection schedule. Audit actual recycling volumes compared to waste recycling targets (%).	Waste recycling dockets. Waste recycling targets are met.
Minimisation					
Excavated material to be reused or recycled where possible.	As required	Independent contractor to test soils for environmental/ geotechnical parameters.	CM/SM	Soil testing report to confirm suitability for re-use. Review by Environment Manager.	No contaminated soils re-used on site.
Any fill imported onto the site is to consist of certified clean material only	As required	Indentation of material	CM/SM	Certificate of suitability.	Certificate provided prior to bring to site.
Minimise packaging and maximise use of recycled products by contractors.	At all times	Review contractor materials and packaging proposals	CM/SM	Inspect material deliveries/ specifications.	Proven examples of minimal packaging and recycled materials.
Site Offices					
Recycling bins shall be provided with the site working area.	As required	Coordinated with existing operational facility	CM/SM	Ensure waste is disposed in accordance with existing operations	monthly EH&S Managers review

Control	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measure
Site amenities shall be provided on-site as required	Prior to works commencing	Coordinated with site population numbers	CM/SM	Ensure waste is disposed in accordance with existing facilities requirements	all waste disposed of appropriate

Appendix 5

BLL Erosion and Sediment Control Plan

Bovis
Lend Lease

Site 4B
Erosion and Sediment Control Plan

Objectives

To avoid erosion, contamination and sedimentation occurring as a result of the construction or demolition activities associated with the redevelopment.

To control the quality of stormwater leaving the construction site such that no unacceptable impact occurs to adjoining natural watercourses or stormwater drains discharging into these water bodies.

Minimise disturbance to the hydrologic regime of the surrounding landscape and maximise opportunities for stormwater recycling on the site.

Key Management Issues

Construction and demolition activity on the project site involves the removal of existing surfaces and the excavation of the basement to facilitate the proposed development of Project Tabitha. The soils at the site are noted to be a combination of fill, clay and shale. In addition the permeability of the site soils and the proximity to groundwater would suggest that dewatering of site excavations will be required.

The construction and demolition works have the potential to adversely impact ecosystems and water quality within adjacent surface water bodies including via sediment loads and potential contaminants contained in runoff. Potential impacts to the site environment, including existing soils and groundwater also need to be considered as part of any stormwater and erosion management plan. Other physical impacts to be considered include the susceptibility of the site to potential flooding events.

The following activities are expected to be the key risk sources during construction:

- Site clearing, excavation, spoil and material stockpiling.

The following management issues have been identified:

- Sediment laden water from the construction site may potentially flow into the stormwater system and/or adjacent surface water bodies (Environmental Class P2 Risk);
- Stormwater with excessively high or low pH values could run-off from the selected stockpiles stabilisation area (Environmental Class P3 Risk);
- Stormwater collected in excavations and requiring disposal (Environmental Class P3 Risk);
- Groundwater entering excavations and requiring disposal after dewatering (Environmental Class P1 Risk).
- Site cut off drains eroding and increasing site water sediment loads (Environmental Class P3 Risk);
- Vehicles leaving the construction site depositing dirt/mud on public roads after rain periods (Environmental Class P3 Risk);
- Removal of bulk material off site escaping from vehicles and polluting roadways (Environmental Class P3 Risk);
- Debris and litter collecting along roads and in catch drains and consequently could affect nearby water bodies quality (Environmental Class P2 Risk).

- Site contamination through the potential for an overflow of fuel/chemical storage containers and contamination from the equipment and plant repair area into the surrounding waterways and drainage systems (Environmental Class P1 Risk)
- Stormwater runoff coming into contact with potential contaminated soils may potentially flow into the stormwater inlets and thus nearby natural water courses could be affected and consequently reduce water quality (Environmental Class P2 Risk);

Site Actions

The prevention of soil erosion by water and wind and by sediment pollution are key components of the Stormwater and Erosion Management Plan for the site.

A Stormwater & Erosion Control Diagram will be prepared prior to site activity and Bulk Earthworks. The diagram will detail collection points, temporary drainage flows, sediment controls and general stormwater overflow management.

