



**ENVIRONMENTAL INVESTIGATION SERVICES**

# **REPORT**

**TO**

**JDH ARCHITECTS**

**ON**

## **REMEDIATION ACTION PLAN**

**FOR**

### **PROPOSED ALTERATIONS AND ADDITIONS**

**AT**

**WILLIAM STIMSON PUBLIC SCHOOL LILY STREET,  
WETHERILL PARK, NSW**

**10 AUGUST 2017**

**REF: E30426KPrpt-RAP**



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| Document Distribution Record |                  |                |
|------------------------------|------------------|----------------|
| Report Reference             | Distribution     | Report Date    |
| E30426KPKrpt-RAP DRAFT       | Client via email | 21 July 2017   |
| E30426KPKrpt-RAP             | Client via email | 10 August 2017 |

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## **EXECUTIVE SUMMARY**

JDH Architects ('the client') commissioned Environmental Investigation Services (EIS)<sup>1</sup> to prepare a Remediation Action Plan (RAP) for the proposed alterations and additions at William Stimson Public School, Lily Street, Wetherill Park. For the purpose of this report, the wider school property has been referred to as 'the site'. The site location is shown on Figure 1.

The RAP applies to the proposed development area only which has been nominated by the client in consultation with other project stakeholders. The area applicable to the RAP is referred to as 'the remediation area'. The terms 'northern area'/'northern remediation area' and 'southern area'/'southern remediation area' have also been used throughout this report to differentiate between the two development/remediation areas within the site.

EIS previously completed a Preliminary Stage1/Stage 2 Contamination Assessment and Preliminary Salinity Assessment at the site<sup>2</sup>. The contamination assessment should be read in conjunction with this RAP. Due to the historical land uses and assessment findings (including the presence of a historically identified asbestos zone in the southern remediation area), EIS were of the opinion that either further investigation and/or remediation would be required. Additional summary information from the contamination assessment is presented in Section 2 of this report.

The goal of the remediation is to render the site suitable and confirm the suitability of the site for the proposed primary school development. The primary aim of the remediation is to reduce the potential for exposure to the contaminants of concern so that the potential risks posed by these contaminants in the remediation areas are low and acceptable. The objectives of the RAP are to:

- Provide a methodology to remediate and validate the site;
- Provide a framework for staged remediation and validation of the various site areas;
- Provide a contingency plan for the remediation works;
- Outline site management procedures to be implemented during remediation work; and
- Provide an unexpected finds protocol to be implemented during the development works.

The proposed strategy for remediation includes a 'cap and contain' approach for the southern area and implementation of an unexpected finds protocol for the northern area. EIS are of the opinion that the remediation area can be made suitable for the proposed development provided this RAP is implemented accordingly. A site validation report (and environmental management plan) should be prepared on completion of remediation activities and should be submitted to the consent authority.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

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<sup>1</sup> Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

<sup>2</sup> EIS Report Reference E30426KPrpt, dated 5 June 2017 (referred to as the contamination assessment)

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## ABBREVIATIONS

|                                               |       |
|-----------------------------------------------|-------|
| Ambient Background Concentrations             | ABC   |
| Added Contaminant Limits                      | ACL   |
| Asbestos Containing Material                  | ACM   |
| Area of Environmental Concern                 | AEC   |
| Australian Height Datum                       | AHD   |
| Acid Sulfate Soil                             | ASS   |
| Benzene, Toluene, Ethylbenzene, Xylene        | BTEX  |
| Contaminated Land Management                  | CLM   |
| Conceptual Site Model                         | CSM   |
| Data Quality Indicator                        | DQI   |
| Data Quality Objective                        | DQO   |
| Ecological Investigation Level                | EIL   |
| Ecological Screening Level                    | ESL   |
| Environmental Management Plan                 | EMP   |
| Environmental Protection Agency               | EPA   |
| Environmental Site Assessment                 | ESA   |
| Ecological Screening Level                    | ESL   |
| Health Investigation Level                    | HIL   |
| Health Screening Level                        | HSL   |
| International Organisation of Standardisation | ISO   |
| Local Government Authority                    | LGA   |
| Map Grid of Australia                         | MGA   |
| National Association of Testing Authorities   | NATA  |
| National Environmental Protection Measure     | NEPM  |
| Organochlorine Pesticides                     | OCP   |
| Organophosphate Pesticides                    | OPP   |
| Polycyclic Aromatic Hydrocarbons              | PAH   |
| Potential Acid Sulfate Soil                   | PASS  |
| Photo-ionisation Detector                     | PID   |
| Practical Quantitation Limit                  | PQL   |
| Quality Assurance                             | QA    |
| Quality Control                               | QC    |
| Remediation Action Plan                       | RAP   |
| Site Assessment Criteria                      | SAC   |
| Sampling, Analysis and Quality Plan           | SAQP  |
| Total Recoverable Hydrocarbons                | TRH   |
| United States Environmental Protection Agency | USEPA |
| Virgin Excavated Natural Material             | VENM  |
| Volatile Organic Compounds                    | VOC   |
| Work Health and Safety                        | WHS   |

## **1 INTRODUCTION**

JDH Architects ('the client') commissioned Environmental Investigation Services (EIS)<sup>3</sup> to prepare a Remediation Action Plan (RAP) for the proposed alterations and additions at William Stimson Public School, Lily Street, Wetherill Park. For the purpose of this report, the wider school property has been referred to as 'the site'. The site location is shown on Figure 1.

The RAP applies to the proposed development area only which has been nominated by the client in consultation with other project stakeholders. The area applicable to the RAP is referred to as 'the remediation area'. The terms 'northern area'/'northern remediation area' and 'southern area'/'southern remediation area' have also been used throughout this report to differentiate between the two development/remediation areas.

EIS previously completed a Preliminary Stage1/Stage 2 Contamination Assessment and Preliminary Salinity Assessment at the site<sup>4</sup>. The contamination assessment should be read in conjunction with this RAP. Summary information from the contamination assessment is presented in Section 2 of this report.

This report has been prepared to support the lodgement of a Development Application (DA) to Fairfield City Council.

### **1.1 Proposed Development Details**

Based on the details provided, EIS understand that the proposed additions will include separate one and two storey buildings with associated concrete balconies, walkways (including soft fall paths) and landscaping. A new ramp and refurbishment of the hardstand sports court is proposed in the southern area. Sensory gardens and a vegetable patch may also be constructed in the northern area. We have assumed that limited excavations will be required for levelling purposes.

The development is likely to proceed in two stages, most likely commencing with the single storey support units and administration extension in the northern area. Other minor works are being undertaken at the site to facilitate the proposed development, including the removal of demountable buildings and other soft landscaping. This RAP does not apply to these works if they occur outside of the remediation area.

A selection of proposed development plans are included in the appendices.

### **1.2 Remediation Goal, Aims and Objectives**

The goal of the remediation is to render the site suitable and confirm the suitability of the site for the proposed primary school development.

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<sup>3</sup> Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

<sup>4</sup> EIS Report Reference E30426KPrpt, dated 5 June 2017 (referred to as the contamination assessment)

The primary aim of the remediation is to reduce the potential for exposure to the contaminants of concern so that the potential risks posed by these contaminants in the remediation areas are low and acceptable. The objectives of the RAP are to:

- Provide a methodology to remediate and validate the site;
- Provide a framework for staged remediation and validation of the various site areas;
- Provide a contingency plan for the remediation works;
- Outline site management procedures to be implemented during remediation work; and
- Provide an unexpected finds protocol to be implemented during the development works.

### 1.3 Scope of Work

The RAP was prepared generally in accordance with an EIS proposal (Ref: EP45129KPrev1) of 16 June 2017 and written acceptance from the client dated 7 July 2017. The scope of work included the following:

- Review of the EIS (2017) contamination assessment report;
- Review of the generic Asbestos Management Plan for NSW Government Schools (2015);
- Review of the proposed development details; and
- Preparation of a report.

The report was prepared with reference to regulations/guidelines outlined in the table below. Individual guidelines are also referenced within the text of the report.

Table 1-1: Guidelines

| Guidelines/Regulations/Documents                                                                                  |
|-------------------------------------------------------------------------------------------------------------------|
| Contaminated Land Management Act (1997) <sup>5</sup>                                                              |
| State Environmental Planning Policy No.55 – Remediation of Land (1998) <sup>6</sup>                               |
| Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998) <sup>7</sup>                 |
| Guidelines for Consultants Reporting on Contaminated Sites (2011) <sup>8</sup>                                    |
| Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006) <sup>9</sup>                                       |
| National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) <sup>10</sup> |

<sup>5</sup> NSW Government Legislation, (1997). *Contaminated Land Management Act 1997*. (referred to as CLM Act 1997)

<sup>6</sup> NSW Government, (1998). *State Environmental Planning Policy No. 55 – Remediation of Land*. (referred to as SEPP55)

<sup>7</sup> Department of Urban Affairs and Planning, and Environment Protection Authority, (1998). *Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land*. (SEPP55 Planning Guidelines)

<sup>8</sup> NSW Office of Environment and Heritage (OEH), (2011). *Guidelines for Consultants Reporting on Contaminated Sites*. (referred to as Reporting Guidelines 2011)

<sup>9</sup> NSW DEC, (2006). *Guidelines for the NSW Site Auditor Scheme, 2<sup>nd</sup> ed.* (referred to as Site Auditor Guidelines 2006)

<sup>10</sup> National Environment Protection Council, (2013). *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999* (as amended 2013). (referred to as NEPM 2013)

## 2 **SITE INFORMATION**

### 2.1 **Site Identification**

Table 2-1: Site Identification

|                                                    |                                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------------|
| Site Address:                                      | William Stimson Public School, 36 Lily Street, Wetherill Park, NSW              |
| Site Owner:                                        | Minister for Education                                                          |
| Lot & Deposited Plan:                              | Lot 1 DP564629                                                                  |
| Current Land Use:                                  | Primary School                                                                  |
| Proposed Land Use:                                 | Unchanged                                                                       |
| Local Government Authority (LGA):                  | Fairfield City Council                                                          |
| Current Zoning:                                    | R2 – Low Density Residential                                                    |
| Site Area (m <sup>2</sup> approx.):                | 28,500 (the remediation areas are estimated to cover <1,200m <sup>2</sup> each) |
| RL (AHD in m) (approx.):                           | 47-49                                                                           |
| Geographical Location (decimal degrees) (approx.): | Latitude: -33.854567<br>Longitude: 150.905794                                   |

### 2.2 **Background**

The client provided EIS with a copy of an existing, site-specific *Asbestos in Grounds, Asbestos Management Plan* (Parsons Brinkerhoff (PB), 2013)<sup>11</sup>. The AMP identified an “Asbestos Zone” in the south-eastern section of the site, to the east of the basketball courts (see Figure 3). Fragments of asbestos containing material (ACM) in the form of fibre cement were identified in fill in this area in 2006.

The AMP indicated that the fragments were picked from the ground surface and areas were landscaped with raised mulched garden beds (based on the EIS inspection as documented in the contamination report, the area of the raised garden beds was relatively limited and did not cover the entire asbestos zone).

<sup>11</sup> PB, (2013). *Asbestos in Grounds, Asbestos Management Plan, William Stimson Public School, Wetherill Park, NSW*. Dated July 2013 (referred to as the AMP)

## **2.3 Site Description**

The site is located on the eastern side of Lily Street and is within an area of Wetherill Park that is characterised by residential land use. Shakespeare Park bounds the site to the north.

