Remedial Action Plan (RAP)

Health Infrastructure

Broken Hill Key Worker Accommodation (KWA)

Key Worker Accommodation Program, Broken Hill, NSW

JBS&G 66655 | 158125

5 April 2024

We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Caring for Country The Journey of JBS&G
Artist: Patrick Caruso, Eastern Arrernte

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Abbreviations

Term	Definition
AEC	Area of Environmental Concern
AHD	Australian Height Datum
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soil
AST	Above-ground storage tank
BHHR	Broken Hill Hospital Redevelopment
Bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and xylenes
COPC	Contaminants of Potential Concern
CLM Act	Contaminated Land Management Act 1997
CSM	Conceptual site model
DG	Dangerous Goods
DP	Deposited Plan
DSI	Detailed Site Investigation
ED	Emergency Department
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ESA	Environmental Site Assessment
FWLHD	Far West Local Health District
HBM	Hazardous Building Materials
HI	Health Infrastructure
JBS&G	JBS&G Australia Pty Ltd
KWA	Key Worker Accommodation
LEP	Local Environmental Plan
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCPs	Organochlorine pesticides
PAHs	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PCE	Tetrachloroethene (also Perchloroethene or perchloroethylene)
PFAS	Per- and Poly-fluoroalkyl Substances
POEO Act	Protection of the Environment Operations Act 1997
PSI	Preliminary Site Investigation
R&H SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RAP	Remedial Action Plan
SMF	Synthetic Material Fibres
SWA	Safe Work Australia
SWNSW	SafeWork New South Wales
TRH	Total Recoverable Hydrocarbons

1. Introduction and Background

1.1 Introduction

JBS&G Australia Pty Ltd (JBS&G) was engaged by Health Infrastructure (HI, the client) to prepare a Remedial Action Plan (RAP) for the proposed Broken Hill Key Worker Accommodation (KWA, the site). The site is formally identified as part Lot 4376 in DP757298. The overall KWA footprint is approximately 1,200 m^2. The site location and layout are shown on **Figures 1** and **2** respectively.

The proposed development involves the delivery of new key worker accommodation as part of the Key Worker Accommodation Program (see Proposed Development Plans **Appendix A**) and will entail the construction of 10 residential units, landscaped/turfed areas and adjoining footpaths. It is understood that the residential unit buildings will be constructed as a pile supported structure which will be above ground level.

JBS&G previously completed a combined Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI) (JBS&G 2023, see **Section 4.3**) for the KWA site. The scope of works completed as part of the PSI/DSI entailed a desktop review of site history and background information including: a site inspection from external areas to identify potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs); a detailed inspection within accessible areas of the site; development and documentation of a conceptual site model (CSM); soil sampling at eight locations via testpits including Asbestos Quantification Assessment (AQA); laboratory analysis of samples for COPCs; and data evaluation against NSW EPA endorsed guideline values.

The key findings of the PSI/DSI are outlined below:

- The site history review identified that the site was historically used as a hospital since the late 1800s;
- The review of historical site use information, previous reports and inspection of site conditions identified potential AECs and associated COPCs which were associated with potential importation of fill materials from unknown origins, hazardous materials associated with historical demolition, refurbishment and construction works, and the application of pesticides for maintenance of vegetated areas;
- Lead exceeded the adopted HILs in one location, requiring remediation in order to meet the requirements of the intended site land use;
- Bonded ACM was encountered within fill in two test pit locations and trace level friable asbestos was detected in one sample location, below the adopted HSLs. These impacts were greater than 0.1 m bgs in depth and are not considered to pose an aesthetic issue for the current site, however, will require future management from a WHS perspective during redevelopment;
- Concentrations of other COPCs were not identified at levels posing an unacceptable risk to human or ecological receptors relating to the proposed redevelopment of the site;
- No other significant aesthetic issues associated with contamination (odours or staining) were identified; and
- No soil background issues or chemical mixtures, or significant potential offsite migration risks were identified.

Based on the findings of the PSI/DSI, the following recommendations were made:

- Preparation of a RAP for the KWA site to manage the identified lead in soil impacts. The report would address:
    - Data gaps to delineate the lateral extent of lead impacts at KW-B3 to identify future remedial extents;
    - Set remediation goals for potentially impacted media that will ensure the ongoing suitability of the land;
    - Typical site management controls including protocols to manage unexpected finds if encountered during any ground disturbance works associated with future site development; and
    - Remediation and validation actions including validation sampling, analysis and quality planning to enable the site to be considered suitable for proposed land use; and
- Preparation of a Redevelopment Asbestos Management Plan (AMP) be prepared for the KWA site, detailing the safe implementation of the RAP in undertaking asbestos removal, as guided by the WHS regulatory framework (SafeWork NSW).

The RAP, documented herein, meets the requirements of Chapter 4 Remediation of Land of *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP). This report documents the procedures and standards to be followed in order to address the lead contaminated soils in such a manner as to make the site suitable for the proposed future uses.

1.2 Objectives

The objective of this RAP is to document the procedures and standards to be followed in order to remediate lead contaminated soil identified at the site, ensuring the protection of human health and the surrounding environment, such that the contamination is remediated / managed in such a manner as to make the site suitable for the proposed future uses.

2. Site Condition and Surrounding Environment

2.1 Site Identification

The location and current layout of the site is shown in **Figures 1** and **2** respectively. The site details are summarised in **Table 2.1.**

Table 2.1: Summary of Site Details

Site Legal Identifier (Figure 2)	Lot 4376 in DP 757298
Site Address	176 Thomas Street, Broken Hill, NSW 2880
Site Area	1,200 m^2
Local Government Authority	City of Broken Hill
Approximate Coordinates (GDA 94 Map Grid of Australia (MGA) 54)	Easting: 542901.856 Northing: 6465344.474
Registered Site Owner	Health Administration Corporation
Current Zoning	Zone R1 – General Residential (*Broken Hill Local Environmental Plan 2013*)
Previous Land Uses	Vacant Land
Current Land Uses	Health Service
Proposed Land Uses	Health Service

2.2 Site Description

A site inspection was undertaken on 6 February 2023 and reported in JBS&G (2023). Key findings of the inspection are as follows:

- The KWA site is an approximately rectangular-shaped parcel of land, situated within the Broken Hill Hospital site boundary along Morgan Street to the northwest. The site contains grassed areas and landscaped gardens (including decorative gravel beds, small trees and shrubs). The south-eastern boundary of the KWA site is adjacent to a concrete footpath, which extends down to the main hospital entry. There are no building structures present;
- The site is situated atop a hill crest, with the highest point at the centre, a gentle downwards slope towards the northwestern and northern boundaries, and a steep downwards slope to the south-eastern boundary of the site, which is approximately 3m lower than the centre of site.
- No aboveground or underground fuel storage tanks (AST/UST) were observed within the investigated area;
- Decommissioned power cables were found in the northern corner of the investigated area. Former water tanks are located within the northwestern portion of the investigated area. No chemical storage and waste disposal pits or bin storages were observed; and
- There was no evidence of significant contamination at the site in the form of asbestos containing materials (ACM) fragments, odours or staining on the surfaces.

2.3 Surrounding Land Use

The proposed KWA area is located within the broader Broken Hill Hospital. As documented in JBS&G (2023), land uses of adjacent properties or properties across adjacent roadways from the hospital are summarised below.

- North – To the north is part of a sealed carpark area, access driveway and Morgan Street, across which is residential land. To the NW between the site and Morgan Street is a former substation, backup power generator and pumphouse and water tanks, with potential to have abandoned fuel/oil distribution pipework;
- West – Hospital buildings and a carpark are west of the KWA. Beyond, the hospital is bound to the west by Bromide Street, and further afield low-density residential dwellings, a private clinic and a pre-school;
- East – Directly east of the KWA are a carpark and Kincumber House, within the hospital. The hospital is bound to the east by Chloride Street and low-density residential dwellings beyond; and
- South – South of the KWA boundary are landscaped gardens and a path down to a carpark and hospital buildings. The hospital is bound to the south by Thomas Street and low-density residential dwellings and a pathology laboratory beyond.

2.4 Topography

Review of JBS&G (2023) indicates that the KWA relatively flat at an elevation of 322 m Australian Height Datum (AHD), with a steep decline south within the hospital boundary, to 312 m Australian Height Datum (AHD). The area in vicinity of the hospital generally slopes east to northeast from this elevated northwest part of the hospital site, based on Lotsearch (2022) elevation contours. Some areas of the hospital site also appear to have been artificially raised for landscaping or building, particularly in the vicinity of Kincumber House, external to the site.

External to the northern site boundary, a steep descent from Morgan Street northward to Morgan Lane and Sulphide Street is noted on Google Street View.

2.5 Geology and Soils

Review of JBS&G (2023) indicates that the site is underlain by Sundown Group Siliciclastic sedimentary rock, comprising interbedded pelite, psammopelitic and psammitic metasedimentary rocks.

The soil classification order is tenosol, which occurs on hills with small valley plains. Tenosols are described as shallow, dense loamy soils to shallow calcareous loamy soils and sands occurring on hills.

It was noted that studies have observed elevated background levels of heavy metals in soils, particularly lead, in the City of Broken Hill, which are associated with the town's historic and ongoing mining industry (Yang & Cattle 2015[1]; Kristensen & Taylor 2016[2]).

2.6 Acid Sulfate Soils

Review of JBS&G (2023) indicates that the site has an extremely low probability of acid sulfate soils (ASS). Review of the geographical and topographical location of the site indicated that it is a significant distance away from tidal creeks or estuaries, and it was considered unlikely that ASS would exist at the site. Based on the identified geological and topographical setting no further consideration for the potential for ASS at the site was required.

[1] "*Bioaccessibility of lead in urban soil of Broken Hill, Australia: a study based on in vitro digestion and the IEUBK model",* Yang K and Cattle SR, *Science of the Total Environment,* 538, pp.922-1933, 2015 (Yang & Cattle 2015)

[2] "*Unravelling a 'miner's myth' that environmental contamination in mining towns is naturally occurring*", Kristensen LJ and Taylor MP, *Environmental Geochemistry and Health,* 38(4), pp.1015-1027, 2016 (Kristensen & Taylor 2016)

2.7 Salinity

Review of JBS&G (2023) indicates that there is no current National Assessment data available.

Areas of high saline risk generally occur lower in the landscape, or at permeability contrasts, where saline groundwater may come within close proximity to the ground surface or where seepage causes waterlogged conditions, thereby concentrating soils. Typically scattered saline indicator vegetation occurs in these areas.

With consideration to the site topography (approximately 300 m AHD) and average depth to the groundwater in proximity to the site (approximately 10 - 20 m bgs), JBS&G (2023) considered there to be a low probably of salinity at the site.

2.8 Hydrology

Review of JBS&G (2023) indicates that the closest water body is a drainage channel approximately 1.2 km east of the site, which joins a tributary of the Willa Willyong Creek, approximately 3.3 km northeast of the site, and eventually enters the Stephen Creek reservoir, approximately 12 km northeast of the site. Stephen Creek flows towards Tandou Lake in the Menindee Lakes catchment and the Darling River, approximately 90-100 km south to southeast of the site. It is noted that the Menindee Lakes catchment supplies water to Broken Hill to meet irrigation, stock and domestic needs (WaterNSW 2022[3]).

Surface water generated during periods of rainfall was anticipated to largely infiltrate through the unsealed surfaces and grass, with excess surface water flowing in a northwesterly and northerly direction from the northwestern side of the KWA area and down the slope in the southeast portion of the site.

JBS&G (2023) noted that the local aquifers are generally of low productivity. With regard to the depth of groundwater in proximal wells to the site, potential onsite groundwater may be encountered at relatively deep levels (approximately 10-20 m bgs).

Based on the topography and hydrology discussed above, it was inferred that shallow/perched groundwater migration will occur in an east to northeast direction. However, noting variable terrain in Broken Hill and historical mining activities in the town predominantly southeast of the site, there is the potential that groundwater flows may differ from what is inferred here.

2.9 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Broken Hill Patton Street[4]) indicates the site is located within the following meteorological setting:

- Average minimum temperatures vary from 5.4 ^{o}C in July to 18.5 ^{o}C in January;
- Average maximum temperatures vary from 15.2 ^{o}C in July to 32.8 ^{o}C in January;
- The average annual rainfall is approximately 259.8 mm with rainfall greater than 1 mm occurring on an average of 34.6 days per year; and
- Monthly rainfall varies from 17.8 mm in April to 25.8 mm in February with the wettest periods occurring on average in January to March.

[3] *Menindee Lakes,* WaterNSW, https://www.waternsw.com.au/nsw-dams/regional-nsw-dams/menindee-lakes#:~:text=Today%20the%20lakes%20supply%20water,supplement%20the%20River%20Murray%20system, accessed 2 April 2024

[4] http://www.bom.gov.au/climate/averages/tables/cw_047007.shtml, Commonwealth of Australia, 2013 Bureau of Meteorology, Product IDCJCM0028, accessed by JBS&G on 2 April 2024.

3. Summary Site History

Based on review of the site history outlined in JBS&G (2023), the site appears to have been vacant until 1889, where records show that it was dedicated for hospital use, and later established as the Broken Hill and District Hospital in 1933. Aerial photography available from 1954 suggests that the site has undergone moderate changes over the past 90 years and has remained a public hospital during this time.

4. Previous Investigations

4.1 Asbestos Register – Broken Hill Health Service (FWLHD 2015[5]) Asbestos Register

The client provided an Asbestos Register prepared in 2015. The audit included inspection of 22 buildings and related structures, identifying predominantly bonded asbestos cement building materials and some friable asbestos items, and the completion of eleven confirmatory samples.

With respect to asbestos contamination aspects, JBS&G note that damaged ACM in external building materials and friable asbestos such as used on pipe lagging in subfloor areas, could impact surface soils.

In addition, an inspection of Corindah Court car park, an area to the north of hospital, identified building and demolition waste within an earthen embankment, with the potential for ACM to be present.

Photographs included in the register suggest there may also be lead-based paints, with some flaking paint visible, however lead-based paints were not assessed.

The conclusion of the audit report recommends a range of management actions to several of the buildings assessed, and within Corindah Court car park.

It is noted that the buildings assessed in the Register fall outside of the developable site extent subject to this investigation; however, as noted in the DSI, building structures that may have been constructed with asbestos (and lead paint) were previously within the KWA site boundaries. As such, asbestos impacts from demolition works may be present within the former building footprints.

4.2 Broken Hill Hazardous Material Survey (GHD 2016[6])

GHD Pty Ltd completed an intrusive (pre-demolition) Hazardous Building Material (HBM) Survey of Kincumber House, located in the north of the hospital area along Morgan Street, for the purpose of addressing HBM data gaps from the FWLHD (2015) investigation and to inform decisions related to the Kincumber House internal refurbishment.

The HBM further defined the extent of ACM and investigated the presence of Synthetic Mineral Fibres (SMF), PCBs within light fittings, Ozone Depleting Substance (ODS) within air conditioning and refrigeration units, leaded paint systems and lead contaminated dust due to the presence of deteriorating lead paint, through the collection of representative samples for analysis at a National Association of Testing Authorities NATA accredited laboratory.

The laboratory and visual findings confirmed the presence of both friable and bonded asbestos and lead paint in the areas surveyed. The likelihood of SMF and PCBs were determined as highly likely, and no ODS were identified during the inspection. The survey concludes with recommendations to safely manage the identified HBMs during the Kincumber House refurbishment.

It is noted that Kincumber House is external to the subject site, in the central northern portion of the hospital boundary (**Figures 2** and **3**).

