WARRINGAH MALL STORMWATER DEVELOPMENT

CONSTRUCTION MANAGEMENT PLAN

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1. CMP OBJECTIVES

This Construction Management Plan (CMP) relates to the development application for the Construction of stormwater upgrade works for Warringah Mall and watercourse bank stabilisation works DA2008/1742 dated 22 May 2012.

The objectives of this CMP are to identify the risks and establish obligations and controls in order to manage construction traffic and construction activities during the staged completion of the works to maintain access or provide alternative temporary means of access to areas of the affected properties including;

- Warringah Golf Course
- Warringah Mall Shopping centre
- Harrison Manufacturing (75 Old Pittwater Road)

1.1 CORPORATE OBJECTIVES

Westfield Design & Construction Pty Ltd is committed to sustainable development and seeks opportunities for positive construction & environmental outcomes in their projects. The corporate objectives for this CMP are to:

- Avoid or minimise construction & environmental impacts
- Ensure good community relations throughout the development
- Ensure the highest levels of safety, maintaining a safe environment & eliminate regulatory non-compliance
- Exploring & adopting, where appropriate, innovative methods to minimise construction impacts
- Provide for an efficient construction process that is environmentally responsible.

1.2 CONSTRUCTION MANAGEMENT

This plan sets out the construction management principles for the proposed scope of works for the project and includes information on:

- The elements comprising the site
- How the site will be redeveloped
- How Westfield plans to minimise interference to neighbours & operating tenants
- Steps to protect the public during the development
- The proposed staging & sequencing of the development.

The CMP also examines the main construction delivery processes including issues relating to:

- Community relations and communications
- Public access, safety & security
- Pedestrian and construction traffic management
- Proposed staging & programme
- Noise & vibration management
- Waste management
- Stormwater management
- Traffic management

2. SITE LOCATION

Westfield Warringah Mall (previously known as Warringah Mall) is a large indoor/outdoor shopping centre on Sydney's Northern Beaches in the suburb of Brookvale, approximately 15 km from the CBD. Its main tenants include David Jones, Myer, Target, Big W, Woolworths, Coles, Rebel Sport, JB HiFi, Dick Smith Powerhouse and Hoyts Cinema in addition to over 300 specialty stores.

The proposed development comprises :-,

1. An existing shopping centre of approximately 124,000 sq m Gross Lettable Area (GLA) over 3 storeys. The number of existing car spaces is approximately 4500. (incl. open on-grade, undercover and roof top car parking).

Figure 1: Warringah Mall Shopping Centre, courtesy Google Earth

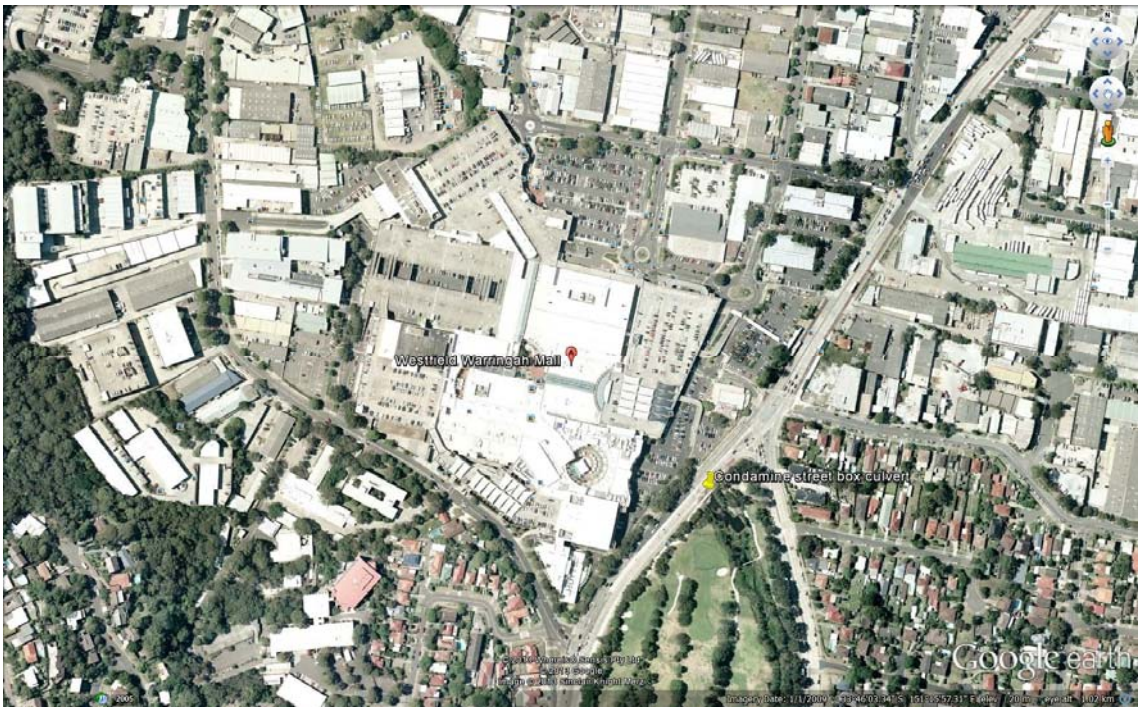


Figure 2: Harrison property, 75 Old Pittwater road, Brookvale, courtesy Google Earth

Figure 3, Condamine Street Crossing and GPT (Warringah Golf Course), courtesy Google Earth

3. SUMMARY OF PROPOSED WORKS

The proposed works comprise an upgrade to the existing stormwater which traverses the site.

Stormwater Augmentation Works:

The Stormwater works comprise a number of different elements which are the subject of development consent DA 2008/1742. The elements include;

- Condamine street crossing
- Box culvert amplification through the Warringah Mall site
- Creek stabilisation works within the Harrison Land located 75 old Pittwater road, Brookvale.

3.1 CONDAMINE STREET CROSSING

Following detailed site investigations, detailed design and preliminary discussions with the Roads and Maritime Services, the initial design concept to install new twin box culverts across Condamine Street was considered to have too great an impact on the traffic flow the subject of the Colston Budd Hunt & Kafes outline traffic management plan dated December 2008. In addition to the impacts on traffic management within the immediate vicinity of the culvert works across Condamine Street, the works would have also significantly impacted upon the operation of the Warringah golf Course and access for players to the 6th Tee during installation of the Twin culverts and subsequent modifications required to the Gross pollutant Trap.

The revised design solution simplifies the construction activities and impact on both the Condamine Street traffic and Warringah Golf Course by enlarging the existing Box culverts beneath Condamine Street. As a result, traffic management measures proposed by the Colston Budd Hunt & Kafes outline traffic management plan dated December 2008 are no longer required.

The proposed enlargement of the Box culverts will require access from within the Warringah Mall carpark. This will be facilitated by removing the existing stormwater mixing chamber roof immediately adjacent to the Condamine street box culvert. Access will also be facilitated via Councils existing Gross pollutant Trap access point on Pittwater road (refer below). It is proposed that materials handling be conducted on either side of the Condamine Street box culvert via these access points.

3.1.1 OPERATIONAL ENVIRONMENT

Works within the Warringah Golf Course site require a number of operational considerations that will be further developed to satisfy the Development Consent prior to issue of the relevant Construction Certificate. These include;

- Appropriately controlled public access to the 6th Tee of Warringah Golf Course
- Establishment of Traffic control access to Pittwater road
- Agreed access for Council to maintain the GPT during construction

3.2 STORMWATER CULVERT AUGMENTATION WORKS WITHIN THE CENTRE:

The works within the Warringah Mall shopping centre include demolition, excavation, shoring and installation of new twin box culverts, connection to existing culverts, realignment of carpark entry and exits, provision of temporary means of pedestrian access, relocation of existing services including High Voltage cabling, fire hydrant and water mains, sewer relocations, gas relocations, power line undergrounding and communications realignment.

In addition, the works are carried out in ground conditions that are highly variable and in many instances immediately adjacent to site boundaries. Appropriate shoring systems have been selected to provide adequate support, including propped and anchored solutions. The excavated material will be removed in accordance with the projects Phase 2 Contamination reports and Acid Sulphate Management plan.

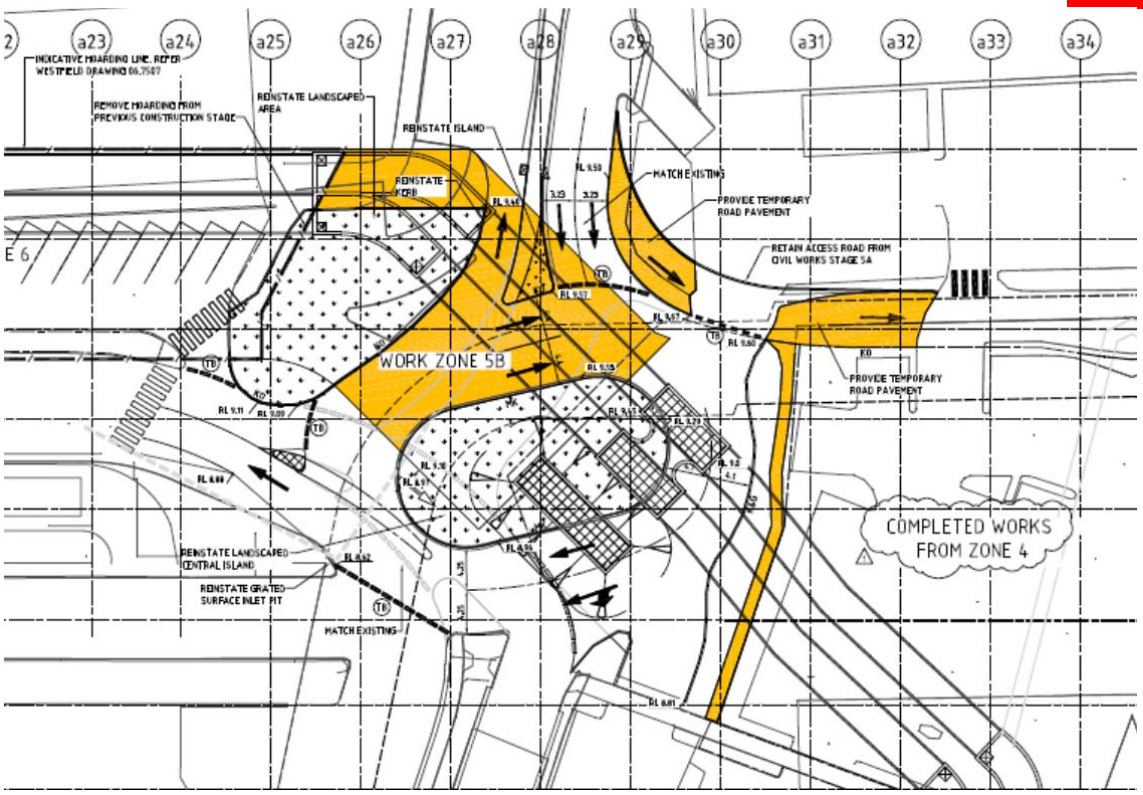
The works are broken up into a number of stages, with materials handling areas being established and relocated as the works progress.

Each stage will require a number of separate Traffic Control Plans to manage the traffic interface with the stormwater works.

3.2.1 OPERATIONAL ENVIRONMENT

The works within the Warringah Mall Shopping centre require a number of operational considerations to be addressed that not only satisfy the development consent, but the constraints of the existing carpark access and egress points and neighbouring properties. This work will require elements of night work to ensure the least disruption possible to the operational environment. These considerations include;

- Customer access points from Green Street, Cross Street, Condamine Street and Dale Street
- Bus access to the Bus stop located adjacent to Target
- Loading dock access to the David Jones loading dock for Best & Less and David Jones
- Loading dock access to the Target loading dock
- Neighbouring Aldi carpark entry
- Relocation of Pedestrian access paths from the Bus stop on Condamine street
- Services diversions and amplifications whilst maintaining operation of the centre.
- Staged carpark closures and reopening
- Reduction in stormwater drainage capacity during realignment and modification to existing culverts.
- Maintenance of access by NSW Fire and Rescue to the Fire Control Room



Example: Re-aligned internal traffic management to accommodate Stormwater Augmentation staging Dale Street

3.3 CREEK STABILISATION WORKS (HARRISON LAND):

The Co-Owners and Harrison Investments Pty Limited have entered into a deed where the Co-owners propose to carry out or procure the carrying out of bank stabilisation works to Brookvale Creek, some of which will be carried out on the Harrison Land.