The site is located within gently undulating terrain characterised by variable slopes of up to 3°. The site is rectangular in plan and generally slopes towards the north and north-east at approximately 1-2°. Parts of the site appeared to have been cut and/or filled to create level platforms for buildings and recreational areas.

A walkover inspection of the site was undertaken by EIS on 13 May 2017 for the contamination assessment. At the time of the inspection the site was occupied by William Stimson Primary School and comprised various buildings, grassed and paved recreational areas, and a car park. Visible or olfactory indicators of contamination were not observed in the remediation areas.

## **2.4 Summary of Geology and Hydrogeology**

Regional geological maps reviewed for the contamination assessment indicated that the site is predominantly underlain by Bringelly Shale which typically consists of shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.

Information reviewed for the contamination assessment indicated that the subsurface conditions at the site are likely to consist of residual soils overlying relatively shallow shale bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions was considered to be low. Use of groundwater is not proposed as part of the development.

There were no registered groundwater users within 500m of the site. The nearest registered bore was located approximately 936m to the south of the site and was registered for irrigation purposes.

## **2.5 Summary of Site History**

The contamination assessment included a review of historical information from various sources. A summary of the historical land uses and activities is presented in the table below:

Table 2-2: Summary of Historical Land Uses

| <b>Year(s)</b>      | <b>Potential Land Use / Activities</b>                                                                                                                                                                                                                 |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Early 1900s to 1977 | Residential (south-western corner) and agricultural/market gardens (eastern area). A large portion of the site including the northern remediation area generally appeared vacant and vegetated until the development of the school.                    |
| 1977 to present     | The residence and associated structures in the south-western corner of the site were demolished around 1970 to 1980. The school appeared to have been constructed sometime between 1982 and 1991. Alterations and additions were undertaken over time. |

| Year(s) | Potential Land Use / Activities                                                                                                    |
|---------|------------------------------------------------------------------------------------------------------------------------------------|
|         | EIS' interpretation of the 1982 aerial photograph indicated that isolated fly tipping of waste may have occurred around this time. |

## 2.6 Summary of Soil Results

Soil samples analysed for the contamination assessment identified one elevated concentration of total recoverable hydrocarbons (TRHs) above the ecological/environmental site assessment criteria (SAC). The elevated result was identified in BH6 (see Figure 2) located in the southern area. BH6 will be covered by the proposed building, therefore the contamination assessment concluded that there will be no complete pathway between the contaminant and the receptors, post development. On this basis the TRH was considered to pose a relatively low environmental/ecological risk. Migration to groundwater was considered to be unlikely based on the soil type/hydrogeology.

With the exception of TRH as discussed above, there were no actual sources of soil contamination identified in the remediation areas, based on the testing undertaken for the assessment. However, there was considered to be a potential for asbestos to be present that was not identified during the investigation. The contamination assessment concluded that these risks would need to be addressed as part of the development process.

## 2.7 Summary of Recommendations

Due to the historical land uses and assessment findings (including the presence of a historically identified asbestos zone in the southern remediation area), EIS were of the opinion that either further investigation and/or remediation would be required. The contamination assessment documented the following two options for consideration:

- 1) A RAP could be prepared on the basis that the southern remediation area is impacted by TRHs above the environmental/ecological SAC, and that the potential for ACM to be present in fill in this area is high. All fill/soil in the southern investigation area would be deemed to be contaminated with ACM. The approach for remediation of the southern investigation area would be based around a 'cap and contain' strategy whereby the building and surrounding balconies eliminate the potential for exposure to the contamination. The RAP would include an unexpected finds protocol which would need to be implemented for all proposed development works, including those in the northern area where sampling for the investigation was limited to two locations; or
- 2) An unexpected finds protocol could be developed for the northern area, and an asbestos quantification assessment (AQA) could be undertaken for the southern area. The results of the AQA would dictate whether remediation of the southern area is required.

Following consultation with the client, option 1 outlined above was selected.

### 3 **CONCEPTUAL SITE MODEL (SITE CHARACTERISATION)**

The table below includes an iteration of the conceptual site model (CSM) based on the findings of the contamination assessment. This CSM has been used to design the remediation strategy.

Table 3-1: CSM

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contaminant source(s) and contaminants of concern | <p>The primary contamination source in the remediation area is fill. The fill at BH6 in the southern remediation area is impacted by mid-fraction TRHs above the ecological/environmental SAC. The fill in the southern remediation area contains building and demolition waste and has also been presumed to contain asbestos in the form of bonded ACM.</p> <p>Fill in the northern remediation area appeared to be consistent with re-worked natural soil and did not contain building and demolition waste at the locations sampled during the contamination assessment. There is considered to be a potential for asbestos to be present as bonded ACM in this area.</p> |
| Affected media                                    | Soil/fill has been identified as the affected medium.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Receptor identification                           | <p>Human receptors for asbestos contamination include site users (teachers, support staff, maintenance staff and primary school children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent residential land users.</p> <p>Ecological receptors for TRH contamination include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas and gardens).</p>                                                                                                                                                                                                                               |
| Exposure pathways                                 | The exposure pathway relevant to the human receptors includes inhalation of airborne asbestos fibres. The exposure pathways relevant to the ecological receptors include direct contact and ingestion (or uptake from plants) of TRHs. The TRHs identified are not volatile and do not pose a risk to human health.                                                                                                                                                                                                                                                                                                                                                           |
| Evaluation of data gaps                           | The low sampling density in the northern area and the absence of asbestos quantification data have been identified as data gaps. Using a weight of evidence approach, these data gaps have been adequately considered in the RAP as outlined in Section 4.                                                                                                                                                                                                                                                                                                                                                                                                                    |



## **4 REMEDIATION EXTENT**

### **4.1 Known Extent**

The known extent of remediation for the purpose of the RAP includes the entire southern remediation area as defined on Figure 4.

### **4.2 Unknown Extent**

Remedial actions are not currently proposed in the northern remediation area (see Figure 4). Potential contamination in this area of the site will be managed via the implementation of an unexpected finds protocol. The implementation of this protocol will dictate whether remediation of the northern area is required.

## **5 REMEDIATION OPTIONS**

### **5.1 Soil Remediation**

The NSW EPA follows the Australian and New Zealand Environment and conservation Council and National Health and Medical Research Council (ANZECC/NHMRC) Guidelines for the Assessment and Management of Contaminated Sites (1992) published hierarchy for the remediation of contaminated sites. The preferred order for soil remediation and management is as follows:

- 1) On-site treatment of soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level;
- 2) Off-site treatment of excavated material so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site;
- 3) Removal of contaminated material to an approved site or facility, followed where necessary by replacement with clean material; and
- 4) Consolidation and isolation of the soil on-site by containment within a properly designed barrier.

The Site Auditor Guidelines 2006 provide the following additional requirements to be taken into consideration:

- Remediation should not proceed in the event that it is likely to cause a greater adverse effect than leaving the site undisturbed; and
- Where there are large quantities of soil with low levels of contamination, alternative strategies should be considered or developed.

## 5.2 Consideration of Remediation Options

The tables below discusses a range of remediation options:

Table 5-1: Site Specific Remediation Options

| Option                                                     | Discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Applicability                                                                                                                                                                                                                                          |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Option 1</u><br>On-site treatment of contaminated soil  | <p>On-site treatment provides a mechanism to reuse the processed material and in some instances, to avoid the need for large scale earthworks. Some of the treatment options include bio-remediation, soil washing, air sparging and soil vapour extraction, thermal desorption and physical removal of bonded ACM fragments.</p> <p>Depending on the treatment option, licenses may be necessary for specific individual waste streams due to the potential for air pollution and the formation of harmful by-products during incineration processes.</p>                                                                                                                                                                                           | Physical removal of bonded ACM may be suitable, however this would require significant earthworks. The remaining treatment options are not appropriate or economically viable for the contaminants of concern and the volume of contaminated material. |
| <u>Option 2</u><br>Off-site treatment of contaminated soil | <p>Contaminated soils are excavated, transported to an approved/ licensed treatment facility, treated to remove/stabilise the contaminants then returned to the subject site, transported to an alternative site or disposed to an approved landfill facility.</p> <p>This option provides for a relatively short program of on-site works, however there may be some delays if the material is to be returned to the site following treatment. The cost per tonne for transport to and from the site and for treatment is considered to be relatively high. The material would also have to be assessed in terms of suitability for reuse as part of the proposed development works under the waste and resource recovery regulatory framework.</p> | Not applicable for this project.                                                                                                                                                                                                                       |
| <u>Option 3</u><br>Removal of contaminated                 | Contaminated soils would be classified in accordance with NSW EPA guidelines for waste disposal, excavated and disposed of off-site to a NSW EPA licensed landfill. The material would have to meet the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | This is a potential option for this project. However, based on the assumptions underlying the RAP, this would require excavation and off-site disposal of                                                                                              |

| Option                                                                                 | Discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Applicability                                                                                                                    |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| material to an appropriate facility and reinstatement with clean material              | requirements for landfill disposal. Landfill gate fees (which may be significant) would apply in addition to transport costs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | all fill which may not be economically viable. This option is also not considered to be sustainable in an environmental context. |
| <u>Option 4</u><br>Consolidation and isolation of impacted soil by cap and containment | <p>This would include the placement of an impermeable barrier such as concrete/pavers etc, or a warning barrier and non-contaminated soil material, over the existing ground surface to isolate the contaminated material and thereby reduce the health risk to future site users. This action may also reduce the transport of contamination via surface water movement and dust generation.</p> <p>The capping and/or containment must be appropriate for the specific contaminants of concern. An ongoing Environmental Management Plan (EMP) would be required and site identification documentation, possibly including the Section 149 council planning certificate, land title or other appropriate statutory documentation (in consultation with the Department of Education), would be modified to note the presence of the contamination. This may impact upon development approval conditions, place restrictions on the use of the land and limit the future potential land value.</p> | Considered to be applicable and is the preferred option for the southern remediation area.                                       |

## 6 **REMEDIATION DETAILS**

Prior to commencement of any demolition, site preparation or remediation work within the remediation area, a suitably qualified contaminated land consultant<sup>12</sup> should be engaged as the validation consultant to validate the implementation of the RAP. The site management plan for remediation works (see Section 9) should also be reviewed and implemented by the remediation contractor.

### 6.1 **Sequence of Remediation Works**

EIS understand that the remediation is likely to be completed in two primary stages including:

- 1) The southern area; and
- 2) The northern area.

EIS are of the opinion that the sequence of the proposed development/remediation works not have a significant impact on the outcome of the validation provided that the potential for cross-contamination is considered during all on-site activities.

### 6.2 **Remediation – Southern Area**

The preferred option for remediation of the southern area is Option 4 (cap and contain). A cap and contain strategy is considered to be the most appropriate option as it reduces the potential for disturbing asbestos impacted fill, and can be relatively easily integrated into the proposed development works and the existing asbestos management framework applicable to the site.

As the built development features will form an integral part of the capping strategy, EIS recommend that the client and other relevant stakeholders engage early with the consent authority to ensure the conditions of consent align with the RAP requirements (e.g. remediation under this RAP cannot be completed prior to the Construction Certificate, however the remediation and validation can be completed prior to the Occupation Certificate).