4.3 Combined PSI and DSI (JBS&G 2023)

JBS&G completed a combined PSI and DSI of the KWA site in 2023. The investigation entailed a desktop review of site history and background information including a site inspection from external areas to identify potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs); a detailed

[5] *Asbestos Register, Broken Hill Health Service, Far West Local Health District 2015,* May 2015.
[6] *Broken Hill Hospital Kincumber House and Ambulatory Wing - Hazardous Building Materials Survey,* GHD Pty Ltd, May 2016 (GHD 2016).

inspection within accessible areas of the site; development and documentation of a conceptual site model (CSM); soil sampling at eight locations via testpits including Asbestos Quantification Assessment (AQA); laboratory analysis of samples for COPCs and data evaluation against NSW EPA endorsed guideline values.

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Based on the findings of the PSI/DSI, the following recommendations were made:

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    - Typical site management controls including protocols to manage unexpected finds if encountered during any ground disturbance works associated with future site development; and
    - Remediation and validation actions including validation sampling, analysis and quality planning to enable the site to be considered suitable for proposed land use; and

Preparation of a Redevelopment Asbestos Management Plan (RAMP) be prepared for the KWA site, detailing the safe implementation of the RAP in undertaking asbestos removal, as guided by the WHS regulatory framework (SafeWork NSW).

5. Contamination Status

Based on the findings of JBS&G (2023), the following conceptual site model (CSM) has been developed for the site.

5.1 Areas of Environmental Concern

Based on a review of previous investigations and with consideration to the proposed commercial/residential end land use for the site, Areas of Environmental Concern (AEC) and associated contaminants of potential concern (COPC) have been identified.

JBS&G (2023) identified the presence of the following AECs and COPC requiring remediation/management, as presented in **Table 5.1**.

Table 5.1 Areas of Environmental Concern, Media and Contaminants of Concern

AEC	COPC	Location and Concentration	Guideline Exceedance
Lead contamination within shallow fill soils as indicated on **Figures 3 and 4**.	Lead	KW-B3_0.1-0.2 (16,000 mg/kg)	HIL C (1,200 mg/kg)

Asbestos Impacted Soils

In addition to the above, bonded forms of asbestos were identified at two locations with concentrations of 0.002% w/w in sample KW-B3_0.0-0.4A and 0.007% w/w in sample KW-B7_0.0-0.6A. The results in both samples were below the adopted criterion for bonded ACM (0.04% w/w). No ACM was observed at the surface (0-0.1 m bgs) portion of the 20L AQ samples completed.

Further, asbestos fines / friable asbestos (AF/FA) was detected in SPLIT05 (triplicate of KW-B1_0.0-0.5), below the adopted criteria of 0.001 % w/w.

Whilst all incidence of asbestos impacts at the site were reported below the adopted site criteria (and therefore don't require remediation to make the site suitable for the proposed landuse), the presence of asbestos in fill material indicates that there may be further asbestos present in disturbed fill material. The presence of asbestos in soil does, however, trigger requirements for asbestos controls to be implemented during remediation/civil works in proximity to the identified impacts, in accordance with SafeWork NSW Codes of Practice. Reference to the AMP developed for the site (JBS&G 2024[7]) should be made.

5.2 Potential for Migration

The potential for migration of contaminants offsite is considered low given the nature, distribution and depth of identified contamination.

In relation to the potential for migration of contamination to groundwater via percolating surface water, given the low annual rainfall of the site and surrounding region, the depth of groundwater and limited extent of lead contaminated soil identified at the site, the potential for the dissolution and migration of lead from the site to the underlying groundwater is considered to be low.

JBS&G considers there is a very low potential for the aeolian transport of contamination from the site in an undisturbed state, noting that impacts were typically identified in subsurface soils (i.e. > 0.1 m bgs).

[7] *Asbestos Management Plan (AMP) Broken Hill Key Worker Accommodation (KWA),* JBS&G Australia Pty Ltd, Ref: 66655/158,782, dated 05 April 2024 (JBS&G 2024)

5.3 Potential Exposure Pathways

Based on the COPC identified in various media as discussed above, the exposure pathways anticipated for the site (if left in a non-remediated state) include:

- Current and future site users who may potentially be exposed to COPC through direct contact with or ingestion of impacted soils;
- Excavation / construction / maintenance workers conducting activities at the site, who may potentially be exposed to COPC through direct contact with impacted soils present within excavations and/or inhalation of dusts associated with impacted soils; and
- Existing and/or future users/occupants of adjoining properties should contamination migrate from the site. This is anticipated to be limited to potential contaminant migration via aeolian transport of dusts.

5.4 Receptors

Potential human populations who may be exposed to site impacts in the future (if they are not remediated or appropriate management is not implemented prior to or during development) include:

- Potential future site users;
- Current and future workers of the site;
- Future construction and site maintenance workers;
- Future and current sub-surface excavation and intrusive workers; and
- Future ecological receptors (largely limited to flora)

5.5 Preferential Pathways

For the purpose of this RAP, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPC as either solid (sediments, dust, etc) or liquid (surface water). If liberated, preferential pathways, for contact with dust or surface water are anticipated to be largely driven by (but not limited to) the magnitude of disturbance, moisture content of soil and meteorologic conditions (rainfall/wind velocity etc.).

6. Remediation Options

6.1 Remediation Objectives

The remediation objectives are outlined as follows:

- Removal of unacceptable risks to human health and the environment from the identified lead contaminated fill such that the site is suitable for the proposed uses;
- Validate the remedial works in accordance with the relevant NSW EPA guidelines and with reference to the adopted site criteria; and
- Document the validation process.

This RAP has been prepared with reference to the following guidelines and legislation:

- Chapter 4 Remediation of Land of *State Environmental Planning Policy (Resilience and Hazards) 2021* (R&H SEPP).
- *Contaminated Land Guidelines: Sampling Design Part 1 - application*, NSW EPA, 2022 (EPA 2022).
- *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*, NSW EPA, May 2020 (EPA 2020).
- *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, 3rd Edition, NSW EPA, October 2017 (EPA 2017).
- *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013, National Environment Protection Council (NEPC 2013).
- *Work Health and Safety Act 2011* (WHS Act).
- *Work Health and Safety Regulation 2017* (WHS Regulation).

6.2 Extent of Remediation

Based on review of JBS&G (2023), the areas requiring remediation at the site to make the land suitable for the proposed landuse (public open space, per NEPC (2013) are outlined in **Table 6.1**.

Table 6.1 Extent of Remediation

AEC	Dimensions	Area (m^2)	Depth Range (m bgs)	Approximate Volume (m^3)
KW-B3_0.1-0.2	5m x 5m (min)	25	0-0.3	7.5

Asbestos Impacted Soil

In addition to the above, whilst soils impacted with asbestos below the adopted site criteria (i.e. non-friable asbestos at locations KW-B3_0.0-0.4A and KW-B7_0.0-0.6A and friable forms at KW-B1_0.0-0.5 (albeit at concentrations below 'trace levels' (i.e. <0.001 %w/w)) do not require specific remediation, these soils are required to be managed such that they are not present or placed (via civil works) at the ground surface (i.e. 0-0.1 m bgs) in areas of future landscaping/softscaped areas (i.e. asbestos impacted materials should be retained below the ground surface or below hardstand).

6.3 Consideration of Possible Remediation Options

NEPC (2013) presents the following hierarchy of options for soil remediation and management approaches, which is followed in NSW EPA (2017):

- Onsite treatment of the contamination so that it is either destroyed or the associated risk is reduced to an acceptable level; or
- Offsite treatment of excavated soil so that the contaminant is destroyed, or the associated risk is reduced to an acceptable level, after which the soil is returned to the site; or

If the above are not practicable,

- Consolidation and isolation of the soil on site by containment with a properly designed barrier; or
- Removal of contaminated material to an approved facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

Consideration of each of the approaches, is presented in **Table 6.2**.

Table 6.2: Remedial Options Assessment Matrix

Remedial Option	Discussion	Conclusion
Option 1: On-site treatment of the soil so that the contaminants are either destroyed or the associated hazards are reduced to an acceptable level.	Lead Contaminated Fill Material (KW-B3_0.1-0.2) Given the limited extent of lead contaminated soils at the site, there are no practical means of micro encapsulating/destroying/removing lead from soils that is commercially viable and available within Australia.	Not a practical option.
Option 2: Off-site treatment of excavated soil 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.	Lead Contaminated Fill Material (KW-B3_0.1-0.2) Given the limited extent of lead contaminated soils at the site, there are no practical means of micro encapsulating/destroying/removing lead from soils.	Not a practical option.
Option 3: Consolidation and isolation of the soil on-site by containment within a properly designed barrier.	Lead Contaminated Fill Material (KW-B3_0.1-0.2) This option provides for the retention of impacted soil on-site beneath a physical barrier such that there are no complete exposure pathways available between the contaminated material and sensitive human receptors and/or potential ecological receptors. The barrier would comprise the hardstand surface under the proposed development scheme. Where persistent contaminants are present (e.g. heavy metals and PAHs) this option would result in ongoing requirements for management under the contaminated land management framework. Moreover, this option minimizes the amount of waste produced from the development works and is therefore consistent with ecological sustainable development (ESD) principles. Containment requires long term management and notification on title and planning certificates which may devalue land for future divestment, imposes restrictions on future land use (via management procedures) and requires to be legally enforceable. However, should materials be unable to be retained for other reasons (i.e. geotechnical) this option may not be viable.	**A potential contingency option.**
Option 4: Removal of contaminated soil to an approved site or facility, followed where necessary by replacement with clean fill	Lead Contaminated Fill Material (KW-B3_0.1-0.2) Ideally suited to small volumes. Contamination is being removed from the site entirely. However, it results in increased landfill disposal and as such is lower on EPA's waste minimisation hierarchy, as well as their remediation hierarchy.	**The preferred option.** It is noted additional samples may be required to be collected to classify soil for offsite disposal as per the NSW Sampling Design Guidelines.

6.4 Preferred Remedial Strategy

A number of potential remedial options have been outlined in **Table 6.2.**

The preferred remedial strategy for the site is offsite disposal of lead contaminated soil and subsequent validation of the remedial extents. Onsite containment of lead contaminated soils is considered to be a suitable/feasible contingency option as part of the development works.

Asbestos impacted soils identified at the site do not require specific remediation, however, their presence in site soils will require management during redevelopment if these soils are disturbed and following redevelopment (i.e. occupation/operational phase) in accordance with the WHS Regulation (2017) and associated SafeWork NSW Codes of Practice.

7. Remediation Plan

7.1 Approvals, Licences and Notifications

Protection of the Environment Operations Act 1997 (POEO 1997)

The proposed remediation/validation activities are not required to be licensed under POEO Act.

State Environment Planning Policy (Resilience and Hazards) 2021 (R&H SEPP)

The works are considered to be Category 1 remediation works in accordance with Resilience and Hazards SEPP as the works will be carried out in an area mapped as heritage item under the Broken Hill Local Environmental Plan (2013).

The notification requirements of the Resilience and Hazards SEPP require the consent authority to be notified 30 days before Category 1 remediation works commence.

Notice is also required to be provided to Council within 30 days after completion of remediation, as per the R&H SEPP.

Asbestos Works

During remediation and civil works which will disturb soils in proximity to known asbestos impacted soils, an appropriately experienced and licensed Remediation Contractor is required to undertake the works under the supervision of an appropriately qualified and experienced Remediation Consultant.

Based on the current site conditions, the remedial works must be conducted by a Class A (friable) licensed contractor who has obtained a site-specific permit approving the asbestos works from SafeWork NSW (SWNSW). This permit application must be made at least seven working days before ground-disturbance activities commence.

Remediation works shall not commence until all required approvals, licences and notifications have been granted and/or received.

Further information regarding the management of asbestos impacted soils at the site are outlined in the AMP (JBS&G 2024) developed for the site.

Onsite Containment

In the event that the contingency remedial strategy of onsite containment is pursued as the primary remedial strategy, prior to implementing containment as part of the remedial approach, an agreement must be reached between Council and HI to comply with the general terms of agreement in support of the establishment of containment cells.

7.2 Remedial Works

Areas requiring remediation are discussed in **Section 5.1** and shown on **Figure 4**. The remedial works are required to be undertaken by a Remediation Contractor with appropriate training, licences and experience, under the supervision of an appropriately experienced Environmental Consultant.

7.2.1 Lead Contaminated Fill Material

The extent of lead contaminated fill material required to be remediated is outlined in **Table 6.1** and shown in **Figure 4.**

The Remediation Contractor shall undertake the following to address the contaminated soil proposed to be disposed from the site:

- The historical testpit location (KW-B3) should be identified on-ground with a GPS with sub-metre accuracy;
- Following which, the extents of the remedial excavation (comprising an area of at least 5m x 5m) should be marked out, centred on the historical testpit location, KW-B3.
- Contaminated fill within the remedial area (**Figure 4**) should be excavated to the underlying natural material (0.3 to 0.4 m bgs) and disposed offsite to an appropriately licensed waste facility, including the ability to accept asbestos waste.
    - A formal waste classification letter prepared by an appropriately experienced Environmental Consultant will be required to dispose of materials offsite;
- The excavation extent(s) should be documented by an Environmental Consultant and residual soils at the resultant walls and base of the excavation validated as per **Section 8.2.7;**
    - It should be noted that JBS&G recommend that a portable X-ray Fluorescence (XRF) device is utilised to screen soils at the resultant walls and base of the excavation following remediation as a preliminary screening tool to assist in determining whether lead impacted soils have been adequately removed, prior to the collection of samples for laboratory analysis. JBS&G recommend that screened soil samples should return results of <1,000 ppm utilising the XRF prior to collection and submission of soil samples for laboratory analysis.
- Should validation fail, the excavation should be advanced an additional 0.3 m in the direction of the failed validation sample and the validation process repeated until validation is achieved;
- If excavated materials are not loaded directly into an awaiting truck and are stockpiled on site, the temporary storage of impacted soil (as required) should be conducted in accordance with **Section 10.3** (i.e. appropriately covered);
- The footprint(s) of all stored material (where placed on unsealed ground) are to be validated by an Environmental Consultant as per **Section 8.2.7.** Should validation fail, the failed base should be excavated a further 0.3 m in the direction of the failure and the validation process repeated until validation is achieved; and
- Materials should be tracked from source, through required remedial activities to the offsite disposal facility, noting the remediation undertaken and validation outcome.

It should be noted that non-friable asbestos was identified within fill material from historic sample location KW-B3 and as such, asbestos related controls will be required for the remediation of these soils, in accordance with the AMP (JBS&G 2024) developed for the site.

7.3 Offsite Disposal

Fill materials requiring removal and disposal shall be classified in accordance with *Waste Classification Guidelines Part 1: Classifying Waste* (EPA 2014) or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation 2014*.

A waste classification letter should be prepared for each material type that is to be disposed. Additional samples may be required to classify waste for offsite disposal as per the NSW EPA's Sampling Design Guidelines (NSW EPA 2022).

The waste facility must be lawfully licensed to receive the material sent to it for disposal, including the ability to accept asbestos waste. The Remediation Contractor must be aware of and conduct all waste disposal in accordance with all relevant regulations. All waste tracking documentation including disposal dockets must be maintained by the Remediation Contractor and must be provided to the Environmental Consultant and the client for inclusion in the validation report.

7.4 Asbestos Air Monitoring

In areas in proximity to known asbestos impacts (refer to **Figure 4**), asbestos air monitoring will be conducted in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) Asbestos Code of Practice and Guidance Notes, in particular the Guidance note for the estimation of airborne asbestos dust [NOHSC 3002:2005].

7.5 Materials Importation

Should material need to be imported to the site to reinstate remedial excavations, its suitability for use at the site from a contamination perspective will require verification prior to importation to the site.

Virgin Excavated Natural Material (VENM) or material subject to a NSW EPA Resource Recovery Order/Exemption should be used for reinstating excavations. Reference should be made to **Section 8.2.7** for imported material characteristics, sampling densities, analytes and compliance with relevant NSW EPA made or endorsed guidelines.

