

18 August 2021
Ref: E33177Plet-ADDrev1

School Infrastructure NSW
C/- Richard Crookes Constructions
Level 3, 4 Broadcast Way
Artarmon NSW 2064

Attention: Mr Joe Hanna

ADDENDUM TO PRELIMINARY AND DETAILED SITE INVESTIGATION REPORTS
PROPOSED NEW PRIMARY SCHOOL IN MULGOA RISE
1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

1 INTRODUCTION

NSW Department of Education | School Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI) for the proposed new primary school development at 1-23 Forestwood Drive, Glenmore Park, NSW ('the site'). The site location is shown on Figure 1 in Appendix A.

The investigations were carried out to support the lodgement of a State Significant Development Application (SSDA), with regards to State Environmental Planning Policy No.55 – Remediation of Land (1998)¹. JKE was subsequently engaged by Richard Crookes Constructions Pty Ltd to undertake a review of the PSI and DSI reports to consider a redesign of the proposed development, prior to the SSDA lodgement in 2021.

This addendum must be read in conjunction with the following reports:

- *Report to Department of Education on Preliminary Site Investigation (PSI) - Contamination for Proposed Mulgoa Rise Public School at 1-23 Forestwood Drive, Glenmore Park, NSW.* (Ref: E33177PARpt, dated 3 June 2020) (referred to as the PSI); and
- *Report to Department of Education on Detailed Site Investigation for Proposed Mulgoa Rise Public School at 1-23 Forestwood Drive, Glenmore Park, NSW.* (Ref: E33177Prpt3-DSI, dated 5 November 2020) (referred to as the DSI).

1.1 Scope of Work

The scope of work generally included:

- Review of the proposed development details in the context of the PSI/DSI data and report conclusions;

¹ State Environmental Planning Policy No. 55 – Remediation of Land 1998 (NSW) (referred to as SEPP55)

- Completion of a site inspection to observe whether the site conditions had changed since completion of the investigations;
- Review of an Interim Advice prepared by an independent, EPA-accredited contaminated sites auditor and provision of written responses to the audit comments relating to the PSI and DSI reports; and
- Preparation of an addendum letter outlining the findings, a discussion, comments and recommendations.

1.2 Proposed Development Details

Based on the information provided, we understand that the proposed development includes the construction of a new primary school. Relatively minor cut/fill earthworks will be required. The development will occur over the northern half of the site, comprising four main buildings, and will not include basements. A carpark and games court are proposed at the eastern end of the site.

A future development (with additional classrooms) may also be completed at a later date over the southern half of the site.

The proposed site layout plan is attached in Appendix B

2 SUMMARY OF INVESTIGATIONS

2.1 PSI

The PSI was previously undertaken by JKE in June 2020. The PSI included a review of historical information, soil sampling from 12 boreholes, 10 test pits and groundwater sampling from one monitoring well installed on-site (see Figure 2 in Appendix A). The PSI identified that the site has historically been used quarrying activities and was rehabilitated from around the year 2000 via importation of material and controlled filling.

A time line summary of the historical land uses and activities is presented in the table below.

Table 2-1: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Circa early 1900s until at least 1982	Vacant land, overgrown with trees, shrubs and grasses, and possibly used for grazing purposes.	Vacant land, possibly used for agricultural activities (i.e. crop cultivation, market gardens) and/or grazing.
Since at least 1986 until 2007.	Quarry activities, which largely ceased by 2000.	Quarry activities which ceased by 2007.
2000-2007	Rehabilitation of land post quarry activities. Filling of the site occurred.	Rehabilitation of land post quarry activities. Filling of the surrounding land also occurred.
2007-Current	Vacant, levelled grassed area.	Mostly residential and recreational uses. Neighbouring land to the north remains vacant.

Based on the site history, potential sources of contamination were considered to include: historical mining/extractive industry (i.e. quarry); imported fill; and use of the site for car parking.

Based on the preliminary soil and groundwater analysis, soil or groundwater contamination that was assessed to pose a risk to on-site receptors and/or in relation to the proposed land use was not identified. Groundwater was found to be impacted by arsenic, nickel and zinc at concentrations that exceeded the ecological-based site assessment criteria (SAC). However, the occurrence of these heavy metals in the groundwater was considered likely to be attributed to regional factors.

Due to the presence of deep fill and the identification of potential sources of contamination, the PSI recommended a DSI.