The specific remediation details for the southern area are described in the table below:

Table 6-1: Remediation Details – Southern Area

| Step | Procedure                                                                                                                                                                                                          |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.   | <u>Site Set-Up:</u><br>Reference should be made to Section 9 prior to commencement of works. EIS understand that the proposed development works will be undertaken with regards to the existing AMP, therefore the |

<sup>12</sup> EIS recommend that the consultancy engaged for the work be a member of the Australian Contaminated Land Consultants Associated (ACLCA), and/or the individual undertaking the works be certified under one of the NSW EPA endorsed certified practitioner schemes

| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | existing AMP should be reviewed by the contractors. A construction-specific AMP should subsequently be prepared for the specific development and remedial activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 2.   | <p><u>Personal Protective Equipment (PPE) and Work Health and Safety (WHS):</u><br/>           Check PPE and WHS requirements prior to commencement of remediation works. The minimum PPE required for the remediation of asbestos includes the following:</p> <ul style="list-style-type: none"> <li>• Disposable coveralls rated type 5, category 3 (prEN ISO 13982–1) or equivalent. The hood must be worn;</li> <li>• Disposable gloves (heavy duty may be required); and</li> <li>• P2/P3 respirator conforming to the requirements of AS/NZS 1716:2009.</li> </ul> <p>Other site/project specific PPE may be required including hard hat, covered clothing, eye protection, steel toed boots and will be dependent on the requirements of the contractor.</p>                                                                                                                                                                |
| 3.   | <p><u>Review of Proposed Capping Design and Adjustment of Site Levels:</u><br/>           The contractor should undertake a review of the minimum acceptable capping standards outlined in Step 4. In the event that the site levels need to be reduced in order to achieve these standards, a waste classification should be undertaken for the material to be excavated. The material should subsequently be excavated and disposed off-site under the waste classification provided.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 4.   | <p><u>Site Preparation and Surface Clearance:</u><br/>           Once the initial site levels are achieved and the site has been prepared to facilitate the remediation and construction activities, the ground surface should be inspected and any visible fragments of fibre cement/ACM should be picked from the surface, double bagged and disposed of to a licensed facility. A surface clearance inspection for visible asbestos materials should subsequently be undertaken by a licensed asbestos assessor or similar competent person. A clearance certificate should be provided for inclusion in the validation report.</p>                                                                                                                                                                                                                                                                                             |
| 5.   | <p><u>Capping Procedures:</u><br/>           The following are considered to be the minimum acceptable capping standards for the purpose of remediation:</p> <ul style="list-style-type: none"> <li>• Existing paved areas that will remain largely undisturbed (i.e. the existing sports court) – no action required;</li> <li>• Unpaved areas including landscaped or grassed areas with shallow plantings, turf and/or rubber soft fall – visual marker layer comprising geogrid (e.g. TriAx) and geofabric<sup>13</sup> over the contaminated fill, overlain by a minimum of 0.5m of clean (validated) soil;</li> <li>• Unpaved areas including landscaped or grassed areas with tree plantings – tree plantings should be boxed out to 1m deep over a 1m by 1m area. The base and sidewalls of the tree pits should be lined with visual marker layer comprising geogrid and geofabric over the contaminated fill.</li> </ul> |

<sup>13</sup> Reference to 'geofabric' in the context of this RAP includes a high visibility, orange, non-woven product that is also suitable from an engineering and geotechnical point of view. A product such as Bidim A14 or similar would be acceptable to achieve its objective under this RAP.

| Step | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <p>Areas where no trees are to be planted can include the marker layers and 0.5m of clean soil as noted above. The root ball of the tree should be approximately 0.5m above the marker layer;</p> <ul style="list-style-type: none"> <li>• New hardstand areas, including areas beneath the building slab, paved walkways and new paved ramps – visual marker layer comprising geogrid and geofabric over the contaminated fill, overlain by pavement materials;</li> <li>• New raised/suspended walkways or areas beneath raised/suspended balconies (assuming there is no accessible crawlspace beneath the walkways/balconies) – visual marker layer comprising geogrid and geofabric over the contaminated fill. If the marker layer is not visible and does not pose an aesthetic issue, no further capping other than construction of the walkway/balcony is required. Mulch or other suitable material could otherwise be placed over the marker layer (prior to construction of the overlying raised/suspended walkway/balcony) to a depth of approximately 0.1m. In the event that there is an accessible crawl space or the area beneath the suspended walkway/balcony is easily accessible, a more robust cap should be constructed, similar to that required for new paved or unpaved areas; and</li> <li>• Underground services – all services to be placed above the marker layer. If service installation extends below the contaminated fill, the base and walls of service trenches are to be lined with a visual marker layer comprising geogrid and geofabric. Service trenches are to be backfilled with clean (validated) materials. Overlying capping requirements to meet the specification for paved or unpaved areas etc as noted above.</li> </ul> <p>A general capping specification plan for the above is provided in the appendices. The integration of the different capping requirements across the site and between the various areas should be appropriately considered prior to commencement.</p> <p>Considering the minimum acceptable capping standards, remediation of capped areas will be undertaken as follows:</p> <ul style="list-style-type: none"> <li>• The marker layer placement should be inspected by the validation consultant prior to the placement of the overlying clean capping materials/pavement. This should be documented photographically;</li> <li>• In any unpaved areas, a levels survey should be completed to document the ground levels at the time the visual marker layers are installed (and prior to placement of the clean capping materials);</li> <li>• Any tree pits and service trenches should be inspected and documented by the validation consultant;</li> <li>• Imported capping materials should be validated in accordance with Section 7;</li> <li>• Construct the capping layers to meet the requirements of the development and address the minimum acceptable capping standards; and</li> <li>• Following installation of the capping materials in unpaved areas, a levels survey should be completed to document the finished ground levels. This survey will be compared to the previous survey to confirm the minimum capping thickness of 0.5m is achieved in the unpaved areas.</li> </ul> |

### **6.3 Remediation – Northern Area**

Remedial actions are not currently proposed for the northern area. The following unexpected finds procedure should be implemented for the northern area. Unexpected finds would typically be able to be identified by visual or olfactory indicators and could include:

- Waste materials in fill, including building and demolition waste;
- Fibre cement fragments (e.g. ACM);
- Stained fill/soil;
- Odorous soils (e.g. hydrocarbon odours); and/or
- Ash, slag and/or coal wash.

Following the initial site preparation works (e.g. following demolition of the buildings, pavements and scrape back of grass/vegetation etc), the northern area should be inspected by the validation consultant. A letter should be prepared to document the findings of the inspection and provide further commentary on contamination and any unexpected finds. The following should be implemented in the event of an unexpected find:

- All work in the immediate vicinity should cease, and the contaminated land consultant (who was engaged to complete the initial inspection should be contacted immediately to inspect and document the find;
- Temporary barricades should be erected to isolate the area;
- The consultant should develop and implement a strategy to assess the issue and provide guidance on the appropriate course of action; and
- Any actions should be implemented and validated to demonstrate that there are no unacceptable risks to the receptors. The remediation actions outlined in Section 6.2 could be utilised where appropriate, depending on the contamination issues identified.

### **6.4 Remediation Documentation**

The construction/remediation contractor must retain all documentation associated with the remediation, including but not limited to:

- Waste/surplus soil disposal docket;
- Imported materials information;
- Photographs of remediation works, including photographs of marker layers prior to placement of the overlying capping materials;
- Asbestos air fibre monitoring results; and
- Site surveys of any capped areas after the marker layers are installed, and again after the capping layers are constructed.

Copies of these documents must be forwarded to the environmental consultant on completion of the remediation for inclusion in the final validation report.



## 7 **VALIDATION PLAN**

Validation is necessary to demonstrate that remedial measures described in this RAP have been successful and that the remediation area is suitable for the intended land use. The validation can be staged if required to permit the various areas of the site to be remediated, validated and signed off progressively.

The sampling and documentation requirements for the validation are outlined in Section 7.1. These are the minimum requirements based on conditions anticipated to exist at the site. Additional validation sampling may be required based on site observations made during remediation. Site observations will also be used as a validation tool to assess the extent of site contamination.

### 7.1 **Validation Sampling and Documentation**

The table below outlines the validation requirements for the site.

Table 7-1: Validation Requirements

| Aspect                      | Sampling                                                                             | Analysis                                                                             | Observations and Documentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Southern Area</i></b> |                                                                                      |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Capping                     | Refer to imported materials validation requirements following sections of this table | Refer to imported materials validation requirements following sections of this table | <p>Visual inspection and photo-documentation of marker layer installation.</p> <p>Levels surveys following placement of marker layers and following placement of capping material (unpaved areas). Documentation of capping materials and thickness of capping layers above the marker layers (new hardstand and balconies/walkways).</p> <p>Validation of imported materials used as capping (as later in this table).</p> <p>Disposal dockets to be retained for any fill requiring off-site disposal.</p> |
| <b><i>Northern Area</i></b> |                                                                                      |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Unexpected finds            | Refer to imported materials validation requirements following sections of this table | Refer to imported materials validation requirements following sections of this table | <p>Initial inspection letter.</p> <p>Any additional documentation produced as a result of unexpected finds.</p> <p>Validation of imported materials used during the development (as outlined later in this table).</p>                                                                                                                                                                                                                                                                                       |

| Aspect                                                                                          | Sampling                                                                 | Analysis                                                                                                                                                                                        | Observations and Documentation                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Imported Materials (all site areas)</b>                                                      |                                                                          |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Imported VENM backfill                                                                          | Minimum of three samples per source                                      | Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRH/BTEX, polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs) and asbestos | <p>VENM documentation/ report required (should include source site history to demonstrate analytes are appropriate). Additional analysis may be required depending on site history.</p> <p>Material to be inspected upon importation to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation.</p>                                                                      |
| Imported engineering materials such as recycled aggregate, road base etc                        | Minimum of three samples per source/material type                        | Heavy metals (as above), TRHs, BTEX, PAHs, pesticides, PCBs and asbestos                                                                                                                        | <p>Documentation required to confirm material has been classified with reference to a relevant exemption and is fit for purpose on site.</p> <p>Material to be inspected upon importation to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation.</p> <p>Dockets for imported material to be provided.</p>                                                            |
| Imported engineering materials comprising only natural quarried products such as blue metal etc | At the validation consultants discretion based on supplier documentation | At the validation consultants discretion based on supplier documentation                                                                                                                        | <p>Documentation to be provided from the supplier confirming the material is a product comprising only VENM (i.e. quarried product).</p> <p>Review of quarry licence.</p> <p>Material to be inspected upon importation to confirm it is free of anthropogenic materials, visible and olfactory indicators of contamination, and is consistent with documentation.</p> <p>Dockets for imported material to be provided.</p> |
| Imported landscaping materials                                                                  | Minimum of three samples per                                             | Heavy metals (arsenic, cadmium,                                                                                                                                                                 | Documentation required to confirm material has been produced under an appropriate standard and is fit for purpose on site.                                                                                                                                                                                                                                                                                                 |

| Aspect | Sampling             | Analysis                                                                                           | Observations and Documentation                                                                                                                                                                              |
|--------|----------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | source/material type | chromium, copper, lead, mercury, nickel and zinc), TRHs, BTEX, PAHs, pesticides, PCBs and asbestos | Material to be inspected upon importation to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation.<br><br>Dockets for imported material to be provided. |

## 7.2 Boundary Survey of Remediation Areas

On completion of the works, a boundary survey should be undertaken for each of the proposed remediation areas. This survey will be utilised in the validation report to demonstrate the extent of the remediation and the areas being signed off by the validation consultant.