7.6 Validation

Validation of the remedial works should be conducted by an appropriately qualified Environmental Consultant to demonstrate that the remediation objectives have been achieved. Details of the validation program are provided in **Section 8.**

8. Validation Plan

8.1 Overview

Validation data is required to be collected to verify the effectiveness of the remediation works and document the condition of the site as being suitable for the proposed future use (without the requirement for ongoing management).

Validation activities will be required for the following aspects:

- Collection of appropriate environmental data from excavation faces and from the footprint of any temporarily stockpiled material following the remediation of in-situ impacts;
- Tracking the movement of fill material on site and imported material; and
- Tracking the movement of waste materials requiring offsite disposal.

8.2 Data Quality Objectives

Data Quality Objectives (DQOs) were developed for the validation program, as discussed in the following sections.

8.2.1 State the Problem

Previous investigations have identified lead contaminated soil at one location (KW-B3). The concentration of lead reported at KW-B3 presents a potentially unacceptable human health risk for the proposed landuse and therefore remediation is required for the site to be made suitable.

During remediation activities, sufficient validation observations and data is required to demonstrate that the identified health-based risks to future site users have been adequately managed to render the site suitable for the proposed land use without the requirement for ongoing management.

8.2.2 Identify the Decision

The decisions which are required to be made for validation of the site are as follows:

1. Are contaminant concentrations in remedial excavations above the adopted site remediation criteria?
2. Are there any aesthetic issues remaining following remediation works?
3. Have the site remediation activities been undertaken in compliance with the regulatory requirements?
4. Is the site considered suitable for the proposed use?

During the remediation activities, sufficient validation of remediation activities is required to demonstrate that the identified environmental and health-based risks to future use(s) of the site have been adequately managed to render the site suitable for the proposed land use.

8.2.3 Identify Inputs to the Decision

The inputs to the decision are:

- Field observations in relation to inspection of all excavation bases, walls and stockpiles for contaminated material or other indicators of potential contamination;
- Soil validation analysis data collected from the base and walls of remedial excavations;
- Waste classification and material characterisation data obtained during assessment of soils prior to and during remediation works;

- Disposal dockets and relevant documents in relation to appropriate disposal of material to be removed from site as part of the remediation works (landfill dockets, beneficial reuse / recycling dockets, etc.);
- Materials imported to the site are appropriate (appropriate documentation supplied and additional testing as required);
- Relevant guideline criteria for validation and waste classification; and
- Data quality indicators (DQIs), which should be used in a quality assurance / quality control (QA/QC) assessment of the data.

8.2.4 Define the Study Boundaries

The study boundary is the site as identified **Table 2.1**.

The lateral and vertical extents of areas subject to remediation are outlined in **Section 5.1,** and the lateral extent is shown on **Figure 4**. The extent is based on currently available information and data, and are subject to the limitations of previous investigations.

In practice, the lateral and vertical extent shall be determined by observations and validation samples/data that satisfy the adopted validation criteria (**Section 8.3**).

The temporal boundaries of this investigation will be limited to the period of field validation works.

8.2.5 Decision Rules

The decision rules adopted to answer the decisions identified in **Section 8.2.2** are discussed below (**Table 8.1**).

Table 8.1 Summary of Decision Rules

Decision Required to be Made	Decision Rule
1. Are contaminant concentrations in remedial excavations above the adopted site remediation criteria?	Soil analytical data for chemical COPCs should be compared against the adopted criteria in the RAP. For the validation sample sets, statistical analysis of the data should be undertaken in accordance with relevant guidance documents, as appropriate, to facilitate the decisions. It is noted these are not applicable to asbestos and will only apply where unexpected chemical contamination may be encountered during remediation works. The following statistical criteria should be adopted with respect to soils: Either: the reported concentrations should be below the site criteria; Or, the 95% Upper Confidence Limit (UCL) of the average concentration for each analyte should be below the adopted health-based site criterion, no single analyte concentration should exceed 250% of the adopted health based site criterion, and the standard deviation of the results should be less than 50% of the site health based criterion. Analytical results for asbestos in soils should be directly compared to the site criteria (if required). No statistical assessment for asbestos in soils should be undertaken. If the statistical criteria stated above are satisfied, or asbestos concentrations are less than the validation criteria, the answer to the decision will be **No**. If the statistical criteria are not satisfied, the answer to the decision will be **Yes**.
2. Are there any aesthetic issues remaining following remediation works?	If there are any remaining fragments of non-friable/friable asbestos containing materials at the ground surface, unacceptable odours, soil inclusions or soil discolouration, the answer to the decision will be **Yes**. Otherwise, the answer to the decision will be **No**.
3. Have the site remediation activities been undertaken in compliance with the regulatory requirements?	Qualitative assessment of the works in relation to regulatory approvals and other requirements (e.g., waste classification and disposal) should be undertaken during and following the completion of remediation activities. If this review indicates works were compliant with regulatory requirements, then the answer to the decision will be **Yes**. Otherwise, the answer to the decision will be **No**.
4. Is the site considered suitable for the proposed use?	Was the answer to any of the above decisions Yes and does the fill with asbestos remain onsite? If **Yes**, a management strategy will be required. If **No**, a management strategy will not be required.

8.2.6 Specify Limits of Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC (2013), appropriate indicators of data quality (DQIs used to assess QA/QC) and standard JBS&G procedures for field sampling and handling.

To assess the usability of the data prior to making decisions, the data should be assessed against pre-determined DQIs for precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS parameters). The acceptable limit on decision error is 95% compliance with DQIs.

The pre-determined DQIs established for the project are discussed below in relation to the PARCCS parameters, and are expanded in **Table 8.2**.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; and ensuring analysing laboratories use consistent analysis techniques; and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- **Sensitivity** – expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted site assessment criteria.

Table 8.2 Summary of Data Quality Indicators

Data Quality Indicators	Frequency	Data Quality Criteria
Precision		
Duplicates (intra laboratory)	1 / 20 samples/media	<50% RPD[1]
Triplicates (Inter laboratory)	1 / 20 samples/media	<50% RPD[1]
Laboratory Duplicates	1 / 20 samples/media	<50% RPD[1]
Accuracy		
Surrogate spikes	All organic samples	70-130% recovery
Laboratory control samples	1 per lab batch	70-130% recovery
Matrix spikes	1 per lab batch	70-130% recovery
Representativeness		
Sampling appropriate for media and analytes	All samples	-[2]
Samples extracted and analysed within holding times.	-	Soil: organics (14 days), inorganics (6 months)
Laboratory blanks	1 per lab batch	<LOR
Trip spike	1 per lab batch (soil only)	70-130% recovery
Trip blank	1 per lab batch (soil only)	<LOR
Rinsate blank	1 per sampling event/media	<LOR
Comparability		
Standard operating procedures for sample collection & handling	All Samples	All Samples
Standard analytical methods used for all analyses	All Samples	NATA accreditation
Consistent field conditions, sampling staff and laboratory analysis	All Samples	All samples[2]
Limits of reporting appropriate and consistent	All Samples	All samples[2]
Completeness		
Sample description and COCs completed and appropriate	All Samples	All samples[2]
Appropriate documentation	All Samples	All samples[2]
Satisfactory frequency and result for QC samples		95% compliance
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted site assessment criteria	All samples	LOR ≤ site assessment criteria

[1] If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.

[2] A qualitative assessment of compliance with standard procedures and appropriate sample collection methods will be completed during the DQI compliance assessment.

8.2.7 Optimise the Design for Obtaining Data

The purpose of this step is to identify a resource-effective field validation sampling design that generates data that are expected to satisfy the decision performance criteria, as specified in the preceding steps of the DQO process. The output of this step is the sampling design that will guide development of the field sampling and analysis plan. This step provides a general description of the activities necessary to generate and select data collection designs that satisfy decision performance criteria.

The remediation validation and subsequent laboratory analysis program as outlined in the following sections should be implemented during site remediation activities to demonstrate the successful completion of works in compliance with the RAP goals. The validation/characterisation sampling and analytical program for the site is outlined in **Table 8.3** below.

Table 8.3: Sampling and Analytical Schedule

Item	RAP Sampling Density	Analytical Suite
Remedial Excavations - Lead		
Excavations formed by the removal of contaminated soils.	Excavation Floors 1 sample per 25 m^2, with a minimum of 2 samples per excavation Excavation Walls 5 m of excavation wall, with a minimum of 1 sample per wall	Heavy metals
Stockpile Footprints		
Stockpile Footprints (following removal of lead contaminated soil)	Stockpile Footprint 1 sample per 25 m^2, with a minimum of 2 samples per excavation	Heavy metals and asbestos
Material Importation		
Quarry Natural Materials (e.g. aggregates and sand products only, e.g. blue metal, sandstone, shale).	If adequate source site documentation is available, then no sampling is required, beyond visual inspection at the site when the material arrives to site. If sampling is required, a minimum of 3 samples per source site/material type, with a frequency of one sample per 2,000 m^3 after initial characterisation.	If chemical sampling is required: TRH/BTEX PAH Heavy Metals Asbestos (40g)
Imported VENM, or products that contain VENM.	If adequate source site documentation is available, then no sampling is required, beyond visual inspection at the source site and when the material arrives to site. If sampling is required, a minimum of 3 samples per source site/material type, with a frequency of one sample per 1,000 m^3.	If chemical sampling is required: TRH/BTEX PAH Heavy Metals OCP/PCBs Phenols Asbestos (40g)
Imported ENM, or products that contain ENM materials.	As per the exemption. If adequate source site documentation is available, then no sampling is required, beyond visual inspection at the site when the material arrives to site. If sampling is required, a minimum of 3 samples per source site/material type, with a frequency of one sample per 2,000 m^3 after initial characterisation.	As per the exemption, as well as: OCPs/OPPs/PCBs Asbestos (40g)
Recycle Materials including 'quarry' products that are recycled, or products that contain recycled products.	Letter showing compliance with the Resource Recovery Order/Exemption from the source facility and supplemented with analytical data at a density of 1 sample per 70 m^3. Visual confirmation/inspection once materials arrive to the site.	As per the exemption, as well as: TRH/BTEX PAH Heavy Metals OCPs/OPPs/PCBs Asbestos (40g)

Item	RAP Sampling Density	Analytical Suite
Growing Media (i.e. topsoil)	One sample per 250 m^3 per material type/source site.	TRH/BTEX PAH Heavy Metals OCP/PCBs pH Asbestos (40g)
Mulch	One sample per 70 m^3 per material type/source site	Asbestos (40g)
Export of Materials		
Classified in accordance with NSW EPA (2014) Waste Guidelines	Fill materials requiring additional classification for off-site disposal will be sampled by the Environmental Consultant as per the sampling densities for stockpiled / in-situ materials in NSW EPA (2022a).	Heavy metals TRH/BTEX PAH Asbestos (40 g) Toxicity Leachate Procedure (TCLP) for heavy metals and PAHs if required
VENM - Classified in accordance with EPA (2014) and POEO Act 1997	VENM which requires off-site disposal will be subject to assessment/inspection to determine that the material meets the definition of VENM provided in POEO Act 1997 and EPA 2014. Where sampling is required, a minimum of 5 samples will be collected per material type.	Appropriate desktop assessment by a trained/experienced Environmental Consultant. Analysis suite may include, but not be limited to: Heavy metals PAHs TRH/BTEX OCPs/PCBs EC pH Asbestos
Unexpected Finds		
Unexpected Finds	<u>Excavation Floors</u> 1 sample per 25 m^2, with a minimum of 2 samples per excavation <u>Excavation Walls</u> 5 m of excavation wall, with a minimum of 1 sample per wall	As appropriate, depending on the location and characteristics of the unexpected find

The nominated sampling densities and analytical program have considered sample density guidance provided in EPA made and endorsed guidelines.

Imported Materials

In accordance with current NSW EPA policy, only material that does not represent an environmental or health risk at the receiving site may be considered importation to the site. Imported materials will only be accepted to the site if they meet the restrictions placed on these materials (i.e. suitable for use as filling) and meet the definition of one or more of the following:

- Virgin Excavated Natural Material (VENM) as defined in the *Protection of the Environment Operations Act* (1997) Schedule 1;
- Excavated Natural Material (ENM) as defined in NSW EPA (2014b); or
- Recycled materials as per a NSW EPA exemption.

All materials imported onto the site are required to be accompanied by appropriate documentation that has been verified by the appointed Remediation Environmental Consultant for consistency/satisfaction of the relevant resource recovery order/exemption.

VENM

For VENM sourced from another site, the Environmental Consultant will be required to review source site documentation with regard to the VENM definition provided to the POEO Act (1997). Where source site documentation cannot adequately demonstrate materials comply with the definition of VENM without chemical testing, then chemical sampling will be requested. The analyses undertaken will be consistent with the COPCs anticipated from the source site historical review, with minimum analytes and sampling frequencies per **Table 8.3**.

Analytical data associated with VENM sampling shall comply with the following criteria:

- Heavy metals background concentrations, as per Olszowy et. al. (1995) (background concentrations); and
- All other COPCs (except for pH an EC) non-detect.

Where quarried VENM is proposed to be imported to the site, the source site shall provide documentation verifying the material is a natural quarried product for review by the Environmental Consultant.

Given the geographic location of the site, where the documentation is able to demonstrate the materials are a natural quarried product or satisfaction of the definition of VENM, the materials will only be required to be inspected upon arrival at the site by the Environmental Consultant to ensure consistency with the supplier documentation.

ENM

Where quarried ENM is proposed to be imported to the site, the source site shall provide documentation verifying the material is consistent with the ENM Order (NSW EPA 2014c) for review by the Environmental Consultant.

Given the geographic location of the site, where the documentation is able to demonstrate satisfaction of the ENM Order, the materials will only be required to be inspected upon arrival at the site by the Environmental Consultant to ensure consistency with the supplier documentation.

Where sampling is required, the analyses undertaken will be consistent with the COPCs anticipated from the source site historical review, with minimum analytes and sampling frequencies per **Table 8.3**.

Recycled Materials

For recycled materials, sampling of materials as per an EPA exemption is required to be undertaken by the facility in accordance with the exemption. In addition, where materials are proposed to be imported to the site under a NSW EPA exemption, the material will need to be further assessed by Environmental Consultant for land use suitability in accordance with the validation requirements nominated in **Section 8.3.3**.

Growing Media

Soils to be imported and used as growing media within the site shall be sampled at a rate of at least one sample per 250 m^3 with a minimum of three samples per source site/material type.

Samples shall be analysed for TRH/BTEX, PAHs, heavy metals, (including As, Cd, Cr, Cu, Pb, Hg, Ni and Zn), OCPs, PCBs, asbestos and soil pH.

The materials shall be further inspected for any aesthetic indicators of contamination.

Inspections of Imported Materials (following importation)

All imported materials (including recycled materials) will be required to be inspected once they arrive at the site to ensure materials are consistent with the material documentation, and for indicators of contamination (visual/olfactory indicators of contamination).

Waste Classification

Materials sampled for waste classification in accordance with the *Waste Classification Guidelines, Part 1: Classifying Waste* (NSW EPA 2014) shall be sampled at an appropriate rate to characterise the materials prior to offsite disposal in accordance with NSW EPA (2022a).

Sampling of materials as per the ENM exemption (or similar) requires to be undertaken in accordance with the exemption.

8.2.8 Soil Sampling Methodology

Validation of Excavation(s)

Samples should be collected by an appropriately trained and experienced environmental scientist / engineer using a hand trowel or from the bucket of mechanical excavation equipment, at the required densities outlined in **Table 8.3**.

Prior to collection of each sample, hand tools should be thoroughly decontaminated using phosphate free detergent and distilled water as per **Section 8.2.13**.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indicators of contamination should be noted on the field documentation.