2.2 DSI

The DSI included soil sampling from an additional 13 boreholes and 10 test pits, and groundwater sampling from three monitoring wells installed at the site. The DSI identified fill across the site ranging from depths of approximately 11.2m below ground level (BGL) to 14.2mBGL, underlain by siltstone bedrock. The fill typically comprised silty clay with inclusions of gravels indicative of natural clay and ripped bedrock used in a controlled filling exercise to rehabilitate the former quarry. Ash, and building rubble (bricks, steel, plastic, glass, terracotta, tile fragments) were encountered to a lesser extent, in minor quantities in fill. No stained soils or offensive odours were encountered during the investigation.

The laboratory analysis detected minor concentrations of heavy metals, total recoverable hydrocarbons (TRH) and polycyclic aromatic hydrocarbons (PAHs) within the fill (soil). All of the detected concentrations were below the respective human health and ecological-based SAC. The contaminant concentrations reported in soils were not considered to pose a risk to the receptors under the proposed land use scenario.

The laboratory analysis detected concentrations of arsenic, cadmium, copper, nickel and zinc within the groundwater beneath the site. With the exception of arsenic, nickel and zinc within the samples collected from MW8, all of the detected concentrations were below the respective human-health and ecological-based SAC. The concentrations of arsenic, nickel and zinc detected in the groundwater collected from MW8 exceeded the ecological-based SAC and were relatively consistent with the results obtained during the PSI. Overall, the minor elevations of these heavy metals in groundwater were assessed not to pose an unacceptable risk under the proposed land use scenario.

The PSI/DSI investigation locations are shown on Figure 2 and the groundwater SAC exceedances are presented on Figure 3 in Appendix A.

The DSI concluded that the site was suitable for the proposed primary school development. Remediation and/or further investigation was not considered to be required based on the information and data collected and evaluated at that time.

JKE recommended that a Fill Import Protocol (FIP) be prepared for the site and implemented as part of the Construction Environmental Management Plan (CEMP) during the proposed development. It was noted that the FIP should include appropriate measures (including visual inspections and/or validation sampling) to ensure that all materials imported to the site (i.e. road-base and gravel, sandstone, general fill, topsoil, mulch etc) are free of contamination and are aesthetically suitable. The DSI also recommended that an Unexpected Finds Protocol (UFP) also be developed and integrated into the CEMP.

3 REVIEW OF PROPOSED DEVELOPMENT DETAILS

Based on the redesigned proposed development details provided by Richard Crookes Constructions, JKE note that the proposed development has not been altered substantially from the time of the DSI, to the extent that it invalidates the previous investigation design or risk assessment. The primary differences are that the proposed development is now concentrated in the northern half of the site, with the southern half designated as a 'future development' area.

Preliminary civil works and architectural drawings indicated that the development will predominantly be at or close to the existing grade, meaning that bulk cut and fill works will be limited to a depth of generally less than 1m. We anticipate that the majority of the cut/excavation would occur in the south-western corner of the proposed development area (i.e. in the vicinity of the central portion of the western site boundary).

4 SITE INSPECTION

4.1 Inspection

JKE completed a site walkover inspection on 23 July 2021. The purpose of the inspection was to observe and record the current site conditions, and to evaluate whether the site conditions had changed since the previous investigations.

The site and immediate surrounds appeared broadly similar to the time of the PSI/DSI, with the exception of the following:

- The north-eastern/eastern section of the site appeared to have marginally less grass cover, although it was noted that in 2020 this area already had reduced grass cover compared to the remainder of the site;
- There appeared to be increased vehicular traffic over the north-eastern/eastern based on the presence of vehicle tracks and wheel ruts in the soil;
- Scattered fragments of fibre cement (suspected of containing asbestos) were observed in the north-eastern/eastern section of the site. The fragments were generally embedded into the soil surface. Nine of these fragments were in a closely-spaced cluster over an area of approximately 5m by 5m;
- There was evidence of fly tipping, particularly in the northern and eastern areas. This included some surficial debris (gravel, sticks etc) and soil that were not previously observed in these areas;
- A small mound with weed-cover was evident in the south-western corner of the site and there was plastic sticking out of this material; and

- It appeared that some works had been undertaken just beyond the norther site boundary. Pavement sections associated with the footpath had sunk (or had been removed) and the area was exposed with soil. There was also a small mound of soil in this area which had been smoothed over.

A selection of photographs from the inspection is attached in Appendix C.