## 7.3 Validation Assessment Criteria and Data Assessment

The validation assessment criteria (VAC) to be adopted for the validation assessment are outlined in the table below:

Table 7-2: VAC

| Validation Aspect                    | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste classification (soil disposal) | In accordance with the procedures and criteria outlined in the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014 <sup>14</sup> )                                                                                                                                                                                                                                                                                                                                                                       |
| Soil validation                      | Analytical soil validation does not currently form part of the proposed remediation strategy. In the event that soil validation sampling is required as the result of an unexpected find, the soil validation criteria will be the Health Investigation Level A (HIL-A) and Health Screening Level A (HSL-A) criteria based on NEPM (2013).<br><br>NEPM (2013) Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) will be considered for validation samples collected in proposed landscaped areas. |
| Imported materials                   | Heavy metal concentrations to be consistent with background range, organic compounds to be less than the laboratory practical quantitation limits (PQLs) and asbestos to be absent. Imported landscaping materials are also to consider EILs and ESLs based on NEPM 2013.<br><br>Aesthetics: soils to be free of staining and odours.                                                                                                                                                                                          |

<sup>14</sup> NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. (referred to as Waste Classification Guidelines 2014)

Data should initially be assessed as above or below the VAC. Statistical analysis may be applied if deemed appropriate by the consultant and undertaken in accordance with the NEPM (2013).

#### **7.4 Validation Report and EMP**

As part of the validation process, a site validation report will be prepared by the validation consultant. The report will outline the remediation work undertaken at the site and any deviations to the remediation strategy. The report will present the results of the validation assessment and will be prepared in accordance with the Reporting Guidelines 2011.

The validation report should draw conclusions regarding the success of the remediation/validation and the suitability of the site for the proposed development (from a contamination viewpoint). Staged validation reporting may occur progressively for each area as the development proceeds.

Any areas where contaminated material is capped in-situ will require on-going management. The validation reporting for these areas (i.e. the southern remediation area) will also include the preparation of a long term EMP. EIS recommend that early engagement be undertaken with the consent authority and any other relevant stakeholders so that the EMP can be publically notified and enforceable.

#### **7.5 Data Quality**

Appropriate QA/QC samples should be obtained during the validation (where applicable) and analysed for the contaminants of concern. As a minimum, QA/QC sampling should include duplicates (5% inter-laboratory and 5% intra-laboratory), trip spikes, trip blanks and rinsate samples.

Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) should be clearly outlined and assessed as part of the validation process. A framework for the DQO and DQI process is outlined below and should be reflected in the validation report.

DQOs should be established for the validation with regards to the seven-step process outlined in the Site Auditor Guidelines 2006 and with reference to USEPA documents Data Quality Objectives Processes for Hazardous Waste Site Investigations (2000) and Guidance on Systematic Planning Using the Data Quality Objectives Process (2006). The seven steps include the following:

- State the problem;
- Identify the decisions/goal of the study;
- Identify information inputs;
- Define the study boundary;
- Develop the analytical approach/decision rule;
- Specify the performance/acceptance criteria; and
- Optimise the design for obtaining the data.

DQIs are to be assessed based on field and laboratory considerations for precision, accuracy, representativeness, completeness and comparability.

## 7.6 Summary of Roles and Requirements

A summary of the roles and requirements of the contractor and validation consultant are provided below:

Table 7-3: Summary of Roles and Requirements

| Contractor Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Validation Consultant Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Engage the validation consultant</li> <li>Review and implement the Site Management Plan and AMP</li> <li>Prepare a construction-specific AMP (this may be outsourced)</li> <li>Review minimum capping standards and arrange waste classifications (as required) for any surplus material</li> <li>Arrange surveys of capped areas (as required) to demonstrate minimum capping standards are being achieved as the works progress</li> <li>Implement the unexpected finds protocol</li> <li>Arrange for the validation consultant to inspect the site at appropriate times in accordance with the RAP</li> <li>Provide supporting documentation required for the validation as outlined in Section 6.4</li> <li>Provide supporting documentation for all imported materials</li> <li>Keep a photographic record of all marker layer installation</li> <li>Provide a final boundary survey of the remediation areas (see Section 7.2)</li> <li>Obtain the validation assessment report and EMP from the validation consultant</li> </ul> | <ul style="list-style-type: none"> <li>Complete the initial unexpected finds inspection in the northern area and prepare a report documenting the findings</li> <li>Inspect the marker layer installation as the works proceed</li> <li>Keep a photographic record of all marker layer installation and the remediation works in general</li> <li>Review documentation and validate imported materials</li> <li>Inspect and document any unexpected finds advised by the contractor</li> <li>Review documentation associated with asbestos-related controls/management, remediation and waste disposal</li> <li>Prepare the site validation report and EMP</li> </ul> |

## **8 CONTINGENCY PLAN**

A review of the proposed remediation works has indicated that the greatest risks that may affect the success of the remediation are an unexpected finds or validation failure of imported materials. Contingency plans are provided below to address these risks.

### **8.1 Unexpected Finds**

Residual hazards that may exist in the remediation area. The protocol provided in Section 6.3 should be implemented in the event of an unexpected find.

### **8.2 Importation Failure for Imported Materials**

Where material to be imported onto the site does not meet the importation acceptance criteria detailed in Section 7, the only option is to not accept the material. Alternative material must be sourced that meets the importation requirements.

## **9 SITE MANAGEMENT PLAN FOR REMEDIATION WORKS**

The information outlined in this section of the RAP is for the remediation work only. The client should contact the local consent authority (council or certifier) for specific site management requirements for the overall development of the site.

### **9.1 Existing Management Plans**

EIS understand that the AMP and the generic AMP for NSW Government Schools will be implemented for the proposed development works where required.

### **9.2 Asbestos Controls and Licensing Requirements**

The following requirements should be met for the asbestos remediation works at the site:

- A Class A licensed asbestos removalist should be engaged to undertake any asbestos-related remediation works (EIS are of the opinion that the works could be undertaken by a Class B contractor as the asbestos issues are associated with bonded ACM. However, the AMP requires a Class A contractor). The licenced contractor is to prepare an Asbestos Removal Control Plan for the site works;
- The contractor should review this RAP and the proposed development requirements to establish whether SafeWork NSW are to be notified;
- All personnel and contractors must be informed of site conditions, asbestos work areas and any exclusion zones;
- Air fibre monitoring should be undertaken on a daily basis during remedial works in the southern remediation area and all readings are to be below the detection limit of 0.01 fibres per millilitre;
- The site should be managed in accordance with this plan and the general requirements of SafeWork NSW and strategies outlined in the relevant regulations, guidelines, codes and standards.

### **9.3 Interim Site Management**

Interim site management is not considered to be required as there is an existing AMP for the site.

### **9.4 Project Contacts**

Emergency procedures and contact telephone numbers should be displayed in a prominent position at the site entrance gate and within the main site working areas. The contact details of key project personnel are summarised in the following table:

Table 9-1: Project Contacts

| Role                     | Company                                  | Contact Details |
|--------------------------|------------------------------------------|-----------------|
| Project Manager          | Johnstaff                                | 8256 0500       |
| Remediation Contractor   | To be appointed                          | -               |
| Environmental Consultant | EIS (at the time of the RAP preparation) | 9888 5000       |
| Certifier                | To be appointed                          | -               |
| NSW EPA                  | Pollution Line                           | 131 555         |
| Emergency Services       | Ambulance, Police, Fire                  | 000             |

## 9.5 Security

Prior to the commencement of site works, fencing should be installed as required to secure the remediation areas. Warning signs should be erected, which outline the PPE required for remediation work.

## 9.6 Timing and Sequencing of Remediation Works

Remediation works will be completed concurrently with the construction activities as the proposed development features such as building slabs, balconies, gardens beds etc will form an integral part of the cap.

## 9.7 Site Soil and Water Management Plan

The contractor should prepare a detailed soil and water management plan prior to the commencement of site works. Silt fences should be used to control the surface water runoff at all appropriate locations of the site.

All stockpiled materials should be placed within an erosion containment boundary with silt fences and sandbags employed to limit sediment movement. The containment area should be located away from drainage lines, gutters, stormwater pits and inlets and the site boundary. No liquid waste or runoff should be discharged to the stormwater or sewerage system without the approval of the appropriate authorities.



## **9.8 Noise and Vibration Control Plan**

The guidelines for minimisation of noise on construction sites outlined in AS-2460 (2002)<sup>15</sup> should be adopted. Other measures specified in the consent conditions should also be complied with. Noise producing machinery and equipment should only be operated between the hours approved by Council (refer to consent documents).

All practicable measures should be taken to reduce the generation of noise and vibration to within acceptable limits. In the event that short-term noisy operations are necessary, and where these are likely to affect residences, notifications should be provided to the relevant authorities and the residents by the project manager, specifying the expected duration of the noisy works.

## **9.9 Dust Control Plan**

All practicable measures should be taken to reduce dust emanating from the site. Factors that contribute to dust production are:

- Wind over a cleared surface;
- Wind over stockpiled material; and
- Movement of machinery in unpaved areas.

Visible dust should not be present at the site boundary. Measures to minimise the potential for dust generation include:

- Use of water sprays on unsealed or exposed soil surfaces;
- Covering of stockpiled materials and excavation faces (particularly during periods of site inactivity and/or during windy conditions) or alternatively the erection of hessian fences around stockpiled soil or large exposed areas of soil;
- Establishment of dust screens consisting of a 2m high shade cloth or similar material secured to a chain wire fence;
- Maintenance of dust control measures to keep the facilities in good operating condition;
- Concrete surfaces brushed or washed to remove dust;
- Stopping work during strong winds;
- Loading or unloading of dry soil as close as possible to stockpiles to prevent spreading of loose material around the site; and
- The expanse of cleared land should be kept to a minimum to achieve a clean and economical working environment.

If stockpiles are to remain on-site or an excavation remains open for a period of longer than several days, dust monitoring should be undertaken at the site. If excessive dust is generated all site activities should cease until either wind conditions are more acceptable or a revised method of excavation/remediation is developed.

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<sup>15</sup> Australian Standard, (2002). AS2460: *Acoustics - Measurement of the Reverberation Time in Rooms*.

Dust is also produced during the transfer of material to and from the site. All material should be covered during transport and should be properly disposed of on delivery. No material is to be left in an exposed, un-monitored condition.

All equipment and machinery should be brushed or washed down before leaving the site to limit dust and sediment movement off-site. In the event of prolonged rain and lack of paved areas all vehicles should be washed down prior to exit from the site, and any soil or dirt on the wheels of the vehicles removed. Water used to clean the vehicles should be collected and tested prior to appropriate disposal under the Waste Classification Guidelines.

#### **9.10 Air Monitoring**

Requirements for air monitoring should be considered by the asbestos removal contractor during the remedial works and any demolition works. EIS note that air monitoring is required for any works that disturb the ground in the “asbestos zones” documented in the existing AMP.