Soil Screening – XRF

Representative soils from the resultant walls and base of the remedial excavation should be screened utilising a portable XRF (at the frequencies outlined in **Table 8.3**) device prior to the collection of soil samples for laboratory analysis. The portable XRF will provide initial field data to assist in determining whether the remediation was successful. Soil samples should be placed into a large resealable (ziplock) clear plastic bag and then homogenised as far as practicable. The XRF should then be used to screen the sample through the clear plastic, two times, flipping the bag over between each screening. Concentrations of lead should be recorded for each sample.

If the results of the XRF screening indicate lead is present at concentrations <1,000ppm, then the collection of soil samples at the frequencies outlined in **Table 8.3** should proceed. If the XRF screening indicates that concentrations of lead are above the 1,000ppm threshold, then the remedial excavation should advance at 0.2 m increments in the direction of the failure until the XRF screening results are below the threshold value.

Sample Handling

Collected samples should be immediately transferred to sample containers of appropriate composition (glass jars for chemical analysis). Sample labels to record: job number; sample identification number; and date of sampling.

Sample containers should be transferred to a chilled ice box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form should be completed and forwarded with the samples to the testing laboratory.

Soil Duplicate and Triplicate Sample Preparation and QA/QC Requirements

Field duplicate and triplicate samples for the characterisation/validation assessment should be obtained during sampling using the procedures outlined at a frequency outlined in **Table 8.2**. The primary sample should be divided laterally into three samples with minimal disturbance to reduce the potential for loss of volatiles

and placed in three clean glass jars. All jars should be filled completely with no headspace to reduce the potential for loss of volatiles and separately labelled as the primary, duplicate and triplicate samples before being placed in the same chilled esky for laboratory transport.

Trip spike, storage blank and rinsate samples should be collected as per **Table 8.3**.

Soil Sampling Equipment Decontamination

The following procedure should be used to clean non-disposable equipment, including the trowel, pick etc., prior to the collection of each sample:

- Scrubbing with a wire brush to remove gross contamination;
- Pressure spray with Decon 90 detergent and potable water mix; and
- Pressure spray rinse with potable water.

Rinsate samples should be obtained during the field decontamination procedures at regular intervals during characterisation/validation sampling activities. Each rinsate sample should be obtained by rinsing the sampling trowel, if used, with laboratory grade demineralised water following the decontamination procedure. The water sample should be appropriately preserved and stored with the site samples prior to transport to the laboratory for chemical analysis.

Laboratory Analyses

All laboratories subcontracted for validation sample analyses are to be National Association of Testing Authorities (NATA) registered for the relevant analyses.

8.3 Validation Criteria

The following is a discussion of validation criteria to be adopted during remediation works within the site.

8.3.1 Soil Validation Criteria and Rationale

As per the decision process for assessment of urban development site (EPA 2017), a set of health and ecological assessment thresholds derived from NEPC (2013) or other EPA endorsed guidelines was used for evaluation of site contamination data collected for this assessment.

The hospital land use represents a scenario that does not fall under the standard land use scenarios presented in NEPM (2013). Schedule B7 of NEPM (2013) states “the HILs developed for the commercial/industrial land use scenario are not applicable to a site used frequently by more sensitive groups such as children (within childcare centres, hospitals and hotels) and the elderly (within hospitals, aged care facilities and hospitals).” Given that children, elderly and other sensitive sub-populations (such as patients with immunosuppression and pre-existing illness) are frequent users of the site, a more sensitive land use scenario is required to be adopted. On this basis, NEPC (2013) criteria for Residential B land use setting were adopted as the site assessment criteria. Aesthetics were also considered in the assessment of site suitability consistent with EPA (2017) and NEPC (2013).

The site assessment criteria are presented in **Table A, Appendix B** and summarised as follows:

- Health based investigation levels (HILs) for residential with minimal soil access land use (HIL B);
- Health screening levels (HSLs) for vapour intrusion for residential with minimal soil access land use, for clay soil types (HSL B);
- HSLs for direct contract for intrusive maintenance worker;
- HSLs for asbestos in soil for residential with minimal soil access land use (HSL B);
- Ecological investigation levels (EILs) for residential with minimal soil access land use, site specific;

- Ecological screening levels (ESLs) for residential with minimal soil access land use, fine soil;
- Management limits for TRH fractions for residential with minimal soil access land use, for fine soil types; and
- Aesthetic considerations consistent with NEPC (2013).

Site-specific EILs consistent with those calculated and utilised by JBS&G (2023) will be employed for the assessment of growing media soils, as presented in **Table A, Appendix B**. NEPC (2013) states that that EILs apply principally to contaminants in the top 2 m of soil at the finished surface/ground level which corresponds to the root zone and habitation zone of many species. In arid regions, where the predominant species may have greater root penetration, specific considerations may result in their application to 3 m depth.

8.3.2 Offsite Disposal Criteria

Contaminated soils requiring disposal offsite shall be assessed in accordance with EPA (2014) or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation 2014* (POEO 2014).

Material will require to be disposed to a facility lawfully able to receive it.

8.3.3 Imported Soil Criteria

In accordance with current EPA policy, only material that does not represent an environmental or health risk at the receiving site may be considered for resource recovery. In accordance with this, only VENM or material subject to an NSW EPA Resource Recovery Order/Exemption as defined in the POEO Act (1997) Schedule 1 can be utilised to reinstate remedial excavations at the site. Quarried natural materials will also be accepted where appropriate. Refer to **Table 8.3** and **Section 8.2.7**.

8.3.4 Validation Report

The validation report shall be prepared by the Environmental Consultant and written in general accordance with EPA reporting guidelines (EPA 2020). The validation report should be submitted at the completion of remedial works.

This report should contain information including:

- Details of the remediation works conducted;
- Information demonstrating that the objectives of this RAP have been achieved, in particular the validation sample results and assessment of the data against both the pre-defined DQO and the remediation acceptance (validation) criteria;
- Information demonstrating compliance with appropriate regulations and guidelines;
- Any variations to the strategy undertaken during the implementation of the remedial works;
- Results of all environmental monitoring undertaken during the course of the remedial works;
- Details of any environmental incidents occurring during the course of the remedial works and the actions undertaken in response to these incidents;
- Verification of regulatory compliance;
- Details on waste classification, tracking and offsite disposal including landfill dockets; and
- Clear statement of the suitability of the site with respect to permissible land uses.

The report will serve to document the remediation works for future reference.

9. Contingency Plan

In the unforeseen event that the proposed remediation works do not meet the validation criteria, or if the selected remedial strategy is unsuccessful, the following actions will be considered to ensure firstly the safety and health of people and the environment and secondly that the overall project objectives are achieved:

- Continued controlled excavation and off-site disposal until validation is achieved; or
- Onsite containment.

9.1 Retention of Contaminated Material (if required)

If retention of contaminated material is required, consultation with the project team, and the appointed Environmental Consultant will be required.

9.1.1 Physical Separation (Capping) of Contaminated Fill Materials (if required)

Should retention of contaminated material (i.e. exceeding land use criteria) be identified as an appropriate contingency remedial strategy, contaminated soil may be retained within a suitable area of the site, below a marker and capping layer, restricting dermal and oral contact.

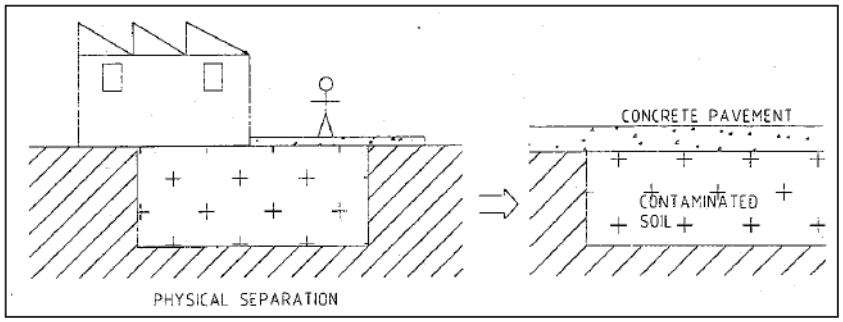
The principal of the on-site management approach is to retain materials in-situ by providing physical separation between impacted fill/soil materials and receptors (e.g. site users, flora, fauna etc). The management approach prevents direct contact via permeant pavements/minimum soil thickness arrangement (i.e. physical separation), and implementation of a long-term EMP to maintain the physical separation arrangements.

Identified contaminants generally fall within Group 2, as listed in Table 1 (ANZECC 1999[8]). Therefore, implementation of a 'physical separation' strategy as indicated in ANZECC (1999), in conjunction with appropriate control measures, is appropriate with respect to management of the health risk.

The minimum typical requirements in ANZECC (1999) for physical separation include:

- Permanent concrete floor slab or asphalt surfaced pavement. The pavement outside of the building/basement footprint shall be underlain by a marker layer; or
- A thickness of soil that is unlikely to be penetrated by future users of the site under the intended land use, underlain by a layer of 'marker layer' in areas of exposed site soil (i.e. landscaped beds). A minimum soil cover thickness of 0.5m is commonly adopted however thinner soil cover may be acceptable where site constraints limit separation thickness.

As shown schematically below:



Source: ANZECC (1999)

[8] *Guidelines for the Assessment of On-site Containment of Contaminated Soil*, Australian and New Zealand Environment and Conservation Council (ANZECC), September 1999 (ANZECC 1999)

Given the specific development plans, provided in **Appendix A** and as understood at the time of preparation of this RAP, the following physical separation arrangements may be implemented (for the contaminated soils from KW-B3 only) within the extent of the site should the physical separation of contaminated fill materials strategy be adopted:

- Permanent concrete ground slabs, asphalt surfaced pavement, mortared stone/concrete pavers or similar. The pavement base course shall be underlain by a visual marker layer; or
- A minimum soil cover thickness of 500 mm is nominated as underlain by a 'marker layer' in areas of exposed site soil. Suitable backfill material may comprise one or a combination of imported virgin excavated natural material (VENM), excavated natural material (ENM) and/or materials under an EPA exemption as discussed in **Section 8.2.7**; and/or
- Where underground services are required to be installed through the contaminated soil, excavation of impacted material from the services alignment will be required, followed by lining of the resulting trench with the visual marker layer, then service installation and backfilling with validated clean material. Typically, the lined trench dimensions should be suitable to allow future maintenance workers space to work in non-impacted backfill material.

In vegetated/landscaped areas, the minimum soil cover depth of 500 mm is consisted appropriate for shallow rooted plants. For deep rooted plants including large shrubs and trees, a depth of growing media of up to 1.5 m below surrounding ground levels may be required, based upon arborist advice following consideration of individual species requirements, to facilitate a suitable zone depth for the plant(s). The underlying impacted material will be covered by a visual marker layer above which, suitable drainage/growing media will be placed within the root zone.

Material to be used above the marker layer must be demonstrated prior to placement as appropriate with respect to site contamination risks in addition to being fit for purpose for uses including growing media, engineered backfill or pavement subgrade material.

The purpose of the marker layer is to serve as a visual signal to those disturbing the capping system of the presence of potentially contaminated fill material at depth. The marker layer shall consist of a light-coloured knitted HDPE constructed at least to a density greater than 300 grams per square metre (or equivalent). The marker layer should be of a distinctive bright colour such that future workers and/or site users will be alerted to conditions as documented in a site environmental management plan (EMP) prior to breaching the marker layer (see **Section 9.1.3** – Long term Environmental Management Plan).

The final extent of material capped in-situ that may be required will be dependent on conditions encountered during remediation and development works and as such, for planning purposes, the anticipated maximum extent of retained fill material, if required, is considered to be within road reserves and public open spaces only.

Validation requirements of the marker layer and capping layer are detailed in **Section 9.1.2**.

9.1.2 Validation of Capping Layer (if required)

Where contaminated soils are to be retained at the site, validation of the marker layer and capping will require to satisfy the following:

- Cover of contaminated materials by permanent paved areas, or in areas not covered by permanent structures, installation of a marker layer underlying the depth of the pavement and overlying potentially contaminated material. As-built survey of structures and marker-layer placement is required;

- Covering of contaminated materials in landscaped areas – installation of the marker layer at a minimum depth of 0.5m below final finished site levels in areas of shallow planting (for grasses and shrubs) and a minimum of 1.5m below final finished site levels in areas of tree planting, with environmentally suitable materials placed above to the final levels. Survey of marker-layer depth and top of growing media demonstrating satisfaction of minimum requirements; and
- Within underground services trenches – in the event underground services trenches are to be installed through contaminated soils, the service infrastructure will require to be installed above a marker layer within suitable materials for potential human and/or ecological exposure. Survey of marker-layer depth and of completed trenches required to demonstrate satisfaction of minimum requirements.

The following data will be required to be recorded for validation and future reference purposes:

- A location plan of the placed materials with co-ordinates based on an agreed grid system (e.g., GPS or relative to the lot boundaries);
- The levels in m AHD of the base of the placement location(s) prior to the material placement;
- The levels in m AHD of the placement locations once all materials have been placed;
- The levels in m AHD of any defining layers and capping layers; and
- Subsequently the total placed volume of materials.

9.1.3 Environmental Management Plan (EMP) (if required)

In addition to the requirements of the validation plan, the retention of contaminated soils at the site (i.e. exceeding land use criteria) will result in passive EMP requirements for portions of the site at the completion of the final development works, if this method is employed.

The EMP will be prepared to detail the ongoing management and monitoring requirements applicable to specific portions of the broader site.

It is anticipated that the EMP will be prepared for the relevant portions of the site following the completion of the validation report.

The EMP(s) will document the following elements:

- A statement of the objectives of the EMP – i.e., to ensure continued suitability of the site following remediation.
- Identification of residual environmental contamination issues at the site that require ongoing management/monitoring to meet the EMP objectives, including the type of contamination and location within the site (including a survey plan of final capping extent prepared by a registered surveyor).
- Documentation of environmental management measures which have been implemented to address the identified environmental issues at the site.
- Description of management controls to limit the exposure of site users to known impacted material to acceptable levels.
- Description of responsibilities for implementing various elements of the provisions contained in the EMP.
- Timeframes for implementing the various control/monitoring, etc. elements outlined in the EMP.
- Environmental monitoring and reporting requirements (if required) for the future management of environmental impact underlying the site including:

- Appropriate monitoring locations and depth within and down-gradient of any residual contamination;
- Relevant assessment criteria to be used in evaluating monitoring results;
- Frequency of monitoring and reporting;
- Process for reviewing monitoring data and how decisions will be made regarding the ongoing management strategy;
- The length of time for which monitoring is expected to continue;
- The regulatory authorities involved, and the management inputs required from each;
- The integration of environmental management and monitoring measures for soil;
- Health and safety requirements for particular activities;
- A program of review and audits;
- The provisions in the EMP are feasible (i.e. able to be implemented) and able to be legally enforceable (i.e., a mechanism exists, such as development consent conditions, Section 88b instruments, etc to give the plan a basis in law); and
- The relevant consent authority (where appropriate) is satisfied that the inclusion of a development consent condition relating to the implementation of the long term EMP is acceptable.

- Corrective action procedures to be implemented where long term EMP assessment criteria are breached.

9.2 Change in Development Plans

In the event that the development plans are changed from those available at the time of preparation of this RAP, consideration of the suitability of the proposed remedial strategy will be required.