4.2 Sampling and Analysis

The occurrence of scattered fragments of fibre cement at the ground surface was inconsistent with previous site observations during the PSI and DSI. Consequently, the observed fragments were collected, placed in zip-lock bags and each was assigned a sample identification number (FCF1 to FCF14 inclusive). The approximate locations of the fibre cement fragment samples are shown on Figure 4 in Appendix A.

The samples were submitted to a National Association of Testing Authorities, Australia (NATA) accredited laboratory for asbestos analysis. Analysis was scheduled on three representative samples, including FCF2, FCF10 and FCF14. All samples were found to contain asbestos. Two of the samples contained chrysotile and amosite asbestos, whilst one of the samples only contained chrysotile asbestos.

All fragments identified and collected by JKE were in good condition and could not be crushed, easily broken or pulverised using hand pressure. On this basis, the fibre cement/asbestos containing material (ACM) was deemed to be non-friable (i.e. bonded).

The laboratory analysis report (274742) is attached in Appendix D.

5 RESPONSE TO SITE AUDITOR COMMENTS

JKE were provided with an Interim Advice (IA01)² prepared by Rebeka Hall of Zoic Environmental, who is an EPA-accredited site auditor. Rebeka was engaged by Richard Crookes Constructions to review the PSI/DSI in her capacity as an auditor, within an overarching scope of providing a Site Audit Statement. JKE understand that the site audit is non-statutory at this stage of the project.

Section 5 of IA01 outlined the site auditor's comments based on the audit review of the PSI and DSI reports. These comments are presented below in *italics* and JKE has provided a response to each comment:

1. Section 10.7 planning certificates have not been provided nor discussed.

Purchase and review of the planning certificates for the site was outside the scope of the investigations. Much of the information from planning certificates is captured via other historical sources such as the Lotsearch report which presents planning information and information from various data bases such as those maintained by the NSW EPA in relation to contaminated land. We are of the opinion that information from

² Zoic Environmental, (2021). *Re: Interim Advice 1 (IA01) Review of existing environmental information for Proposed Mulgoa Rise Public School at 1-23 Forestwood Drive, Glenmore Park NSW.* (referred to as IA01)

the planning certificate would not alter the Conceptual Site Model (CSM) or alter the conclusions of the PSI/DSI report. Hence this was not identified as a data gap.

2. SafeWork enquiries had been made but no response provided at the completion of the report. Has information now been provided to JKE?

No, the client did not supply the permission letter for JKE to lodge the search request to SafeWork NSW. Our position on the matter remains unchanged from that documented in Section 8.3 of the DSI.

3. Monitoring wells have not been surveyed and groundwater flow direction has not been confirmed. Given the highly disturbed nature of the site groundwater flow requires confirmation, particularly considering the heavy metal exceedances noted during the groundwater sampling of MW8.

Ground surface levels at the monitoring well locations have now been interpolated based on the survey/contour information presented on Figure 2 in Appendix A. These levels were used to generate a groundwater contour plan using Surfer v8.08 (Surface Mapping Program), presented as Figure 5 in Appendix A of this addendum. The data input into the contour model was as follows:

Table 5-1: Data Summary for Figure 5 Contour Plan

Location	Ground Surface RL (approx.) (mAHD)	Groundwater Standing Water Level (SWL) during DSI Sampling (mBGL)	Converted Groundwater RL (approx.) (mAHD)
MW8	60	2.0	58.0
MW311	60.05	1.49	58.56
MW317	62.5	2.39	60.11

The contour plan indicates that the groundwater flow direction is towards the north-east. This is in sympathy with the topography and generally aligned with expectations based on what was reported in the DSI.

4. Groundwater sample containers and preservatives utilised during sampling is not discussed in either investigation report (PSI or DSI).

Groundwater samples were preserved in accordance with the analytical requirements. This included field-filtering samples for heavy metals analysis with a 0.45µm single-use filter, before placing the sample in a nitric acid preserved plastic bottle. Samples for benzene, toluene, ethylbenzene and xylenes (BTEX) analysis were placed in a glass vial with hydrochloric acid preservative. The remaining samples were placed in unpreserved amber glass bottles or plastic bottles.

5. Rinsate samples been [sic] analysed for volatile analytes only. Rinsate samples typically require analysis for the full analytical suite to confirm no cross contamination during fieldwork and decontamination activities. A discussion on this omission should be provided.

There were no elevated contaminant concentrations in soil above the SAC and there was no evidence of cross-contamination. The reduced analysis schedule on the rinsate samples does not impact the data quality.