The works include the following;

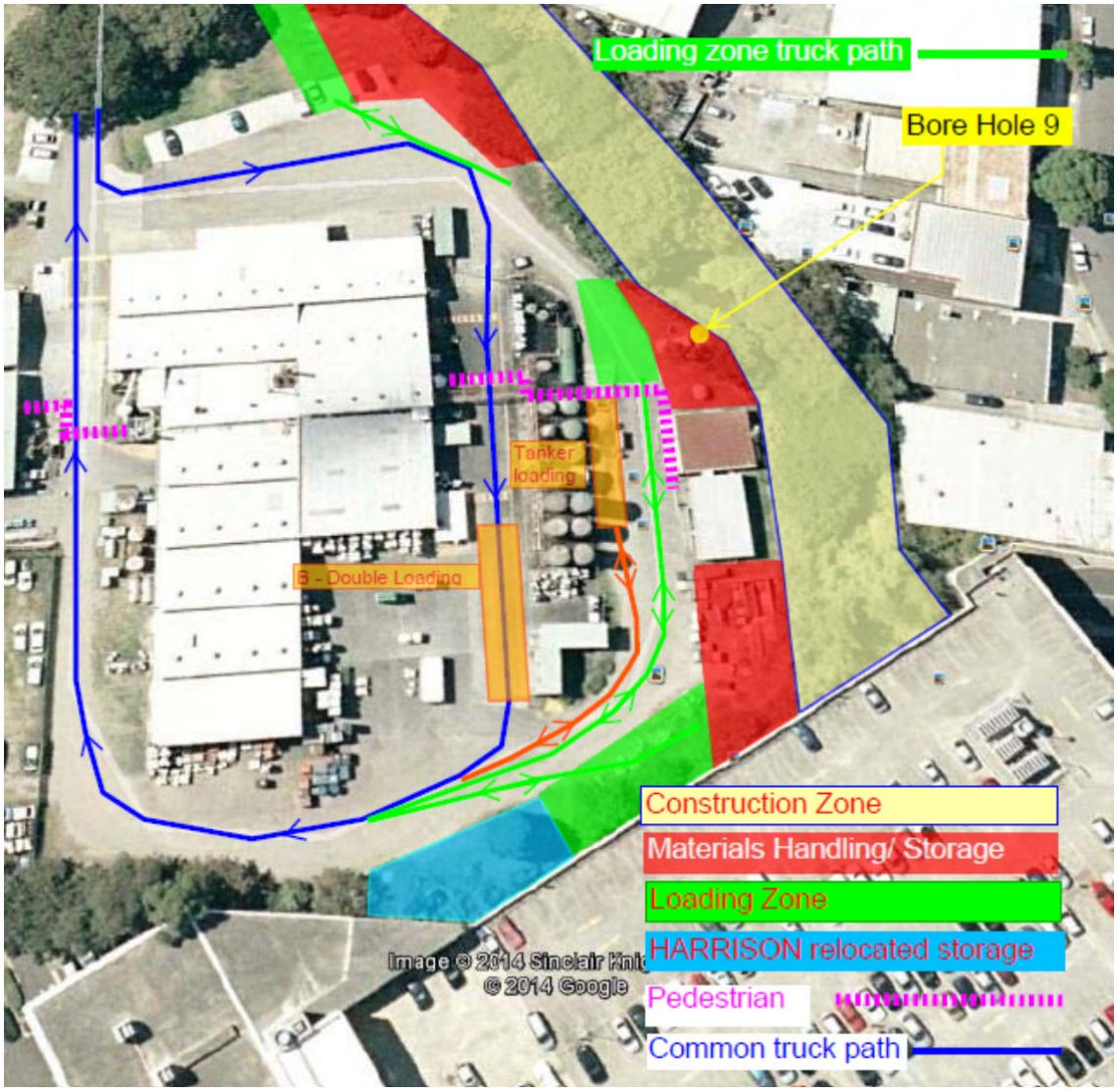
- Geotechnical and contamination investigations along the creek alignment
- Establishment of OHS plan, environmental management plan and traffic management plan.
- Establishment of construction zones within the Harrison Land to undertake the works
- Temporary diversion of creek flows and establishment of environmental controls
- Installation of open concrete channel and rock armouring in accordance with the design drawings
- Planting and establishment of riparian zone
- Ongoing maintenance for the Defects liability period
- Site demobilisation, including make-good

3.3.1 OPERATIONAL ENVIRONMENT

The works within the Harrison Land require a number of operational considerations that will be addressed during development of the Construction traffic management plan required of Condition of consent 23. These considerations include;

- Col Crawford car storage on the Harrison Land and construction activities that may affect car storage locations
- After hours car movements by Col Crawford between the hours of 8.00pm and 5.00am
- B-Double truck movements, including swept paths
- B-Double loading area for Harrison Activities
- Harrison tanker deliveries and unloading
- Harrison Forklift movements and loading of containers
- Harrison Pedestrian movement
- Shaker grid location to not affect Harrison Delivery vehicles
- Maintaining operation of Harrison meal room
- No on-site parking for construction personnel (with exception 2 cars for First aid and Supervision)
- Temporary site accommodation for Construction workforce including meal shed and ablutions.

Indicative construction zones, loading zones, shared delivery paths, pedestrian movement and Harrison activities



4. COMMUNITY RELATIONS

Westfield will appoint a member of staff to the role of Community Liaison Officer as the point of contact for external parties with project related enquiries or concerns. A 24 hour contact line will be established for this purpose.

4.1 NEIGHBOURING STAKEHOLDERS

The following nearby stakeholders have been identified as neighbours:

- Council land, Lot 30 DP 204107
- The Harrison Property
- Warringah Golf Course
- All occupiers of the properties within a 100m radius of the proposed construction site.

4.2 AUTHORITIES, COUNCILS & PRIVATE SERVICES PROVIDERS

The following Authorities & private service providers will also need to be consulted throughout the development. WDC will ensure that the appropriate consultation processes are followed:

- Warringah Shire Council
- Steve Watson and Partners - PCA
- Sydney Water
- Roads and Maritime Services
- Ausgrid
- Telstra
- Optus
- Jemina
- Department of Primary Industries, Office of Water

5. PROJECT SEQUENCING & METHODOLOGY

5.1 STAGING

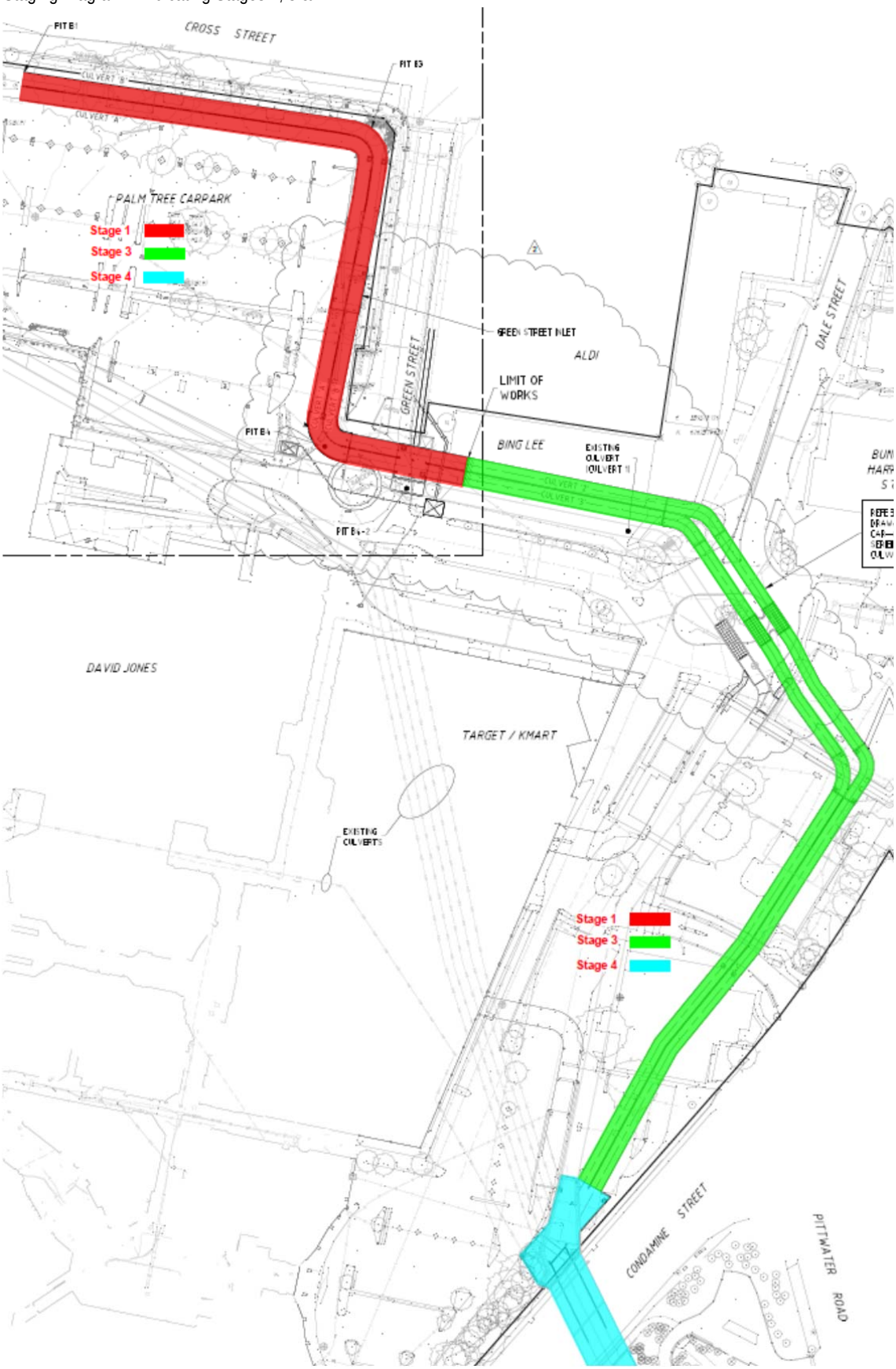
The works are planned to be undertaken in a staged manor to cause the least disruption to the varying operational environments, access to carparking and interface with existing stormwater assets. In many instances within each stage of the works, the stages are broken into further phases or areas to align with site constraints for access to carparking, relocation of customer access points, bus interface, connection to existing infrastructure, diversion of other assets such as HV, sewer, communications, water and fire hydrants and the like.

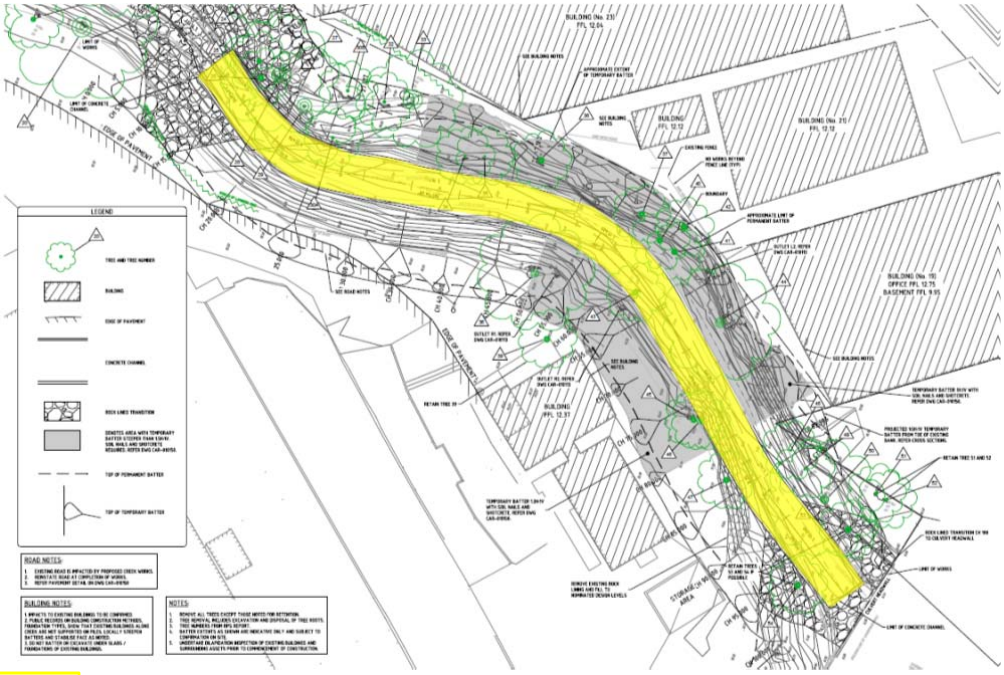
The stages are broken into the following;

Stage 1 – Palm tree Carpark
Stage 2 – Creek Stabilisation
Stage 3 – Downstream
Stage 4 - Condamine Street

For further details on timing, refer to the planning section of the CMP

Staging Diagram – Indicating Stages 1, 3 & 4





Stage 2 – Creek Stabilisation works

5.2 SITE ESTABLISHMENT:

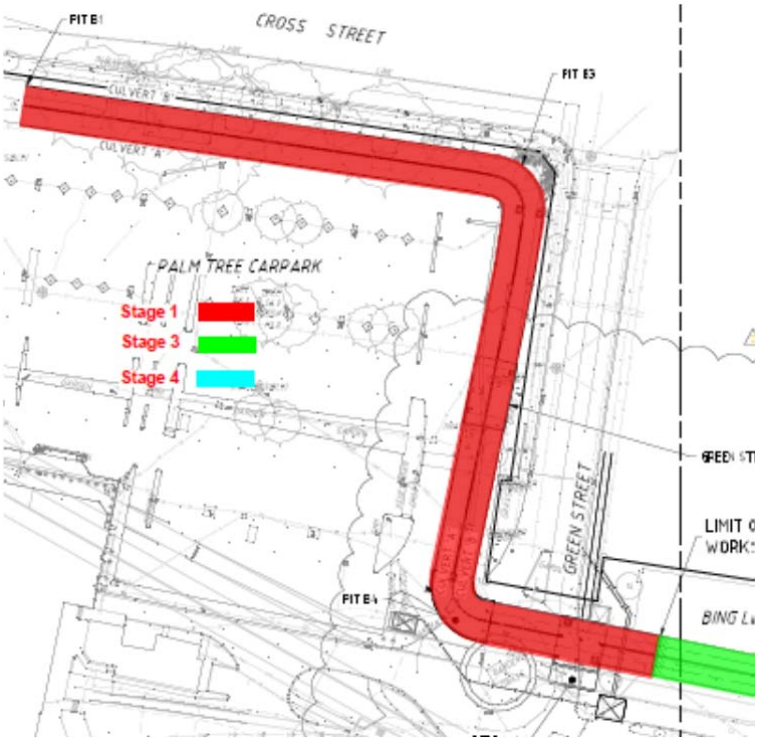
The scope of the establishment of the site prior to commencement within the relevant stage or area consists of:

- Undertake dilapidation report
- Erecting "A Class" fencing to secure the site, inclusive of access gates
- Implementing the approved Traffic and pedestrian management plan, install barriers, temp signage and controls.
- Clearing and levelling the construction zones ready to accept trucks and equipment
- Installing temporary site accommodation
- Implementing required measures of the Environmental and Biodiversity management plans

5.3 STAGE 1 – PALM TREE CARPARK

5.3.1 PALM TREE CARPARK : SCOPE

- Demolish existing carpark areas and decommission parking controls
- High Voltage feeder cable redirection and protection
- Gas relocation
- Demolition and excavation to Pit B1
- Installation of foundation piles
- Installation of the shoring wall system
- Excavation and removal of material in accordance with the Phase 2 contamination assessment
- Management of soils in accordance with the Acid Sulphate Management plan
- Concrete works, installation of precast culverts, backfill.
- Reinstate existing traffic arrangements



5.3.2 PALM TREE CARPARK: METHODOLOGY

- Works will commence concurrently along the entire alignment of stage 1 to undertake the required services relocations and facilitate commencement of the foundation piling rigs.
- Pit B1 requires the demolition of adjoining structure and temporary support of the existing secant wall along the site boundary with Cross Street. This will require installation of temporary ground anchors. The pit B1 works also require relocation of the 450mm dia sewer. The 450mm dia sewer has been relocated as part of early works
- The shoring wall system requires the diversion of existing High voltage cabling at the green street roundabout. Once eth high voltage cables are relocated, eth shoring wall system can be installed to support the excavation
- Foundation piles will be installed along with the shoring wall system along the alignment of the culvert.
- Soil will be excavated and carted from site. Backfill material validated by our environmental consultant will be stockpiled on site.
- Following excavation in stages, ground preparation will be undertaken along with installation of the Reinforced concrete slab
- Precast concrete units will be delivered to site via semi-trailer and craned into position following which backfill and compaction operations can be completed.
- The bitumen pavement will be re-instated and line marked