9.3 Unexpected Finds Protocol

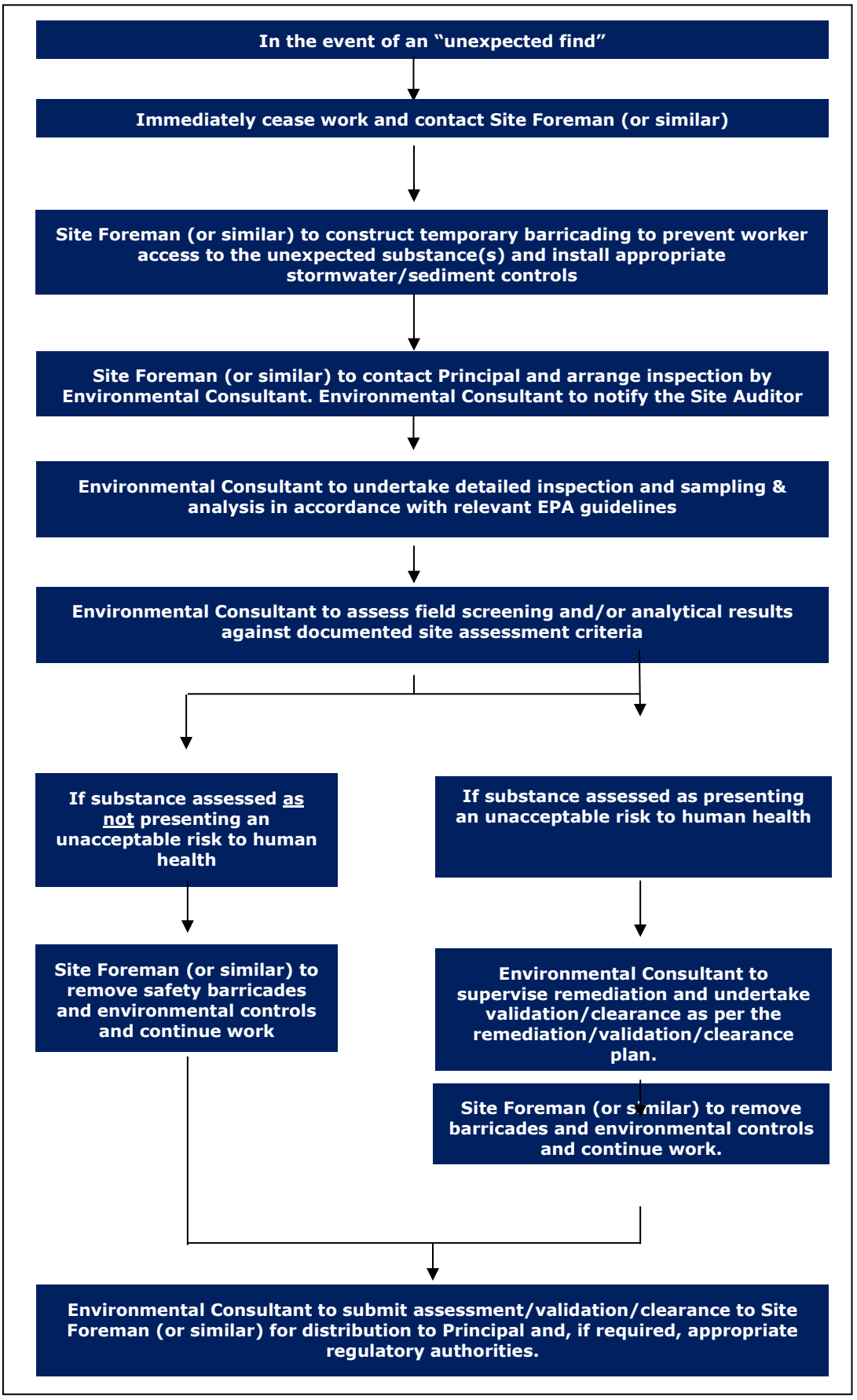
It is acknowledged that previous investigations of the site have been undertaken to assess the identified contaminants of potential concerns, specifically related to the presence of general site fill materials including stockpiles, potential in-filling such as dams, vegetated mounds and trenches. However, ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and / or in unexpected locations during remediation. The nature of any residual hazards which may be present at the site are generally detectable through visual or olfactory means, for example:

- ACM fragments (visible);
- Bottles / containers of chemicals (visible);
- Tar contaminated soils / fill materials (visible); and
- Volatile organic compound (VOC) contaminated soils (odorous) and vapours.

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances be identified (or any other unexpected potentially hazardous substance), the procedure summarised in **Flowchart 9.1** is to be followed.

An enlarged version of the unexpected finds protocol, suitable for use on-site, should be posted in the site office and referred to during the site-specific induction by the remedial / principal contractor.

Flowchart 9.1 – Unexpected Finds Protocol



10. Site Management Plan

This section contains procedures and requirements that are to be implemented as a minimum requirement during the remedial works at the site.

10.1 Hours of Operation

Typical hours of operation for remedial works are:

- Monday to Saturday: 7am to 5pm.
- Sunday and public holidays: No work permitted.

Or as defined within the consent conditions.

10.2 Soil and Water Management

All works shall be conducted in general accordance with the NSW Department of Housing Blue Book – *Managing Urban Stormwater – Landcom*, 2004, which outlines the general requirements for the preparation of a soil and water management plan.

All remedial works shall be conducted in accordance with a soil and water management plan, which is to be kept onsite and made available to Council Officers on request. All erosion and sediment measures must be maintained in a functional condition through the remediation works by the Contractor.

To prevent the migration of impacted soil off site, silt fences shall be constructed at the down- gradient site boundaries by the Contractor. Any material which is collected behind the sediment control structures shall be treated by one of the following options:

- Removal off site to a licensed waste facility subsequent to waste classification or,
- Placement under a capping layer if appropriate.

In storm or extended rainfall event, the structures located on site for sediment control shall be monitored and replaced or altered, if necessary, by the Contractor. Collected material shall be managed in accordance with remediation works by the Contractor.

10.3 Stockpile Management

All materials stockpiled onsite will be managed by the Contractor. Unique numbers will be provided for each stockpile, the source of the stockpile, its estimated volume, material characterisation and its location onsite (via GPS) will also be recorded.

The following procedures will be implemented by the Contractor:

- No stockpiles of soil or other materials shall be placed on footpaths or nature strips unless prior Council approval has been obtained;
- All stockpiles of soil or other materials shall be placed away from drainage lines gutters or stormwater pits or inlets;
- All stockpiles of soil or other materials likely to generate dust or odours shall be covered (where practical);
- All stockpiles of chemically contaminated soil shall be stored in a secure area and be covered if remaining more than 24 hours (where practical); and
- All stockpiles of asbestos contaminated or impacted soils shall be kept damp and covered to minimise potential fibre release, and if left for more than 24 hours, be stored in a secure area (where practical).

10.4 Site Access

All vehicle access to the site shall be stabilised to prevent the tracking of sediment onto the roads and footpaths. All materials must be removed from the roadway on a daily or as required basis. Soil washings from wheels shall be collected and disposed of in a manner that does not pollute waters. Any personnel, equipment, plant or vehicles that enter an asbestos works zone must be appropriately decontaminated prior to exiting.

10.5 Excavation Pump-out

Any excavation pump out water shall be sampled by the Environmental Consultant for analysis for total suspended solid concentrations, turbidity, pH and the identified contaminants of concern prior to release to stormwater with permission from Council, sewer (only if trade waste permit obtained) or licensed liquid waste Contractor.

Excavation pump out from trenches is not anticipated with the general remediation works given the general remedial plan of minimising ground disturbance and groundwater being at a depth of approximately 10-20 m bgs. Pump out following accumulation of surface water is the most likely scenario for water disposal.

10.6 Landscaping / Rehabilitation

All exposed soils shall be progressively stabilised and revegetated or resealed on the completion of remedial works.

10.7 Noise

Remediation work shall not give rise to 'offensive noise' as defined in the *Protection of the Environment Operations* (POEO) Act 1997. All equipment and machinery associated with the remediation work shall be operated by the Contractor in accordance with the POEO Act 1997 and its *Noise Control Regulations 2000*.

The remediation works shall comply with the NSW EPA's *Environmental Noise Control Manual* for the control of noise from construction sites which specifies that:

- For a cumulative period of up to 4 weeks, the noise level as measured by the LA10 (15 minute) emitted by the works to specific residences should not exceed the background noise level, LA 90 (15 minute), by more than 20dB(A).

All machinery and equipment used on site will be in good working order and with the fitted with appropriate silencers when necessary.

10.8 Vibration

The use of plant and machinery by the Contractor shall not cause vibrations to be felt or capable to be measured at any premises.

10.9 Air Quality

During remedial works, dust emissions and any odours will be confined within the site boundary. This will be assessed by a program of air monitoring undertaken by the Environmental Consultant for all remediation works and implemented by air emission controls as required by the Contractor. Air monitoring requirements are summarised in this section.

10.10 Air Monitoring

Real-time Exposure Monitoring (Dust)

Preference is given for all environmental monitoring to be undertaken using real time methods. To this extent, the Environmental Consultant shall monitor remediation works on the site by the use of a Dusttrak real-time aerosol monitors. A minimum of two locations will be monitored throughout periods of remediation.

The Environmental Consultant will advise the Principal and Contractor when the time averaged Dusttrak particulate measurement (PM10) exceeds 0.05 mg/m3. WA DoH (2009) reports that this level is protective of potential asbestos fibre exposures. Further, this level is well below the inspirable dust inhalation standard, and is further protective of potential respirable dust impacts at the site boundary. The remediation works shall not comprise excavation / handling of silica rich materials, and maintenance of particulates at this level is considered to be similarly protective of potential silica exposures.

If dust levels exceed the adopted criteria of 0.05 mg/m3, the Principal and Contractor will be notified, and works will require to be modified to reduce dust emissions to below the adopted criteria. All exceedances will be required to be "closed-out" by re-sampling at the exceedance location subsequent to implementation of modified work routines (such as increased dust controls).

10.11 Occupational Asbestos Monitoring

Airborne asbestos fibre monitoring will be conducted by an Licensed Asbestos Assessor (LAA, for friable) or Competent Person (Bonded) in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) Asbestos Code of Practice and Guidance Notes, in particular the Guidance note for the estimation of airborne asbestos dust [NOHSC 3002:2005].

The COH shall undertake airborne asbestos fibres monitoring at a minimum of four static locations daily during remediation works that will disturb asbestos impacted or contaminated materials. Monitoring locations will include site perimeter locations and downwind locations. Wind information available from the Bureau of Meteorology (BOM) for the nearest weather stations will be used to determine common prevailing winds in the area. Additionally, personal monitoring of up to three potentially impacted workers as nominated by the Contactor must be undertaken by the COH.

Air filters shall be analysed by a NATA accredited laboratory and results shall be required to be below 0.01 fibres/mL. All detections of fibres shall be further analysed by scanning electron microscope (SEM) to confirm the fibres are asbestos.

If respirable asbestos fibres are confirmed and present between 0.01 and 0.02 fibres/mL, the following controls must be implemented by the licensed asbestos removalist, in accordance with Code of Practice: How to Safely Remove Asbestos, SafeWork NSW (SWNSW 2020a);

- Review control measures;
- Investigate the cause; and
- Implement controls to eliminate or minimise exposure and prevent further release.
- If respirable asbestos fibres are confirmed and present above 0.02 fibres/ml, the following controls must be implemented by the licensed asbestos removalist, in accordance with SWNSW 2020a;
- Stop removal work;
- Notify SafeWork NSW by phone, then by fax or written statement that work has ceased;
- Investigate the cause;
- Implement controls to eliminate or minimise exposure and prevent further release; and

- Do not recommence removal work until further air monitoring is conducted and fibre levels are detected below 0.01 fibres/mL.

A daily report air monitoring report will be prepared documenting the previous/same days airborne asbestos fibre air monitoring results. This report will be made available to all relevant stakeholders, including but not limited to:

- Site workers;
- Hospital staff;
- Neighbouring facilities; and
- Unions.

10.12 Dust Control

During the remedial works, as necessary, excavation areas will be wetted down using a water spray to minimise the potential for dust to be generated by the Contractor. A wetting or bonding agent may be used to further bind the soil to minimise asbestos fibre release.

All asbestos impacted soils must be wetted (but not flooded) prior to and during excavation and movement of the soils. To control dust in significant areas of exposed asbestos contaminated fill, industrial misting fans, placed at the outer extents of remedial/excavation areas, must be utilised by the Contractor.

Dust shall also be controlled by ensuring vehicles leave via the designated (stabilised) site access and all equipment have dust suppressors fitted by the Contractor.

During all remedial works, dust screens will be erected around the perimeter of the site by the Contractor. Where significant fugitive emissions are observed from asbestos inspection / treatment pads, or bioremediation areas, these areas shall be wetted and/or covered by the Contractor.

Meteorological conditions will be monitored by the Environmental Consultant and Contractor. Remedial work will be stopped or modified where meteorological conditions are adverse (i.e., dry conditions and strong winds towards sensitive receptors).

Plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse wetted haul roads. Only essential vehicles are permitted to traverse the asbestos exclusion zone.

10.13 Staging of Asbestos Disturbance Works

Where practicable, separate all potential asbestos and non-asbestos dust generating activities so appropriate levels of control can implemented for each type of activity.

10.14 Odour / Volatile Emissions Control

No odours should be detectable at the site boundary and volatile emissions of other potentially volatile substances shall be controlled. Appropriate actions will be taken by the Contractor to reduce the odours, which may include: increasing the amount of covering of excavations / stockpiles; mist sprays; odour suppressants; and maintenance of equipment.

Records of volatile emissions and odours shall be kept by the Contractor. Equipment and machinery will be adequately maintained to minimise exhaust emissions. No materials shall be burnt on the site.

10.15 Transport of Material Offsite/Across the Site

Trucks will be loaded in a designated area. The Contractor shall ensure that there is no material tracked out onto the street and that the load is securely covered. In addition, all site vehicles must leave the site in a forward direction.

The Contractor shall also log truck movements and approximate volume, via registration number and consignment number (where applicable), into and out of the site including material relocated across the site.

All appropriate road rules shall be observed and state roads will be selected as far as practicable over local roads when deciding on the transport route to the off-site material disposal location.

Plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse wetted haul roads.

10.16 Hazardous Materials

Hazardous and / or intractable wastes arising from the remediation work shall be removed and disposed by the Contractor in accordance with the requirements of NSW EPA, SafeWork NSW and the relevant regulations.

In particular, any hazardous wastes will be transported by a NSW EPA licensed transporter.

10.17 Offsite Disposal of Contaminated Soil

All soils to be removed from the KWA for disposal will be classified, managed and disposed in accordance with the Waste Classification Guidelines (EPA 2014) or other appropriate EPA-issued waste RRO/RRE. Documentary evidence for all soil disposal shall be kept for inclusion in the Validation Report.

It is a requirement under the Protection of the Environment Operations (Waste) Regulations 2014 (POEO Waste Regulation) to record the movement of all loads of more than 100 kg of asbestos waste or more than 10 m2 of asbestos sheeting. Each load will be assigned a unique consignment code to allow NSW EPA to monitor their movement from site of generation to disposal.

In addition, the proximity principle, under the POEO Regulation, makes it an offence to transport waste generated in NSW by motor vehicle for disposal more than 150 kilometres from the place of generation, unless the waste is transported to one of the two nearest lawfully disposal facilities to the place of generation.

10.18 Imported Fill

Refer to **Section 8.2.7.**

10.19 Groundwater Dewatering

It is anticipated no dewatering will be required for the remediation works. If dewatering is required as part of the remediation works, a licence shall be applied for from Water NSW for approval to extract groundwater.

10.20 Site Signage and Contact Numbers

A sign/s shall be displayed adjacent to the site access point/s throughout the duration of the works with the contact details of the Contractor and project manager as provided and maintained by the Contractor.

10.21 Site Security

The remedial areas shall be secured against unauthorised access by means of an appropriate fence or barricade by the Contractor. All persons working in asbestos remedial areas must be inducted, have undertaken required training and don appropriate PPE. The access gates will be locked at all times when remedial works are not occurring.