6. MW8 has shown elevated heavy metals above the ecological criteria (Arsenic, Nickel and Zinc) on the two occasions, whereas the other two monitoring wells MW311 and MW317 have not detected heavy metal concentrations above criteria. Further discussion is required as to the risk posed to the environment from the exceedances, particularly the potential to reach nearby ecological receptors, and in the absence of any contour plan confirming flow direction.

JKE maintains the view that the risks posed by heavy metals in groundwater, in relation to off-site surface water environments and potential freshwater ecological receptors, are low and acceptable based on the following:

- The site and surrounds (including the land between the site and Surveyors Creek) have historically been subject to significant disturbance in the form of quarrying activities and subsequent rehabilitation via backfilling. On this basis, the groundwater system is considered to be highly disturbed and is likely to be variable;
- Heavy metal concentrations in soil were low and consistent across the site, suggesting that the fill/soil is not likely to pose an unacceptable risk to groundwater via processes such as leaching; and
- The DSI indicated that groundwater was likely to flow eastwards and towards Surveyors Creek, which is located approximately 200m to the east of the site. It is expected that the creek flows northwards based on the topography. In the vicinity of the site, the upper reaches of Surveyors Creek do not appear to permanently maintain a permanent surface water body (this observation was supported via review of Nearmap imagery). On this basis, the potential for groundwater from the site to impact ecological receptors in the creek is low.

7. Results have shown that the fill profile meets site criteria. Please confirm that there is sufficient sampling conducted across the shallow soils to show it is suitable for primary school use and potential receptors.

JKE does not understand the intent of this comment. There were no exceedances of the SAC and the SAC were selected to be protective of the identified human and ecological receptors.

8. Three boreholes were advanced into underlying bedrock with soil sampling and analysis across the full depth of filling. All other sampling locations were typically less than 2mbgl with the deepest test pit extending to 3.45mbgl. A discussion is required on why sampling was not disseminated throughout the fill profile and whether there is a risk to future site users or the environment due to this data gap.

Deeper boreholes drilled for the site investigations (including the PSI, DSI and those drilled for the JK Geotechnics investigations) identified relatively consistent conditions at depth, comprising what appeared

to be natural excavated clayey soils and crushed rock. The sampling and analysis plan for the DSI was optimised via consideration of these factors and concentrated the sampling and analysis on the upper soil profiles where the exposure to potential contamination was considered more likely to occur.

The contamination conditions in the deeper soils were validated by deeper sampling and analysis from a selection of locations, primarily targeted in the proposed building areas. Approximately 21 samples were analysed for the contaminants of concern, from depths ranging from approximately 3mBGL to 13.95mBGL. The results of this analysis confirmed that the deeper soils had similar contaminant characteristics to the shallower soils. None of the results indicated that the deeper soils would pose an unacceptable contamination risk to the receptors.

Additionally, we reiterate that the proposed development will largely be constructed close to the existing grade.

9. Table 6-5 and Section 7: The Auditor does not consider that the ENM Exemption can be applied to the site. Based on the logs the fill material is variable across the site. Any surplus materials will require testing in accordance with the NSW EPA (2014) waste classification guidelines and appropriately disposed to a licensed facility. Preliminary evaluation indicates GSW.

Could the site auditor please provide a valid justification for why the ENM Exemption cannot be applied to the site? Notwithstanding the unexpected asbestos-related finds documented in this addendum which would need to be appropriately considered in the context of future waste classification assessments, JKE consider that waste soil from the site can be subject to ENM classification, provided the material is characterised in accordance with the ENM Order/Exemption. This aligns with the intent of the Resource Recovery Exemption and the NSW EPA waste hierarchy.

It is further noted that the DSI report did not classify the fill as ENM, but rather stated that the data were screened against the ENM criteria and were largely compliant. On this basis, it was recommended that waste soil generated during the proposed development be stockpiled and subject to further assessment with regards to the ENM Order/Exemption.

9. There is no discussion on whether there are any aesthetic issues for the shallow fill material encountered at the site.

The DSI documented that there was no stained soils or offensive odours encountered during the investigation, and that the soils were largely free of anthropogenic inclusions. There were no aesthetic issues.

6 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

JKE was engaged to undertake a review of the PSI and DSI reports to consider a redesign of the proposed development prior to the SSDA lodgement. Based on a review of the proposed development details provided, the PSI/DSI are considered to be appropriate in light of the redesign. However, due to the identification of

non-friable ACM at the ground surface in the north-eastern/eastern sections of the site during the recent JKE site inspection on 23 July 2021, further work will be required to address this unexpected find and confirm that the site is suitable for the proposed development from a contamination viewpoint.