5.4 STAGE 2 - CREEK STABILISATION

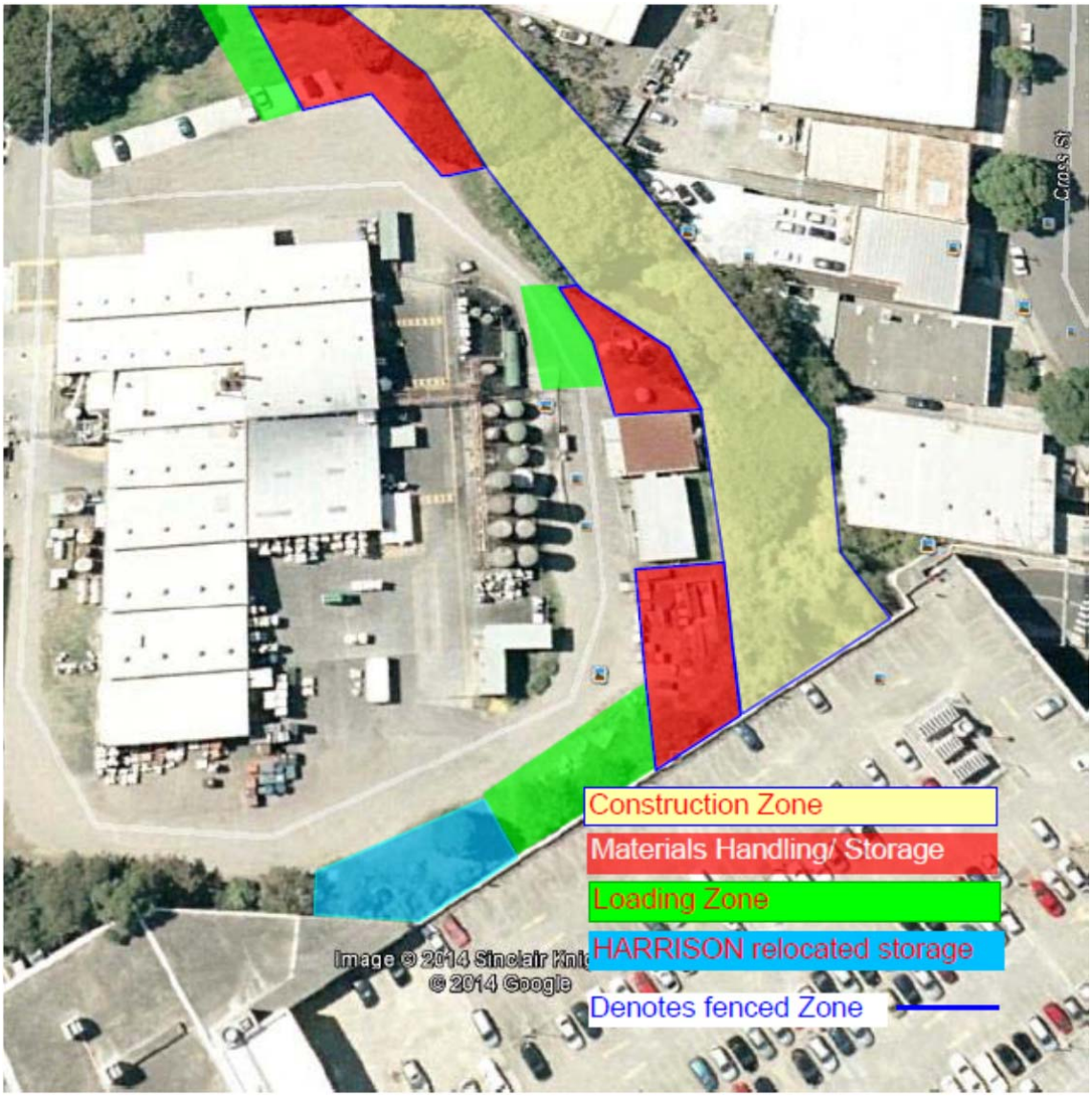
5.4.1 CREEK SITE ESTABLISHMENT

Key

Fencing/ works Zone

Construction Zone

Delivery zones



5.4.2 CREEK STABILISATION: SCOPE

- Construct coffer dam and implement creek flow management measures
- Clearing of trees and vegetation
- Excavating to required contours
- Subgrade preparation
- Warringah Mall parapet modifications
- Installation of precast culverts
- Backfill and grading
- Rock armouring and scour protection
- Revegetation

5.4.3 CREEK STABILISATION: METHODOLOGY

Following establishment of the site the works will be completed in the following sequence;

- Construction of coffer dam and implementation of creek flow measures which consists of pumps moving water downstream from the coffer dam via temporary pipes to the existing culvert beneath the Warringah Mall site. Pumps will be sized to deal with normal creek flows, with major rain events resulting in water levels overflowing the coffer dam and running along the natural watercourse (under construction).
- All trees and shrubs will be cleared and removed from the site
- The watercourse will be excavated to the bulk reduced levels as documented
- The subgrade will be prepared in accordance with the geotechnical engineers requirements prior to placement of the concrete channel
- The concrete channel will be lifted in in stages commencing from the downstream connection to the culvert at the Warringah mall boundary and working upstream. Timing will be largely dictated by the ability to deliver the culvert concrete elements without affecting the operation of the Harrison Manufacturing activities. For this reason, the storage areas indicated are required to allow siting of mobile cranes and storage of the culverts and parking of semi-trailers on delivery.
- Subject to geotechnical advice immediately adjacent to the creek alignment, mobile crane encroachment outside these zones may be required to safely install the concrete culverts, this will only be undertaken following detailed consultation with Harrison and agreeing timing to negate the impact on Harrison activities.
- Following culvert installation backfill operations will commence, along with installation of rock scour protection, rock armouring and rock groynes along the alignment of the culvert.
- Landscape planting and mulch will be completed
- The Coffer Dam will be decommissioned and removed with planting reinstated

Management measures

- Dust suppression measures will be implemented as required, to minimize nuisance to surrounding stakeholders.
- An environmental complaints register will be maintained and appropriate close out responses implemented
- Internal Environmental auditing will be carried out on a weekly basis, with close out items verified during scheduled site walks.
- The project ecologist will attend site on a weekly basis to inspect and provide recommendations as required
- Geotechnical and site contamination investigations will be undertaken on an as required basis following any identification of site contaminants or adverse geotechnical conditions.
- The civil engineer will conduct minimum weekly site investigations of the works.

5.4.4 SITE DEMOBILISATION

Following completion of the creek stabilisation works the following works will be undertaken to demobilise from the site;

- Removal of coffer dam and temporary pumps to restore creek flow to the new concrete culvert. Following removal of the coffer dam, landscape planting will be reinstated within this area
- Sheds and fencing will be removed from the site.
- Areas not within the landscape zone will be left with graded roadbase. Any existing structures within these zones will not be reinstated.
- Traffic management measures will be removed on completion of final activities.

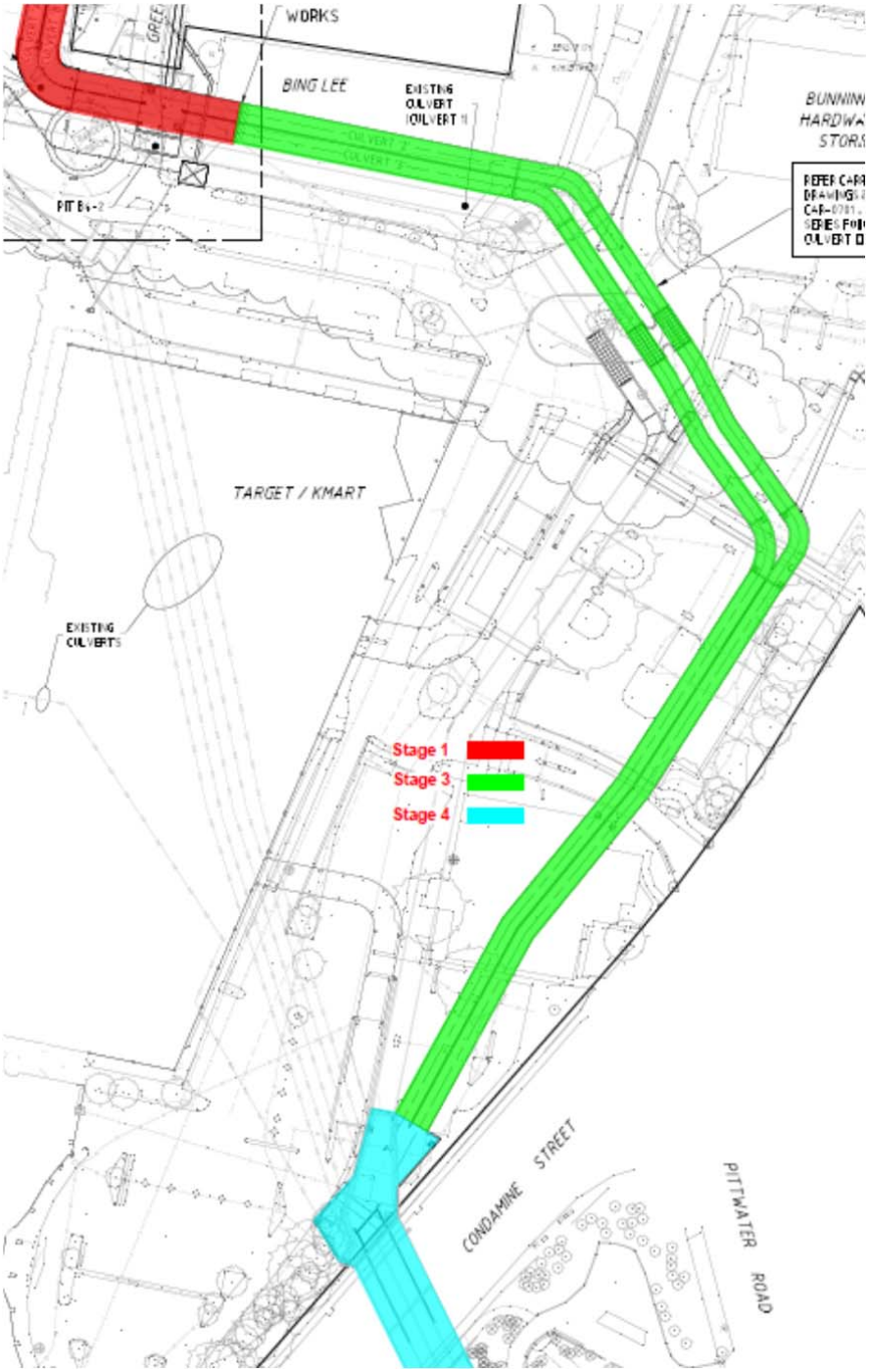
5.5 STAGE 3 – STORMWATER WORKS WITHIN CENTRE

5.5.1 STAGE 3: SCOPE

- Demolish existing carpark areas and decommission parking controls
- Decommissioning of kiosk Substation adjacent to the HCF building
- Demolition of the HCF building
- Re-diversion of 1200mm dia Narrabeen Submain sewer traversing the site
- High Voltage feeder cable redirection and protection
- Communications re-diversions
- Relocation of fire hydrant main and Water Main
- Demolition, re-diversion and connection to existing culverts at Pit C6
- Installation of foundation piles
- Installation of the shoring wall system
- Dewatering of the site
- Excavation and removal of material in accordance with the Phase 2 contamination assessment
- Management of soils in accordance with the Acid Sulphate Management plan
- Concrete works, installation of precast culverts, backfill.
- Implementation of staged closure and re-establishment of Carpark entry and exit points
- Maintenance of Bus stop provision to the Centre
- Maintain provision of temporary pedestrian access routes

5.5.2 STAGE 3: METHODOLOGY

- The works commence from Pit C6 and work upstream to Pit B4-2 being the final connection to the Stormwater system. The construction methodology is similar to Stage 1 however; there is a greater emphasis on traffic control and staging of the works to ensure access points to the centre are maintained to an acceptable level.
- The works require concurrent installation of the 1200dia sewer that is being relocated along the Condamine street alignment. The sewer traverses beneath Pit C6 and will require to be installed in a staged manor to ensure the operational capacity required of the stormwater system is maintained.
- Whilst works are being undertaken surrounding Pit C6 the existing HCF building will be demolished in preparation of extending the stormwater culvert through this area.
- Access from Condamine Street immediately adjacent to the HCF building will be temporarily closed to allow installation of both the Sewer and Stormwater and will be reinstated when activities are completed.
- As works progress towards the existing bus stop on Condamine street, the Bus Stop will require to be relocated further south along with pedestrian access paths to the centre. Consultation on the relocated bus stop will occur with Sydney Buses.
- As works progress towards Pit B4-2, the existing round-about accessing the target carpark, target loading dock and bus stop will be realigned to allow staged installation of the culverts through this area whilst maintaining access. Night works will be required.
- Final connection occurs parallel to the Bing lee Tenancy at Pit B4-2. Once connection occurs the stormwater culvert will be operational

