APPENDIX D
Site Work Plan

Billbergia
creating communities

SITE WORK PLAN

FOR

Extension of Utility Services to the Lease Area

No.1 Grand Ave

Camellia

Project No: 3263

CLIENT: Remondis Pty Ltd, P.O. Box 885, Mascot NSW 1460

PROJECT DESCRIPTION:

Extension of Utility Services and stormwater line to service the proposed Waste Processing Facility at No.1 Grand Avenue, Camellia.

Plan approved by:_____ Date: 25/06/10

(Project Manager)

Revision No.	Date	Description of Revision	EMR Certification	
			Reference (e.g. letter)	Date
Rev 0	June 10	Initial Draft	N/A	N/A
Rev 1	May 11	Air Quality issues expanded	DECC review	N/A

CONTENTS

ATTACHMENTS

SECTION 1 Introduction

1.1 Purpose and Scope

The purpose of this Site Work Plan is to describe how Billbergia Pty Limited proposes to manage and control:

- Excavation below the capping layer
- Handling and disposal of Contaminated Soils, and
- Soil and Water Management

associated with the provision of utility services and extension of the stormwater system for the proposed construction of the Waste Processing Facility by Remondis Pty Ltd.

A key objective of this Site Work Plan is to ensure appropriate environmental controls and procedures are implemented during construction activities. The objective is to handle any contaminated soil safely, minimise soil erosion, contain sediment within the site and to minimise the impact of construction below the capping layer.

This Site Work Plan is applicable to all Billbergia activities during the construction phase of the Project. In particular, this Plan has been prepared to address the requirements of the:

- **Site Management Plan** (SMP) – Eastern Portion Former James Hardie Site Grand Avenue Camellia (dated 17 March 2004)
- NSW Department of Housing (2004) Guideline *Managing Urban Stormwater - Soils & Construction* (also known as the "Blue Book") and other applicable regulation.

1.2 Proposed Site Works

The proposed development works involves the construction of two large industrial buildings, including excavation of services trenches to the proposed buildings, filling of the land underneath the proposed buildings and construction of concrete access roads and carpark surrounding the proposed buildings. The excavation for services will be generally 1m to 3.7m below existing ground levels within the site.

Geotechnical investigations carried out by various environmental companies over the past 10 to 15 years indicate that parts of the site have been filled with asbestos waste. The investigations show that the buried asbestos is generally limited to the western portion of the site nearest to the railway line. The site has been capped with a layer of impermeable material and is under the protection of a legally binding Site Management Plan. The Site Management Plan generally prohibits excavation below the capping layer without the written approval of the **Department of Environment and Climate Change**. (DECC).

The service trenches will be excavated through the site to extend the services from the boundary at Grand Avenue to the perimeter of the proposed building/lease area. These include trenches for stormwater, sewer, electricity and potable water. The excavation and laying works will be carried out by Billbergia Pty Limited as part of its commitment to providing services to Remondis' lease area. Excavation of any contaminated soil will be carried out as recommended by the Site Management Plan with all excess material being taken off site to a pre-determined tip site.

Appropriate handling and supervision of the contaminated soil will be carried out as outlined in the **Safe Work Method Statement** (SWMS) attached as Attachment 1. The work will be supervised by a licensed asbestos removal (AS1) contractor. The AS1 Contractor will prepare and implement asbestos hazard reduction measures as part of their safe work method statements and will provide experienced personnel to supervise excavation of any asbestos impacted fill or asbestos waste. A suitably qualified occupational hygienist will be engaged to prepare an air monitoring program for the excavation, storage and offsite removal of fill material containing asbestos in accordance with the Australian Code of Practice for the Safe Removal of Asbestos (NOHSC: 2002 (2005). This air monitoring program will assess the nature of the asbestos material, different wind movements across the site, location of nearby receptors such as child care centre, Train Station and residential housing.

The work area will be limited to the line of trenching for the stormwater pipes and the incoming services as shown on the site plan in Attachment 2. There is approximately 550m of trenching to be excavated which will yield approximately 1200m^3 of spoil. This spoil will be disposed of to an approved landfill site. The geotechnical reports indicate that the material below the cap comprises silty clay with traces of fine to course sand with asbestos present in parts. The asbestos is expected to be located in the top 900mm of the excavation for the majority of the work area. The depth of asbestos is expected to be up to 5m deep in the vicinity of the sewer manhole.

Excavated concrete and roadbase will be stripped off the surface and set aside for recycling. The contaminated soil will be set aside in controlled stockpiles and tested for classification for disposal. Any surplus soil will be disposed off site to a licensed landfill depot such as SITA's site at Kemps Creek. Pipe embedment material comprising clean sand and gravel will be imported to site and compacted around the pipes and services. Clean imported material will be used to backfill the remainder of the trench and the trench will then be capped with roadbase.

Investigations are still being undertaken to determine the suitability of using a pumped sewer collection system to avoid a deep trench excavation near the manhole.

The construction period is expected to last 6 weeks to 8 weeks with approximately 80 truck and dogs of contaminated soil to be

removed from site over a 20 day period. Once the spoil is removed there will only be deliveries to site.

It is likely that Alkene Pty Ltd will be appointed as the AS1 contractor to supervise excavation and remove the soil from the site. Alkene Pty Ltd was previously engaged to supervise remediation works on site and worked well with Billbergia staff. Decontamination units and site facilities will be provided by Billbergia Pty Ltd.

It is expected to have 4 to 5 of Billbergia's full time staff on site at anyone time to carry out the excavation and pipe laying tasks. There will be a site foreman, two labourers and a machine operator.

1.3 Site Construction Sequence

Prior to commencing construction on site, the statutory notifications shall be made and approval sought from DECC to carry out the excavation work as required by the SMP.

Once approval has been obtained establishment of the site office and diversion of stormwater flows from areas upstream of the work area will be carried out as part of the preliminaries prior to commencing excavation.

It is proposed that the works will generally be carried out in the following stages:-

Stage 1: Erect barrier fencing around the work area, construct sediment traps where required, delineate the construction access route and install sediment and erosion control measures.
Stage 2: Carry out trench excavation for the stormwater line below the cap.
Stage 3: Carry out trench excavation for the remaining service lines below the cap.
Stage 4: Carry out trench excavation for the remaining service lines above the cap or in non-contaminated areas.

It is expected that there will be overlaps in the timing of these activities and that the works will be undertaken in the following sequence:-

Stage 1:

a) Construct barrier fencing around the work area to prevent access to areas not to be disturbed,
b) Isolate the construction access route from the rest of the site,
c) Provide sediment traps downstream of the work area in the outlet channel,
d) Provide all other sediment and erosion control measures that may be required to ensure that no run-off from disturbed areas is directly discharged to down slope areas or drainage lines

Stage 2:

e) Establish decontamination procedures as identified in the SWMS in conjunction with the hygienist. Install air monitors as indicated in air monitoring plan.
f) Excavate the line of the stormwater pipe and gross pollutant trap.
g) Place contaminated excavated material in stockpiles on HDPE plastic sheeting for classification and in preparation for transport off site.
h) Maintain sediment traps as required.
i) Construct required drainage lines as works progress including temporary and permanent sediment and litter arrestors as detailed on the drawings.
j) Load and transport excavated material to suitably licensed disposal sites as outlined in the SWMS.
k) Restore trenches and capping.

Stage 3:

l) Continue with the general procedures as for Stage 2.
m) Construct required service lines as works progress as detailed on the drawings.
n) Load and transport excavated material to suitably licensed disposal sites as outlined in the SWMS.
o) Restore trenches and capping.

Stage 4:

p) Continue with the general procedures as for Stage 2 without the requirements of handling contaminated soil.
q) Construct required service lines as works progress as detailed on the drawings.
r) Re-use on site if suitable or load and transport excavated material to suitably licensed disposal sites as outlined in the SWMS.
s) Restore trenches.

SECTION 2 Legislative and regulatory Requirements

2.1 Protection of the Environment Operations Act, 1997

Construction activities during the Project are required to be effectively managed to ensure Billbergia complies with the water quality goals and criteria outlined in the *Protection of the Environment Operations Act 1997*. The objectives of this Act include the reduction of risk and prevention of degradation of the environment through the use of measures that promote the prevention of pollution, and environmental monitoring and reporting.

2.2 Contaminated Land Management Act, 1997

Construction activities during the Project are required to be effectively managed to ensure Billbergia complies with the criteria outlined in the *Contaminated Land Management Act 1997*. The objectives of this Act are to establish a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation under Division 2 of Part 3.

Particular objects of this Act are:

(a) to set out accountabilities for managing contamination if the EPA considers the contamination is significant enough to require regulation under Division 2 of Part 3, and
(b) to set out the role of the EPA in the assessment of contamination and the supervision of the investigation and management of contaminated sites, and
(c) to provide for the accreditation of site auditors of contaminated land to ensure appropriate standards of auditing in the management of contaminated land, and
(d) to ensure that contaminated land is managed with regard to the principles of ecologically sustainable development.

A Site Management Plan was prepared for the site to manage the contamination issues and achieve the objectives of the Act. All excavation work to establish the necessary services and stormwater control for the site are to be carried out in accordance with the procedures identified in that SMP.