It is noted that the PSI and DSI including soil sampling from 44 boreholes and test pits. Approximately 74 bulk field samples were screened for asbestos and there was no fibre cement/ACM observed in any of the samples. Furthermore, the occurrence of asbestos precursors such as building and demolition rubble in the fill was infrequent and minor, and there was no fibre cement/ACM observed at the ground surface during the previous walkover inspections. Therefore, the PSI/DSI asbestos data is considered to be valid and robust and representative of the site conditions. It is further noted that the area where the ACM was identified is to include predominantly paved surfaces associated with a games court and car park. Therefore, risks from asbestos in the context of the proposed land use in this area would be mitigated by the proposed development.

We consider that the ACM identified at the ground surface during the 2021 inspection is potentially a result of fly-tipping and/or from debris associated with trucks that have utilised the site for parking, subsequent to completion of the DSI. Given that the site is uncontrolled and unfenced, this is plausible. It is noted that a site inspection was completed on 29 April by Zoic and Richard Crookes Constructions representatives, and IA01 also documented the occurrence of fly-tipping.

JKE recommend the following to mitigate risks from ACM and to verify the CSM relating to the potential extent of the asbestos impact:

- The site is to be secured by appropriate fencing to eliminate unauthorised access;
- A suitably qualified contractor/consultant is to undertake an 'emu pick' to remove any visible fragments of ACM/fibre cement from the ground surface in the north-eastern/eastern areas of the site (in accordance with the relevant codes of practice). Any fragments must be double bagged and disposed of lawfully as asbestos waste. A waste disposal docket is to be provided to the client to demonstrate compliance;
- Following the pick, a suitably qualified environmental consultant (e.g. a Licensed Asbestos Assessor) is to carry out a surface inspection and provide an asbestos clearance certificate;
- Subsequently, asbestos quantification sampling is to occur to verify the removal of the ACM and to confirm that impacts do not extend beneath the surface. This is to involve bulk sampling/screening utilising the same field methods as documented in the DSI. We recommend that sampling occurs on a 12m grid spacing and that samples be collected from the surface (0-0.05m depth interval) and from the subsurface at depths of approximately 0.5m and 1m, whilst ensuring that all district fill profiles down to the termination depth of the investigation are sampled/screened. These details should be outlined in a Sampling, Analysis and Quality Plan (SAQP) prior to the commencement of the investigation and the SAQP should be approved by the site auditor; and
- A Supplementary Asbestos Investigation Report is to be prepared presenting the results of the investigation, along with a discussion/assessment of risk and any recommendations.

We consider that the above approach is reasonable as an initial step to address the unexpected find.

We maintain our recommendations from the DSI that a FIP should be prepared for the site and implemented as part of the CEMP during the proposed development. CEMP. A UFP is also to be integrated into the CEMP.

The findings of this addendum and any subsequent investigations of asbestos in soil must be considered in any future waste classification assessment for the site. We note that the presence of asbestos in soil would alter the preliminary waste classifications provided in the DSI.

7 LIMITATIONS

The report limitations are outlined below:

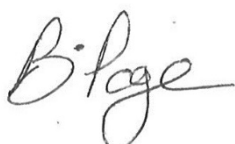
- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE 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 screening criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE 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;
- JKE 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;
- JKE 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. JKE 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;
- 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;
- Copyright in this report is the property of JKE. JKE has used a degree of care, skill and diligence normally exercised by consulting professionals in similar circumstances and locality. No other warranty

expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report;

- If the client, or any person, provides a copy of this report to any third party, such third party must not rely on this report except with the express written consent of JKE; and
- Any third party who seeks to rely on this report without the express written consent of JKE does so entirely at their own risk and to the fullest extent permitted by law, JKE accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

If you have any questions concerning the contents of this letter please do not hesitate to contact us.