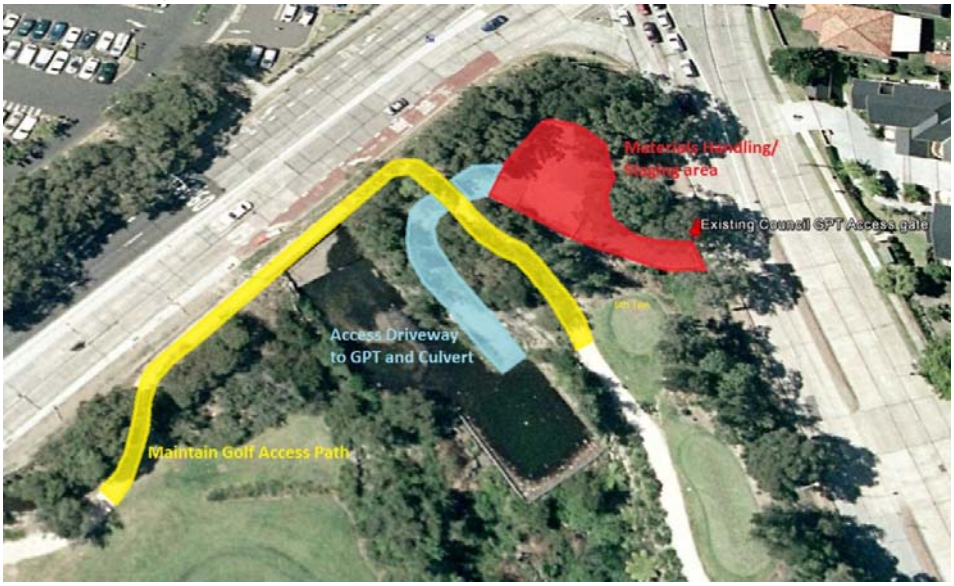

WORKS
BING LEE
EXISTING
CULVERT
TARGET / KMART
EXISTING
CULVERTS
Stage 1
Stage 3
Stage 4
CONDAMINE STREET
PITTWATER ROAD

5.6 STAGE 4 – CONDAMINE STREET CROSSING

5.6.1 STAGE 4 CONDAMINE STREET: ESTABLISHMENT

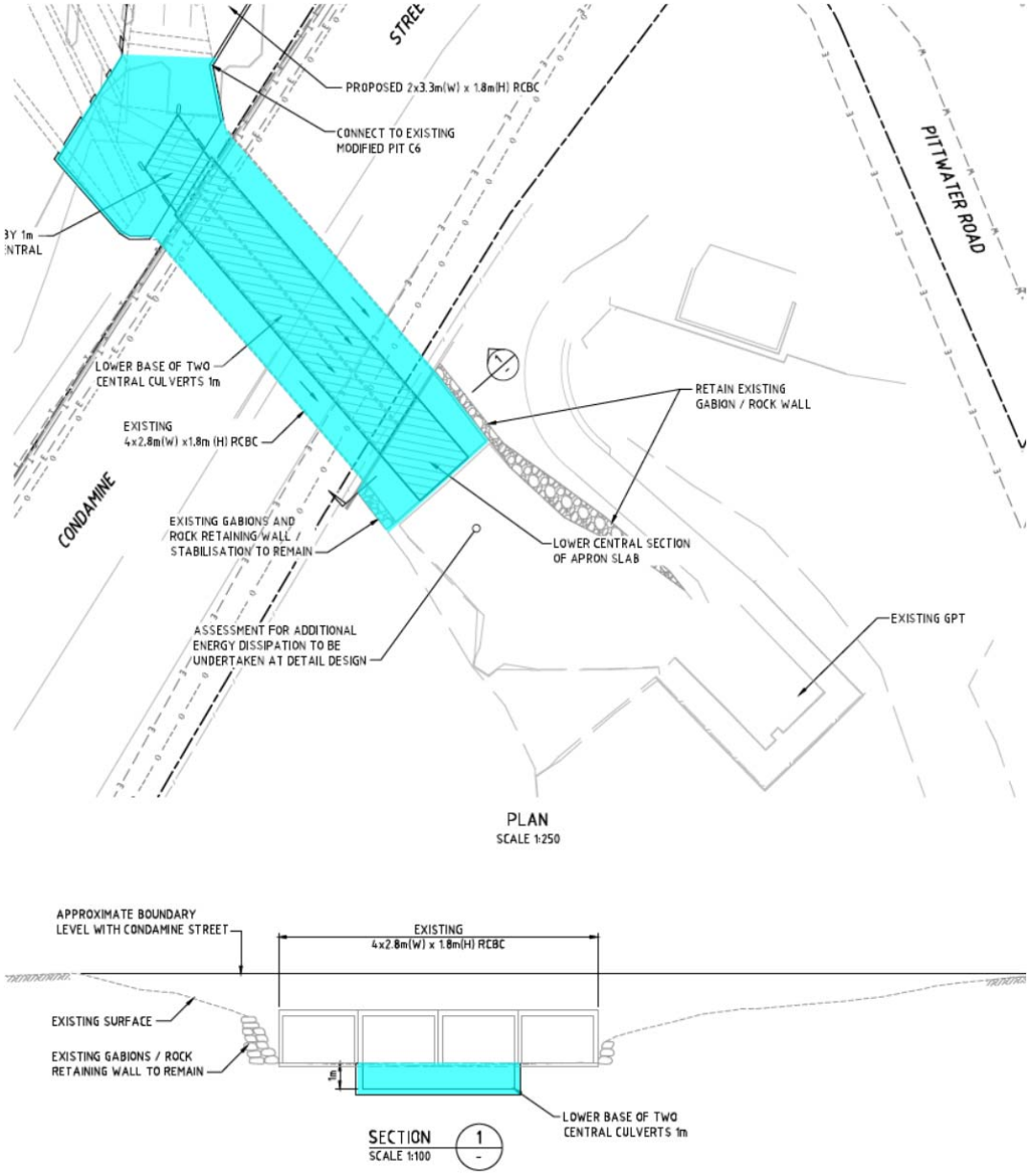
Site establishment will consist of the following within the Warringah Golf Course

- Erect Fencing and gates to the Staging/ materials handling compound and install fencing around the GPT to prevent access by the public during the works.
- Provide pedestrian management measures to ensure golf patrons have priority during the works
- Establish Site accommodation within the staging area
- Maintain the access driveway for council maintenance of GPT and to provide delivery path for removal of excavated/ demolished materials and delivery of required construction materials
- Establish access path within GPT to Culvert



5.6.2 STAGE 4 CONDAMINE STREET: SCOPE

- Undertake dilapidation report
- Create access points on both sides of the Condamine street culvert
- Temporary stormwater diversion wall to affected culverts
- Modification to culvert Apron within GPT
- Temporary support and propping to existing box culvert
- Staged demolition and reconstruction of reinforced concrete lowered culvert elements
- Removal of Temporary support and diversion walls
- Clean up and demobilise



5.6.3 Stage 4 Condamine Street: Methodology

- Construction of temporary diversion walls upstream within the mixing culvert to prevent stormwater entering the culverts that will be modified.
- Construction of a temporary access road from the GPT driveway to the entry of the box culvert to facilitate materials handling
- Demolition of the concrete apron utilising excavators with mounted hydraulic hammers and excavation to reduced levels.
- Installation of mechanical ventilation systems to provide a safe air environment during the works
- Reconstruction of the modified apron to designed levels including re-compaction and preparation of subgrade in accordance with the geotechnical engineers advice
- Installation of temporary propping within the box culvert
- Staged demolition of the existing box culvert in accordance with the Civil Engineering drawings including excavation to reduced levels and preparation of subgrade for construction of the lowered culvert sections. Works will commence from the downstream apron and progress west towards the Warringah Mall mixing chamber.
- Staged removal of temporary propping

- Following completion of the concrete works, all temporary supports, diversion walls and temporary access paths will be removed and made good.

5.6.4 STAGE 4 CONDAMINE STREET: SITE DEMOBILISATION

- Sheds and fencing will be removed from the site.
- Areas will be cleaned and sediment controls will be removed.
- Traffic management measures will be removed on completion of final activities.

5.7 CONSTRUCTION STAGING: KEY LEGISLATION

Key legislation relating to civil works for the project:

- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011
- Protection of environment operations Act 1997 and Regulation
- Contamination land management Act 1997 and Regulation
- Managing Noise and Preventing Hearing Loss at Work Code of Practice 2011
- Excavation and Demolition codes of practice
- Managing risks of plant in the workplace code of practice

5.8 CONSTRUCTION STAGING: SUPPORTING INFORMATION

For further details regarding the Environmental, Work Health & Safety Controls that will be implemented during the works, refer to the Biodiversity management plan, Environmental management plan and Work Health & Safety Management Plan

For an expected timeline of the works, refer to the construction programme located in Appendix 1.

6. PROJECT TIMELINE

6.1 OVERALL TIMELINE

It is expected that the overall project construction timeline for the works to be approximately 24 months. Obviously rain events can have a significant impact upon the construction timeline depending on the timing of the works. Start dates are currently:

- Stage 1 - Palm Tree Carpark: Jan 2015 – June 2015
- Stage 2 - Creek Stabilisation : June 2015 – November 2015
- Stage 3 – Downstream: June 2015 – August 2016
- Stage 4 – Condamine Crossing June 2015 – September 2016

A summary programme of the development can be found in Appendix 1

6.2 PROGRAM WORKS

Below is a table outlining the expected durations:

CONSTRUCTION ELEMENT	EXPECTED COMMENCEMENT DATE
Stage 1 – Palm Tree Carpark	
Site Establishment	12.01.2015
Construction	30.06.2015
Green street crossing	01.05.2015
Site Demobilisation	30.11.2015
Stage 2 - Creek Stabilisation	
Site establishment	01.06.2015
Construction	30.11.2015
Site landscaping	15.10.2015
Site demobilisation	30.11.2015
Stage 3 – Downstream	
Site Establishment	01.06.2015
Construction Area1	01.06.2015
Construction Area 2	01.10.2015
Construction Area 3	01.12.2015
Construction Area 4	03.06.2016

Construction Area 5	01.05.2016
Construction Area 6	01.07.2016
Site Demobilisation	15.09.2016
Stage 4 – Condamine Street	
Site Establishment	01.06.2015
Construction	15.06.2015
Site Demobilisation	15.10.2015

7. SITE MANAGEMENT

7.1 HOURS OF CONSTRUCTION

The proposed hours of construction for the main project are:

Monday - Friday:	7.00am – 7.00pm
Saturday:	7.00am – 5.00pm (Subject to the following); I. All work (including the operation of cranes) carried out after 1pm on Saturday is not to exceed the noise affected Rating Background level (RBL) plus 5dB, measured in accordance with the interim Construction Noise Guideline dated July 2009 prepared by the NSW Department of Environment and Climate Change. II. No concrete pumps are to be operated after 1.00pm III. Cranes are only to operate until 3pm.
Sundays/Public Holidays:	Works subject to Out Of Hours permit request to Council.

If 'Out of Hours Works" are required WDC will follow the Warringah Council process in obtaining the relevant "Out of Hours" permits.

7.2 PROJECT OFFICE

The Westfield Design & Construction Office will be operating from within the centre and will oversee all activities conducted to complete the works.

7.3 KEY PROJECT PERSONNEL

The list of key consultants for the Warringah Mall Project is:

CONSULTANT	COMPANY	TEAM LEADER	CONTACT No
Concept Architect	WDC	Liann Lim	(02) 9350 7000
Design Architect	WDC	Glen Pidgeon	(02) 9358 7208
Structural Engineer	Hyder Consulting	Martin O'Shea	(02) 3371 6677
Civil Engineer - Creek	Cardno	Nathan Evans Scott Brisbin	(02) 4965 4555
Project Ecologist	RPS	Laura Worthington	(02) 8270 8300
PCA Consultant	SWP	Steve Watson	(02) 9283 6555
Traffic Engineering	Parking and Traffic Consultants	Andrew Morse	(02) 8920 0800

7.4 SITE AMENITIES & ABLUTION FACILITIES

Westfield Design & Construction will be ensuring that the project has appropriates site amenities & ablution facilities. All facilities will at a minimum adhere to the Workcover Code of Practice for "Amenities for Construction Work".

7.5 NOISE & VIBRATION MANAGEMENT

A full acoustic & vibration management plan will be prepared and appended to this plan.

7.5.1 NOISE & VIBRATION OBJECTIVES

The Westfield Design & Construction objectives with regards to noise & vibrations are:

- Minimise the generation of noise and vibration from construction activities on site, and the subsequent impact on surrounding residents, businesses and workers
- Manage construction activities in accordance with the Environmental Management plan
- Comply with the EPA requirements of the Interim Construction noise guidelines dated July 2009 and Warringah Council
- Establish and maintain good relations with the local community and occupiers and operators of neighbouring sites.

7.5.2 NOISE & VIBRATION: KEY LEGISLATION

Key legislation relating to noise and vibration management for the site is:

- Environmental Protection Authority NSW
- Interim Construction noise guidelines dated July 2009
- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011

7.5.3 NOISE & VIBRATION: KEY MANAGEMENT ISSUES

Noise and vibration from all works will be managed so as to minimise effects on stakeholders.

Advice given within Australian Standard AS2436-19 – Guide to noise control on construction, maintenance and demolition sites will be applied.

If in the event of noise breach during construction, mitigation measures to be employed will potentially include:

- Stop the offending activity
- Reduce the number of machines
- Use different equipment
- Reschedule the works to a time when the noise will not cause complaint
- Apply noise absorption measures (screens, noise control kits)
- Use alternative methods

If the noise levels are determined to be above the limit, ANE will give advice on mitigation measures to be employed.

Issue	Management Strategy	Monitoring and Reporting
GENERAL		
Plant may cause excessive noise.	Plant and equipment to be fitted with standard pollution control devices. Copies of compliance certificates to be supplied. Plant and equipment meet Clean Air (Plant and Equipment) Regulation 1997req. Advice given within AS 2436-19 – Guide to noise control on construction, maintenance and demolition sites will be applied.	Plant & Equipment Register to be kept detailing approved equipment, noise compliance certificates and relevant restrictions/ conditions of use (if any).
Cranes may cause excessive noise.	Cranes and will comply with the Code	Check compliance on a monthly basis.

7.5.4 Noise & Vibration: Performance Measures

Performance relating to the Operating Hours, Noise and Vibration Management Plan will be measured by the number of complaints received from adjoining operations or Statutory Authorities.

Any breaches of "The Code" will be investigated and corrective action taken in accordance with Westfield's EOH&S Management procedures.

7.5.5 Noise & Vibration: Escalation Procedures

WDC would expect that with the management measures to be employed we will eliminate complaints before they arise. However, if there is a complaint please refer them to the Westfield Warringah Mall Centre Management.

7.6 Traffic Management

7.6.1 Traffic Management: Objectives

Individual traffic management plans (TMP) will be prepared for each stage by Parking & Traffic Consultants. Where required by the conditions of consent these plans will be submitted for approval to the certifying authority and or, where required, submitted to council's traffic committee and/ or RMS for consideration and approval.