10.22 Community Consultation

Owners and / or occupants of adjacent premises and will be notified at least seven days prior to the commencement of preparation for the remediation works. As a minimum the notification shall include the details of an appropriate contact person.

Hospital staff and contractors will be notified at least seven days prior to the commencement of preparation for the remediation works via communications notices by the FWLHD.

11. Conclusions

With reference to the limitations in **Section 12**, the following conclusions are provided.

It is considered that the proposed actions outlined in this RAP conform to EPA requirements because they are: technically feasible; environmentally justifiable; and consistent with relevant laws, policies and guidelines endorsed by NSW EPA.

The works are deemed Category 1 and require consent under the *Remediation of Land requirements under State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP 2021).

Subject to the successful implementation of the measures described in this RAP and consideration to the AMP (JBS&G 2024), it is concluded that the risks posed by potential direct human contact pathways with contamination can be managed in such a way as to be adequately protective of human health such that the site can be made suitable for the proposed land use.

12. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties. The report has been prepared specifically for the client for the purposes of the commission, and no warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be amended in any way without prior approval by JBS&G, or reproduced other than in full including all attachments as originally provided to the client by JBS&G.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements or agreed scope of work.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures

Legend

Approximate Site Boundary

JBS&G

Job No: 66655	
Client: Health Infrastructure	
Version: R01 Rev A	Date 5/03/2024
Drawn By: EP	Checked By: DD
Scale 1:20,000	

0 190 380

metres

Coord. Sys. GDA2020 MGA Zone 54

Broken Hill Hospital
170-320 Thomas Street
Broken Hill, NSW

SITE LOCATION

FIGURE 1

File Name: 66655_BrokenHillKWA_R01_RevA

Legend

- Approximate Site Boundary
- NSW Cadastre
- Kincumber House
- KWA Proposed Location

JBS&G

Job No: 66655

Client: Health Infrastructure

Version: R01 Rev A	Date 4/04/2024
Drawn By: EP	Checked By: DD

Scale 1:2,500

0 20 40

metres

Coord. Sys. GDA2020 MGA Zone 54

Broken Hill Hospital
170-320 Thomas Street
Broken Hill, NSW

SITE LAYOUT

FIGURE 2

File Name: 66655_BrokenHillKWA_R01_RevA
Reference: Nearmap - www.nearmap.com (Capture Date: 11/01/2023)

Sample ID	Depth (m)	Analyte	Concentration	Criteria
SPLIT05 (Triplicate of KW-B1)	0.0 - 0.5	FA/AF	0.003 (g)	NEPC HSL-B

Sample ID	Depth (m)	Analyte	Concentration	Criteria
KW-B3	0.0 - 0.4	Bonded ACM in Soil	0.002 (% w/w)	NEPC HSL-B
	0.1 - 0.2	Lead	16,000 (mg/kg)	NEPM 2013 Table 1A (1) HILs Res B Soil

Sample ID	Depth (m)	Analyte	Concentration	Criteria
KW-B7	0.0 - 0.6	Bonded ACM in Soil	0.007 (% w/w)	NEPC HSL-B

Legend
- Approximate Site Boundary
- NSW Cadastre
- Kincumber House
- KWA Proposed Location
- Sample Locations (JBS&G, 2023)

JBS&G

Job No: 66655

Client: Health Infrastructure

Version: R01 Rev A | Date 4/04/2024

Drawn By: EP/MW | Checked By: DD

Scale 1:450

0 5 10
metres

Coord. Sys. GDA2020 MGA Zone 54

Broken Hill Hospital
170-320 Thomas Street
Broken Hill, NSW

SAMPLE LOCATIONS AND EXCEEDANCES

FIGURE 3

File Name: 66655_BrokenHillKWA_R01_RevA
Reference: Nearmap - www.nearmap.com (Capture Date: 11/01/2023)

Legend

- Approximate Site Boundary
- NSW Cadastre
- KWA Proposed Location
- Kincumber House
- Remedial Extent
- Sample Locations (JBS&G, 2023)

JBS&G

Job No: 66655

Client: Health Infrastructure

Version: R01 Rev A	Date 4/04/2024
Drawn By: EP/MW/TS	Checked By: DD

Scale 1:450

0 5 10
metres

Coord. Sys. GDA2020 MGA Zone 54

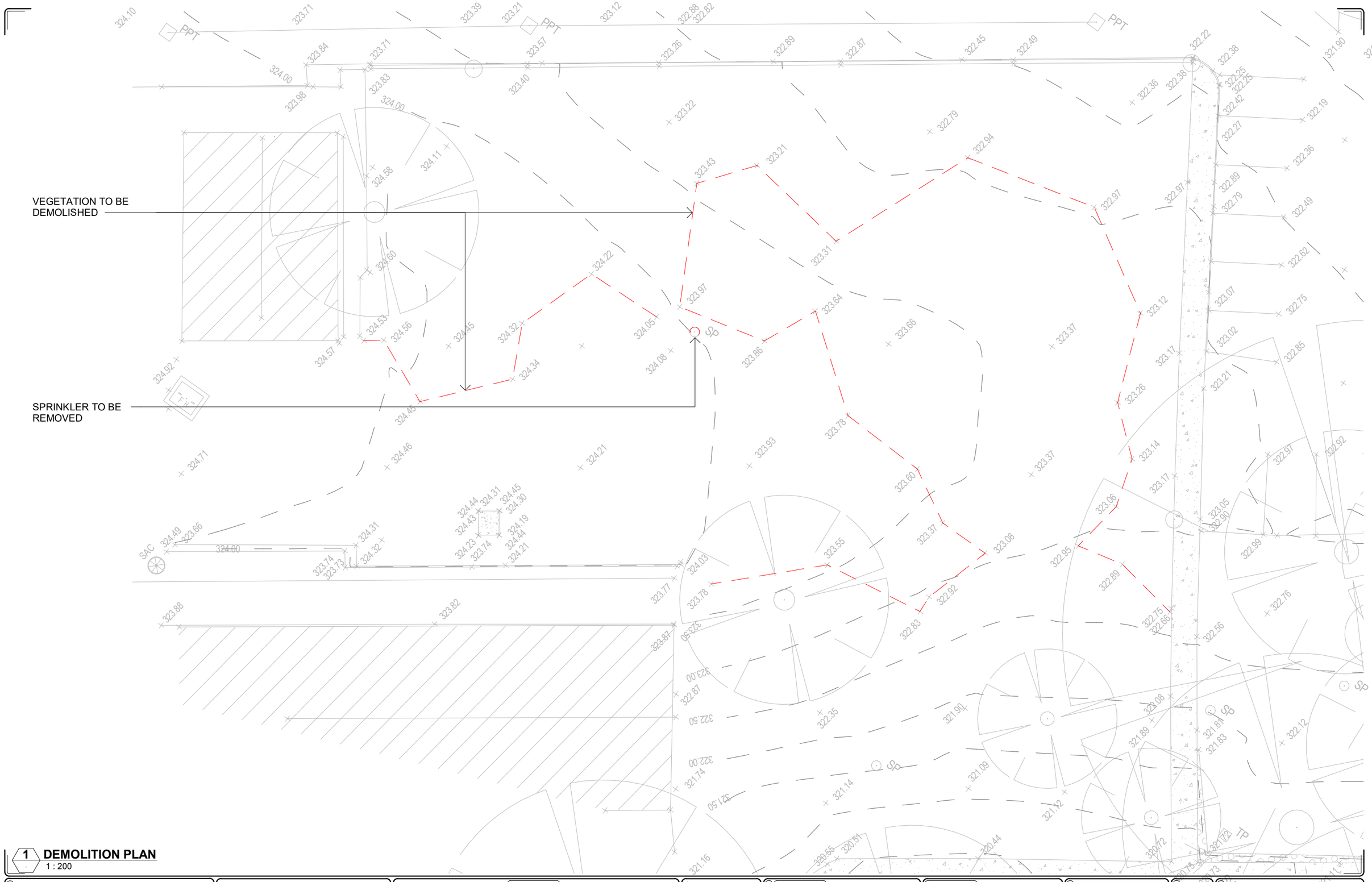
Broken Hill Hospital
170-320 Thomas Street
Broken Hill, NSW

REMEDIAL EXTENT

FIGURE 4

File Name: 66655_BrokenHillKWA_R01_RevA
Reference: Nearmap - www.nearmap.com (Capture Date: 11/01/2023)

Appendix A Site Development Plans



1 DEMOLITION PLAN

1 : 200

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
B	100% SD ISSUE	19.02.24	MF
A	75% SD ISSUE	18.01.24	MF

NSW GOVERNMENT Health Infrastructure

HUTCHINSON BUILDERS

HUTCHINSON MODULAR

p | 07 4632 5877 e | toowoomba@hutchinsonbuilders.com.au a | 3/1B Kitchener Street
f | 07 4632 5461 w | www.hutchinsonbuilders.com.au Toowoomba Q 4350

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PRELIMINARY - THE SHEET HAS BEEN ISSUED FOR PRELIMINARY USE ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION.

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AS CONSTRUCTED - REFLECTS AS-BUILT INFORMATION PROVIDED BY CONTRACTOR. COMPLIANCE WITH ALL REGULATIONS AND ORIGINAL DESIGN INTENT HAS NOT BEEN CONFIRMED.

THIS SHEET MUST BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, SPECIFICATIONS, SCHEDULES AND THE LIKE.

KEARNEY ARCHITECTURE

NSW NOMINATED ARCHITECT
ARCHITECT: BENJAMIN KEARNEY
REGISTRATION NO. 11990

PROJECT INFORMATION

PROJECT NAME
KEY WORKER ACCOMMODATION

PROJECT LOCATION
176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT
NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	CF
DESIGNER	
ORIGINAL SIZE	297 x 420 - A3
PRINT DATE	19/02/2024 3:03:25 PM
SCALE	1 : 200

AUTHORISATION
THIS DRAWING IS UNCONTROLLED WITHOUT DESIGNER/PPEO SIGNATURE BELOW

NORTH

SHEET TITLE: DEMOLITION PLAN

DWG | PROJECT NO. 1079 | FILE | CONSULT REF. NO.

USE: PRELIMINARY
REFER TO 'USE DEFINITION' ADJACENT

DWG | PHASE: SD | BLD NO. | CONSULT | SHEET NO.: A003 | ISSUE: B

1 SITE PLAN
1 : 200

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
G	100% SD ISSUE	19.02.24	MF
F	FOR COORDINATION	05.02.24	MF
E	75% SD ISSUE	18.01.24	MF
D	UPDATE	10.01.24	MF
C	PRELIMINARY	22.12.23	MF
B	50% SD ISSUE	13.12.23	MF
A	PRELIMINARY	5.12.23	MF

NSW GOVERNMENT Health Infrastructure

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HUTCHINSON MODULAR
p | 07 4632 5877 e | toowoomba@hutchinsonbuilders.com.au a | 3/1B Kitchener Street
f | 07 4632 5461 w | www.hutchinsonbuilders.com.au Toowoomba Q 4350

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KEARNEY ARCHITECTURE
NSW NOMINATED ARCHITECT
ARCHITECT: BENJAMIN KEARNEY
REGISTRATION NO. 11990

PROJECT INFORMATION
PROJECT NAME: KEY WORKER ACCOMMODATION
PROJECT LOCATION: 176 THOMAS STREET, BROKEN HILL, NSW , 2880

CLIENT: NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	CF
DESIGNER	
ORIGINAL SIZE	297 x 420 - A3
PRINT DATE	19/02/2024 3:03:36 PM
SCALE	1 : 200

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NORTH

SHEET TITLE: SITE PLAN

DWG | PROJECT NO. 1079 | FILE | CONSULT REF. NO.

USE: PRELIMINARY
REFER TO 'USE DEFINITION' ADJACENT

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD			A004	G

1 SECTION A
1 : 100

2 SECTION B
1 : 100

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
A	100% SD ISSUE	19.02.24	MF

NSW GOVERNMENT Health Infrastructure

HUTCHINSON BUILDERS
HUTCHINSON MODULAR

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NSW NOMINATED ARCHITECT
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CLIENT: NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	CF
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ORIGINAL SIZE	297 x 420 - A3
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SCALE	1 : 100

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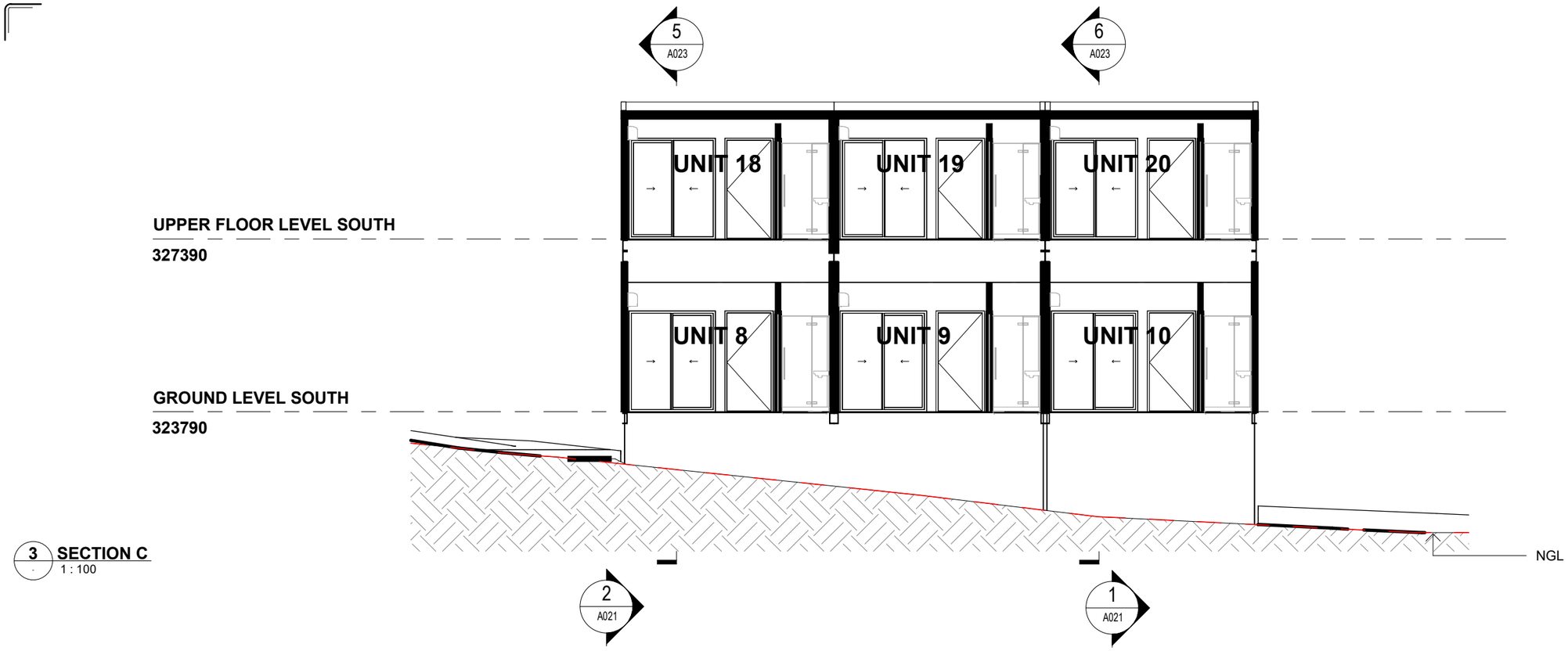
USE: PRELIMINARY
REFER TO 'USE DEFINITION' ADJACENT

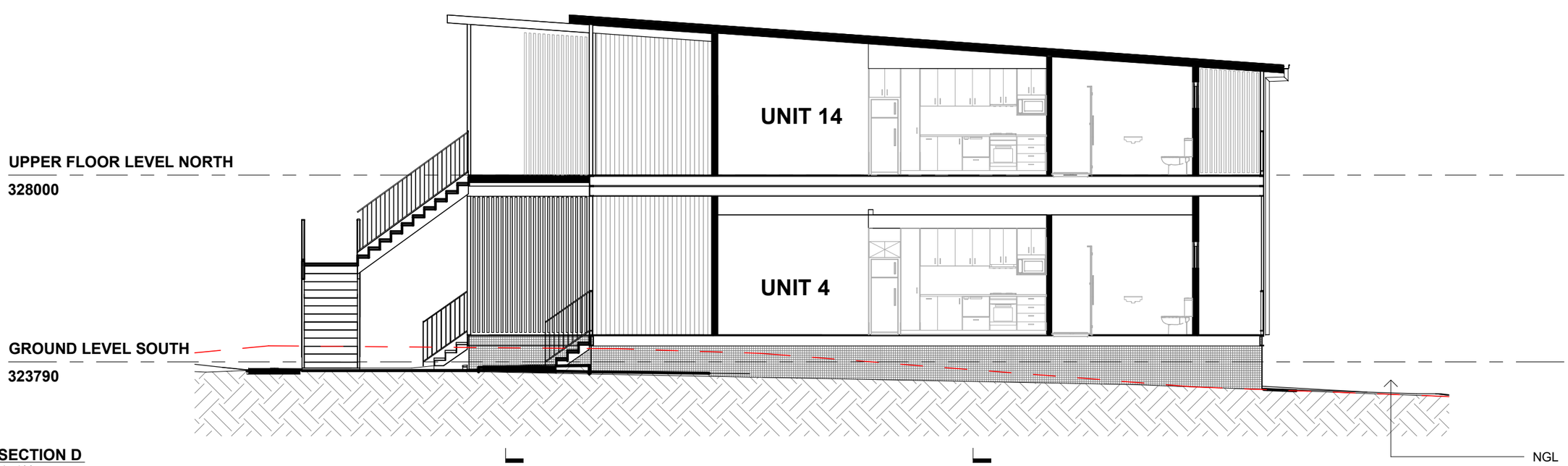
SHEET TITLE: SECTIONS - SHEET 1

DWG: PROJECT NO. 1079 | FILE: CONSULT REF. NO.