Kind Regards



Brendan Page
Principal Associate | Environmental Scientist
CEnvP SC



Appendices:

Appendix A: Report Figures

Appendix B: Proposed Development Site Plan

Appendix C: Inspection Photographs (23 July 2021)

Appendix D: Laboratory Report



Appendix A: Report Figures



SOURCE: <http://www.whereis.com/>

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

Title:

SITE LOCATION PLAN

Location:

1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Project No:

E33177P

Figure No:

1

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

JKEnvironments



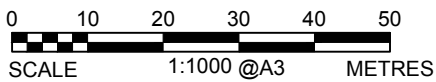
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LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ TP (Fill Depth) TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ● SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - DISI
- BH(Fill Depth) DEEP GEOTECHNICAL BOREHOLES AND DEPTH OF FILL (m) BY JKG

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM



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

Title: SAMPLE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 2
JKEnvironments	



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BH8/MW8 (18/05/20)	
Arsenic	48µg/L
Nickel	25µg/L
Zinc	11µg/L
BH8/MW8 (19/10/20)	
Arsenic	40µg/L
Nickel	20µg/L
Zinc	12µg/L

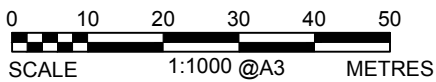
LEGEND

- APPROXIMATE SITE BOUNDARY
- BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - DSI
- DEEP GEOTECHNICAL BOREHOLES AN DEPTH OF FILL (m) BY JKG
- | | |
|-----------|----------------------|
| SAMPLE ID | - |
| CHEMICAL | CONCENTRATION (µg/L) |

GROUNDWATER SAMPLE EXCEEDANCE

GROUNDWATER CONCENTRATION ABOVE SAC

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM



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

Title: SAC EXCEEDANCE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 3
JKEnvironments	



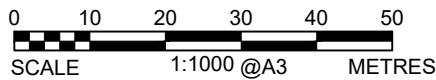
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LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ TP (Fill Depth) TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - DSI
- BH(Fill Depth) DEEP GEOTECHNICAL BOREHOLES AND DEPTH OF FILL (m) BY JKG
- ✕ FCF SURFACE FIBRE CEMENT FRAGMENT SAMPLE LOCATION AND IDENTIFICATION (JKE JULY 2021)

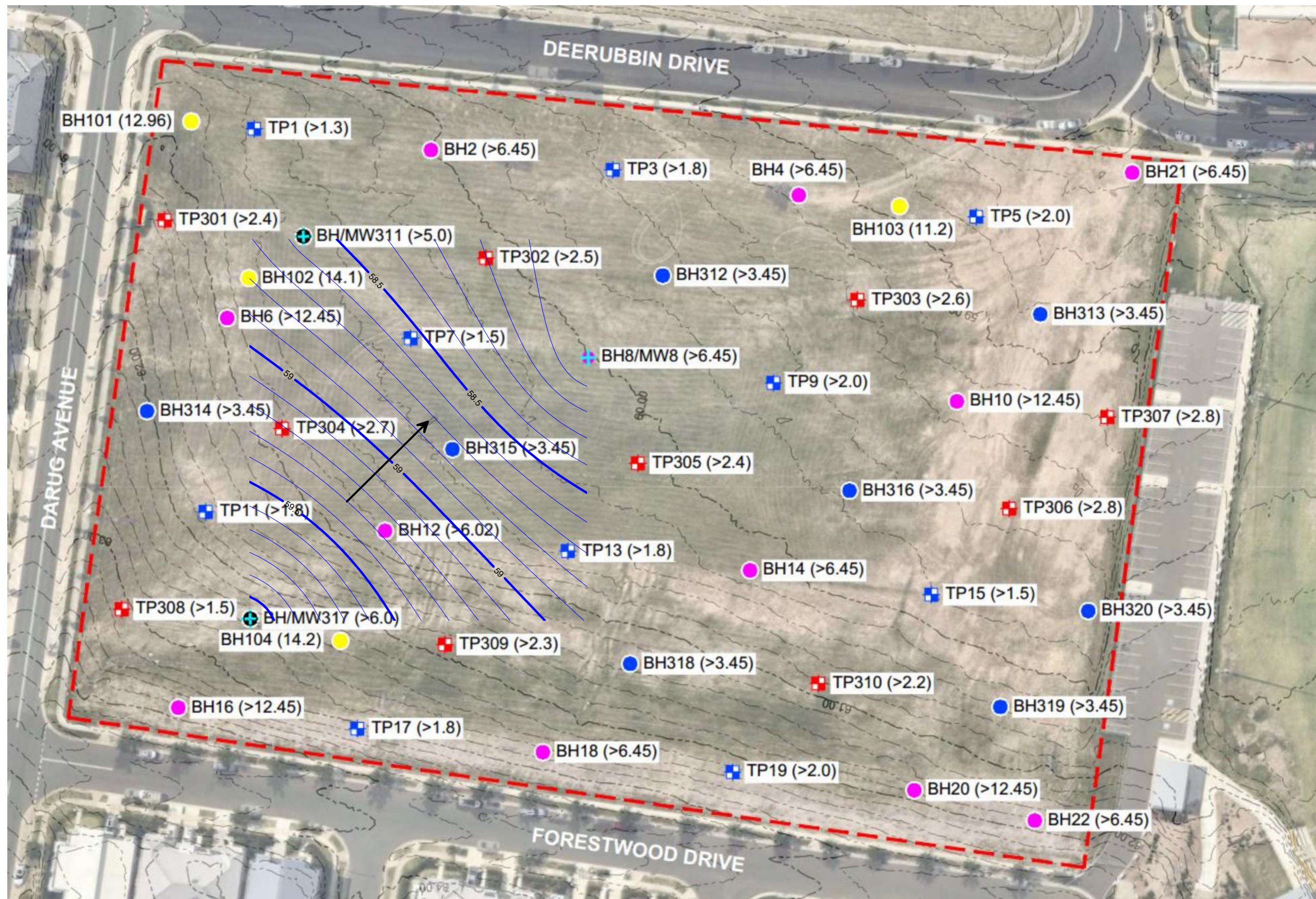
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This plan should be read in conjunction with the Environmental report.