The plans will be consistent with the methodologies and timings required by other areas of this CMP and follow the below key objectives;

- Maintain traffic capacities commensurate with the available carparking in the affected area
- Maintain adequate access to businesses adjacent to the works at all times during construction
- Maintain access for delivery vehicles
- Ensure continuous safety of all public vehicular activities, pedestrians, site construction activities and site construction personnel
- Provide construction access driveways where possible to allow for entry and exit without reversing
- Maintain access to bus stops for both Sydney Buses and Forest Coach Lines alongwith pedestrian access routes

- Maintain access to the Gross pollutant Trap for Council staff to carry out general maintenance.

7.6.2 TRAFFIC MANAGEMENT: SHOPPING CENTRE ACCESS

During the stormwater augmentation works the existing pedestrian access links will be either closed or redirected to allow the works to be undertaken. Adequate signage and customer communication will be undertaken alongwith the provision of required staff or traffic management personnel to direct pedestrians to altered access points.

Vehicular access will be altered as required to suit the construction methodology. All required signage will be implemented in accordance with the traffic management plans.

7.7 DILAPIDATION REPORTS

Full Dilapidation Reports will be prepared by an independent consultant prior to commencing works. The key objectives are:

- Ensure that the existing conditions of the Harrison Land is not degraded by the development
- Ensure that the existing conditions of the neighbours property is not degraded by the development
- Ensure that a detailed snapshot of the conditions of all properties & public domain areas before commencement of the development
- Ensure the existing RMS bridge Asset and Condamine street is not degraded by the development
- Ensure the existing gross pollutant trap is not degraded by the development.

7.8 GEOTECHNICAL INVESTIGATIONS

A full geotechnical investigation of the geology surrounding the site has been undertaken by Douglas Partners.

8. ENVIRONMENT, WORK HEALTH & SAFETY (EH&S)

The Westfield Design & Construction project specific Environment, Work Health and Safety Management Plan has been developed to provide a standardised approach to safety management on Westfield Warringah Mall redevelopment.

It sets out the project specific environmental health & safety resources, responsibilities and procedures or practices for the project.

8.1 EH&S: DOCUMENT REVIEW, REVISION & ISSUE

The success of this Site Specific Environment, Health and Safety Plan rests with its implementation. Implementation involves management and all employees at Westfield's to carry out their duties and responsibilities as specified in the Site Specific Environment, Health and Safety Plan. If this does not occur, the procedures in the Site Specific Environment, Health and Safety Plan are not a true representation of the operations of Westfield.

To ensure the effectiveness of the Site Specific Environment, Health and Safety Plan, Westfield will carry out a monthly review of the whole Site Specific Environment, Health and Safety Plan. Separate procedure reviews may be carried out on a more frequent basis.

The monthly review of the Site Specific Environment, Health and Safety Plan will be carried out by management and discussed at management meetings, subcontractor coordination meetings and toolbox meetings. Each procedure in the Site Specific Environment, Health and Safety Plan will be reviewed to measure its effectiveness within Westfield. It will also be reviewed to ensure that the procedure is being carried out in practice.

8.2 EH&S: OBJECTIVES

The key objectives of the Site Specific Environment, Health and Safety Plan are:

- To ensure all parties involved in the construction process receive Occupational Health & Safety information regarding the project.
- To ensure that stakeholders in the project are involved in appropriate consultation and communication regarding Occupational Health & Safety matters on the project.
- To ensure that stakeholders in the project are involved in appropriate consultation and communication regarding Occupational Health & Safety matters on the project.

8.3 EH&S: KEY ISSUES

The following are key issues that WDC will be focussing on during the construction process. All subcontractors activities will be closely monitored with the respect to the following:

- Plant and equipment
- Pedestrian and traffic management
- Complying with existing Harrison Manufacturing WHS requirements
- Hazardous chemicals within the existing Harrison property
- Hazardous Materials
- Electrical hazards
- Workplace violence & bullying
- The use of power tools
- Manual handling issues

8.4 FIRST AID

A qualified first aider will be present onsite at all times that the site is operational. This person will be on call at all times in the case of an emergency and will have the appropriate facilities as required. It is worth noting that this qualified first aider does not replace the need for the emergency services in incidents deemed as serious.

8.5 EMERGENCY SERVICES

In case of an emergency the following emergency numbers are contactable. For the full incident response plan, refer to the Site Specific Environment, Work Health & Safety Management Plan for the Westfield Warringah Mall redevelopment.

SERVICE	EMERGENCY NUMBER
Emergency Services	000
Police	000
Fire Brigade	000
NSW Ambulance Services	000
Manly Public Hospital	(02) 9976 9611
Warringah Council	(02) 9942 2111
Dept. of Primary Industries Office of Water	(02) 8838 7547
Sydney Water	13 20 90
Jemina (Gas)	1300 137 078
Energy Australia	13 13 88
Poisons Information Centre	13 11 26
Dial Before You Dig	11 00

In the event of an evacuation, the muster point & evacuation process can be found in the Site Specific Environment, Work Health & Safety Management Plan

WDC Emergency Contacts & Response

In the event of an emergency, the following WDC personnel can be contacted 24 hours a day, 7 days a week:

POSITION	TEAM MEMBER	CONTACT No
Site Manager	Gerard Mangos	0417 708 665
Project Manager	Matthew Fisk	0404 812 143
Project Civil Engineer	Declan O'Brien	0420 206 788
Risk Management Coordinator	Simon Lyster	0417 427 641

9. ENVIRONMENTAL MANAGEMENT

9.1 ENVIRONMENTAL MANAGEMENT: OBJECTIVES

An Environmental Management Plan has been prepared as required by the Development consent and in accordance with this CMP by Cardno. This report is consistent with the methodologies and timings that the project requires. The key objectives are;

- Comply will all local, State & Federal environmental legislation, codes & guidelines
- Satisfying the requirements of ISO14001 Environmental Management Systems
- Proactively Identify & manage environmental risks in accordance with the Environmental Management plan including ;
  - the Biodiversity Management Plan;
  - the Vegetation Management Plan;
  - the Soil and Water Management plan
- Adoption of best practice environmental management procedures
- Comply with all requirements of the Project Ecologist to ensure satisfaction of eth relevant conditions of consent.

9.2 ENVIRONMENTAL MANAGEMENT: KEY ISSUES

The following key issues have been addressed in the Environmental Management Plan:

- Threatened Species management
- Air & Dust Management
- Spoil Removal & Sediment Control
- Contaminated Soil & Groundwater Management
- Acid Sulphate soil management
- Storm Event and Stormwater Control
- Chemical Spillage
- Waste Management

9.3 ENVIRONMENTAL MANAGEMENT: HAZARDOUS MATERIALS

- Complying will all local, state & federal environmental legislation, codes & guidelines
- Satisfying the requirements of ISO14001 Environmental Management Systems
- Proactively Identify & manage environmental risks
- Adoption best practice environmental management procedure

9.4 EMERGENCY CONTACTS & RESPONSE

In the event of an emergency, the following WDC personnel can be contacted 24 hours a day, 7 days a week:

POSITION	TEAM MEMBER	CONTACT No
Site Manager	Gerard Mangos	0417 708 665
Project Manager	Matthew Fisk	0404 812 143
Project Civil Engineer	Declan O'Brien	0420 206 788
Risk Management Coordinator	Simon Lyster	0417 427 641

9.5 ENVIRONMENTAL MANAGEMENT: CONTROL MEASURES

The following Environmental Control Devices will be established at the commencement of work, then maintained by WDC and its relevant subcontractors during the course of the works:

- Mandatory covering of soil loads leaving the site
- Silt Fence and sediment controls installed as required
- Silt Socks in existing Kerb & Channel as required
- Stabilized Entry-Exits will be provided for site access (rock approaches & rumble grid/strip)
- Dust suppression measures will be implemented as required, to minimize nuisance to surrounding stakeholders.
- An environmental complaints register will be maintained and appropriate close out responses implemented
- Internal Environmental auditing will be carried out on a weekly basis, with close out items verified during scheduled site walks.

APPENDICES

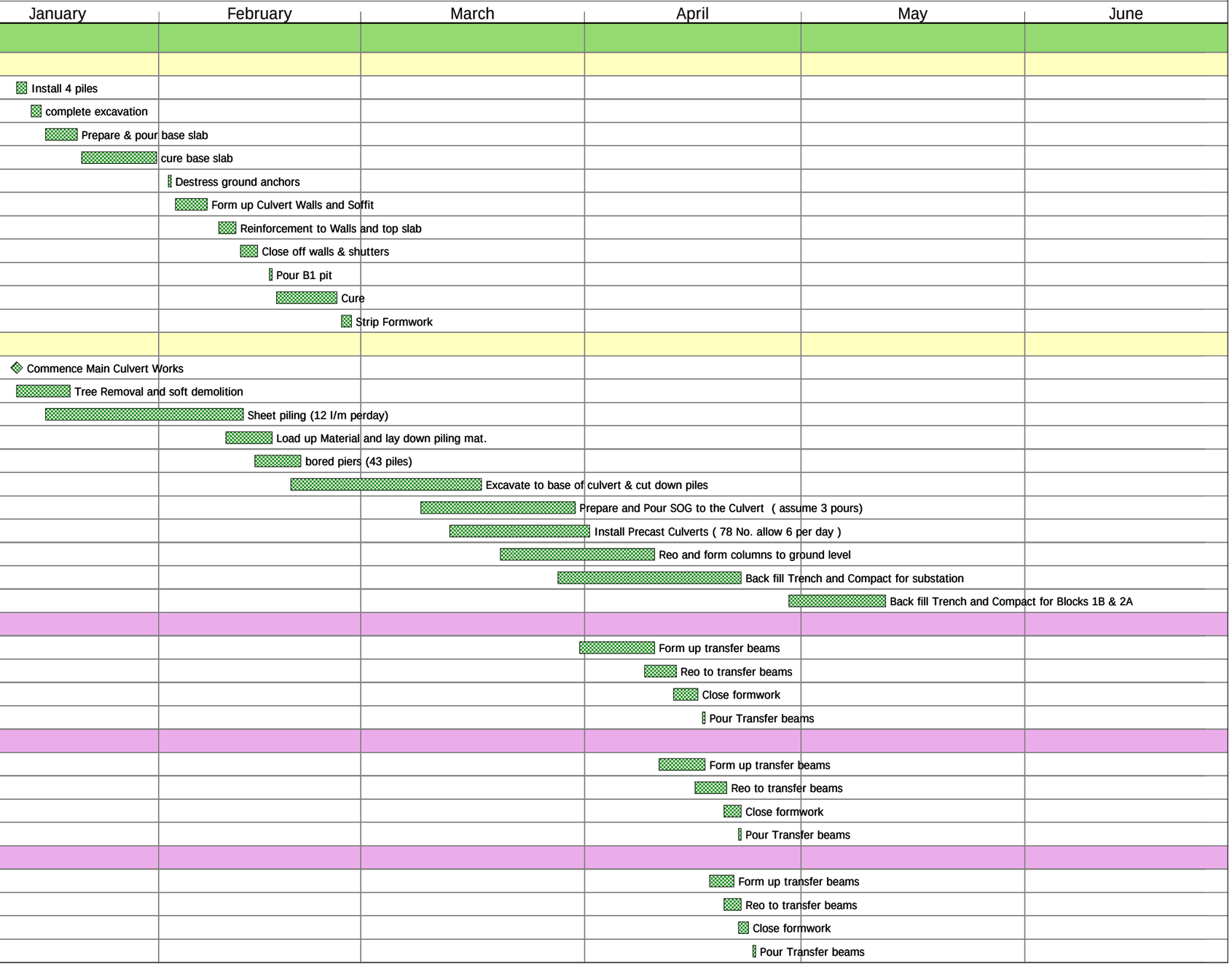
APPENDIX 1: PROJECT PROGRAMME

SCENTRE GROUP

Owner and Operator of Westfield in Australia and New Zealand

Westfield Warringah Redevelopment
Draft Programme for Stormwater Culvert Stage 1

	Line	Activity	Start	Finish
+	1	**Cross Street Elevation**		
+	2	**Completion of Pit B1**		
+	3	Install 4 piles	12 Jan 15	13 Jan 15
+	4	complete excavation	14 Jan 15	15 Jan 15
+	5	Prepare & pour base slab	16 Jan 15	20 Jan 15
+	6	cure base slab	21 Jan 15	31 Jan 15
+	7	Destress ground anchors	02 Feb 15	02 Feb 15
+	8	Form up Culvert Walls and Soffit	03 Feb 15	07 Feb 15
+	9	Reinforcement to Walls and top slab	09 Feb 15	11 Feb 15
+	10	Close off walls & shutters	12 Feb 15	14 Feb 15
+	11	Pour B1 pit	16 Feb 15	16 Feb 15
+	12	Cure	17 Feb 15	25 Feb 15
+	13	Strip Formwork	26 Feb 15	27 Feb 15
+	14	**Culvert works**		
+	15	Commence Main Culvert Works	12 Jan 15	12 Jan 15
+	16	Tree Removal and soft demolition	12 Jan 15	19 Jan 15
+	17	Sheet piling (12 l/m perday)	16 Jan 15	12 Feb 15
+	18	Load up Material and lay down piling mat.	10 Feb 15	16 Feb 15
+	19	bored piers (43 piles)	14 Feb 15	20 Feb 15
+	20	Excavate to base of culvert & cut down piles	19 Feb 15	17 Mar 15
+	21	Prepare and Pour SOG to the Culvert (assume 3 pours)	09 Mar 15	30 Mar 15
+	22	Install Precast Culverts (78 No. allow 6 per day)	13 Mar 15	01 Apr 15
+	23	Reo and form columns to ground level	20 Mar 15	10 Apr 15
+	24	Back fill Trench and Compact for substation	28 Mar 15	22 Apr 15
+	25	Back fill Trench and Compact for Blocks 1B & 2A	29 Apr 15	12 May 15
+	26	**Transfer Beams BLock 1B (4 No)**		
+	27	Form up transfer beams	31 Mar 15	10 Apr 15
+	28	Reo to transfer beams	09 Apr 15	13 Apr 15
+	29	Close formwork	13 Apr 15	16 Apr 15
+	30	Pour Transfer beams	17 Apr 15	17 Apr 15
+	31	**Transfer Beams BLock 2A (3 No)**		
+	32	Form up transfer beams	11 Apr 15	17 Apr 15
+	33	Reo to transfer beams	16 Apr 15	20 Apr 15
+	34	Close formwork	20 Apr 15	22 Apr 15
+	35	Pour Transfer beams	22 Apr 15	22 Apr 15
+	36	**Transfer Beams BLock 2B (1 No)**		
+	37	Form up transfer beams	18 Apr 15	21 Apr 15
+	38	Reo to transfer beams	20 Apr 15	22 Apr 15
+	39	Close formwork	22 Apr 15	23 Apr 15
+	40	Pour Transfer beams	24 Apr 15	24 Apr 15