Construction stage water quality impacts shall be minimised by incorporation of appropriate erosion and sediment control measures in the detailed design, specification and contract arrangements and quality assurance inspection during construction.

Adopt best practice environmental management strategies in accordance with the principles outlined in the Department for Infrastructure, Planning & Natural Resources) document titled “Guidelines for Erosion & Sediment Control on Building Sites” and other key reference documents and legislation previously outlined.

Planning

- Locate all stockpiled soils away from surface waters, potential watercourses and flood prone areas.
- Limit land disturbance to the area needed, especially in the vicinity of existing stormwater drainage.
- Cease works if excess dust is being generated and resolve the problem prior to recommencing works.
- Restrict construction and demolition traffic to designated traffic routes that are well drained and all weather.
- Annual weather patterns to be taken into account when planning general site operations and in particular during planned excavations or land disturbance activities.
- Clearly identify, demarcate and fence off areas of vegetation or landscape on or near the boundaries of proposed excavation and demolition footprint to indicate these areas are not to be entered or disturbed.

Controls

- Divert up slope runoff around disturbed areas;
- Construct earth bunds and similar diversion drains to divert surface water runoff around the perimeter of the proposed demolition or construction areas. Where possible, seed all diversion channels to dissipate water velocity.
- Install temporary sediment and erosion controls to prevent the erosion of soil from disturbed construction areas and stockpiles. Measures may include filter barriers (straw bails or silt fence), temporary covering or revegetation with hydro-mulching and native seeding.
- Control access to construction areas by limiting entry and exit points. Ensure all approved access points shall be marked prior to the commencement of construction within that area.
- Reduce the erosive energy (concentrated flow and velocity) of water using measures such as temporary storage, dissipaters, level spreaders and drain grass planting’s.
- Prevent deposition of sediment on the public road network due to truck / equipment movements to and from the site via a purpose built truck/wheel wash facilities at site exit point.
- Collection of stormwater into temporary detention basins (refer to de-watering procedure)
- Progressive landscaping and rehabilitation of disturbed areas

Sediment Fences / Devices:

Sediment fences and devices will be used in areas where temporary sediment control is required. These relatively simple devices will dissipate stormwater velocity and collect moving solids.

Throughout the Pre-excavation and Post Road Construction period of excavation and construction, temporary sediment fences and devices will need to be positioned where erosion is most severe.

Sediment fences will be placed downstream of stockpiles and disturbed areas. It is important that sediment is collected adjacent to these areas to prevent loss of material downstream.

Sediment devices will be placed in areas where energy dissipation is required. When constructed these systems are commonly known as check dams and are placed in areas where a major flow path exists. Straw bales filter coarse sediments but tend to be less effective with fine sediments. For this reason all Straw bales will be lined on the upstream side with a geotextile filter fabric where appropriate. Straw bales will be secured with three stakes and positioned so the bale twine does not degrade due to direct sunlight.

Rehabilitation

On completion of works decommission sediment traps constructed as part of the temporary works by removing all silt material from the base of the trap, removing the trap wall and filling the trap with compacted fill. The diversion drains will be graded to match surface levels.

Temporary silt traps or sediment control devices will not be removed for landscape or streetscape works, but shall only be removed following stabilisation of disturbed areas.

For rehabilitated areas, maintenance will continue until vegetation is well established and can be managed

Maintenance of Controls:

- Perform routine maintenance inspections of the stormwater diversions and sediment and erosion controls, particularly after rainfall events or extremely windy conditions.
- Where required, clean or repair diversion drains, storage basins, silt fences and other related control structures to ensure the continued effective operation of these over the duration of the construction and demolition period.

Controlled Discharges (Dewatering):

BLL is committed to Stormwater Management during construction, and as such, operates without formal licences but in accordance with industry best practice for the management of stormwater and de-watering discharge.

All site waters during construction and landscaping shall be contained on site, and released only when suspended solids are less than 50mg/L (for storms less than 1 in 5 year time of concentration) in order to avoid pollutants entering the Council's stormwater drainage system.