#### **9.11 Odour Control Plan**

All activities undertaken at the site should be completed in a manner that minimises emissions of smoke, fumes and vapour into the atmosphere and any odours arising from the works or stockpiled material should be controlled. Control measures may include:

- Maintenance of construction equipment so that exhaust emissions comply with the Clean Air Regulations issued under the Protection of the Environment Operations Act (1997)<sup>16</sup>;
- Demolition materials and other combustible waste should not be burnt on site;
- The spraying of a solution of an appropriate proprietary product if required to suppress any odours that may be generated by excavated materials; and
- Use of protective covers (e.g. tarpaulins or builder’s plastic).

All practicable measures should be taken to reduce fugitive emissions emanating from the site so that associated odours do not constitute a nuisance and that the ambient air quality is not adversely impacted.

#### **9.12 Health and Safety Plan**

A site specific WHS plan should be prepared by the contractor for all work to be undertaken at the site. The WHS plan should meet all the requirements outlined in SafeWork NSW WHS regulations.

As a minimum requirement, personnel must wear appropriate protective clothing, including long sleeve shirts, long trousers and steel cap boots. Gloves and dust masks should be worn when working

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<sup>16</sup> NSW Government, (1997), *Protection of Environment Operations Act*. (referred to as POEO Act 1997)

on remediation activities (additional asbestos-related PPE is also required as outlined previously in this RAP). Washroom and lunchroom facilities should also be provided to allow workers to remove potential contamination from their hands and clothing prior to eating or drinking.

### **9.13 Waste Management**

Prior to commencement of remedial works and excavation for the proposed development, the contractor should develop a waste management or recycling plan to minimise the amount of waste produced by the site. This should, as a minimum, include measures to recycle and re-use natural excavated material wherever possible.

### **9.14 Incident Management Contingency**

The environmental consultant engaged to undertake the validation assessment should be contacted if any unexpected conditions are encountered at the site. This should enable the scope of remedial/validation works to be adjusted as required. Similarly if any incident occurs on site, the validation consultant should be advised to assess potential impacts on site contamination conditions and the remediation/validation timetable.

### **9.15 Hours of Operation**

Hours of operation should be between those approved by Council under the development approval process. Reference should also be made to any specific conditions imposed by other consent authority/regulatory bodies.

## 10 **CONCLUSION**

EIS are of the opinion that the remediation area can be made suitable for the proposed development provided this RAP is implemented accordingly. A site validation report (and EMP) should be prepared on completion of remediation activities and should be submitted to the consent authority.

### 10.1 **Remediation Category**

Site remediation can fall under the following two categories outlined in SEPP55:

Table 10-1: Remediation Category

| Category   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category 1 | <p>Category 1 remediation works are those undertaken in the following areas specified under Clause 9 of SEPP55:</p> <p>A designated development;</p> <ul style="list-style-type: none"> <li>Carried out on land declared to be a critical habitat;</li> <li>Development for which another SEPP or REP requires a development consent; or</li> <li>Carried out in an area or zone classified as: <ul style="list-style-type: none"> <li>➤ Coastal Protection;</li> <li>➤ Conservation or heritage conservation;</li> <li>➤ Habitat protection, or habitat or wildlife corridor;</li> <li>➤ Environmental protection;</li> <li>➤ Escarpment, escarpment protection or preservation;</li> <li>➤ Floodway or wetland;</li> <li>➤ Nature reserve, scenic area or scenic protection; etc.</li> </ul> </li> <li>Work that is not carried out in accordance with the site management provisions contained in the consent authority Development Control Plan (DCP)/Local Environmental Plan (LEP) etc.</li> </ul> <p>Approval is required from the consent authority for Category 1 remediation work. The RAP needs to be assessed and determined either as part of the existing DA or as a new and separate DA. Category 1 remediation work is identified as advertised development work unless the remediation work is a designated development or a state significant development (Part 6 of EPAA Regulation 1994).</p> |
| Category 2 | <p>Remediation works which do not fall under the above category are classed as Category 2. Development consent is not required for Category 2 remediation works, however the consent authority should be given 30 days' notice prior to commencement of works.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Considering the above, EIS understand that the remediation work is Category 2 remediation. However, it is noted that the RAP is likely to be assessed by Council as part of the development application/consent process.

## 10.2 Regulatory Requirements

The regulatory requirements applicable for the site are outlined in the following table:

Table 10-2: Regulatory Requirement

| Guideline                                         | Applicability                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Duty to Report Contamination (2015) <sup>17</sup> | At this stage, EIS consider that there is no requirement to notify the NSW EPA of the site contamination. This requirement should be reassessed following review of the validation results.                                                                                                                                                                                                                                                                                        |
| POEO Act 1997                                     | <p>Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.</p> <p>Appropriate waste tracking is required for all waste that is disposed off-site.</p>                                     |
| WHS Code of Practice (2016) <sup>18</sup>         | <p>Sites with asbestos become a 'workplace' when work is carried out there and require a register and asbestos management plan. Appropriate SafeWork NSW notification will be required for asbestos removal works or handling. Contractors are also required to be appropriately licensed for the asbestos works undertaken (i.e. bonded or friable asbestos works).</p> <p>The existing AMP requires a Class A licensed contractor for intrusive works in the asbestos zones.</p> |

<sup>17</sup> NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under the Contamination Land Management Act 1997*. (referred to as Duty to Report Contamination 2015)

<sup>18</sup> Safe Work Australia, (2016). *Code of Practice – How to Manage and Control Asbestos in the Workplace*.

## **11 LIMITATIONS**

The report limitations are outlined below:

- EIS accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the EIS proposal; and terms of contract between EIS and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated in the report;
- EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- EIS have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. EIS should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

## **LIST OF IN-TEXT TABLES**

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## **IMPORTANT INFORMATION ABOUT THIS REPORT**

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

### **The Report is based on a Unique Set of Project Specific Factors:**

This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

### **Changes in Subsurface Conditions:**

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

### **This Report is based on Professional Interpretations of Factual Data:**

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

### **Assessment Limitations:**

Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.



**Misinterpretation of Site Assessments by Design Professionals:**

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

**Logs Should not be Separated from the Assessment Report:**

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

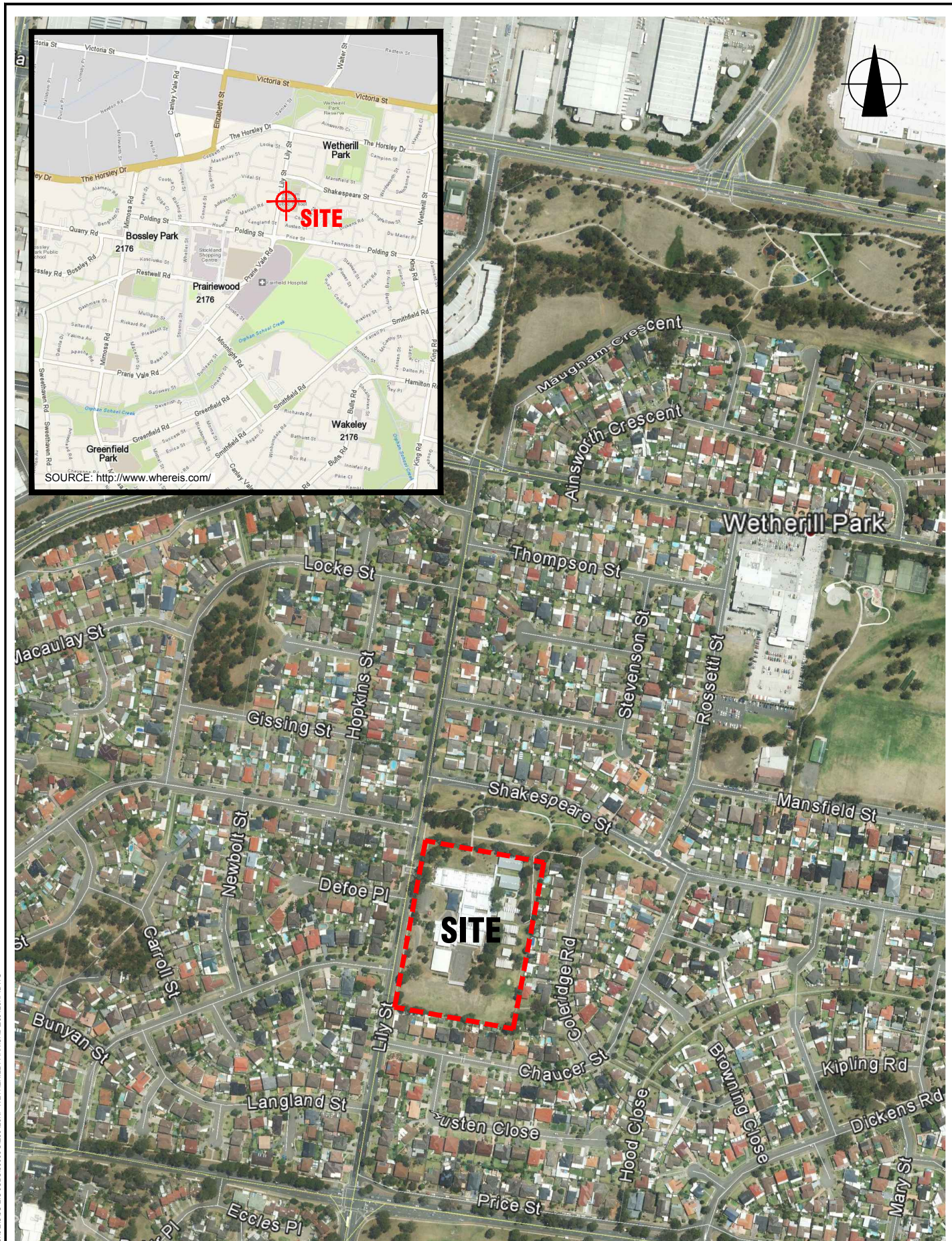
To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

**Read Responsibility Clauses Closely:**

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

## **REPORT FIGURES**





AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.5.1557  
AERIAL IMAGE ©: 2015 GOOGLE INC.