Comments : **DRAFT - FOR COMMENT ONLY**

Prepared by: **Peter Gibbs**

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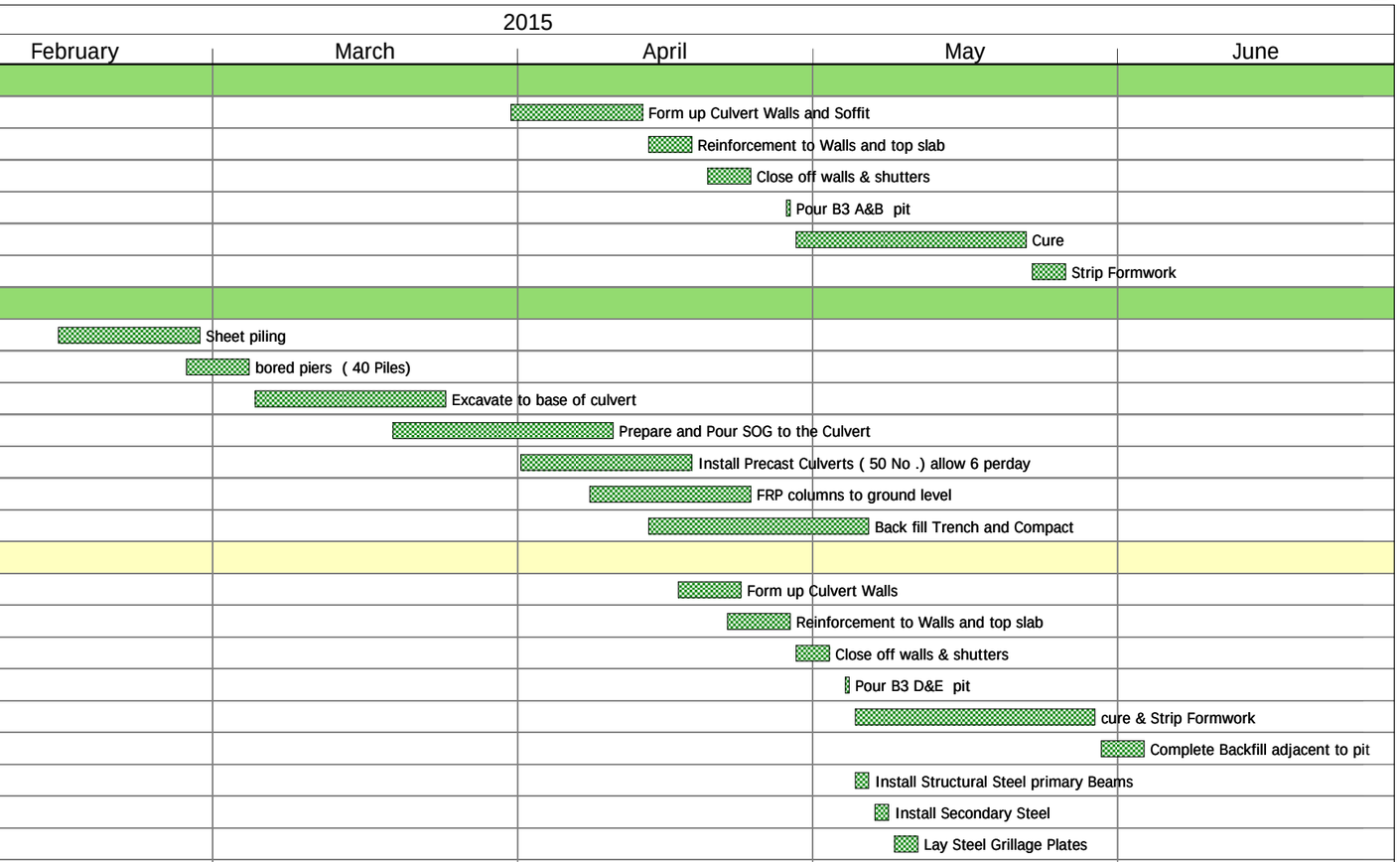
Project Title	**Westfield Warringah Redevelopment**		
Programme Title	**Draft Programme for Stormwater Culvert Stage 1**		
Programme No.	**Warringah Program 14 Oct 2014**		
Revision	**1**	Date:	**16/10/2014**

SCENTRE GROUP

Owner and Operator of Westfield in Australia and New Zealand

Westfield Warringah Redevelopment
Draft Programme for Stormwater Culvert Stage 1

	Line	Activity	Start	Finish
+	41	**Pit B3 A&B Works (insitu)**		
+	42	Form up Culvert Walls and Soffit	31 Mar 15	13 Apr 15
+	43	Reinforcement to Walls and top slab	14 Apr 15	18 Apr 15
+	44	Close off walls & shutters	20 Apr 15	24 Apr 15
+	45	Pour B3 A&B pit	28 Apr 15	28 Apr 15
+	46	Cure	29 Apr 15	22 May 15
+	47	Strip Formwork	23 May 15	26 May 15
+	48	**Green Street Elevation**		
+	49	Sheet piling	13 Feb 15	27 Feb 15
+	50	bored piers (40 Piles)	26 Feb 15	04 Mar 15
+	51	Excavate to base of culvert	05 Mar 15	24 Mar 15
+	52	Prepare and Pour SOG to the Culvert	19 Mar 15	10 Apr 15
+	53	Install Precast Culverts (50 No .) allow 6 perday	01 Apr 15	18 Apr 15
+	54	FRP columns to ground level	08 Apr 15	24 Apr 15
+	55	Back fill Trench and Compact	14 Apr 15	06 May 15
+	56	**Pit B3 D & E Works (insitu)**		
+	57	Form up Culvert Walls	17 Apr 15	23 Apr 15
+	58	Reinforcement to Walls and top slab	22 Apr 15	28 Apr 15
+	59	Close off walls & shutters	29 Apr 15	02 May 15
+	60	Pour B3 D&E pit	04 May 15	04 May 15
+	61	cure & Strip Formwork	05 May 15	29 May 15
+	62	Complete Backfill adjacent to pit	30 May 15	03 Jun 15
+	63	Install Structural Steel primary Beams	05 May 15	06 May 15
+	64	Install Secondary Steel	07 May 15	08 May 15
+	65	Lay Steel Grillage Plates	09 May 15	11 May 15



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Prepared by: **Peter Gibbs**

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Project Title	**Westfield Warringah Redevelopment**		
Programme Title	**Draft Programme for Stormwater Culvert Stage 1**		
Programme No.	**Warringah Program 14 Oct 2014**		
Revision	**1**	Date:	**16/10/2014**

APPENDIX 2: SEDIMENT CONTROL PLAN

CROSS STREET

STREET

TEMPORARY STORMWATER BUNDING TYPE 1

PROVIDE STRAW BALES AROUND EXISTING HEADWALL

INDICATIVE HOARDING LINE. REFER SCENTRE GROUP DWG 060201

TEMPORARY STORMWATER BUNDING TYPE 2

STREET

GREEN

LEGEND

- TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP TO BE PROVIDED
- SEDIMENT BARRIER FOR KERB INLET PITS TO BE PROVIDED
- GRAVEL FILLED SAUSAGE
- STRAW BALES
- SILT FENCE
- TEMPORARY CONSTRUCTION VEHICLE EXIT
- TEMPORARY STOCKPILE OF TOPSOIL SURROUNDED WITH SILT FENCE

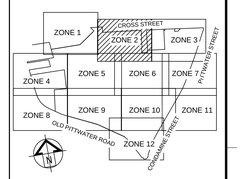
0 5 10 15 20m

SCALE 1:200 A0

PLAN
SCALE 1:200

Rev	Date	By	Chk	Description
A	01/09/14	SGB/SJB		ISSUE FOR CONSTRUCTION
B	29/08/14	SGB/SGB		REVISED FOR COSTING
C	04/08/14	SGB/SGB		REVISED FOR COSTING
A	25/07/14	SGB/SGB		ISSUE FOR CONSTRUCTION
C	19/02/14	SGB/SGB		FOR EMP INCLUSION
B	17/01/14	SGB/SGB		100% TENDER ISSUE
A	29/11/13	SGB/SGB		70% COSTING PACKAGE

Key Plan



General Note

ALL DIMENSIONS TO BE CHECKED ON SITE. WRITTEN DIMENSIONS ONLY TO BE USED. REFER TO ALL DETAIL DRAWINGS, STRUCTURAL, MECHANICAL & SERVICES DRAWINGS BEFORE COMMENCING WORK. REFER ANY DISCREPANCIES TO THE ARCHITECT. DO NOT SCALE FROM DRAWINGS.

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SCENTRE GROUP

Owner and Operator of Westfield in Australia and New Zealand

Westfield

WARRINGAH

Scentre Design & Construction Pty Limited
85 Castlereagh Street. Sydney NSW 2011
Phone (02) 9358 7000 Fax (02) 9028 8500
GPO Box 4004 Sydney NSW 2001

Title

WARRINGAH STORMWATER AUGMENTATION
CULVERT STAGE 1
SOIL AND WATER MANAGEMENT PLAN

Drawing Scale	Scale Bar 1:1	
1:200		
Drawn By	CAD Filename	Plot Date
LDB	CAR-020125 (4) SOIL & WATER PLAN	01/09/14 5:36 PM
Project No.	Drawing No.	Revision
D11753	CAR-020125	4

FOR CONSTRUCTION

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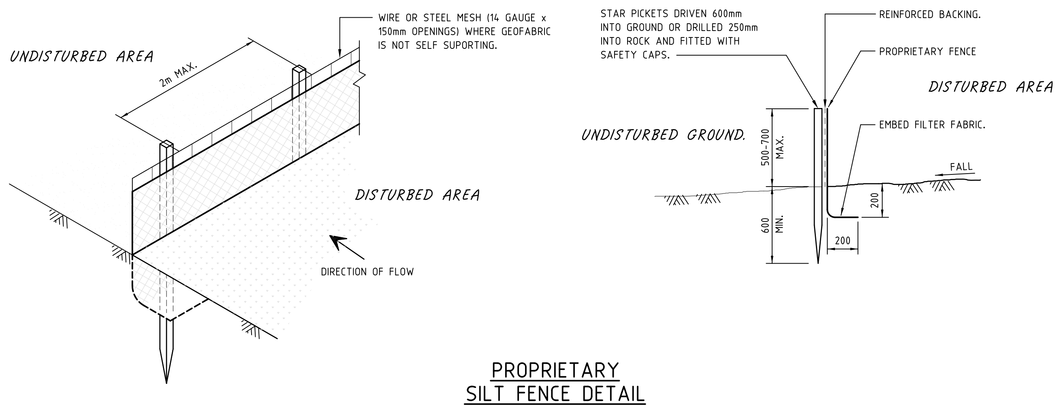
N:\PROJECTS\89514\04\500_599 OTHER CARDNO BUSINESS UNITS\89914004 WARRINGAH MALL - STAGE 1\STAGE 1 CULVERTS\DRAWINGS\BUILD\CIVIL\CAR-020125 (4) SOIL & WATER PLAN.DWG



PROPRIETARY SILT FENCE DETAIL

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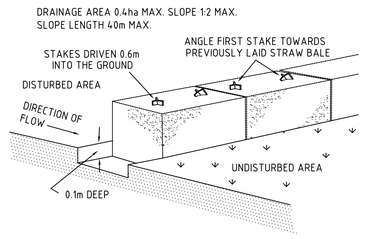

STRAW BALE SEDIMENT FILTER

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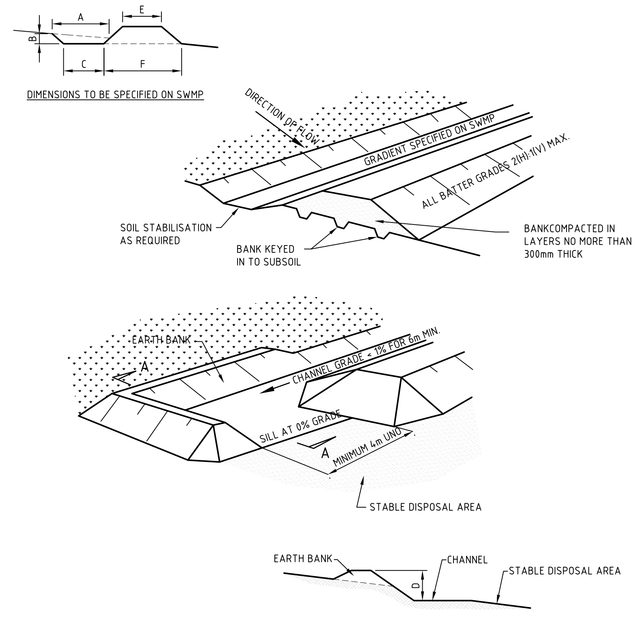

SECTION A–A

DIVERSION BUND & LEVEL SPREADER

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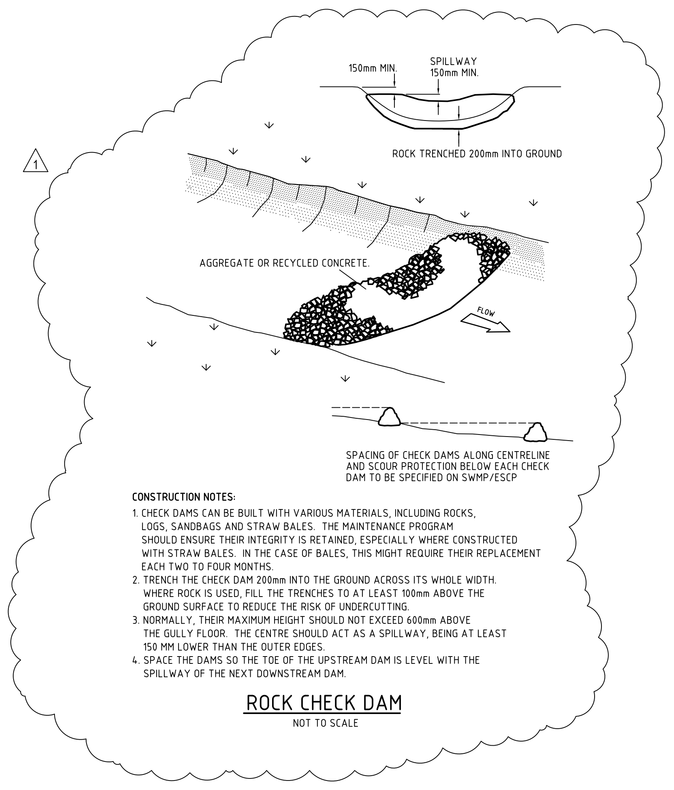