SECTION 3 Project Impacts

3.1 Environmental Aspects

The aspects of the project works that could contribute to erosion, off-site sedimentation, impact on downstream water quality and the handling of contaminated material include the following:

- construction works in high rainfall periods;
- slow or ineffective design and/or installation of erosion and sediment control measures
- ineffective maintenance of environmental control measures
- stripping and clearing of vegetation
- stripping of topsoil
- working in waterways
- access/egress points
- disturbance of contaminated soils
- transport and disposal of contaminated soils
- slow rehabilitation/ re-vegetation of works
- fuel and chemical storage and handling
- pollutants from plant wash down activities, including washing out of trucks
- areas of concentrated flows (eg batter drains, culvert construction)
- litter
- spillage/leakage of oil, grease, fuels and other chemicals from equipment operation and maintenance
- effluent from site offices and compounds.

These issues are addressed in the SWMS. A detailed **Erosion and Sediment Control Plan** (ESCP) is to be produced during construction.

3.2 Potential Impacts on Hydrology, Water Quality and Soil

The Project will not involve any significant modifications to the existing drainage systems or generation of substantial quantities of wastewater during construction. Disturbance of landform geology and soils will be minimal during the construction phase.

The site is contaminated as a result of past activities. Disturbance of contaminated material during construction is addressed in the SWMS and the procedures contained therein are to be implemented during the excavation phase. The potential for migration of contaminants does exist and will need to be managed.

Groundwater impacts during construction may occur during excavation of the gross pollutant trap and deeper sections of the stormwater line. The potential impacts include:

- groundwater contamination due to accidental spillage or leakage of materials associated with construction activities;

These issues are addressed in Section 4 of this Plan.

SECTION 4 Environmental Mitigation Measures

4.1 Air, Soil and Water Management Strategy

This section of the Plan outlines the overall strategy for managing project-wide risks related to air, soil and water.

4.2 Safe Work Method Statement (SWMS)

The Safe Work Method Statement for work areas and activities requiring detailed pollution control strategies due to potential environmental impacts has been developed for the work. The SWMS includes detailed environmental management information such as proposed pollution controls, handling of contaminated soils, sequence of events and tool boxing requirements.

4.3 Primary Erosion and Sediment Control Plan

A **Primary** Erosion and Sediment Control Plan (Primary ESCP) is to be developed to serve as a broad based plan to outline the intentions and fundamental principles that will be followed in the planning and implementation of control measures, for the entire work area.

4.4 Progressive Erosion and Sedimentation Control Plans (ESCP)

Progressive Erosion and Sedimentation Control Plans (Progressive ESCP) shall be developed using the principles provided in the Primary ESCP for each stage of the project prior to commencement of construction at each individual stage of the project.

The ESCP's will be developed for areas identified as having possible risk and will contain detailed erosion and sediment control information for various construction stages, including location of sediment fences, drainage systems and discharge and monitoring specifications, if required. The ESCPs may also contain other pollution controls and procedures in regard to noise and air aspects of the environment.

The ESCP's will be developed prior to the commencement of site works for each stage of the work. ESCP's will be amended progressively to accommodate changed construction activities, landforms, drainage paths and other conditions. ESCP's will be based on construction/design drawings or aerial photographs with the following types of soil and water management aspects identified, if applicable:

- controls for different stages of construction (i.e. initial clearing to trench excavation to restoration of backfill);
- heavy machinery access paths, positioning and associated hardstand and clearance requirements;
- areas of high erosion hazard;
- specific activities that may occur outside the project area (e.g. compound, stockpile sites, access roads);
- site and works layout, including the extent of clearing and disturbance, controlled access routes and stockpile sites;

- proposed temporary and permanent erosion and sediment control measures and reference to procedures, including dewatering procedures if necessary;
- reference to monitoring and maintenance procedures;
- location of other pollution controls such as noise walls and dust and odour control devices
- environmental management procedures; and
- temporary site rehabilitation measures.

Mitigation measures and responsibilities for identified actions to minimise and mitigate soil and water quality impacts during construction are outlined in **Table 4.1**.

4.5 Water Management Strategy

The proposed water management strategy during the construction for the services includes:

- surface water management;
- wastewater management
- groundwater management;
- water treatment and potential reuse; and
- sewage treatment and disposal.

Site-specific strategies for water management shall be detailed in the relevant SWMS and ESCPs.

4.5.1 Surface Water Management

The effective control of surface water quality will be achieved through the use of erosion and sediment control and mitigation measures listed in **Section 4.6**.

Erosion and sediment controls will be designed and operated to ensure they do not exacerbate existing flood conditions. Permanent drainage systems will be developed to ensure that permanent construction features do not cause an adverse flooding effect.

4.5.2 Wastewater Management

The majority of wastewater generated on-site will be produced from:

- site runoff water, especially from excavations and ponded areas;
- chemical and fuel storage compounds;
- concrete saw cutting activities;
- concrete curing;
- run off from concreting activities; and
- washdown of concrete haul trucks and agitators.

All activities that generate wastewater will, where practical, utilise controls including bunding to contain wastewater to enable its removal or treatment in an environmentally acceptable manner.

All sub-contractors, particularly those who undertake activities that generate or handle potential pollutants will be made aware of their environmental responsibilities during the induction and regular

inspections will be undertaken to ensure that they are complying with all relevant legislation. All potentially contaminated wastewater will be contained and disposed of in accordance with DECC Guidelines *'Assessment, Classification and Management of Liquid and Non-liquid Waste'* and the requirements of the POEO Act.

Concrete washout areas/pits will be adequately sized, regularly maintained and located in a position where wastewater will not enter any drainage lines/waterways.

4.5.3 Groundwater Management

Works associated with the excavation for the services are not anticipated to adversely impact groundwater quality or levels. If groundwater accumulates in excavation trenches it will be directed or pumped into a sump, analysed for any potential contaminants and appropriately treated/disposed of before discharge to ensure it does not present a pollution hazard to any waterways.

Construction zones will have above ground and bunded refueling areas and storage areas for contaminated soils. The bunded areas will have impermeable bases of HDPE plastic sheeting and in the case of liquid storage areas a capacity of 110% of the volume of the largest container stored within the bund.

During excavation water will be diverted around the excavation area to avoid unnecessary flooding of the trench and cross contamination with asbestos material. Clean water will be kept separated from the work area as much as possible.

4.5.4 Sewage Treatment and Disposal

Site amenities (portable buildings) will be connected directly to the sewer system. These facilities will be located/positioned towards the front boundary of the site well upstream of the work area.

4.6 Erosion and Sediment Control and Mitigation Measures

The implementation of temporary erosion and sediment controls will be progressive and continual. Erosion control measures will be designed such that they are as close to the potential source of sediment as possible. The specifics of design, location and operation of each erosion and sediment control will be shown on the Progressive ESCPs. Key controls will be installed during site establishment and as the site evolves and changes, sediment controls will be adjusted accordingly. The Project Engineer, Site Foreman and Contractors will liaise with the Environmental Officer to ensure that appropriate controls are always in place and working effectively.

4.6.1 Erosion and Sediment Controls
Minimising Disturbance and Cleared Disturbed Areas

Erosion will be reduced through the minimisation of the cleared footprint, to areas immediately affected by the trench excavation. Concrete pavements will be sawcut to suit the width of the trench with minimal area of cap exposed at any one time.

Where practicable, progressive restoration of the trenches will occur to minimise the area of exposed surfaces following completion of works.

Sediment Fences

Sediment fences are a temporary barrier of geotextile filter fabric, supported by stakes to retain sediment on-site by filtration and reduction of surface water flow velocity. The position of sediment fences will be identified on Progressive ESCPs and also in various locations, which will become more apparent as site conditions evolve.

When appropriate, sediment fences will be attached to the site perimeter fencing and anchored into the ground before the commencement of other site establishment works. Sediment fences will also be used to assist in the control of runoff from topsoil and other stockpiles.

Sediment fences will be inspected for undercutting, sagging and overtopping, and repaired immediately. Accumulated sediment behind the sediment fence is to be removed before the level of accumulated sediment reaches one third of the original height of the fence.

Temporary Site Access

Site access will be from the site entrance to Grand Avenue. An access route from the work area will be identified and marked to maintain separation from the rest of the site. Trucks leaving the site will be covered and washed down as specified in the SWMS to minimise the tracking of soil from the site onto roads during the project.

Straw Bale Filter

Straw bale filters wrapped in geotextile fabric may be used as an alternative to a sediment fence where high surface water flows are anticipated. The straw bales are to be placed parallel to the contours of the site.

4.7 Site Drainage

During design Billbergia will endeavour to keep clean water separated from turbid run-off from exposed areas. Where possible clean water will be diverted around the exposed areas directed to the nearest stormwater outlet. Drainage construction will obviously form an integral part of controlling water movement on site and the early commissioning of the permanent drainage line will be undertaken where practicable. Construction of the drainage line will commence from the downstream end and progress upstream.

4.8 Maintenance of Controls

Regular maintenance of all erosion and sediment controls will be implemented and monitored by construction personnel and the Environmental Officer (refer to Section 5). Sediment cleaned from sediment controls will be relocated to locations where further pollution will not occur.

4.9 Chemical & Fuel Storage

The storage and handling of fuels and chemicals has the potential to pollute surface waters and contaminate soils. Storage areas for fuels, oils and chemicals used during construction will be contained within an impervious bund with a volume of at least 110% of the volume of the largest container in the bunded area, to retain any spills. Any spillage will be immediately contained and absorbed with a suitable absorbent material.

Spill kits will be provided at areas of the worksite where handling and use of fuels, oils and chemicals occurs. Relevant staff will posses or be provided with appropriate training in spill response.

Materials Safety Data Sheets (MSDS) for all chemicals stored and used on-site will be available to site personnel. Site personnel will be informed of the location of the MSDS register as a part of the site induction.