Title: ADDITIONAL SAMPLE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 4
JKEnvironments	





LEGEND

	APPROXIMATE SITE BOUNDARY
	BH(Fill Depth)
	BH/MW(Fill Depth)
	TP (Fill Depth)
	SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
	DEEP GEOTECHNICAL BOREHOLES AND DEPTH OF FILL (m) BY JKG
	GROUNDWATER CONTOUR AND APPROXIMATE GROUNDWATER LEVEL (RL in mAHD)

Notes:

Not to scale.

Reference should be made to the report text for a full understanding of this plan.

Image Sources: Base image sourced from JKE Figure

Title: **GROUNDWATER CONTOUR PLAN**

Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Project No: E33177P

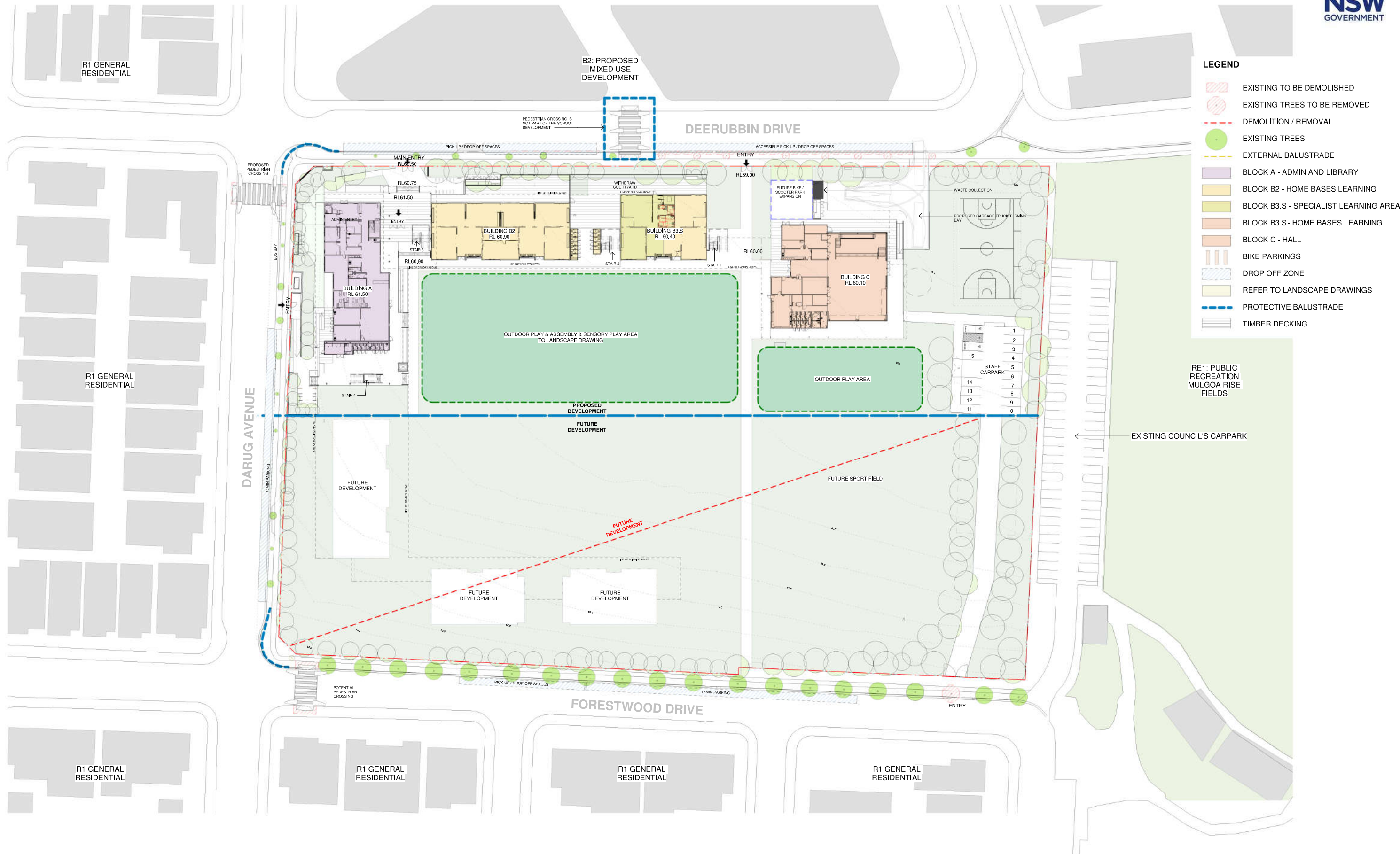
Figure No: 5

JK ENVIRONMENTS





Appendix B: Proposed Development Site Plan



Issue No.	Date	Description	Chkd
1	12/04/2021	ISSUE FOR COORDINATION	
2	16/04/2021	SD ISSUE	
3	23/04/2021	ISSUE FOR COORDINATION	
4	04/05/2021	SSDA ISSUE	
5	14/07/2021	FOR INFORMATION	

RICHARD CROOKES
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Drawing Title
SITE PLAN

PRELIMINARY

Project
NEW PRIMARY SCHOOL IN MULGOA
RISE
at
1-23 Forestwood drive, Glenmore Park, NSW 2745, Australia
for
SINSW

Architect
NBRSARCHITECTURE.
Sydney
61 2 9922 2344
Any form of replication of this drawing in full or in part without the written permission of NBRS-PARTNERS Pty Ltd constitutes an infringement of the copyright.
Nominated Architect:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197
nbrsarchitecture.com
ABN 16 002 247 565

Date 14/07/2021 4:48:19 PM
Scale 1:500 @ A1
Drawing Reference
20415-NBRS-DR-A-SSDA-0110
Revision
5
0 5m 10m 15m 20m 25m 30m 35m 40m 45m 50m