ROCK CHECK DAM

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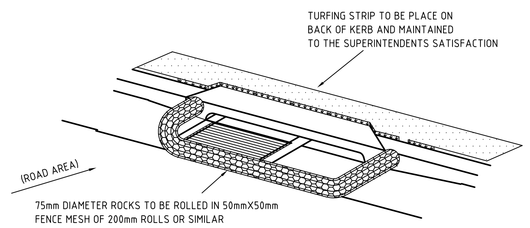

DETAIL OF MESH AND GRAVEL INLET SEDIMENT TRAP

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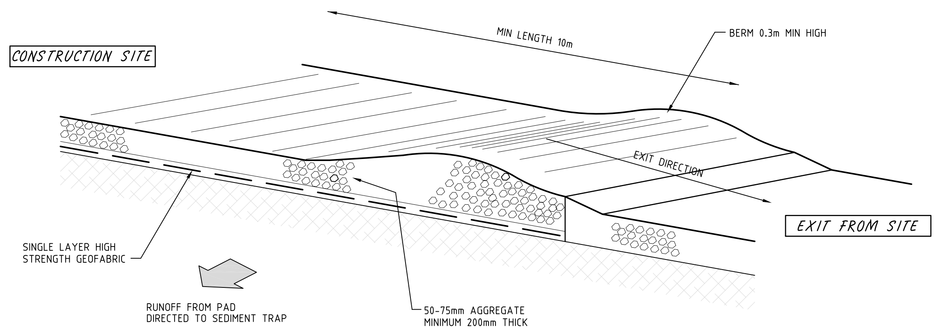
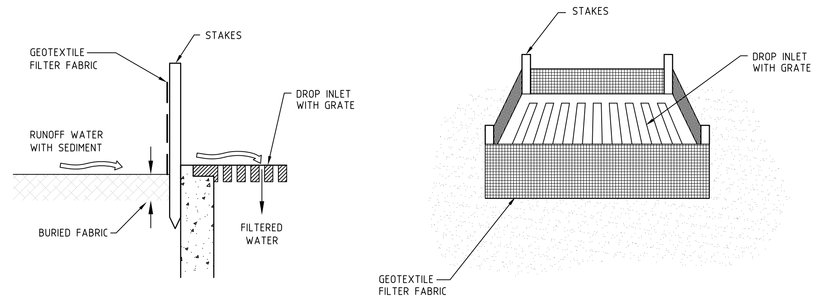


TEMPORARY CONSTRUCTION VEHICLE EXIT

NOT TO SCALE

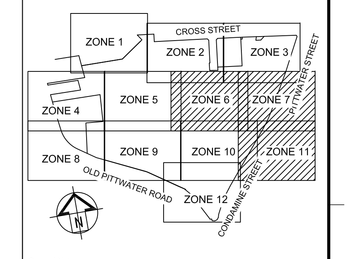


GOETEXTILE FILTER SEDIMENT TRAP

NOT TO SCALE

Rev	Date	By	Chk	Description
1	31/10/2014	LC	DNA	ISSUE FOR CONSTRUCTION
D	30/01/2014	DH	DNA	70% COSTING PACKAGE REVISED - BING LEE
C	31/01/14	DH	DNA	70% COSTING PACKAGE REVISED
B	14/12/2013	DH	DNA	70% COSTING PACKAGE REVISED
A	29/11/2013	DH	DNA	70% COSTING PACKAGE

Key Plan



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Owner and Operator of Westfield in Australia and New Zealand

Westfield

WARRINGAH

Scentre Design & Construction Pty Limited
85 Castlereagh Street, Sydney NSW 2011
Phone (02) 9358 7000 Fax (02) 9028 8500
GPO Box 4004 Sydney NSW 2001

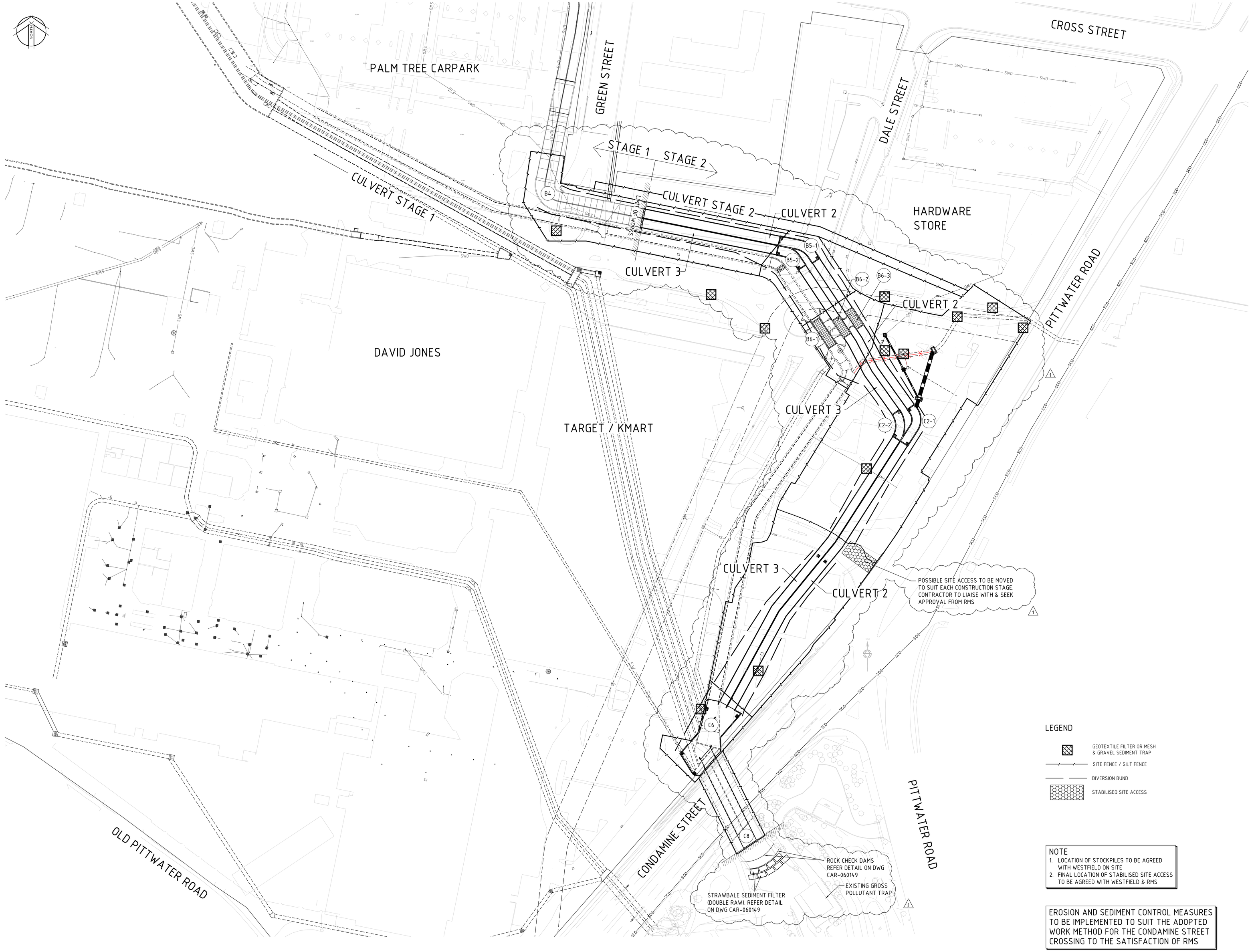
Title

WARRINGAH STORMWATER AUGMENTATION
CULVERT STAGE 2

SOIL AND WATER MANAGEMENT DETAILS

Drawing Scale	Scale Bar 1:1	
AS SHOWN		
Drawn By	CAD Filename	Plot Date
DH	CAR-060149(1).DWG	31/10/2014 3:32pm
Project No.	Drawing No.	Revision
D11753	CAR-060149	1

\\CARDNOCORP\GLOBAL\AU\NSW\DIRECTORYSTRUCTURE\PROJECTS\89914004_WARRINGAH MALL STAGE 1 & 2\004 STAGE 2 CULVERT\DRAWINGS\BUILD\DRAWINGS\CAR-060149(1).DWG



LEGEND

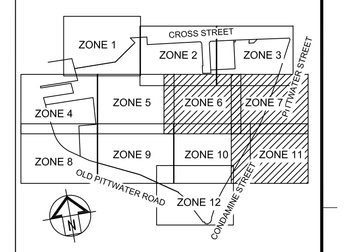
- GEOTEXTILE FILTER OR MESH & GRAVEL SEDIMENT TRAP
- SITE FENCE / SILT FENCE
- DIVERSION BUND
- STABILISED SITE ACCESS

NOTE
1. LOCATION OF STOCKPILES TO BE AGREED WITH WESTFIELD ON SITE
2. FINAL LOCATION OF STABILISED SITE ACCESS TO BE AGREED WITH WESTFIELD & RMS

EROSION AND SEDIMENT CONTROL MEASURES TO BE IMPLEMENTED TO SUIT THE ADOPTED WORK METHOD FOR THE CONDAMINE STREET CROSSING TO THE SATISFACTION OF RMS

Rev	Date	By	Chk	Description
I	31/03/2014	LC	DNA	ISSUE FOR CONSTRUCTION
H	30/07/2014	GY	DNA	70% COSTING PACKAGE REVISED - BING LEE
G	29/05/2014	DH	DNA	STAGE 2 ALIGNMENT REVISED
F	9/05/2014	DH	DNA	70% COSTING PACKAGE REVISED
E	4/12/2013	DH	DNA	70% COSTING PACKAGE REVISED
A	28/11/2013	DH	DNA	70% COSTING PACKAGE

Key Plan



General Note
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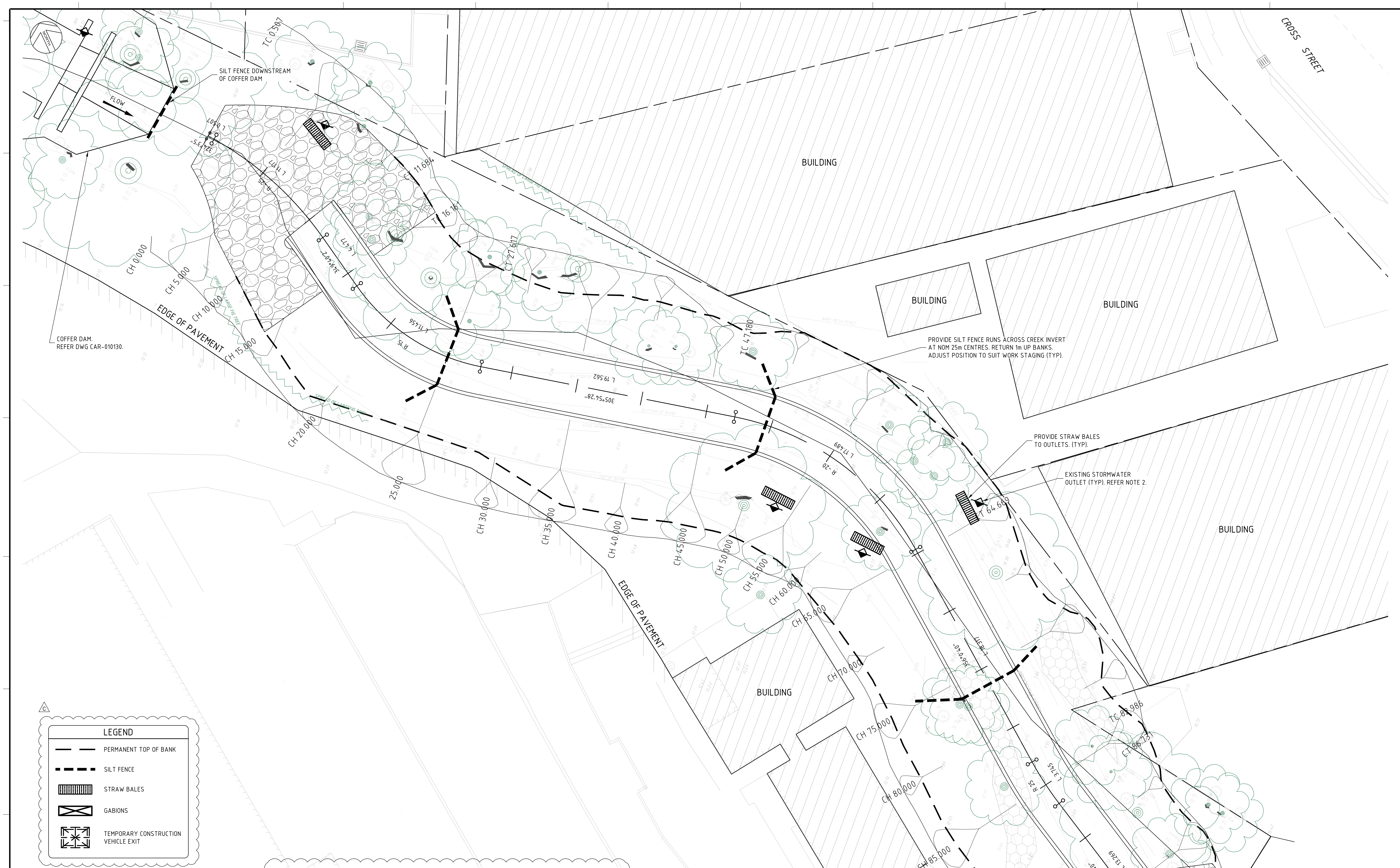
Title
WARRINGAH STORMWATER AUGMENTATION
CULVERT STAGE 2

SOIL AND WATER MANAGEMENT PLAN

Drawing Scale	Scale Bar 1:1	
1:500	10 15 20 25	
Drawn By	CAD Filename	Plot Date
DH	CAR-060148(1).DWG	31/10/2014 3:31pm
Project No.	Drawing No.	Revision
D11753	CAR-060148	1



NOTES:

1. ACCESS TO WORK AREA IS VIA HARRISON'S PROPERTY VIA NEGOTIATED AGREEMENT. RESTRICTIONS MAY APPLY. REFER DOCUMENTATION BY WESTFIELD.
2. ALLOW TO TEMPORARILY DIVERT OR MANAGE FLOWS FROM STORMWATER PIPES THAT DISCHARGE TO WORKSITE.
3. ALL EROSION AND SEDIMENT CONTROL TO 'BLUE BOOK' AND COUNCIL STANDARDS.
4. PROVIDE 'SEDIMENT BARRIER FOR KERB INLET PITS' TO ALL PITS IN OLD PITTWATER ROAD WITHIN 30m IN ANY DIRECTION OF AGREED SITE ACCESS.
5. STOCKPILE LOCATIONS AT POSITIONS AGREED WITH HARRISON'S. PROVIDE DIVERSION BANK AND CHANNEL UPSTREAM AND SILT FENCE DOWN STREAM.
6. FENCE SITE TO EXCLUDE PUBLIC.
7. ONGOING AND REGULAR MAINTENANCE AND INSPECTION OF SOIL AND WATER MANAGEMENT DEVICES IS CRITICAL TO THEIR EFFECTIVENESS AND OPERATION.