In the event water is polluted by chemicals, fuels, oil, and/or fire fighting materials (e.g. foams) the water will be collected, and disposed at an approved Liquid Waste Treatment Facility in accordance with DECC guidelines.

4.10 Control of Dust and Odour

Works will be undertaken in a manner that minimises fugitive dust and odour emissions. Given the size of the site a program of dust monitoring will be implemented during the works. A suitably qualified occupational hygienist will be engaged to prepare an air monitoring program for the excavation, storage and offsite removal of fill material containing asbestos in accordance with the Australian Code of Practice for the Safe Removal of Asbestos (NOHSC: 2002 (2005). This air monitoring program will assess the nature of the asbestos material, different wind movements across the site, location of nearby receptors such as child care centre, Train Station and residential housing.

The following measures shall be taken to control dust and odour:

Careful handling of material in a manner that minimises dust emissions;

Placement of screening material (eg. hessian) on perimeter fences adjacent to excavations;

Consideration of excavating asbestos containing material within a tent or other structure that can follow the excavation if recommended by the Hygienist;

Spraying dusty parts of the site with water;

Keeping excavations moist (where practical);

Use of Tarpaulins to cover loads (incoming and outgoing);

Restriction of stockpile hight to below the fence line where possible.

Where visual inspection indicates that dust levels may be unacceptable, work will cease until measures are taken to reduce emissions or until weather conditions improve. The site supervisor will be responsible for dust management. Where the hygienist advises that asbestos concentration levels exceed the permitted level, work will stop and revised methods of work will be adopted based on advise from the hygienist and AS1 contractor.

If odours are detected at the boundary of the site the following procedures may be engaged to minimise odours:

Covering of stockpiles where practical;

Use of fine mist sprays and hydrocarbon mitigating agent on impacted areas and materials;

Adequate maintenance of equipment and machinery to minimise exhaust emissions.

Table 4.1 Soil and Water Mitigation Measures

Management and Mitigation Measures	Responsibility	Timing
General Construction		
All personnel are to be inducted, and receive ongoing training via toolbox talks, regarding their responsibilities related to soil conservation issues, erosion and sediment control systems and the need for ongoing maintenance to prevent land degradation and water pollution.	PM/EO	Ongoing
All sediment control measures (i.e. sediment fences, diversion drainage structures and bunding, where slope warrants significant energy dissipation etc) are to be designed and installed as per relevant ESCP prior to the commencement of construction works. Controls will be used in conjunction with one another to form the "treatment train approach" to managing erosion and sediment on site.	PM/EO/SF	Ongoing
The area of surface soil disturbed will be kept to the minimum area necessary to complete the works. Disturbed areas will be stabilised and restored as soon as practicable.	PM/SF	At all times
Measures to be taken to prevent tracking of soils/sediments from the work site onto roadways and footpaths.	PM/SF	Ongoing
Any sediment/soil transferred from the work site to adjacent roadways/footpaths is to be swept up progressively at the end of each work day.	PM/SF	Ongoing
Chemicals, fuels and liquid wastes would be stored in accordance with AS 1940 Guidelines and in sealed vessels of appropriate volumes and kept in bunded areas away from stormwater drainage lines. However, as the quantities of chemicals on site are likely to be very low it is unlikely that this type of storage facility will be required.	PM/SF	Ongoing
Specific training will be provided to engineers and labour teams responsible for construction and maintenance of, temporary controls including sediment fences and batter drains on fill batters etc.	PM/SF/EO	Ongoing
Any fuel, lubricant or hydraulic fluid spills would be cleaned-up immediately using absorbent material and the contaminated material disposed of at a licensed waste depot.	PM/SF	At all times
Spoil Management		
Erosion and sediment control measures that secure the stockpile areas (eg diversions and sediment fence) must be in place prior to the commencement of any spoil stockpiling activities.	PM/SF	Pre-construction
Stockpiles of erodible material (including spoil and fill) are to be located as far away as practical from any storm-water system inlets and protected with appropriate erosion and sediment controls.	PM/SF	Ongoing
Any soils contaminated from fuel, oil or chemical spills are to be excavated and transported by an appropriate licensed contractor to an appropriate licensed waste facility.	PM/SF/EO	Ongoing
Excess soil that cannot be used on site will be tested and classified before removal from the site for reuse or disposal at a licensed waste facility.	PM/SF/EO	Ongoing
Stockpiles are to be checked for stability, and erosion controls maintained as required.	SF	Daily
Contaminated Soil Management		
Erosion and sediment control measures that secure the stockpile areas (eg HDPE Liner, diversions and sediment fence) must be in place prior to the commencement of any spoil stockpiling activities.	PM/SF	Pre-construction
Stockpiles are to be located as far away as practical from any storm-water system inlets and within the designated area as outlined in the SWMP and protected with appropriate erosion and sediment controls.	PM/SF	Ongoing
Contaminated soils are to be transported by an appropriate licensed contractor to an appropriate licensed waste facility as outlined in the SWMP.	PM/SF/EO	Ongoing
Stockpiles are to be checked for stability, and erosion controls maintained as required.	SF	Daily

Table 4.1 Soil and Water Mitigation Measures

Management and Mitigation Measures	Responsibility	Timing
Surface Runoff Management		
Sandbags or other suitable sediment traps would be placed around stormwater system inlets at risk of receiving surface runoff from the work area.	PM/SF	Ongoing
Sediment fences/traps would be cleaned out before 30% capacity is reached. The resultant sediment material would either be stored for re-use on site or disposed of to an approved facility.	SF	Ongoing
Any water treatment chemicals (flocculants) used on the project will be appropriately selected to ensure minimal impact on waterways.	EO/PM/SF	Ongoing
All stormwater pits that lie within disturbed areas shall be protected or isolated to prevent run-off from disturbed areas entering the drainage system.	AM/SF	As required
Any dewatering or water collected in excavation areas and sediment control structures will only be discharged to receiving waters when confirmed through recorded field tests/observations to comply with the requirements of the *Protection of the Environment Operations* Act, 1997. Where required, waters will be treated and then tested to confirm compliance.	PM/SF/EO	Prior to discharge
Groundwater Management Measures		
Management of any excess groundwater will involve collection, analysis, and treatment to ensure the water is compliant with the requirements of the *Protection of the Environment Operations Act 1997*.	PM/SF/EO	As required
Contaminated Water Management		
Concrete washout areas / pits will be adequately sized, regularly maintained and located in a position where wastewater will not enter any drainage lines / waterways.	PM/SF	Ongoing
All potentially contaminated wastewater will be contained and disposed of in accordance with DEC Guidelines *Assessment, Classification and Management of Liquid and Non-liquid Waste*.	PM/SF/EO	Ongoing
Monitoring, Auditing and Reporting		
The EO or delegate shall inspect erosion control devices following major rainfall events or on a weekly basis. Where controls deemed as inadequate additional controls will be installed e.g. sandbags, additional sed-fences, channels. Sediment removed from controls will be assessed and if suitable combined with stockpiled project spoil for reuse/disposal.	EO/SF	Weekly
In the event of a film, oil/grease stain or other indicator of pollution within site run-off being observed, the EO or delegate will inspect the work site to determine the source. Appropriate remedial measures to control the source will be determined for implementation by the Site Foreman in consultation with EO.	EO/SF	As required

SECTION 5 Inspection, Auditing and Monitoring

5.1 Environmental Monitoring and Inspection

Monitoring and auditing will be organised and undertaken by the Environmental Officer. The reporting program for the Project is:

5.2 Quarterly Environmental Auditing

Quarterly Environmental Audits to assess compliance with Sub Plans.

5.3 Environmental Inspections

An inspection of active work sites will take place after heavy rainfall, or at least weekly, to ensure compliance with all environmental requirements. The Weekly Inspection Form Rec 56 shall be used.

5.4 Daily Surveillance

The Site Foreman/Engineer will be responsible for ensuring day to day maintenance of environmental management measures and shall liaise with the EO on environmental matters as required.

The Site Foreman/Engineer shall inspect the site daily and shall;

1) ensure that all drains are operating effectively and shall make any necessary repairs,

2) remove any spilled material from area subject to runoff or concentrated flow,

3) remove trapped sediment where the capacity of the trapping device falls below 60%,

4) inspect the sediment basin after each rainfall event and/or weekly. Ensure that all sediment is removed once the sediment storage zone is full - refer to indicator pegs placed in accordance with construction sequence. Ensure that outlet works are maintained in fully operational condition at all times.

5) inspect discharge from proposed treatment system at regular intervals for any visible change in discharge quality. The frequency of the discharge checks will be determined based on the adopted treatment system.

6) maintain proprietary treatment systems in accordance with manufacturers/suppliers standards and specifications.

7) ensure rehabilitated lands have effectively reduced the erosion hazard and initiate upgrading or repair as appropriate,

8) construct additional erosion or sediment control works as may be appropriate to ensure the protection of down slope lands and waterways.

9) maintain erosion and sediment control measures in a fully functioning condition until all earthwork activities are completed and the site is rehabilitated,

10) inspect the contaminated soil stockpile area and check the integrity of the HDPE liner for any damage and immediately instigate repairs to the liner if necessary.

11) remove temporary soil conservation structures as the last activity in the rehabilitation program.

5.5 Incident Management Procedure

In the event of an occurrence:

- Action is taken commensurate to the incident or problem
- An Incident Report or Non-conformance is raised
- Personnel and authorities are advised, as required
- Remedies and/or corrective action is determined and instigated.