Title:

## SITE LOCATION PLAN

Location:

WILLIAM STIMSON PUBLIC SCHOOL  
LILY STREET, WETHERILL PARK, NSW

Report No:

E30426KP

Figure No:

1

ENVIRONMENTAL INVESTIGATION SERVICES

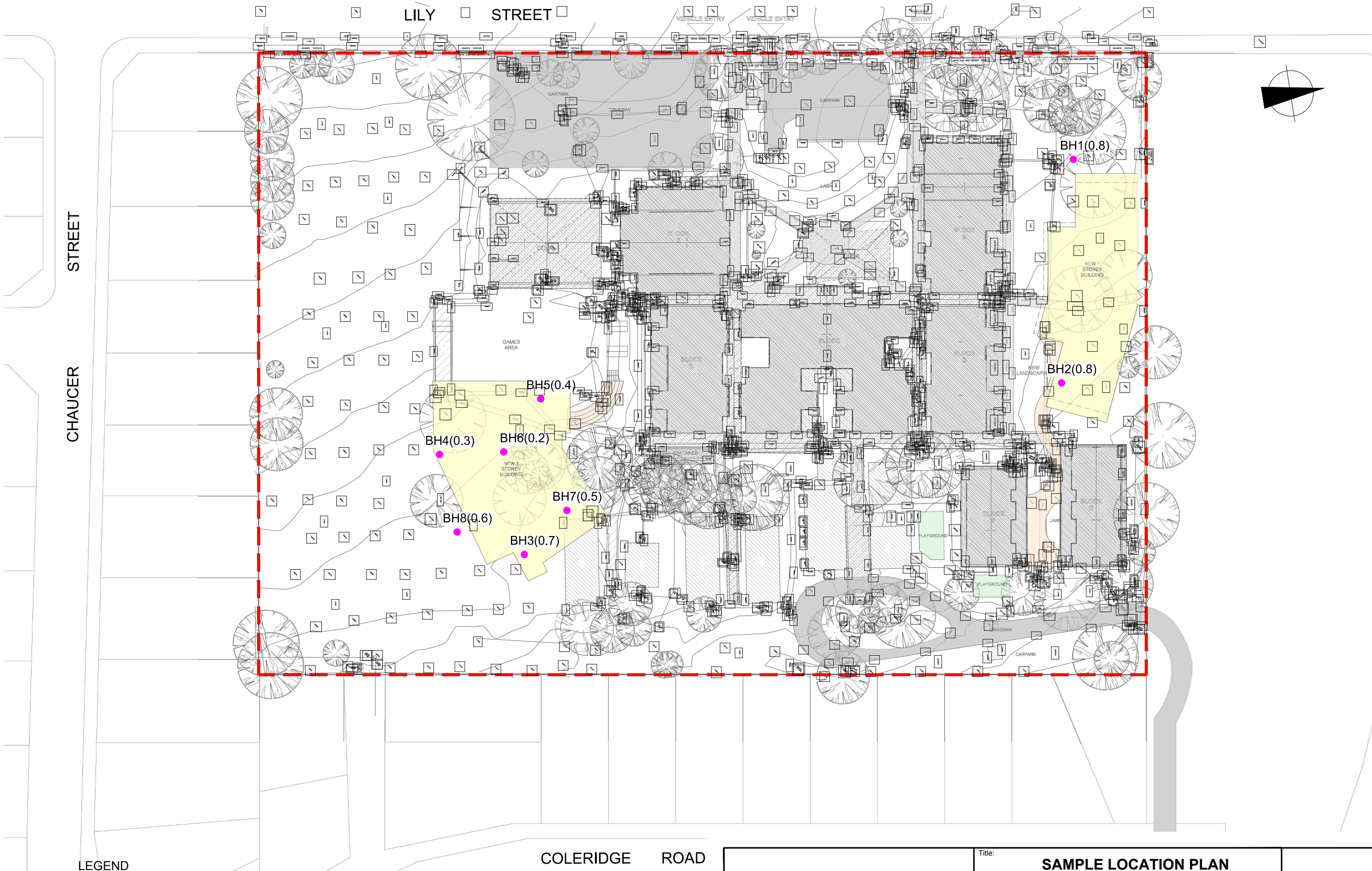


This plan should be read in conjunction with the EIS report.



PLOT DATE: 19/07/2017 10:42:13 AM DWG FILE: S:\5 EIS\SC EIS JOBS\30000\S\E30426KP WETHERILL PARK\CADE30426KP.DWG

© EIS

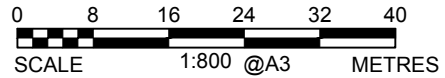


LEGEND

- APPROXIMATE SITE BOUNDARY
- BH (Fill Depth)

BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)

COLERIDGE ROAD

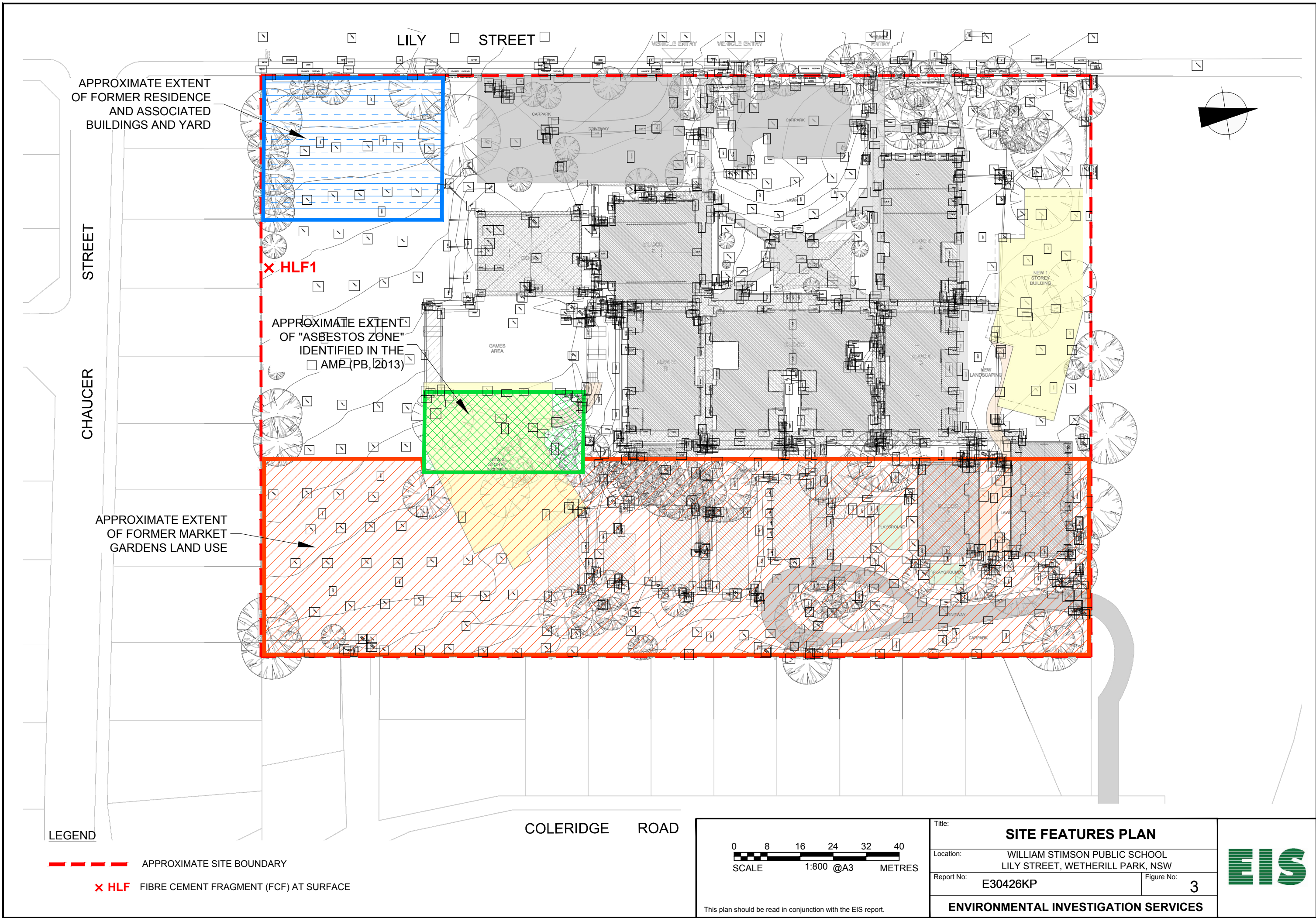


This plan should be read in conjunction with the EIS report.

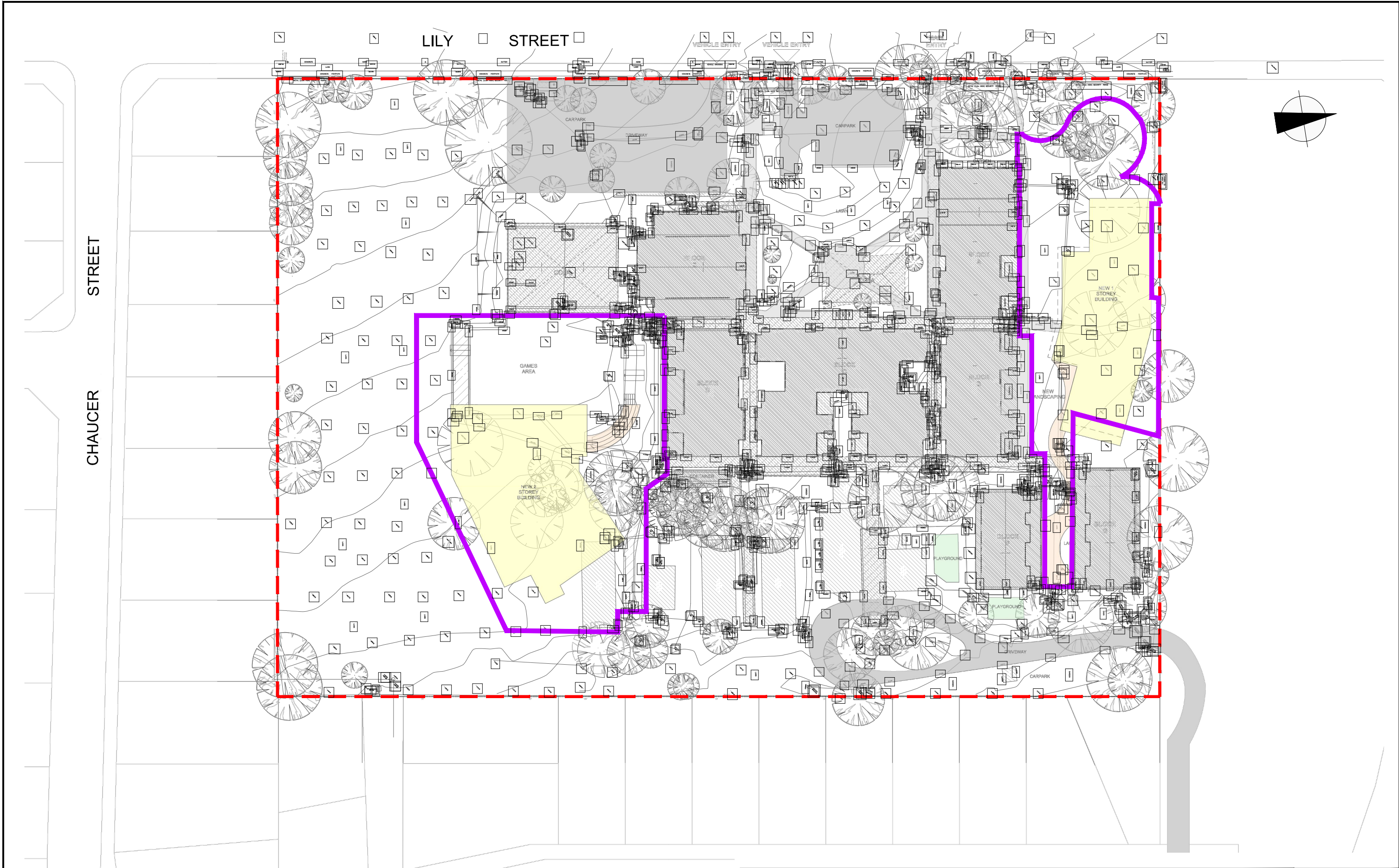
|                                                                             |                     |
|-----------------------------------------------------------------------------|---------------------|
| Title: <b>SAMPLE LOCATION PLAN</b>                                          |                     |
| Location: WILLIAM STIMSON PUBLIC SCHOOL<br>LILY STREET, WETHERILL PARK, NSW |                     |
| Report No: <b>E30426KP</b>                                                  | Figure No: <b>2</b> |
| <b>ENVIRONMENTAL INVESTIGATION SERVICES</b>                                 |                     |