C

INDICATIVE STAGING / SEQUENCE OF WORKS NOTES:

1. ESTABLISH SITE COMPOUND AREAS.
2. INSTALL COFFER DAM, ASSOCIATED SHOTCRETE AND PUMPS ETC TO DIVERT UPSTREAM FLOWS.
3. INSTALL DOWNSTREAM GABION FILTER AT ENTRANCE TO EXISTING CULVERTS UNDER WESTFIELD.
4. INSTALL EROSION AND SEDIMENT CONTROLS INCLUDING TEMPORARY ACCESS RAMP TO CREEK BED.
5. INSTALL AND COMMENCE DEWATERING OPERATIONS.
6. REMOVE EXISTING VEGETATION IN ACCORDANCE WITH PROJECT ECOLOGIST AND PROJECT ARBORIST REQUIREMENTS.
7. UNDERTAKE EARTHWORKS ON CREEK BED INCLUDING OVER-EXCAVATION FOR WORKING PLATFORM.
8. INSTALL WORKING PLATFORM.
9. UNDERTAKE EARTHWORKS ON CREEK BANKS. WHERE TEMPORARY BATTER SLOPES EXCEED 1.5H:1V INSTALL TEMPORARY SOIL NAILS AND SHOTCRETE (NOTE: TEMPORARY SOIL NAILS AND SHOTCRETE FORM A DESIGN AND CONSTRUCT COMPONENT OF THE WORKS)
10. LAY PRECAST CULVERT UNITS TO FORM CONCRETE LINED CHANNEL AND BACKFILL.
11. CONNECT EXISTING STORMWATER PIPES TO CHANNEL THROUGH BLOCKOUTS IN CULVERT WALL.
12. FILL AND SHAPE CREEK BANKS AND REVEGETATE IN ACCORDANCE WITH THE VMP.
13. REMOVE AND DISPOSE COFFER DAM, SHEET PILING, TEMPORARY SOIL NAILS AND ASSOCIATED CONCRETE. RESTORE AREA TO MATCH ADJACENT DESIGN DETAILS.
14. UNDERTAKE FURTHER REVEGETATION IN ACCORDANCE WITH THE VMP UPSTREAM OF THE CULVERT WORKS.

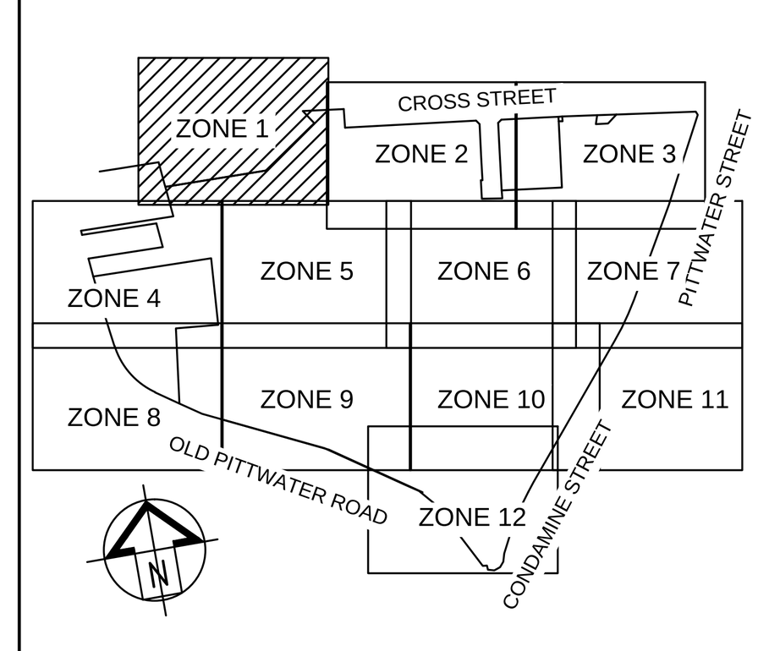
C

0 2 4 6 8 10m
SCALE 1:100 A0

PLAN
SCALE 1:100

Rev	Date	By	Chk	Description
C	28/03/14	LDB	SGB	100% COMPLETE
B	29/01/14	LDB	SGB	REVISED FOR NoW APPLICATION
A	20/12/13	LDB	SGB	70% COSTING PACKAGE

Key Plan



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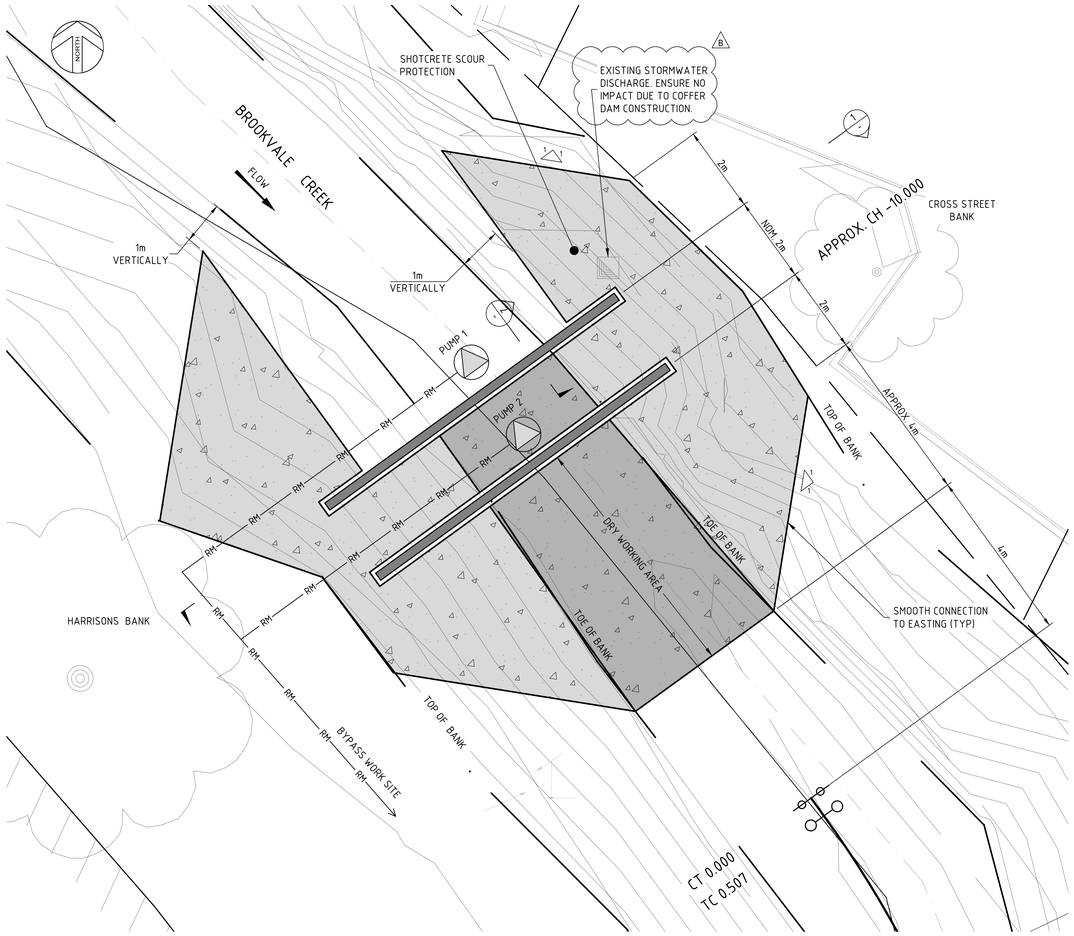
Title
WESTFIELD WARRINGAH MALL
BROOKVALE CREEK AUGMENTATION
SOIL AND WATER MANAGEMENT PLAN

Drawing Scale	Scale Bar 1:1	
1:100		
Drawn By: LDB	CAD Filename: CAR-010140 (C) SOIL & WATER MANAG PLAN	Plot Date: 27/03/14 12:27 PM
Project No.: D11753	Drawing No.: CAR-010140	Revision: C

PLOTTED BY : LAIS DE BRITO (GOSFORD) DEVICE NAME : DWG TO PDF.PC3 - WFDC_STD.ctb

...NEY JOBS\59914010 BROOKEVALE CREEK\DRAWINGS\BUILD\CIVIL\CAR-010140 (C) SOIL & WATER MANAG PLAN.DWG



COFFER DAM - PLAN VIEW
SCALE 1:50

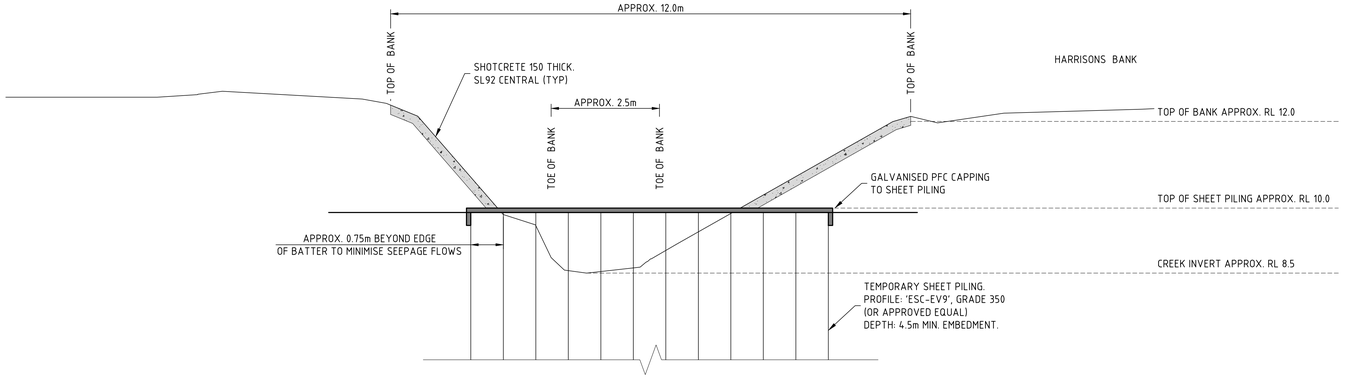
PUMP 1 AND 2 NOTES:

1. CONTRACTOR TO PROVIDE AND MAINTAIN PUMP 1 AND 2 FOR THE DURATION OF WORKS.
2. PUMP 1 AND 2 REQUIRED TO DIVERT CREEK FLOWS FROM WORK SITE
3. PUMP 1 AND 2 TO RUN 'SILENT' TO THE SATISFACTION OF THE SUPERINTENDENT
4. PUMP 1 AND 2 TO BE CAPABLE OF RUNNING UNATTENDED FOR MIN 24h PERIOD
5. PUMP 1 TO DISCHARGE MINIMUM 200L/s AT NOMINAL 65m HEAD
6. PUMP 2 TO DISCHARGE MINIMUM 60L/s AT NOMINAL 65m HEAD
7. PUMP 1 AND 2 TO BE SUITABLE TO ACCEPT AND DISCHARGE CREEK FLOWS AND DEBRIS UP TO 25mm DIAMETER
8. PUMP 1 AND 2 INLET TO BE SCREENED TO PREVENT INGRESS OF OVERSIZED MATERIAL
9. PUMP 1 AND 2 TO BE SELF-PRIMING
10. PUMP 1 AND 2 TO DISCHARGE FLOWS TO EXISTING CULVERTS UNDER WESTFIELD SITE
11. PUMP 1 TO HAVE NOMINAL 200mm INLET AND OUTLET
12. PUMP 2 TO HAVE NOMINAL 100mm INLET AND OUTLET

NOTE:

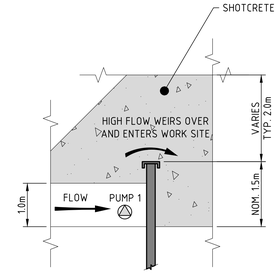
1. REMOVE SHEET PILING AND SHOTCRETE AT COMPLETION OF CONSTRUCTION AND DISPOSE OFF SITE.

B



TYPICAL SECTION THROUGH COFFER DAM WALL

SECTION 1 / -
SCALE 1:50



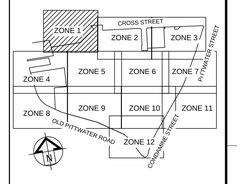
TYPICAL SECTION THROUGH SHEET PILING

SECTION 2 / -
SCALE 1:50

0 1 2 3 4 5m
SCALE 1:50 A0

Rev	Date	By	Chk	Description
B	28/03/14	LDB	SGB	100% COMPLETE
A	20/12/13	LDB	SGB	70% COSTING PACKAGE

Key Plan



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Title
WESTFIELD WARRINGAH MALL
BROOKVALE CREEK AUGMENTATION
COFFER DAM PLAN
AND TYPICAL SECTIONS

Drawing Scale	Scale Bar 1:1	
1:50		
Drawn By: LDB	CAD Filename: CAR-010130 (B) COFFER DAM PLAN & TYP SECTIONS	Plot Date: 27/03/14 12:27 PM
Project No.: D11753	Drawing No.: CAR-010130	Revision: B

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P:\SYDNEY JOBS\59914010 BROOKVALE CREEK\DRAWINGS\BUILD\CIVIL\CAR-010130 (B) COFFER DAM PLAN & TYP SECTIONS.DWG