Examples of “Incidents” include fuel, oil and chemical spills, discharge of polluted waters, spillage of asbestos material, damage to protected flora and damage to archaeological sites, etc.

5.6 Water Quality Monitoring

Water quality monitoring shall be required for groundwater and surface water.

If deemed necessary, water quality monitoring will be used in the event of an uncontrolled sediment or chemical discharge to ensure compliance with regulations and also to assess the water quality discharged from site works.

A summary of the water quality parameters that may be tested are outlined in **Table 5.1** below.

If necessary monitoring will be conducted by the EO or appropriately qualified personnel who have training and expertise in water sampling techniques. Monitoring criteria will be in

accordance with the Environment Protection Licence requirements and laboratory analysis will occur as required.

Table 5.1 Water Quality Parameters

Parameter (and EPA limits)	Sampling Method	Analytical Method
Colour (no visible)	Inspection and Grab Sample	Field Analysis and confirmed as required with lab assessment
pH (6.5 –8.5)	Grab Sample	Field Analysis and confirmed as required with lab assessment
Turbidity (NTU)	Grab Sample	Field Analysis
TSS (50mg/L)	Grab Sample	Laboratory Analysis (as required to calibrate field analyses)
Conductivity (200-300µScm^{-1})	Probe or Grab Sample	Field Analysis or Laboratory Analysis (testing to occur when required)
Oil and Grease (no visible)	Grab Sample	Field Analysis and confirmed as required with lab assessment

ATTACHMENT 1

TO THE

SITE WORK PLAN

Project No. 3263

SAFE WORK METHOD STATEMENT

SAFE WORK METHOD STATEMENT

Company: Billbergia Group

Activity Description: Excavation and laying of stormwater and utility services

The purpose of this Safe Work Method Statement (SWMS) is to eliminate, or reduce as far as possible, the possibility of an accident occurring where persons may suffer injury or work related illness, or where property may be damaged. A consultative process will/has been used to complete this SWMS

COMPANY WORKERS SHALL FOLLOW THIS WORK METHOD WHEN CARRYING OUT THE NOMINATED WORKS

The personnel who carry out this task/activity must be involved in the preparation of this work method

Written & Prepared by:	Eddie Lucas	Signature:		Date:	24/6/10
Project Name:	1 Grand Avenue Camellia	Project Number:	3263	Principal Contractor:	Billbergia Group
Principal Contractor's Rep.	Eugene McGee	Signature:		Date:	

Risk Class Calculator

		Consequence				
		Disaster	**Very Serious**	**Serious**	**Substantial**	**Minor**
Likelihood	**Almost certain**	1	1	1	2	2
	Likely	1	1	2	2	2
	Possible	1	2	2	2	3
	Remotely Possible	2	2	2	3	3
	Practically impossible	2	3	3	3	3

Likelihood / Consequence	**Risk Class**
The hazard has the potential to: • permanently disable or kill • cause major damage to the structure • have significant impact on the surrounding population and environment	1
The hazard has the potential to: • temporarily disable or seriously injury • cause minor damage to the structure • breach the site boundary and pollute local environment	2
The hazard has the potential to: • cause minor injury • be contained within the site boundary	3

Billbergia creating communities	**SAFE WORK METHOD STATEMENT**	**Company: Billbergia Group** **Activity Description:** Excavation and laying of stormwater and utility services

ACTIVITY STEPS *(Break the job down into steps)*	**POTENTIAL HAZARDS** *(What can harm you?)*	**RISK CLASS**	*Safety Controls* *(what you will do to make the job safe)*	*Responsibility* *(who is going to ensure this happens)*
General planning	Inadequate planning	1	Ensure that site specific risk assessment and safety plan have been drawn up and that consultation has taken place with all appropriate persons/authorities prior to start of job.	Project Manager
		1	Ensure that service location plans have been obtained before commencement.	
	Inadequate training	1	Ensure that a competent supervisor is engaged to direct the work and that all site personnel have undertaken required training.	Project Manager
	Improvisation.	2	Arrange for the most appropriate plant and equipment available to be used on the job.	Project Manager / Supervisor
	Exposure to ultra violet light, glare.	3	Sunscreen 15+, shirt, hard hat flap and AS rated sunglasses to be provided and worn by all persons on site.	All personnel
	Hot weather.	3	Ensure adequate supply of cold drinking water to be provided to the work area.	Supervisor
	Wet weather	3	Generally work will stop in wet weather. If work must be completed in wet weather then appropriate wet weather clothing shall be provided. Supervisor to monitor conditions and suspend work if necessary.	Supervisor
	Manual Handling	3	Ensure that sufficient manpower and equipment are provided to undertake the required task and that job rotation occurs on a frequent basis.	Supervisor
	Dust / Asbestos	2	Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Excavation area to be wetted down prior to excavation process commencing and then wetting process to be continued for the duration of the excavation process. Nearby personnel to wear dust masks / respirators, gloves, disposable overalls as required. All persons to be trained to correctly fit and use	AS1 supervisor /Hygenist Project Manager AS1 Supervisor All personnel

	Chemical Hazards such as Heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH) and Monocyclic Aromatic Hydrocarbons (benzene, toluene, ethyl benzene, xylenes, BTEX		respiratory devices. All asbestos contaminated materials, overalls, etc will be disposed of at an EPA licensed landfill or buried on site in a location approved by Environmental Engineer. Workers to wet decontaminate before leaving the work area. A suitably qualified occupational hygienist will be engaged to prepare an air monitoring program for the excavation, storage and offsite removal of fill material containing asbestos in accordance with the Australian Code of Practice for the Safe Removal of Asbestos (NOHSC: 2002 (2005). This air monitoring program will assess the nature of the asbestos material, different wind movements across the site, location of nearby receptors such as child care centre, Train Station and residential housing. Air monitors to be set up to detect asbestos fibres adjacent to where excavations are occurring and at other locations identified in the air monitoring program, daily to ensure the suppression / wetting process is maintained as effective during the excavation process. Demarcation barriers are to be installed at the edge of the excavation area and maintained until the final clearance has been obtained for that area. Signage stating " Asbestos removal No…. unauthorised access" to be placed at the demarcation point and no unauthorised access to be allowed in that area. All workers to wash hands thoroughly prior to eating. Food to be consumed only in lunch shed. Soil to be removed from boots prior to entering lunch shed. Avoid direct contact with contaminated soils, surface water or groundwater. Avoid ingestion or swallowing of with contaminated soils, surface water or groundwater. Wear PPE as required for asbestos exposure above including disposable latex gloves for personnel involved in soil or groundwater sampling. No smoking, eating or drinking permitted on site in areas where the possibility of contamination exists. All workers to wash hands thoroughly prior to eating. Food to be consumed only in lunch shed. Soil to be removed from boots prior to entering lunch shed.	AS1 Supervisor AS1 Supervisor AS1 Supervisor AS1 Supervisor
Set out of line	Impact with road vehicles or plant	1	Assess site prior to commencement and arrange traffic control if necessary	Surveyor
Site establishment	Lack of awareness/orientation	3	Ensure that all personnel have undertaken a site specific induction before starting work. All persons to be made aware of asbestos and other	Supervisor

			contaminants on the site and that all workers involved in Site remediation are familiar with the Billbergia Safe Work Method Statement.	
	Vehicles / persons entering work area	1	Organise the fencing off of work area. Appropriate barriers and signs shall be erected to warn of hazards (including Asbestos) and to direct vehicles/persons away from the work area. Arrange for traffic control plan to be drawn up and implemented if required.	AS1 Supervisor Project manager
	Unsafe plant and equipment	1	Ensure that all plant is in good working order and fitted with functioning horns, reverse beepers, flashing beacons, fire extinguishers and roll-over protection. All lifting equipment and electrical equipment shall be tagged.	Supervisor
	Unskilled plant operators	2	Check that operators have appropriate tickets.	Supervisor
Delivery of Plant to site	Injury to the general public during transport of excavator to the work site.	1	Excavator/ plant to be secured to the low loader via suitable tie down chains and dogs. Bucket and attachments to be secured to the low loader and prevented from falling during transport. Excavator/ plant to be loaded onto the low loader by a competent operator. Excavator / plant to be transported to the worksite at times approved by the RTA and Local Council authorities and within time frames stipulated by those authorities.	Float Driver
Unload excavator / plant at site.	Persons crushed by reversing low loader and plant being unloaded.	1	Low Loader to unload the excavator / plant inside the site away from the public. Low loader to be driven in the forward direction at all times. Spotter to be present when the excavator/ Plant is driven off the low loader with the operator's cabin to be in the forward facing direction. Excavator / Plant to be fitted with travelling alarms and flashing orange beacon in working order. Excavator operator to be certified and competent to operate the excavator and daily pre-start inspection checks to be completed prior to this operation commencing.	Low Loader Driver, Plant Operator, Traffic controllers and Spotter.