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD			A021	A



3 **SECTION C**
1 : 100



4 **SECTION D**
1 : 100

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
A	100% SD ISSUE	19.02.24	MF

NSW GOVERNMENT Health Infrastructure

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KEARNEY ARCHITECTURE
NSW NOMINATED ARCHITECT
ARCHITECT: BENJAMIN KEARNEY
REGISTRATION NO: 11990

PROJECT INFORMATION

PROJECT NAME
KEY WORKER ACCOMMODATION

PROJECT LOCATION
176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT
NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	CF
DESIGNER	
ORIGINAL SIZE	297 x 420 - A3
PRINT DATE	19/02/2024 3:04:33 PM
SCALE	1 : 100

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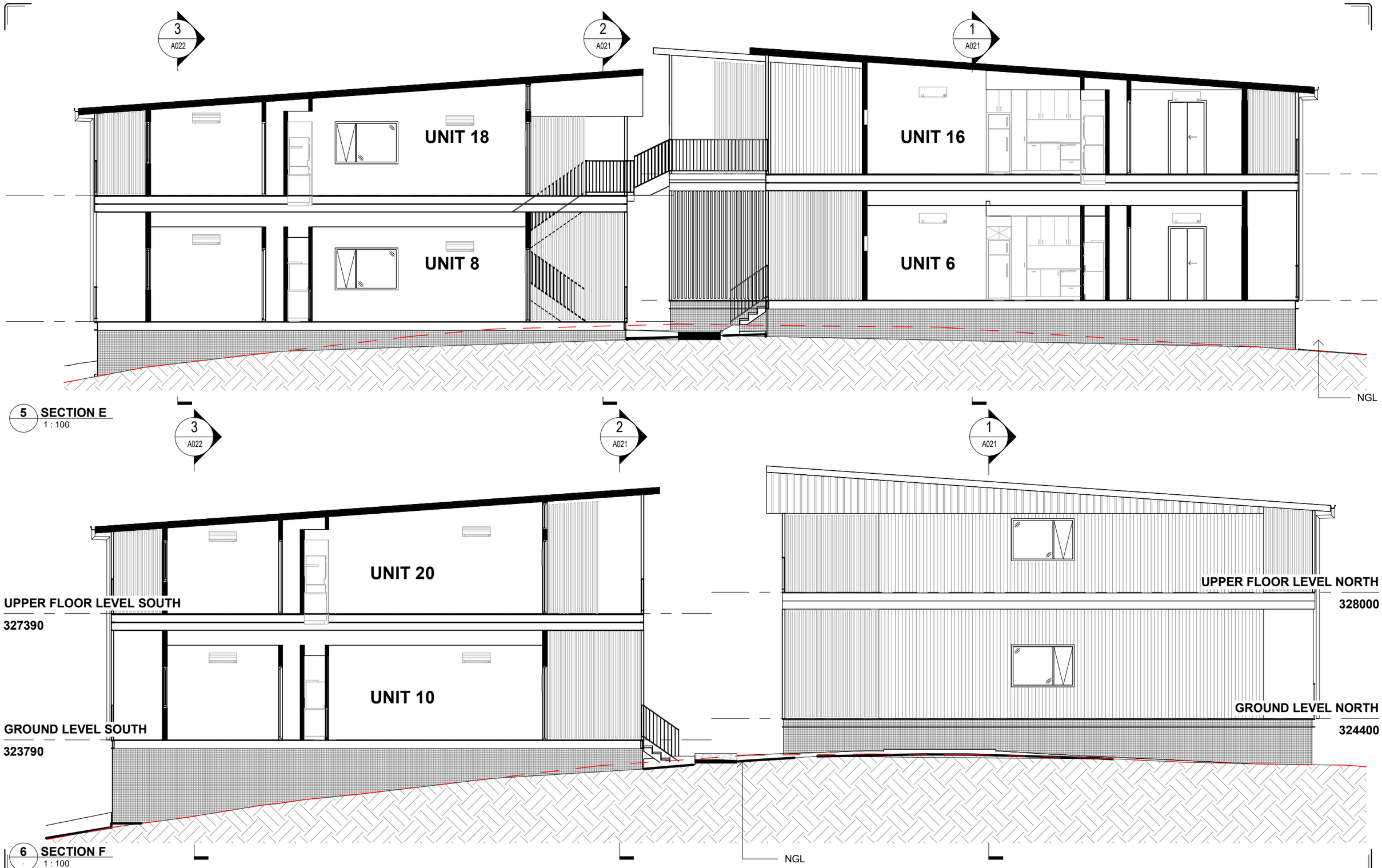
USE: PRELIMINARY
REFER TO 'USE DEFINITION' ADJACENT

SHEET TITLE: SECTIONS - SHEET 2

DWG	PROJECT NO.	FILE	CONSULT REF. NO.
	1079		

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD			A022	A



5 **SECTION E**
1 : 100

6 **SECTION F**
1 : 100

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
A	100% SD ISSUE	19.02.24	MF

NSW GOVERNMENT Health Infrastructure

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KEARNEY ARCHITECTURE
NSW NOMINATED ARCHITECT: BENJAMIN KEARNEY
REGISTRATION NO: 11990

PROJECT INFORMATION

PROJECT NAME
KEY WORKER ACCOMMODATION

PROJECT LOCATION
176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT
NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	CF
DESIGNER	
ORIGINAL SIZE	297 x 420 - A3
PRINT DATE	19/02/2024 3:04:34 PM
SCALE	1 : 100

AUTHORISATION
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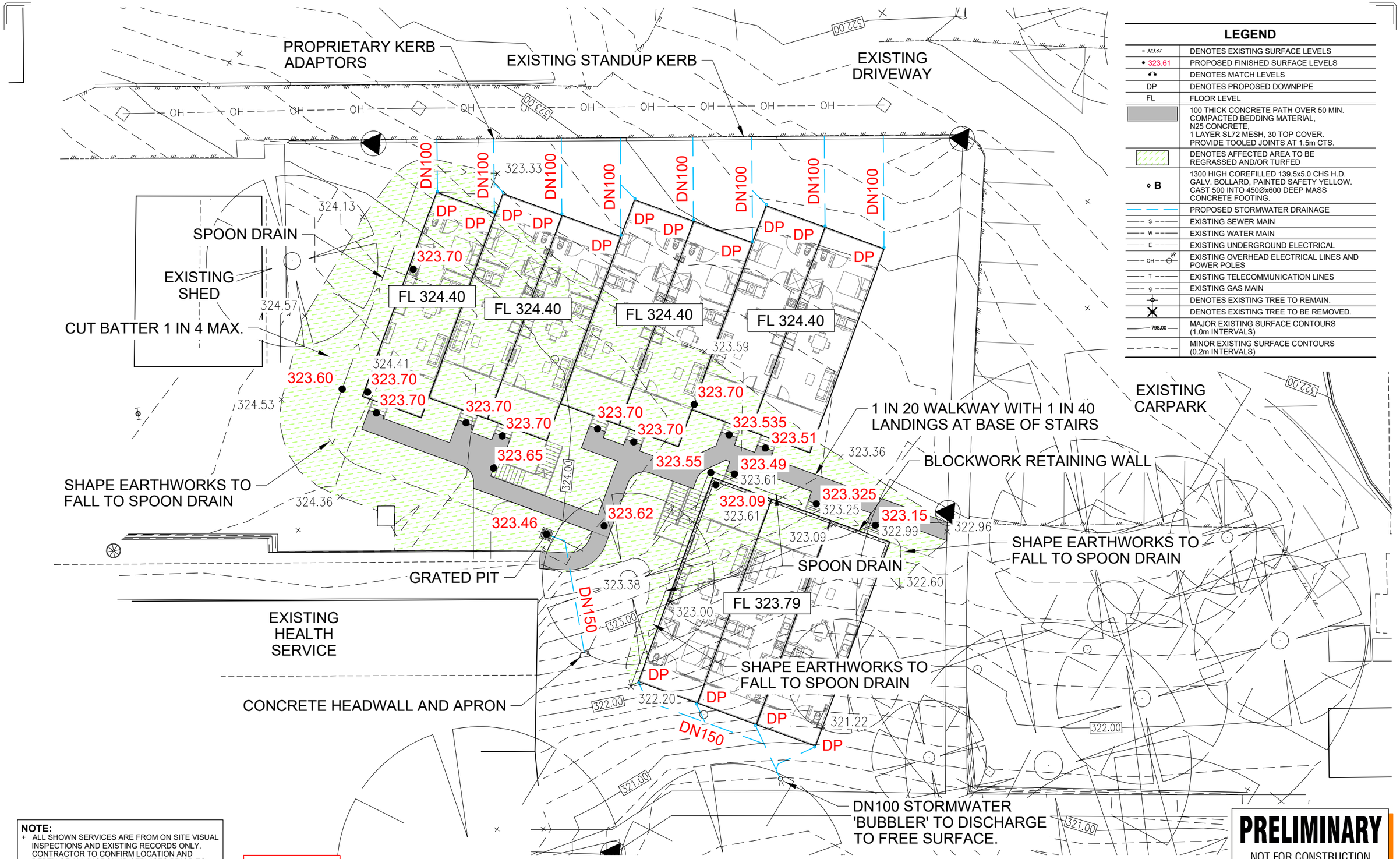
NORTH

USE: PRELIMINARY
REFER TO 'USE DEFINITION' ADJACENT

SHEET TITLE: SECTIONS - SHEET 3

DWG	PROJECT NO.	FILE	CONSULT REF. NO.
	1079		

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD			A023	A



LEGEND

× 323.61	DENOTES EXISTING SURFACE LEVELS
• 323.61	PROPOSED FINISHED SURFACE LEVELS
	DENOTES MATCH LEVELS
DP	DENOTES PROPOSED DOWNPIPE
FL	FLOOR LEVEL
	100 THICK CONCRETE PATH OVER 50 MIN. COMPACTED BEDDING MATERIAL, N25 CONCRETE, 1 LAYER SL72 MESH, 30 TOP COVER. PROVIDE TOOLED JOINTS AT 1.5m CTS.
	DENOTES AFFECTED AREA TO BE REGRASSED AND/OR TURFED
∘ B	1300 HIGH COREFILLED 139.5x5.0 CHS H.D. GALV. BOLLARD, PAINTED SAFETY YELLOW. CAST 500 INTO 450Ø x600 DEEP MASS CONCRETE FOOTING.
	PROPOSED STORMWATER DRAINAGE
— S —	EXISTING SEWER MAIN
— W —	EXISTING WATER MAIN
— E —	EXISTING UNDERGROUND ELECTRICAL
— OH —	EXISTING OVERHEAD ELECTRICAL LINES AND POWER POLES
— T —	EXISTING TELECOMMUNICATION LINES
— g —	EXISTING GAS MAIN
	DENOTES EXISTING TREE TO REMAIN.
	DENOTES EXISTING TREE TO BE REMOVED.
798.00	MAJOR EXISTING SURFACE CONTOURS (1.0m INTERVALS)
	MINOR EXISTING SURFACE CONTOURS (0.2m INTERVALS)

NOTE:
+ ALL SHOWN SERVICES ARE FROM ON SITE VISUAL INSPECTIONS AND EXISTING RECORDS ONLY. CONTRACTOR TO CONFIRM LOCATION AND DEPTH OF ALL INGROUND SERVICES PRIOR TO ANY EXCAVATION.