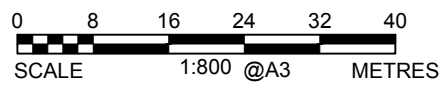




LEGEND

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE REMEDIATION AREA BOUNDARY

COLERIDGE ROAD



This plan should be read in conjunction with the EIS report.

|                                                                             |              |
|-----------------------------------------------------------------------------|--------------|
| Title:                                                                      |              |
| REMEDIATION AREA PLAN                                                       |              |
| Location: WILLIAM STIMSON PUBLIC SCHOOL<br>LILY STREET, WETHERILL PARK, NSW |              |
| Report No: E30426KP                                                         | Figure No: 4 |
| ENVIRONMENTAL INVESTIGATION SERVICES                                        |              |



## **Appendix A: Site Information – Development Plans**

















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| Rev | Date      | By | Issue Name            | CK |
|-----|-----------|----|-----------------------|----|
| 01  | 07-Jul-17 | ZK | ISSUED TO CONSULTANTS | AC |
| 02  | 14-Jul-17 | ZK | ISSUED TO CONSULTANTS | AC |
| 03  | 28-Jul-17 | ZK | ISSUED TO CONSULTANTS | AC |
| 04  | 04-Aug-17 | ZK | DRAFT DA              | AC |

### PROPOSED FLOOR PLAN LEGEND

- EXISTING RETAINED
- LEARNING AREA
- WITHDRAWAL ROOM
- SERVICES
- UNDERCROFT
- BALCONY
- SITE AREA TO BE MADE GOOD WITH SOFT LANDSCAPING AT END OF CONSTRUCTION
- NEW SOFT LANDSCAPE
- NEW HARDSCAPE
- SOFTFALL / GRAVEL
- NEW / GRADED BITUMEN
- EXISTING WALL
- NEW WALL
- SITE BOUNDARY / BOUNDARY FENCE
- TREE PROTECTION ZONE (TPZ)
- OUTLINE OF PROPOSED NEW BUILDING
- EXISTING TREE
- BUILDING ENTRY
- EXISTING RL
- PROPOSED RL

Landscape: **SPACE** LANDSCAPE DESIGNS

Project Manager: **JOHNSTAFF**

Building Certifier: **BLACKETT MALCOLM GOLDENWORTH**

Mechanical, Electrical, Hydraulic, Structural & Civil Engineering Consultant: **JOHNS NICHOLSON CONSULTING ENGINEERS**

Architect: **JDHarchitects**  
JDH ARCHITECTS PTY. LTD.  
info@jdharchitects.com.au  
ABN: 27 110 978 802  
ACN: 110 978 802  
NOMINATED ARCHITECT: [www.jdharchitects.com.au](http://www.jdharchitects.com.au)  
JAYNE HARRISON (7403)

Client: **NSW Education**  
LILY STREET WETHERILL PARK NSW, 2164

Project Name: **WILLIAM STIMSON PUBLIC SCHOOL**

LILY STREET WETHERILL PARK

Drawing Title: **PROPOSED GROUND FLOOR PLAN - ZONE A**

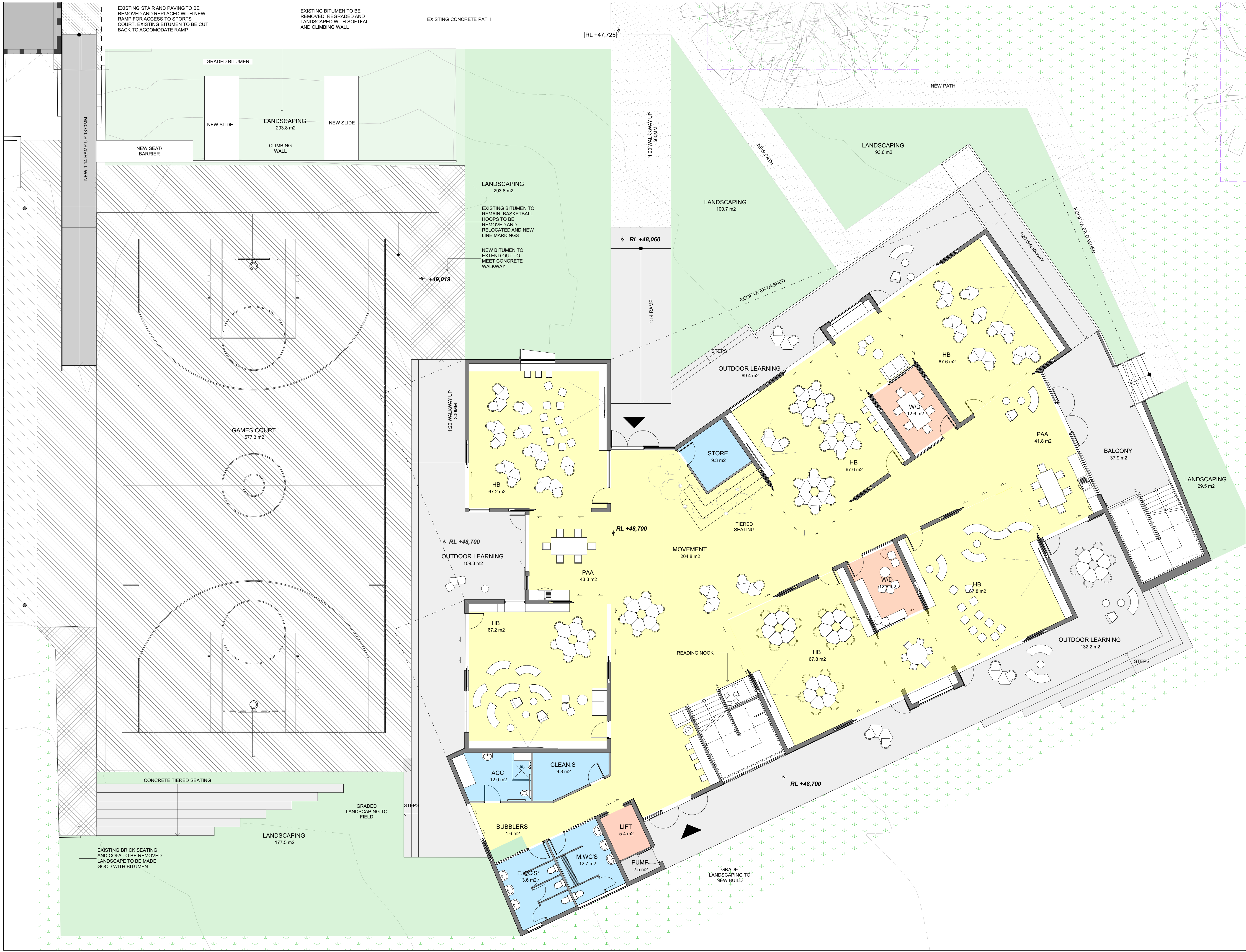
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Drawn: ZK Checked: AC

Project No. 998 Drawing No. DA21 Rev. 04

QUALITY CERTIFIED ISO 9001 INITIALING THE 'DRAWN AND THE CHECK' BOXES PREPARED IN CONFORMANCE WITH JDH ARCHITECTS Q.M.S. PROCEDURES

Status: **PRELIMINARY**





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| Rev | Date      | By | Issue Name            | OK |
|-----|-----------|----|-----------------------|----|
| 01  | 07-Jul-17 | ZK | ISSUED TO CONSULTANTS | AC |

### PROPOSED FLOOR PLAN LEGEND

- EXISTING RETAINED
- LEARNING AREA
- WITHDRAWAL ROOM
- SERVICES
- UNDERCROFT
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- SITE AREA TO BE MADE GOOD WITH SOFT LANDSCAPING AT END OF CONSTRUCTION
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- EXISTING WALL
- NEW WALL
- SITE BOUNDARY
- TREE PROTECTION ZONE (TPZ)
- EXISTING TREE
- BUILDING ENTRY
- EXISTING RL
- PROPOSED RL

Mechanical, Electrical, Hydraulic, Structural & Civil Engineering Consultant

**JONES NICHOLSON**  
CONSULTING ENGINEERS

Architect

**J.D.H. architects**  
J.D.H. ARCHITECTS PTY. LTD.  
info@jdharchitects.com.au  
ABN: 27 110 978 802  
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NOMINATED ARCHITECT: JAYNE HARRISON (7403)

44 Little Oxford Street  
Darlinghurst, NSW 2010  
Telephone: 02 9261 9697  
www.jdharchitects.com.au

Client

**NSW** Education  
43 LILY STREET  
WETHERILL PARK  
NSW, 2164

**WILLIAM STIMSON P.S.**  
LEARN TO LIVE

Project Name

**WILLIAM STIMSON**  
WILLIAM STIMSON P.S.  
43 LILY STREET  
WETHERILL PARK

Drawing Title

**PROPOSED GROUND FLOOR PLAN - ZONE B**

Scale: 1:100 @A1 Date: 12-Jul-17  
Drawn: ZK Checked: AC

Project No. 998 Drawing No. DA-33 Rev. 01

QUALITY CERTIFIED ISO 9001

INITIALLYING THE DRAWING AND THE CHECK BOXES CONFIRMS THAT THIS DRAWING HAS BEEN PREPARED IN CONFORMITY WITH J.D.H. ARCHITECTS Q.M.S. PROCEDURES.

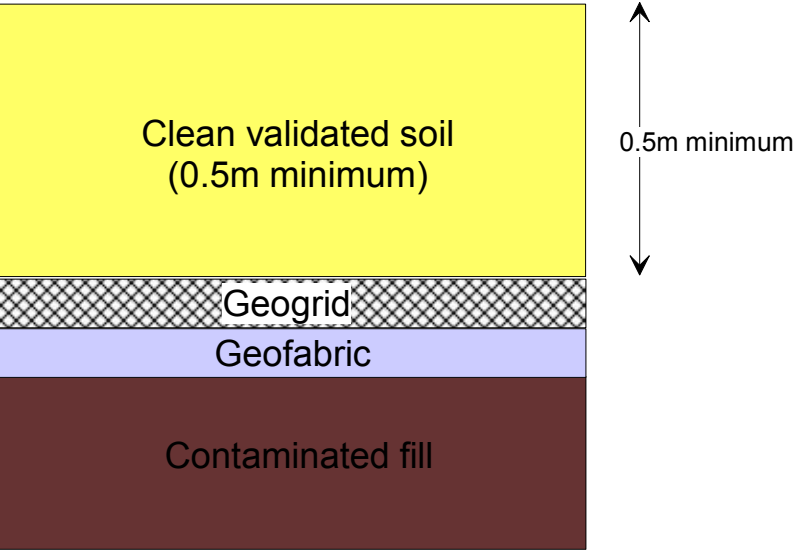
Status: **PRELIMINARY**



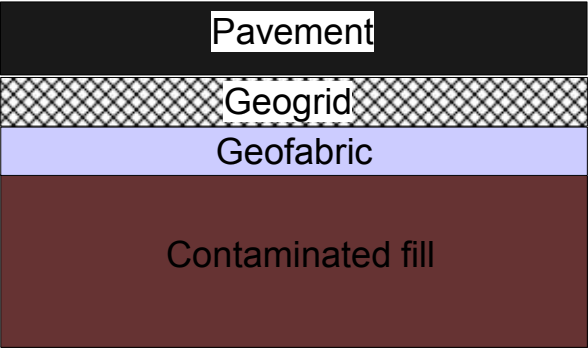
## **Appendix B: Site Information – General Capping Specification**