			Spotter and Low loader driver to be positioned in a way that prevents them being in the fall shadow of the excavator, during the unloading procedure. Spotter, Low Loader Driver and others to remain in full view of the excavator / Plant operator at all times during this process and to ensure they are wearing high visibility vests at all times.	
Plant Operation	Unsafe Plant	2	Check that all plant is in good working order and fitted with functioning horns, reverse beepers, flashing beacons, fire extinguishers and roll-over protection on a daily basis. Ensure that plant receives regular maintenance.	Operator Operator
	Unskilled plant operators	2	Only ticketed operators are to operate plant under unsupervised conditions. Where non-ticketed personnel operate equipment they must be overseen by a qualified person and record all details of their work in a WorkCover training logbook.	Supervisor
	Difficult work space	2	Operator to check that mirrors are clean and undamaged and that personnel are clear of slewing area before moving. Headlights and floodlights are to be used in low light visibility.	Operator
	Impact with plant	1	Operator to ensure that work area is cordoned off with high visibility barrier mesh if non excavation personnel are likely to come within vicinity of slewing radius. All personnel working in vicinity of plant must wear high visibility vest/clothing.	Operator All personnel
	Machinery noise	2	All workers must wear earmuffs/earplugs when working near hammers and noisy plant.	All personnel
	Fume inhalation	2	Supervisor to ensure that, when working in areas of poor ventilation, plant is fitted with catalytic converters and industrial fans provided if necessary.	Supervisor
	Dust / asbestos fibres	2	Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Nearby personnel to wear dust masks / respirators, gloves, disposable overalls as required. Air monitors to be set up to detect asbestos fibres as identified in air monitoring plan daily.	Project Manager AS1 Supervisor All personnel AS1 Supervisor

	Moving Machinery	2	Operator to check path is clear, level and stable and that route is safe prior to travelling. Operator to ensure that passengers do not travel on plant.	Operator Operator
	Parking Plant	2	Operator to ensure that plant is hand-braked with buckets on ground before leaving machine. Operator to ensure that plant is not parked within the zone of influence of an excavation.	Operator Operator
	Laser Use	3	Operator to ensure that warning signage is in place whilst in use and that laser is not set up at eye level.	Operator
Power Tool Operation	Inadequate Training	2	Supervisor to ensure that all personnel are given suitable instructions in the operation of tools before use. Explosive Power Tools (EPTs) are to be used by ticketed personnel only. Concrete cutting of existing pavement to be carried out by approved experienced subcontractor.	Supervisor
	Unsafe equipment	2	Supervisor and worker to ensure that all guards are in place before use and that equipment is in good working order. Electrical tools must have a current tag.	Supervisor
	Nature of job/equipment	2	Workers to wear eye protection, hearing protection, gloves or other PPE as recommended by the operation manual.	All personnel
	Dust	2	Where dust suppression equipment is inadequate or impractical all personnel must wear appropriate dust masks or respirators.	All personnel
Concrete breaking	Noise	2	Operator to keep cab closed and wear hearing protection. Nearby personnel to wear hearing protection.	Operator All personnel
	Dust / Asbestos	2	Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Nearby personnel to wear dust masks / respirators, gloves, disposable overalls as required. Air monitors to be set up to detect asbestos fibres as identified in air monitoring plan daily.	AS1 Supervisor All personnel AS1 Supervisor

Excavation	Overhead hazards	1	Operator to observe safe distances from overhead electrical wires as stated on compliance plate. If safe distance cannot be maintained the wires shall be covered or isolation arranged with the relevant electrical utility.	Operator
	Existing in-ground service rupture	1	Project manager to check with relevant authorities and arrange on-site service location.	Project manager
			Project manager is to ensure that the project instruction for "Service Location, Identification and Excavation is followed.	Project manager
			Supervisor to check on service location prior to commencement. All services to be exposed during excavation. When in close vicinity to services, and where in doubt, hand-digging should be used.	Supervisor
	Excavation collapse	1	Supervisor to assess stability of all excavations taking into account the following: a) the depth of excavation b) nature and faults in the earth or rock c) presence of water d) loads in the zone of influence of the excavation e) vibration f) previous disturbances and excavations g) adjoining buildings and structures	Supervisor
			Supervisor to ensure excavation is benched or shored as required, and if depth is greater than 1.5m. Personnel are not to enter an excavation greater than 1.5m deep, without benching or shoring, in material other than rock. Where necessary, the stability of slopes or rock faces should be certified by a geotechnical engineer.	Supervisor
	Falls from heights	1	Supervisor to ensure that all excavations greater than 1.5m deep are fenced off. Where personnel are required to work close to the edge of a deep excavation each worker must wear a suitable fall arrest harness or other device.	Supervisor
	Unsecured work site	2	Supervisor to check all fencing daily with particular care required before finishing work for the day. If necessary night lighting and sentries should be used.	Supervisor

	Deep water collecting in excavation	1	The project manager / supervisor should assess the likelihood of the excavation collecting and retaining water. If the risk of drowning is high then lifebuoys should be provided close to the excavation.	Project manager / supervisor
	Excavating adjacent to buildings or structures	3	The project manager is to seek advice from appropriately qualified engineers prior to deep excavation close to buildings or structures. Where necessary, existing structures should be underpinned or otherwise retained.	Project manager
	Inrush of water	2	Inrush of water may be countered by: a) provision of sumps b) increasing exit points e.g. increasing the number of ladders c) lowering the water table (e.g. use of spear pumps) d) provision of pumps e) physical or mechanical barriers	
	Materials/traffic above or near excavation	1	Operator to ensure that no load is placed within the zone of influence of an unshored excavation. Operator to ensure that no load is placed closer to than a metre to an appropriately shored excavation.	Operator Operator
	Falling objects	1	Operators to ensure loads are secure and within the safe working limits of the machinery. Loads are not to be suspended or travel over persons working below. Operator to ensure that all debris and loose excavated spoil is pulled away from the top and sides of the excavation. Handrails with kickboards should be provided where loose material is present above an excavation. It is mandatory that all personnel wear safety helmets.	Operator Supervisor All personnel
	Unsafe access and untidy work areas	2	Supervisor to ensure that ladders, steps or ramp access are provided and maintained at entries to excavation. Workers to ensure that work areas and passageways are clear and free from obstructions. Workers to ensure that rubbish, including construction waste and excess excavated material are removed on ongoing basis.	Supervisor All personnel Supervisor
	Soil contaminants – gases,	1		AS1 Supervisor

	dusts, chemicals & biological substances		Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Nearby personnel to wear dust masks / respirators, gloves, disposable overalls as required. Air monitors to be set up to detect asbestos fibres as identified in air monitoring plan daily. If odours are encountered during excavation then the excavation is to be monitored by Environmental Engineer using PID monitor to detect hydrocarbons.	All personnel AS1 Supervisor Project Manager / Environmental Engineer
	Contamination spread to non affected areas or offsite	1	All clothing utilised shall be managed, as per the decontamination requirements of the NOHSC Standard 2002, at all times during the excavation and removal process. Only areas that require excavation for services and stormwater are to be disturbed. Site to be designated with an internal road system that prevents access by trucks to contaminated areas. All drivers are to ensure they remain on this road at all times while on the project site. Rails and flat spots on trucks to be checked for soil and trucks to be washed down prior to leaving site.	AS1 Supervisor Project Manager Project Manager Truck drivers AS1 supervisor
	Persons injured in contamination zone	2	Soil to be separated and stockpiled in designated areas as directed by Environmental Engineer. Excavator and other plant to be decontaminated, prior to departing site. A first aid kit and qualified first aid person are to be located on site during the removal process	Project Manager/ Enviro. Engineer AS1 Supervisor AS1 Supervisor
Prior to Loading truck with asbestos contaminated material for offsite disposal, trucks are to be lined with 200um plastic, use duct tape to secure plastic while loading material. (Not required if using sealed tarp trucks)	Fall from bin	2	Use fixed ladder on truck to gain access to truck body.	All personnel
	Hit by truck	2	Trucks to be turned off prior to workers lining bodies.	Truck Driver

Load truck	Asbestos fibres	1	Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Nearby personnel to wear dust masks / P3 respirators, gloves, disposable overalls as required. Air monitors to be set up to detect asbestos fibres adjacent to where loading is occurring daily and as indicated on Air monitoring program. Operator /drivers to remain in cab at all times with windows closed and air conditioning on reverse cycle.	AS1 Supervisor All personnel AS1 Supervisor Operator / Driver
	Unsafe loading practices	1	Remain in cab and do not stand on truck body to check spoil whilst truck is being loaded. Move truck to safe distance from spoil heap (allow enough space for next truck to begin loading) before getting out of the cab and putting on load covers. Use fixed ladder on truck to gain access to truck body.	Driver
		1	Do not load truck if driver or other workers may be hit by spoil whilst loading	Operator
Haulage	Unsafe plant	2	Ensure that trucks are in good working order and have load covers if travelling on public roads.	Driver
	Hazardous site access	2	Arrange for traffic control plan to be drawn up and implemented if required. Appropriate barriers and signs shall be erected to warn of hazards. Only ticketed traffic controllers wearing high visibility clothing are to direct traffic as trucks enter and exit site if required.	Project manager
		2		
	Asbestos fibres	2	Trucks to have their load sealed with 200um plastic & secured with duct tape. (Not required if using sealed tarp trucks). Trucks to be licensed to carry asbestos contaminated material when travelling on public roads.	AS1 Supervisor
	Fall from bin		Use fixed ladder on truck to gain access to truck body.	All personnel
	Hit by truck		Trucks to be turned off prior to workers sealing loads.	Truck Driver
	Spoil dropped on public roads	3	Ensure truck tyres are washed and loads secured before truck leaves site.	AS1 Supervisor