The collection of stormwater/ground water on a project could be discharged to the stormwater system if it meets certain criteria. This would involve an analysis of the quality of receiving waterways and the collected water within the project boundary. This analysis would need to be carried out by a NATA accredited laboratory and the results and final report supplied to Bovis Lend Lease.

The analysis would need to demonstrate that the collected water within the project boundary does not exceed the tested parameters and have no evidence of the following substances detected:

- nutrients, from fertilisers;
- herbicides and pesticides used in landscaping;
- acids from washing;
- building wastes and litter;
- paint and paint wastes; and
- oils, grease and fuel, from equipment operation and maintenance.

An on site treatment with discharge to stormwater system could be implemented providing that there is no chemical contamination (as listed above) and water quality during construction must comply with any specific requirements of SOPA. In addition to the schedule of analytes outlined below, the potential for contamination of the retained waters should also be determined and if required, additional analysis performed to meet criteria.

- pH is between 8.5 and 6.5
- suspended solids is less than 50 mg/L,

Treatment options could include the use of a mobile specialist plant for this procedure and may prove more cost effective than a procedure of pumping out and/or on site storage of this water.

Ongoing water quality monitoring would need to performed and the contractor engaged to do this work would need to provide a safe work method statement (SWMS) detailing the frequency of sampling and on site procedures to ensure discharge does not exceed the criteria.

Training

Communication and education material on the stormwater, erosion and sediment controls will be part of the Site Environmental Awareness Program that will be incorporated into the site induction program.

Performance Measures

- Control structures constructed and operational prior to earthworks commencing in the nominated area.
- All site cut-off drains unobstructed.
- All major site drains adequately stabilised.
- All controls maintained and functional.
- All stockpiled material adequately stabilised and protected.
- No de-watering stormwater/ground water discharge from the site in a 5 year ARI storm event have a suspended solid content of less than 50mg/L.
- Appropriate parameters for any contaminants of concern (if present) meet the relevant ANZECC (2000) criteria.
- No complaints concerning mud/organic debris on the surrounding public roads to the site.

Monitoring and Reporting

At least weekly, the Bulk Earthworks or Maintenance Subcontractor or nominated Stormwater/ Sediment Control contractors will inspect (and document) the site and, providing particular attention to the following matters:

- Perform daily visual inspection of stormwater diversions and sediment/ erosion control devices ensuring they are operating effectively and at full capacity.
- Maintain erosion and sediment control measures in a functioning condition until all earthwork activities are completed and the site is rehabilitated.
- Devise and implement appropriate remedial measures where any controls or devices are not functioning effectively or are inappropriate.
- Ensure rehabilitated lands have effectively reduced the erosion hazard and initiate upgrading or repair as appropriate.
- The SM will maintain records and comments on the condition of existing erosion and run-off controls (drains, silt fences, catch drains etc.) de-watering procedures and test results, and any site instruction issued to Subcontractors to undertake remedial works.
- Rainfall data will be filed on site by SM and discussed where reports of poor drainage areas occur.
- Water quality parameters meet relevant discharge limits for either re-use on-site or via a controlled discharge.
- All daily inspection reports, environmental incidents and controlled discharge records will be maintained and may be reviewed during any Environmental Audit performed on the site.

Corrective Actions

Non-conformances are to be recorded by way of the System Defects.

The Subcontractor (and EM/ CM/ SM if applicable) shall review and analyse the cause of detected non-conformance and develop a corrective action to prevent recurrence. Details of the non-conformance including any immediate corrective actions undertaken are to be recorded, reviewed and accepted by the CM.

It is the responsibility of the EM to immediately initiate corrective actions following approval. The non-conformance and corrective action must include details of the actions proposed, desired performance target and action close out date. The system defects report should be signed, dated and filed.

All corrective and preventative action taken by the Subcontractor will be carried out by and at the cost of the Subcontractor.

If such corrective and preventative action leads to further non-conformance, any further action shall be subject to approval by the CM in consultation with the EM.