Appendix C: Inspection Photographs (23 July 2021)









Appendix D: Laboratory Report

CERTIFICATE OF ANALYSIS 274742

Client Details

Client	JK Environments
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	<u>E33177P, Glenmore Park</u>
Number of Samples	14 material
Date samples received	26/07/2021
Date completed instructions received	26/07/2021

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	26/07/2021
Date of Issue	26/07/2021
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Ridwan Wijaya
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Asbestos ID - materials				
Our Reference		274742-2	274742-10	274742-14
Your Reference	UNITS	FCF2	FCF10	FCF14
Date Sampled		23/07/2021	23/07/2021	23/07/2021
Type of sample		material	material	material
Date analysed	-	26/07/2021	26/07/2021	26/07/2021
Mass / Dimension of Sample	-	39x30x5mm	26x21x4mm	33x24x5mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected
		Amosite asbestos detected		Amosite asbestos detected
Trace Analysis	-	[NT]	[NT]	[NT]

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Brendan Page

Sample Login Details

Your reference	E33177P, Glenmore Park
Envirolab Reference	274742
Date Sample Received	26/07/2021
Date Instructions Received	26/07/2021
Date Results Expected to be Reported	26/07/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	14 material
Turnaround Time Requested	Same day
Temperature on Receipt (°C)	18
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:

Sample ID	Asbestos ID - materials	On Hold
FCF1		✓
FCF2	✓	
FCF3		✓
FCF4		✓
FCF5		✓
FCF6		✓
FCF7		✓
FCF8		✓
FCF9		✓
FCF10	✓	
FCF11		✓
FCF12		✓
FCF13		✓
FCF14	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

[illegible]