			Ticketed traffic controllers wearing high visibility clothing must be in position if public roads need cleaning by workers on foot.	
	Uneven or soft ground (Truck overturning)	1	Check that tip area is on even and solid ground before tipping load	Driver
	Contamination as a result of contaminated materials being dumped at other than a nominated waste disposal depot.	1	A waste disposal depot is to be nominated by Billbergia. A receipt of disposal is to be issued by the depot to the truck driver who in turn, is to return the receipt to the Supervisor	Project Manager AS1 supervisor, truck drivers.
Taking samples for Classification testing	Trench collapse	1	Supervisor to ensure excavation is benched or shored as required, and if depth is greater than 1.5m. Personnel are not to enter an excavation greater than 1.5m deep, without benching or shoring, in material other than rock.	Supervisor
			Operator to ensure that no load is placed within the zone of influence of an unshored excavation.	Operator
			Operator to ensure that no load is placed closer to than a metre to an appropriately shored excavation.	Operator
	Falls into trench	1	Supervisor to organise the barricading of open trenches when no work is taking place in the immediate area. Appropriate barriers and signs shall be erected to warn of hazards and to direct vehicles/persons away from the work area.	Supervisor
			Supervisor to ensure that ladders extending 1m or higher than the top of the trench are provided and maintained at 20m intervals.	Supervisor
	Soil contaminants – gases, dusts, chemicals & biological substances	1	Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used.	AS1 Supervisor
			Nearby personnel to wear dust masks / respirators, gloves, disposable overalls as required.	All personnel
			Air monitors to be set up to detect asbestos fibres as identified in air monitoring plan daily.	AS1 Supervisor
			If odours are encountered during excavation then the excavation is to be monitored by Environmental Engineer using PID monitor to detect hydrocarbons.	Environmental Engineer
	Contaminated groundwater	2	Pump groundwater to detention basin for testing.	Supervisor

Backfilling Excavation	Soil contaminants – gases, dusts, chemicals & biological substances		Works to be supervised by AS1 Contractor. AS1 Supervisor to ensure dust suppression measures such as hoses, sprinklers are used. Nearby personnel to wear dust masks / respirator, gloves, disposable overalls as required. Air monitors to be set up to detect asbestos fibres as identified in air monitoring plan daily. Backfill material to be clean imported material.	AS1 Supervisor AS1 Supervisor Supervisor
	Trench collapse	1	Supervisor to ensure excavation is benched or shored as required, and if depth is greater than 1.5m. Personnel are not to enter an excavation greater than 1.5m deep, without benching or shoring, in material other than rock. Operator to ensure that no load is placed within the zone of influence of an unshored excavation. Operator to ensure that no load is placed closer to than a metre to an appropriately shored excavation.	Supervisor Operator Operator
	Falls into trench	1	Supervisor to organise the barricading of open trenches when no work is taking place in the immediate area. Appropriate barriers and signs shall be erected to warn of hazards and to direct vehicles/persons away from the work area. Supervisor to ensure that ladders extending 1m or higher than the top of the trench are provided and maintained at 20m intervals.	Supervisor Supervisor
	Crushing Hazards	2	Steel toe capped boots to be worn at all times All personnel to be instructed in the correct use of hand operated compaction plant.	All personnel All personnel
	Load and Haul backfill material	2	Controls as describes in Load truck and Haulage above Check that tip area is on even and solid ground before tipping load	Supervisor Driver , spotter
	Uneven or soft ground (Truck overturning)	1		Driver / Supervisor / spotter
	Overhead hazards	1	Driver to observe safe distances from overhead electrical wires as stated on compliance plate when tipping. Spotter to guide truck driver. If safe	

	Plant rollover	1	distance cannot be maintained the wires shall be covered or isolation arranged with the relevant electrical utility. Fill / pavement materials to be spread by grader /loader in uniform layers. Edges of batters are to be even prior to use of roller.	Operator / Supervisor
	Persons struck by movement of Plant (Swing Area)	1	Swing area to be determined prior to the operation of the Plant commencing, all persons to be informed of the swing area. No person to stand behind the Plant and in the blind spot of the operator at any time. 10 metre demarcation zone to be implemented in front of and to the sides of the Plant. Pedestrian traffic to utilise high visibility vests at all times.	Operator, Supervisor and All
Delivery of backfill and materials to site.	Unsafe plant	2	Ensure that trucks are in good working order and have load covers if travelling on public roads.	Driver
	Hazardous site access	2	Arrange for traffic control plan to be drawn up and implemented if required. Appropriate barriers and signs shall be erected to warn of hazards. Only	Project manager
		2	ticketed traffic controllers wearing high visibility clothing are to direct traffic as trucks enter and exit site if required.	
	Member of the General Public injured during delivery of fill and pavement materials	1	Spotter to direct driver during delivery of fill / pavement materials. Deliveries not to enter site until pedestrian footpath is clear of pedestrians. Placement of fill /pavement material only to occur within confines of temporary fenced area and clear of pedestrian traffic. Spotter to be utilised to reverse truck and dog to the unloading point. Spotter to position himself and remain in a position whereby he remains visible to the truck driver at all times. Spotter never to be placed in a position where his is between a reversing vehicle and any static object, inclusive of the parked Plant.	Spotter, Truck Drivers, Plant Operator and Foreman
Tip backfill materials	Uneven or soft ground (Truck overturning)	1	Check that tip area is on even and solid ground before tipping load	Driver , spotter

	Overhead hazards	1	Driver to observe safe distances from overhead electrical wires as stated on compliance plate when tipping. Spotter to guide truck driver. If safe distance cannot be maintained the wires shall be covered or isolation arranged with the relevant electrical utility.	Driver / Supervisor / spotter
	Spoil dropped on public roads/ asbestos fibres tracked onto road	3	Ensure truck tyres are washed and loads secured before truck leaves site. Ticketed traffic controllers wearing high visibility clothing must be in position if public roads need cleaning by workers on foot. P3 respirator & disposable overalls to be worn during washing down.	AS1 Supervisor / driver
Place and compact trench backfill and pavement Materials	Plant rollover	1	Fill / pavement materials to be spread by grader /loader in uniform layers. Edges of batters are to be even prior to use of roller.	Operator / Supervisor Operator,
	Persons struck by movement of Plant (Swing Area)	1	Swing area to be determined prior to the operation of the Plant commencing, all persons to be informed of the swing area. No person to stand behind the Plant and in the blind spot of the operator at any time. 10 metre demarcation zone to be implemented in front of and to the sides of the Plant. Pedestrian traffic to utilise high visibility vests at all times.	Supervisor and All
Work on public roads	Road traffic	1	Project manager to arrange for traffic control plan to be drawn up and implemented if required.	Project manager
	Inadequate Training	1	Supervisor to ensure that all personnel working on public roads have undergone traffic control training. Only ticketed traffic controllers wearing high visibility clothing are to direct traffic.	Supervisor
	Lack of visibility	1	All personnel must wear high visibility vests/clothing.	All personnel
	Vandalism/Theft	2	Supervisor to check all signage, barriers, lights and other safety equipment on a daily basis and fix or replace if necessary.	Supervisor

Work in confined spaces	Lack of awareness	1	Supervisor to ensure entry is by Confined Spaces trained personnel only and confined spaces procedures are followed.	Supervisor
	Gases from sewer	1	Always verify that confined space procedures are followed, particularly the checking of the atmosphere inside the conduit with a gas meter.	Supervisor
			Rescue equipment to be set-up at connection point with First Aid Kit	Supervisor
			Appropriate personnel with First Aid certificate to be on site at all times whilst personnel are in the conduit	Supervisor
	Fumes and foul air	1	Supervisor to ensure additional ventilation is provided if required.	Supervisor
Improvement to SWMS	Note	2	If SWMS is deemed to be unsuitable or unsafe, works regarding that activity will cease until the new strategy for control is implemented	Project Manager
			The SWMS will be updated and reissued as necessary	Project Manager

Billbergia creating communities	SAFE WORK METHOD STATEMENT	**Company: Billbergia Group** **Activity Description:** Excavation and laying of stormwater and utility services

Handwrite site specific hazards and controls in space below if required				

Billbergia creating communities	**SAFE WORK METHOD STATEMENT**	**Company: Billbergia Group** **Activity Description:** Excavation and laying of stormwater and utility services

Personal Qualifications and Experience	Personnel, Duties and Responsibilities:	Training needed to Carry-out Activity
All Personnel		Consultation will be carried out via tool box meetings when needed, with all personnel that will be involved or affected by works relating to this SWMS.
Project Manager	• Conduct risk assessment. • Prepare site safety plan and SWMS. • Oversee implementation of site safety plan & SWMS. • Ensure personnel have required training. • Explain Safe Work Method Statement to Supervisor. • Maintain project records.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction
Supervisor	• Conduct site specific safety induction. • Carry out site specific risk assessment and amend this SWMS accordingly. • Conduct SWMS induction Oversee site personnel. • Implement site safety plan and ensure compliance with SWMS.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction Confined Spaces Training
Machine Operator	• Work in accordance with SWMS and supervisor's directions.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction National Certificate of competency for plant operation
Pipe Layer	• Work in accordance with SWMS and supervisor's directions.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction National Certificate of competency for plant operation

Labourers	• Work in accordance with SWMS and supervisor's directions.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction
Personal Qualifications and Experience	**Personnel, Duties and Responsibilities:**	**Training needed to Carry-out Activity**
AS1 Contractor	• Conduct risk assessment. • Prepare site SWMS. • Oversee implementation of site safety plan & SWMS. • Ensure personnel have required training. • Explain Safe Work Method Statement to Supervisor. • Set up air monitors Maintain project records.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction AS1 Licence
AS1 Supervisor	• Conduct site specific safety induction. • Carry out site specific risk assessment and amend this SWMS accordingly. • Conduct SWMS induction Oversee site personnel. • Implement site safety plan and ensure compliance with SWMS.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction AS 1 Licence First Aid Certificate.
AS1 Labourers	• Work in accordance with SWMS and supervisor's directions. • Cleaning and decontamination of all tools employed in the asbestos removal process	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction AS 1 Licence

Concrete Sawcutting Contractor	• Work in accordance with own SWMS and supervisor's directions.	Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction Training in operation of road saw
Environmental Engineer / Occupational Hygienist	• Conduct risk assessment. • Prepare air monitoring Program • Prepare site SWMS for validation testing. • Conduct site specific induction of SWP. • Monitor and test for contaminants • Maintain project records.	Degree in Environmental Engineering Workcover Construction Induction Certificate (White Card) Site Specific Safety Induction SWMS Induction

Engineering Details / Certificates / WorkCover Approvals	Codes of Practice / Australian Standards / Legislation
Supplier's Instructions Sydney Water Site Management Plan	OHS Act 2000 No 40 OHS Regulations 2001 Code of Practice Amenities for construction work Code of Practice: Excavation work Codes of Practice – Moving Plant on construction Sites NOHSC Documentation /Standards 1003, 2002 and 3008 WorkCover Authority NSW Publications Your Guide to Working With Asbestos 2008 & Guidelines for Licensed Asbestos Removal Contractors.