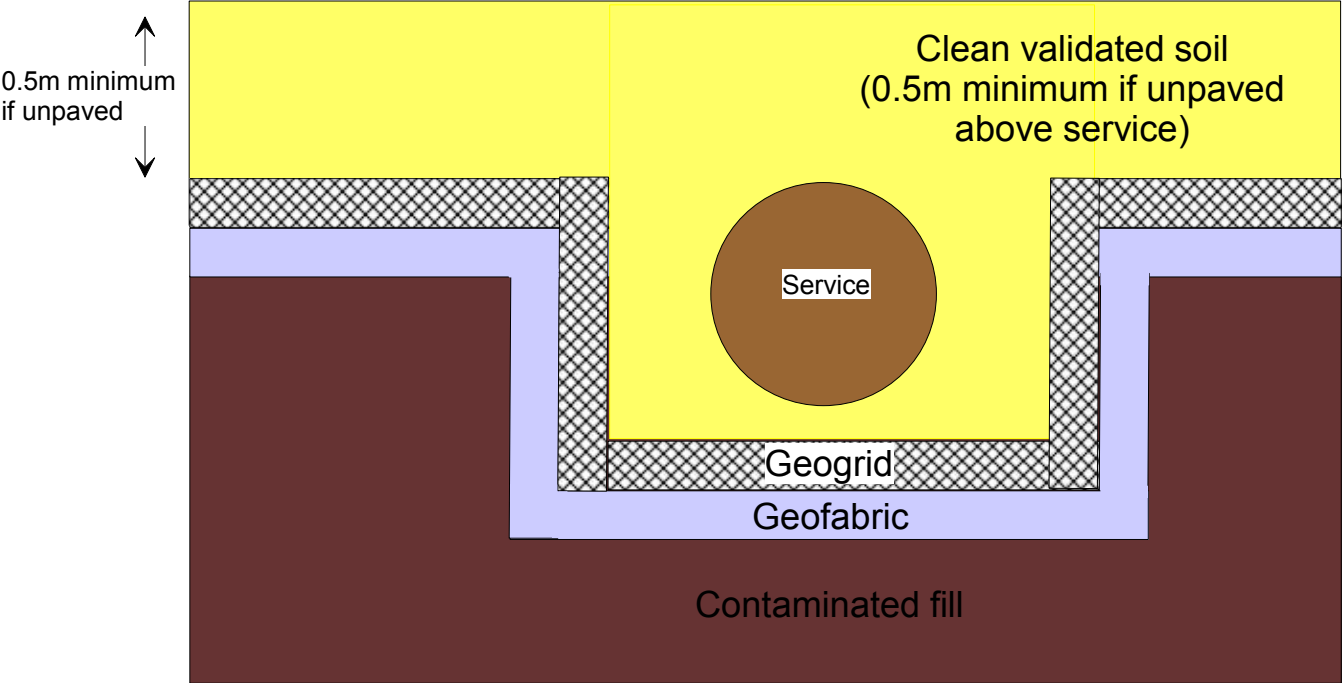
**Unpaved Areas (shallow plantings)**



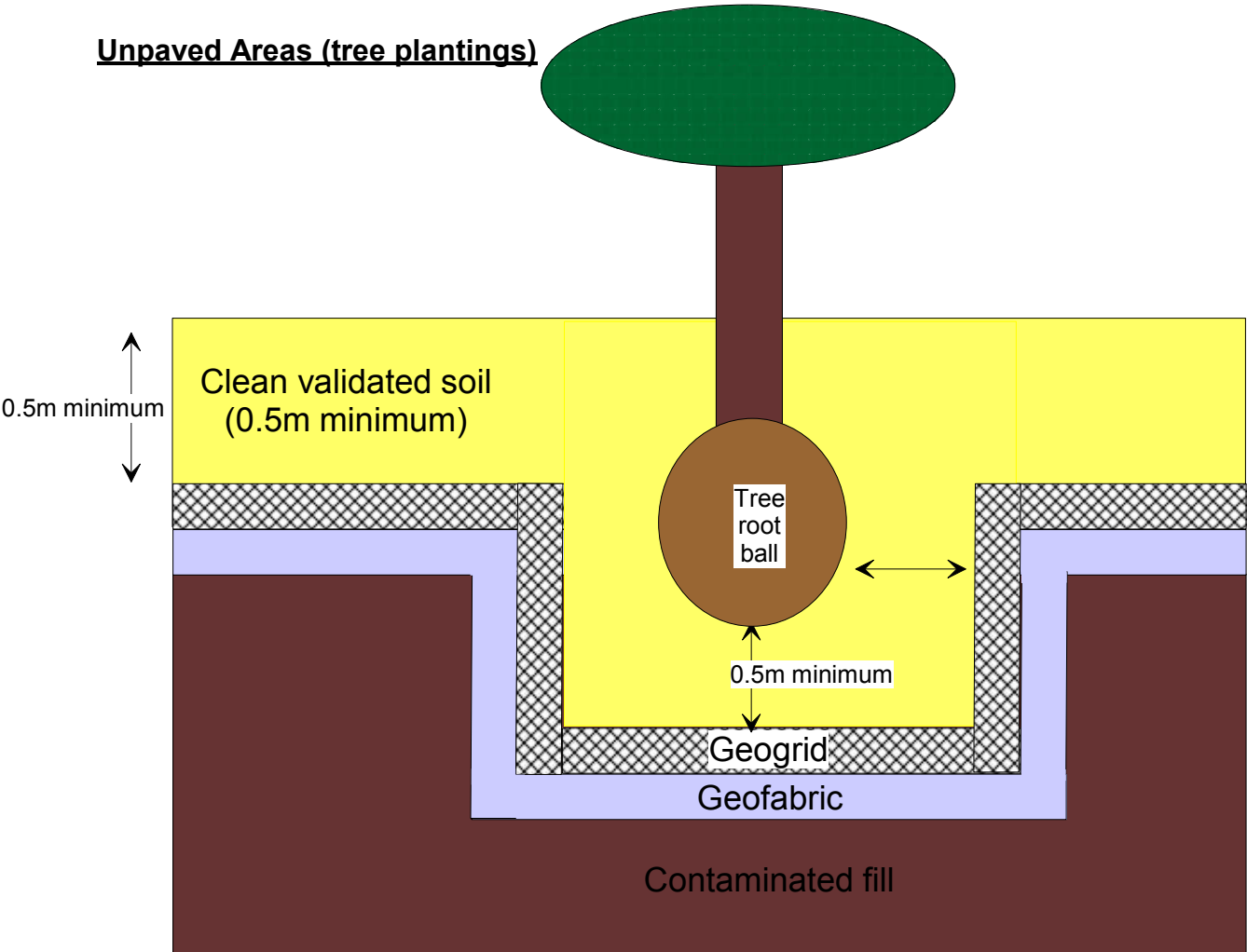
**New Hardstand**



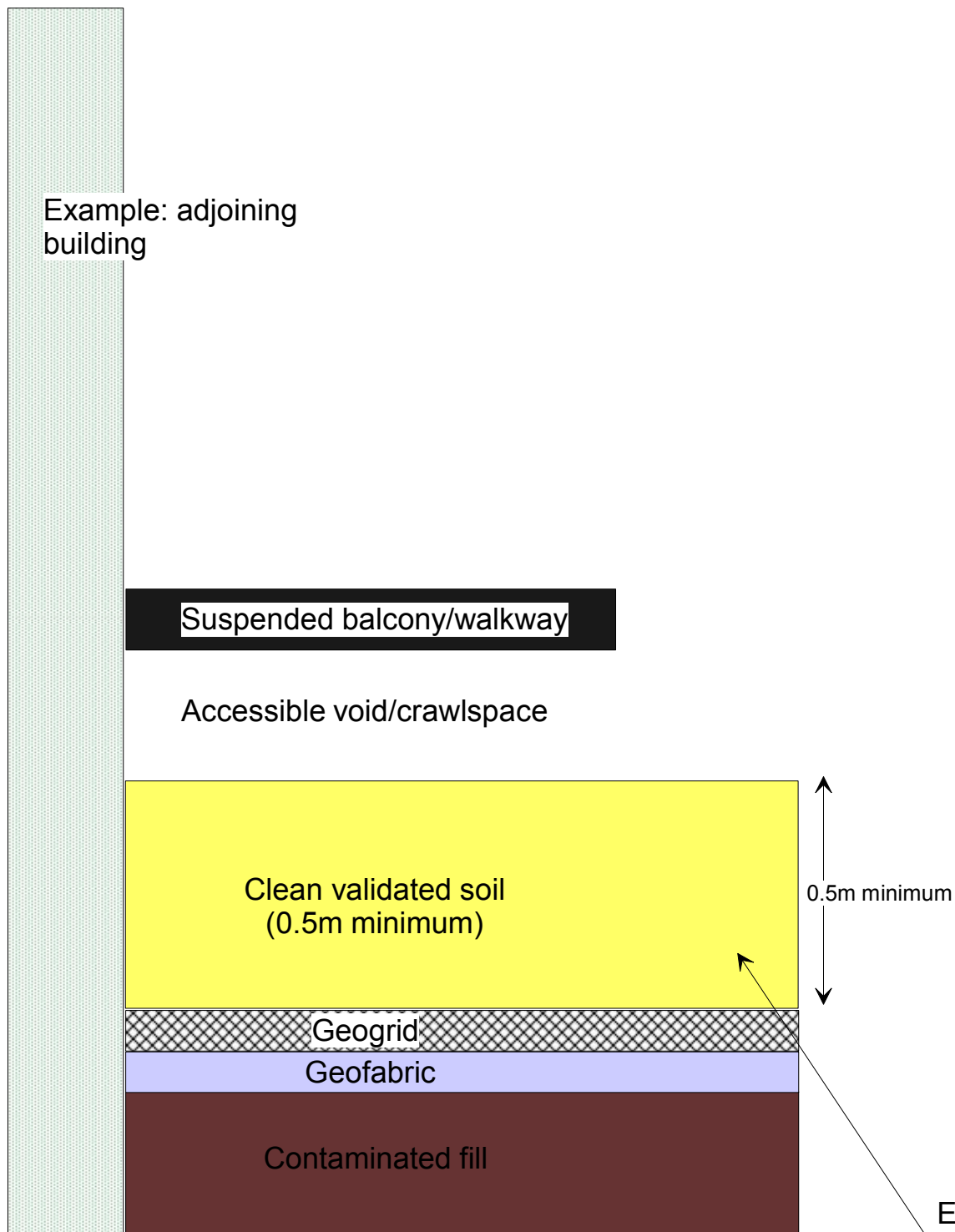
**Underground Services**



**Unpaved Areas (tree plantings)**



**New Raised/Suspended Walkways and Balconies**  
**(assuming accessible crawlspace)**



**New Raised/Suspended Walkways and Balconies**  
**(assuming no accessible crawlspace)**