Standard Drawings	
Plant / Equipment needed	**Maintenance logbooks and daily checklists up to date:**
Excavator, backhoe, loader, roller, grader, water cart, bobcat, quick-cut saw, grinder, generator, hand operated compactors, spanners, hand tools, gas monitoring equipment, air monitoring equipment, PID monitor.	Check all equipment is in good working condition prior to starting. Use Civil Contractors Federation (CCF) Logbooks. Cleaning and decontamination of all tools employed in the excavation and pipe laying process

Billbergia creating communities	SAFE WORK METHOD STATEMENT	**Company: Billbergia Group** **Activity Description:** Excavation and laying of stormwater and utility services

We confirm that this Safe Work Method Statement (SWMS) has been explained to us and that we understand its contents. We also confirm that we understand its purpose of reducing, as far as practical, the chance of accidents occurring.

NAME	POSITION	SIGNATURE	DATE	EMPLOYER

Billbergia creating communities	SAFE WORK METHOD STATEMENT	**Company: Billbergia Group** **Activity Description:** Excavation and laying of stormwater and utility services

We confirm that this Safe Work Method Statement (SWMS) has been explained to us and that we understand its contents. We also confirm that we understand its purpose of reducing, as far as practical, the chance of accidents occurring.

NAME	POSITION	SIGNATURE	DATE	EMPLOYER

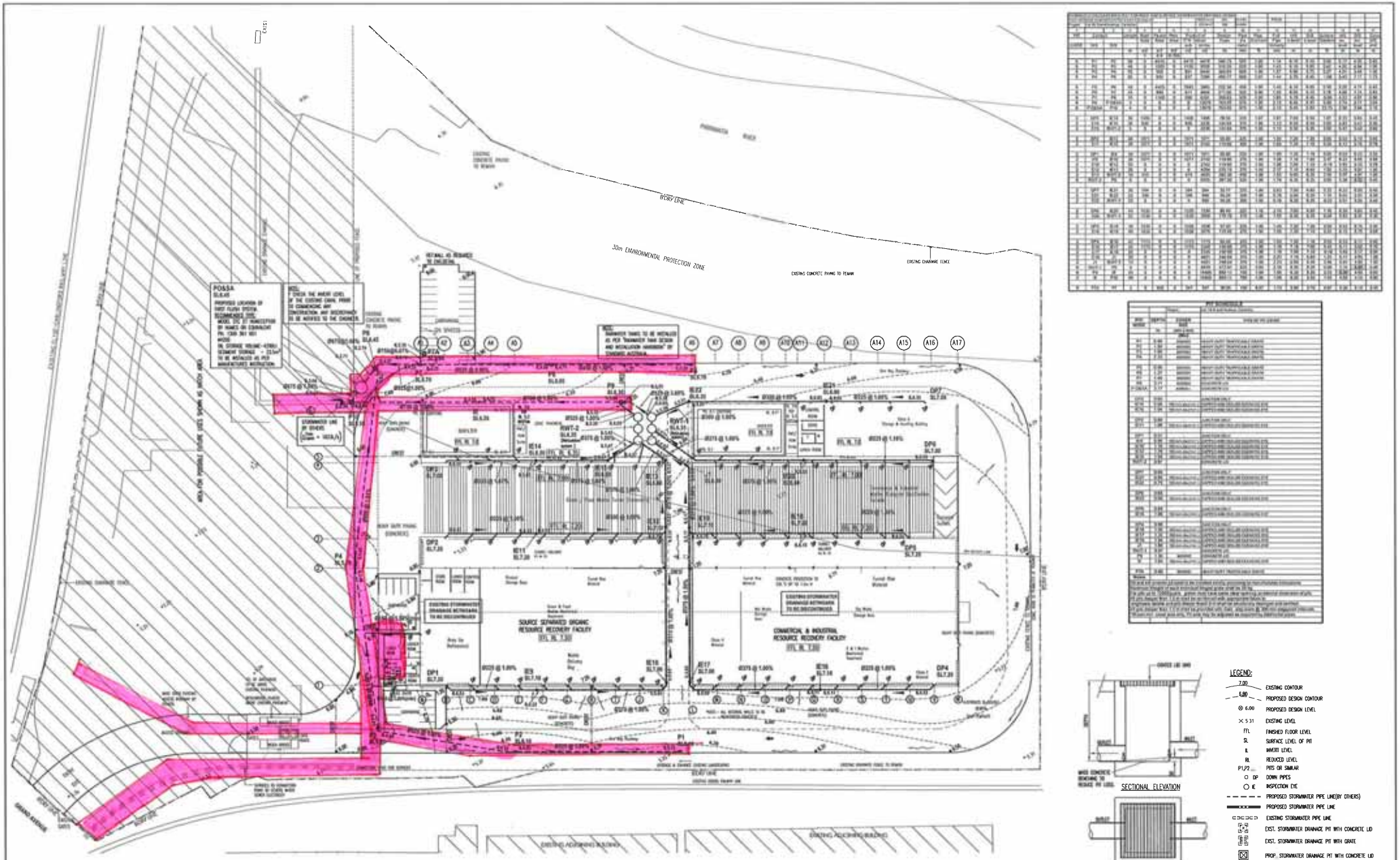
ATTACHMENT 2

TO THE

SITE WORK PLAN

Project No. 3263

SITE PLAN



STORMWATER DRAINAGE CONCEPT PLAN
1:500

Extent of Excavation for Stormwater & Services (subject to final design review + survey)

SECTIONAL ELEVATION

PLAN

TYPICAL STORMWATER PIT
SCALE 1:20

LEGEND:

- 7.00 — EXISTING CONTOUR
- 6.80 — PROPOSED DESIGN CONTOUR
- ⊘ 6.00 — PROPOSED DESIGN LEVEL
- × 5.31 — EXISTING LEVEL
- FFL — FINISHED FLOOR LEVEL
- SL — SURFACE LEVEL OF PIT
- IL — INVERT LEVEL
- RL — REDUCED LEVEL
- P1,P2... — PITS OR SIMILAR
- DP — DOWN PIPES
- IE — INSPECTION EYE
- PROPOSED STORMWATER PIPE LINE(BY OTHERS)
- PROPOSED STORMWATER PIPE LINE
- EXISTING STORMWATER PIPE LINE
- EXST. STORMWATER DRAINAGE PIT WITH CONCRETE LID
- EXST. STORMWATER DRAINAGE PIT WITH GRATE
- PROP. STORMWATER DRAINAGE PIT WITH CONCRETE LID
- PROP. STORMWATER DRAINAGE PIT WITH GRATE

ASSOCIATED DRAWING:
D02 - SEDIMENT CONTROL PLAN

Issue	By	Description	Date
A	LA	FOR DA	03.06.10

DRAINAGE CONCEPT NOTES
1. DRAINAGE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ASSOCIATED ARCHITECTURAL DRAWINGS.
[illegible] ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
[illegible] FINAL DESIGN OF THE STORMWATER DRAINAGE SHALL BE D[illegible] IN ACCORDANCE WITH THE REQUIREMENTS [illegible] OTHER RELEVANT AUSTRALIAN STANDARDS.

SURVEY
LEVELS ARE TO AHD

Date	JUN 2010
Scale	AS SHOWN
Drawn	GP
Checked	LA
Certified	

ALGORRY ZAPPIA & ASSOCIATES PTY. LTD.
Consulting Civil & Structural Engineers & Building Designers
Suite 4, Level 1, 84 Bathurst Street, Liverpool, NSW 2170
P.O. Box 825, Liverpool Business Centre, NSW 1871
Tel 9602 3133 / 9602 0303 Fax 9601 6903

Project: REMONDIS INTEGARTED RECYCLING PLANT
LOT 1B GRAND AVENUE
CAMELLIA

Client: REMONDIS PTY LTD

Project No: P3268

Title: STORMWATER DRAINAGE CONCEPT PLAN

Activity Type	Job No.	Sheet No.	Issue
DA	1097-10	D01	A

ATTACHMENT 3

TO THE

SITE WORK PLAN

Project No. 3263

SEDIMENT & EROSION CONTROL PLAN

A1

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   a. LOCAL AUTHORITY REQUIREMENTS
   b. EPA REQUIREMENTS
   c. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. THE WATER IN THE SEDIMENT BASIN(S) SHALL BE LOWERED PERIODICALLY TO MAINTAIN THE MINIMUM STORAGE VOLUME REQUIRED FOR FINE SOILS
5. AT ALL TIMES A WATER CART(S) SHALL BE MAINTAINED ON SITE TO:
   (A) WATER THE AREAS OF HYDROMULCH
   (B) CONTROL DUST
   WATERING OF MULCH, DUST OR VEGETATION MUST BE KEPT TO THE MINIMUM REQUIRED TO ACHIEVE SPECIFIED OUTCOMES. IN NO CASE SHALL AREAS BE OVER WATERED TO SATURATION OR TO THE POINT WHERE WATER PONDS ON THE SURFACE.
6. STORMWATER IN THE SETTLING ZONE SHALL BE DRAINED OR PUMPED OUT WITHIN 7 DAYS (NO LATER THAN 14 DAYS AS SITE CONDITIONS ALLOW) FOLLOWING RAINFALL EVENT IF THE NOMINATED WATER QUALITY TARGETS CAN BE MET. THE LOWER LEVEL OF THE SETTLING ZONE SHALL BE IDENTIFIED WITH A PEG THAT SHOWS CLEARLY THE LEVEL WHICH DESIGN CAPACITY IS AVAILABLE.
7. ON THE SUPERINTENDENT'S INSTRUCTIONS AIDED FLOCCULATION SHOULD BE EMPLOYED WHERE EXTENDED SETTLING IS LIKELY TO FAIL TO MEET QUALITY STANDARDS WITHIN 5 DAYS.
8. STORED SEDIMENT SHALL NOT ENCROACH INTO SETTLING ZONE. SEDIMENT REMOVED FROM SEDIMENT BASINS SHALL BE DISPOSED IN PLACES THAT WILL NOT RESULT IN A FUTURE EROSION OR POLLUTION HAZARD.
9. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
10. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

11. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   (A) INSTALL A WIND FENCE ALONG THE BOUNDARIES
   (B) INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES REFER DETAIL.
   (C) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   (D) INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
   (E) INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
   (F) UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

12. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
13. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

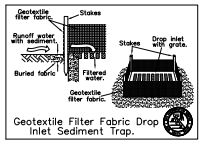
14. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
15. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
16. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
17. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

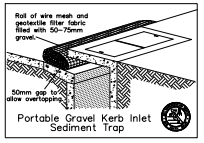
18. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
19. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
   (A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
   (B) ENSURING THAT NOTHING IS NAILED TO THEM
   (C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.

LEGEND

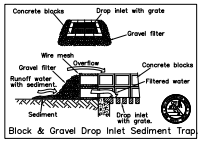
- Sewermain — S
- Sewer manhole — S
- Watermain — W
- Water hydrant — W
- Water stop valve — W
- Telstra line — T
- Telstra Pit/Manhole — T
- Gasmains — G
- Electricity power pole
- Electricity overhead cables — E
- Electricity underground cables — UE
- Bench mark
- Top of roof gutter — TG
- Tree (Canopy spread, trunk diameter) — Sp8 ø0.4
- SEDIMENTATION TRAP
- CATCHDRAIN
- SILT FENCING
- STRAW BALE BARRIER
- 150ø uPVC PIPE
- TEMPORARY CONSTRUCTION ACCESS



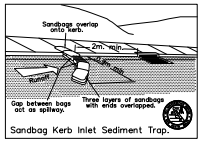
Geotextile Filter Fabric Drop Inlet Sediment Trap.



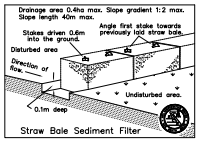
Portable Gravel Kerb Inlet Sediment Trap



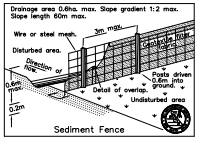
Block & Gravel Drop Inlet Sediment Trap



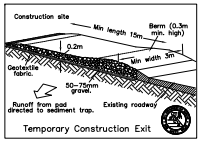
Sandbag Kerb Inlet Sediment Trap.



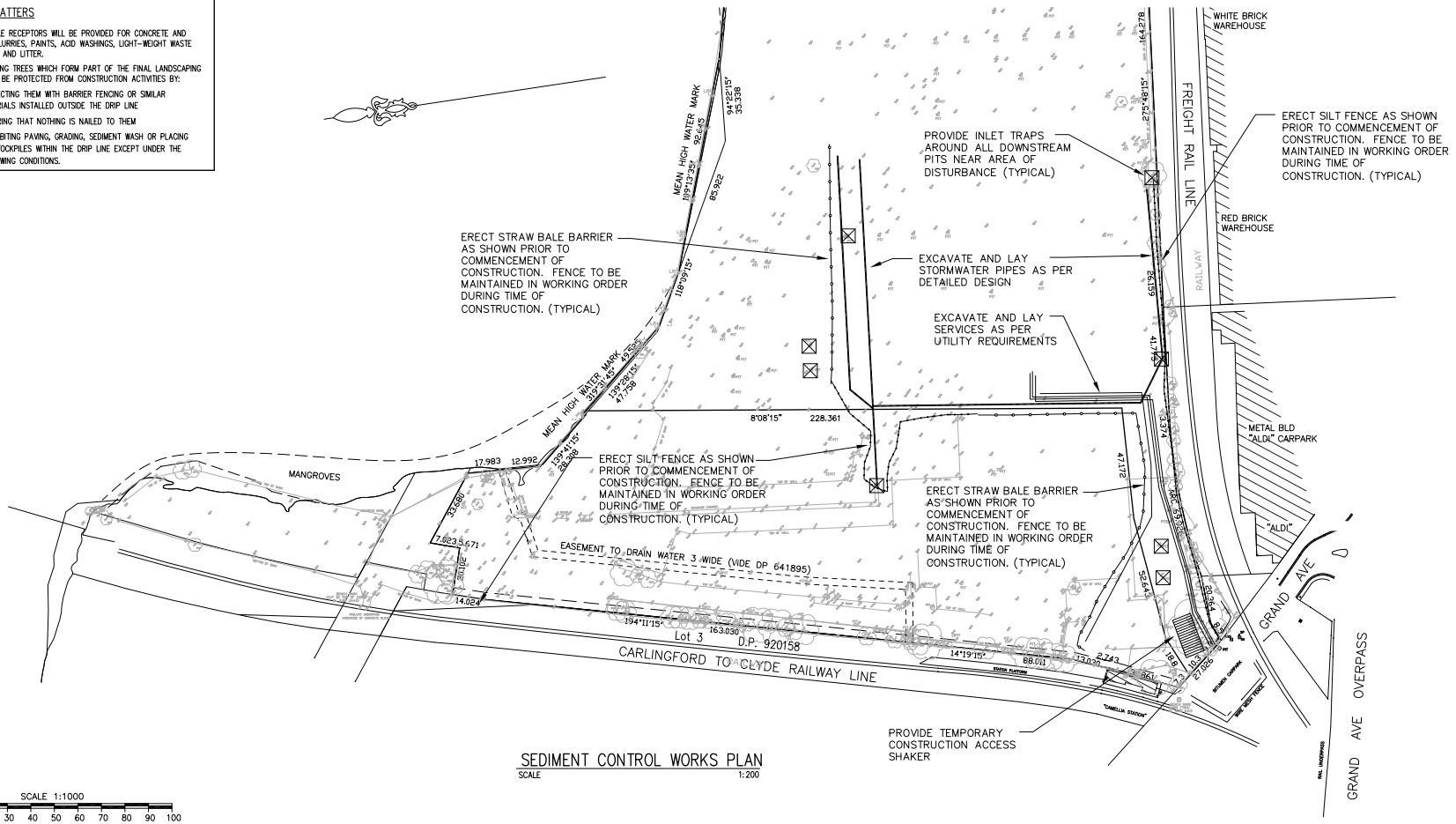
Straw Bale Sediment Filter



Sediment Fence



Temporary Construction Exit



SEDIMENT CONTROL WORKS PLAN

SCALE 1:200

SCALE 1:1000
0 10 20 30 40 50 60 70 80 90 100

ISSUE / REVISION				
A	ORIGINAL ISSUE FOR DEVELOPMENT APPROVAL	EL		3/08/10
	DESCRIPTION	BY	APPROVED	DATE

SCALE 1:1000 | DATUM AHD

ALL DIMENSIONS IN MM UNLESS OTHERWISE STATED

DRAWN EL DATE 25/07/10
DESIGNED EL DATE 20/07/10
APPROVED
DATE

EDWARD LUCAS, MIE Aust, CPEng
REGISTERED PROFESSIONAL ENGINEER No.118690
NPER-3 REGISTRATION CATEGORIES – CIVIL

LUCAS CONSULTING ENGINEERS PTY. LIMITED
CIVIL & STRUCTURAL ENGINEERS
CONSTRUCTION & PROJECT MANAGEMENT
P.O. BOX 7725, BAULKHAM HILLS B.C., N.S.W. 2153
TEL 0411 078 394
FAX (02) 8678 8965
ABN 82 081 237 890

CLIENT
BILLBERGIA PTY LTD
25 ANGAS STREET
MEADOWBANK NSW 2114

LOCAL GOVT. AREA
PARRAMATTA CITY COUNCIL

PROPOSED UTILITY SERVICES INSTALLATION

Lot 1 D.P. 226202 and Lots 1 & 2 D.P. 579735
No.1 GRAND AVENUE, CAMELLIA

STORMWATER EROISON & SEDIMENT CONTROL PLAN

FILE NO.	COMPUTER REF.
3263	3263SWMP-V1
SHEET NO.	REVISION
SHEET 1 OF 1	A
DRAWING NO.	
3263-DA-01	