PRINT IN COLOUR

SITE CIVIL WORKS LAYOUT

SCALE:- 1:250 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION
DATE 13.02.24 09:44 AM

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
P2	REVISED CONCEPT DESIGN	13.02.24	DSE
P1	CONCEPT DESIGN	19.01.24	DSE

NSW GOVERNMENT Health Infrastructure

HUTCHINSON BUILDERS
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CIVIL | STRUCTURAL | HYDRAULIC

PROJECT INFORMATION

PROJECT NAME: KEY WORKER ACCOMMODATION
PROJECT LOCATION: 176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT: NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	DSE
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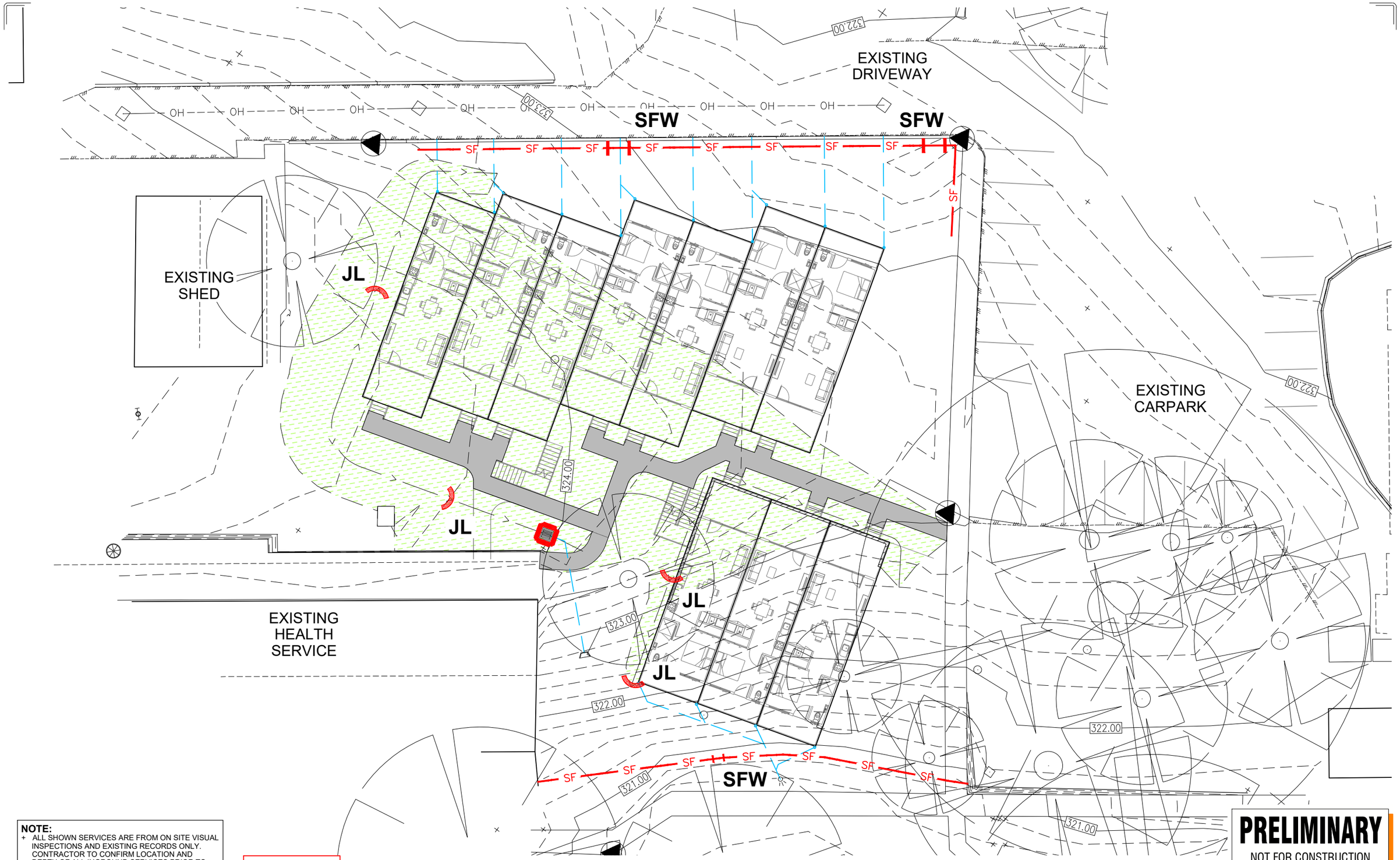
SHEET TITLE: SITE CIVIL WORKS LAYOUT

DWG	PROJECT NO.	FILE	CONSULT REF. NO.
	1079		S2324174

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD	01	SCW	PR01	P2



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PRINT IN COLOUR

EROSION AND SEDIMENT CONTROL LAYOUT

SCALE:- 1:250 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION
DATE 16.02.24 11:14 AM

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
P1	FOR INFORMATION	16.02.24	DSE

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PROJECT NAME: KEY WORKER ACCOMMODATION

PROJECT LOCATION: 176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT: NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	DSE
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SCALE	

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USE: PRELIMINARY

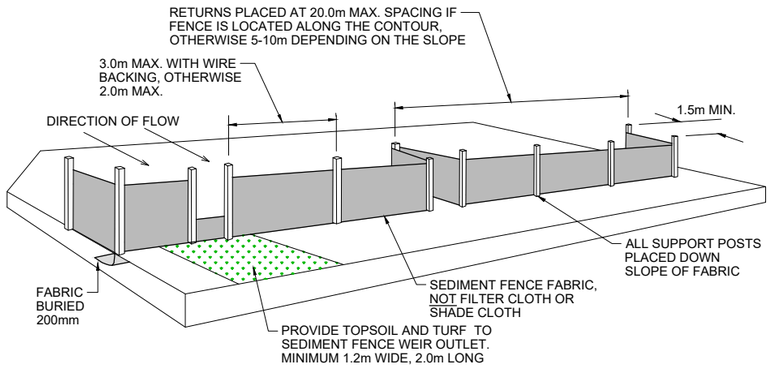
SHEET TITLE: EROSION AND SEDIMENT CONTROL LAYOUT

DWG	PROJECT NO.	FILE	CONSULT REF. NO.
	1079		S2324174

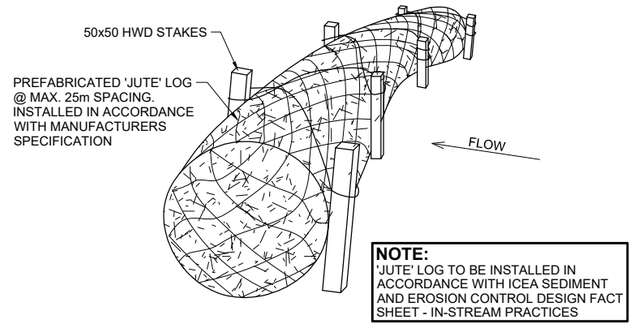
DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD	01	SCW	PR02	P1

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL ENSURE THAT MUD AND SILT IS NOT TRACKED ONTO PUBLIC ROADS BY VEHICLES LEAVING THE SITE.
2. A REPRESENTATIVE OF THE CONTRACTOR SHALL BE ON SITE AT ALL TIMES DURING ANY CONSTRUCTION OPERATIONS AND SHALL RECTIFY ANY FAILURE OF THE SILT CONTROL DEVICES AND CLEAN ANY EXTERNAL ROADS CONTAMINATED BY CONSTRUCTION TRAFFIC.
3. INSPECTION OF THE SURROUNDING ROADWAYS SHALL BE CARRIED OUT ON A DAILY BASIS AND A DIARY RECORDS KEPT WITH RESPECT TO ANY CLEANING WORKS UNDERTAKEN.
4. SUBCONTRACTORS SHALL NOT BE ALLOWED TO WORK UNSUPERVISED.
5. DUST EMISSIONS FROM CONSTRUCTION MACHINERY SHALL BE CONTROLLED BY REGULAR WATERING OR ON AN AS-REQUIRED BASIS.
6. SILT STOP FENCES SHALL BE INSTALLED AT THE START OF WORKS AND SHALL BE MAINTAINED FOR THE FULL DURATION OF THE PROJECT AND UNTIL ESTABLISHMENT OF ANY PLANTINGS.

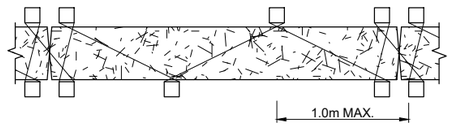


INSTALLATION OF SEDIMENT FENCE
NOT TO SCALE



NOTE:
'JUTE' LOG TO BE INSTALLED IN ACCORDANCE WITH ICEA SEDIMENT AND EROSION CONTROL DESIGN FACT SHEET - IN-STREAM PRACTICES

ANCHORAGE OF 'JUTE' LOG

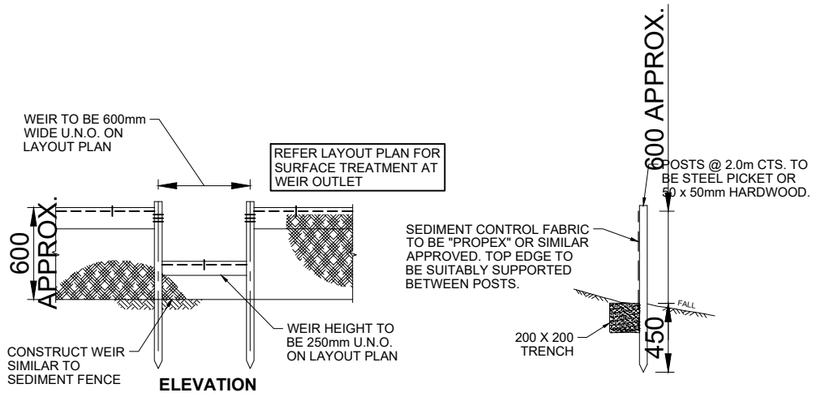


STAKING METHOD

JUTE LOG DETAIL
SCALE:- N.T.S.

SEDIMENT FENCE NOTES

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 2.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.



SEDIMENT FENCE WEIR DETAIL
SCALE:- 1:20 @ A1, 1:40 @ A3

SEDIMENT FENCE DETAIL
SCALE:- 1:20 @ A1, 1:40 @ A3

NOTE:
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PRINT IN COLOUR

PRELIMINARY
NOT FOR CONSTRUCTION
DATE 16.02.24 11:14 AM

ISSUE HISTORY

ISSUE	DESCRIPTION	DATE	DWN
P1	FOR INFORMATION	16.02.24	DSE

NSW GOVERNMENT Health Infrastructure

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PROJECT INFORMATION

PROJECT NAME: KEY WORKER ACCOMMODATION

PROJECT LOCATION: 176 THOMAS STREET, BROKEN HILL, NSW, 2880

CLIENT: NSW GOVERNMENT HEALTH INFRASTRUCTURE

SHEET DETAIL

AUTHOR	DSE
DESIGNER	DSE
ORIGINAL SIZE	297 x 420 - A3
PRINT DATE	2/15/2024 2:20:16 PM
SCALE	

AUTHORISATION: THIS DRAWING IS UNCONTROLLED WITHOUT DESIGNER'RPEQ SIGNATURE BELOW

USE: PRELIMINARY

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SHEET TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

DWG	PROJECT NO.	FILE	CONSULT REF. NO.
	1079		S2324174

DWG	PHASE	BLD NO.	CONSULT	SHEET NO.	ISSUE
	SD	01	SCW	PR03	P1

LANDSCAPE CONCEPT PLAN

NEARMAP DATED: 11/10/23 (PHOTOMANIPULATED)

1 SHADE / SCREEN TREES
Tree species to provide visual and climatic amenity and landscape softening of the proposed building; Refer Proposed Planting Schedule
(ie: *Brachychiton populneus, Brachychiton rupestris, Malus tschonoskii, Pyrus calleryana* Capital, *Pistacia chinensis*, *Tristaniopsis laurina*)

2 SCREEN PLANTING
Dense planting to boundaries so as to provide visual amenity and privacy screening to neighbouring properties; Refer Proposed Planting Schedule

3 SHRUBS AND GROUNDCOVERS
Mass planting to large areas to assist in building presentation to the streetscape and to provide visual amenity; Refer Proposed Planting Schedule

PROPOSED GARDEN EDGE
To future detail

EXISTING RETAINING WALL
As taken from Survey drawings

PROPOSED TURF
To future detail

EXISTING GRASSED AREAS
Retain and protect during construction
Make good any damage. To future detail

EXISTING TREE - RETAINED
As taken from Survey drawings

EXISTING TREE - REMOVED
As taken from Survey drawings

ANDREW GOLD LANDSCAPE ARCHITECTURE
PO BOX 5220, MT GRAVATT EAST QLD 4122
T 07 3420 0006 **M** 0405 389 243 **E** andrew@agla.com.au

PROPOSED KEY WORKERS ACCOMMODATION
176 THOMAS STREET, BROKEN HILL

JOB NUMBER	SHEET NO.	ISSUE	REASON	DATE	DRAWN BY
24.002	2	B	UPDATED PLANS	08/02/24	AG / JB

1:200@A3
0 1 2 3 4 5 10m

Appendix B Historical Figures and Tables (DSI, JBS&G 2023)

Legend:

- Broken Hill Hospital Boundary
- Broken Hill Hospital Redevelopment

JBS&G

Job No: 63879	
Client: Health Infrastructure	
Version: R03 Rev 0	Date 3/03/2023
Drawn By: LJ	Checked By: EA
Scale 1:10,000	

0 100 200
metres

Coord. Sys. GDA 1994 MGA Zone 56

170-320 Thomas Street
Broken Hill, NSW

SITE LOCATION

FIGURE 1

File Name: 63879_BrokenHill_R03_Rev0

Legend:

- Broken Hill Hospital Boundary
- NSW Cadastre

Site Features

- KWA Proposed Location
- Kincumber House

JBS&G

Job No: 63879

Client: Health Infrastructure

Version: R03 Rev 0	Date 3/03/2023
Drawn By: LJ	Checked By: EA

Scale 1:2,500

0 25 50

metres

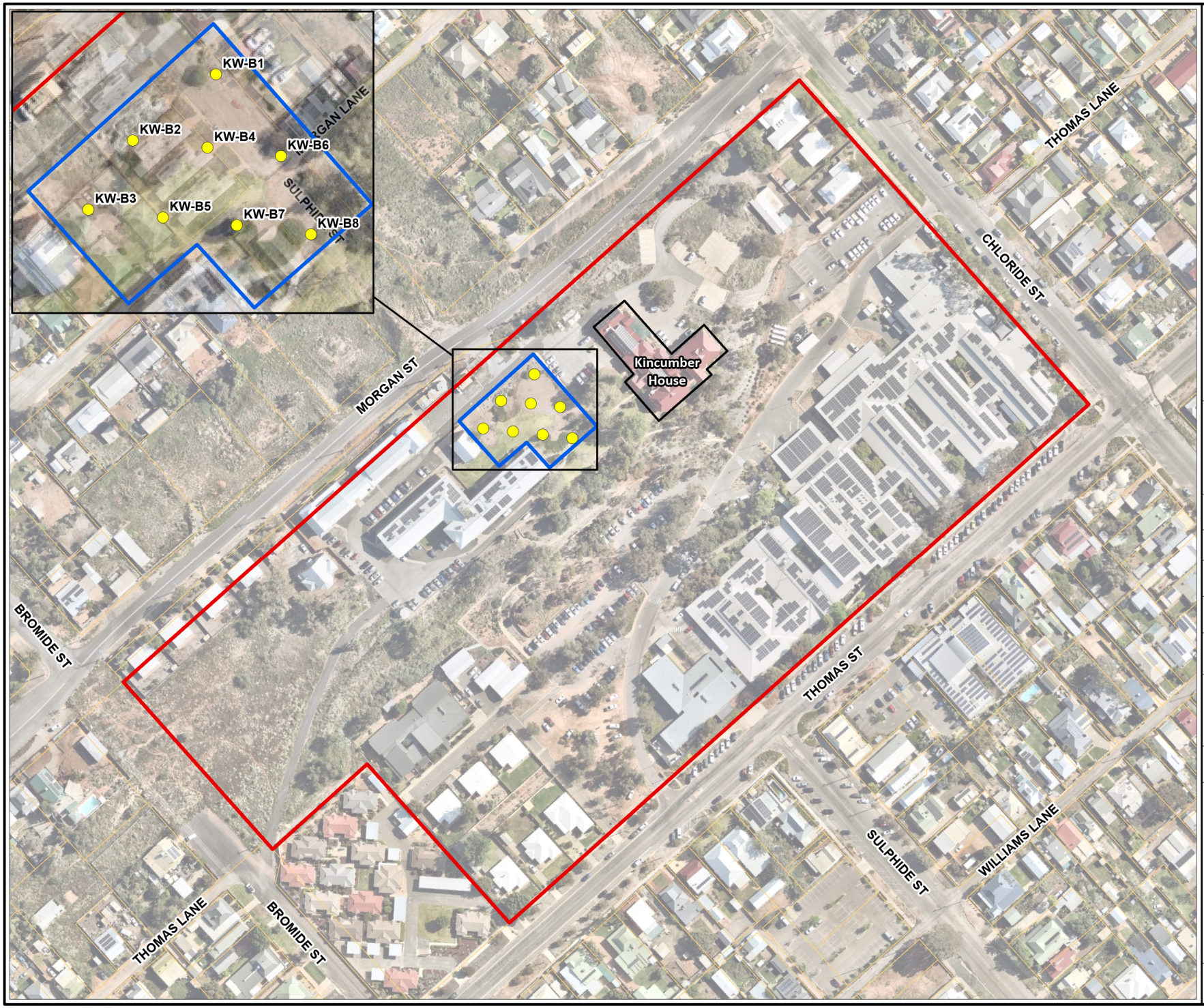
Coord. Sys. GDA 1994 MGA Zone 56

170-320 Thomas Street
Broken Hill, NSW

SITE LAYOUT

FIGURE 2

File Name: 63879_BrokenHill_R03_Rev0
Reference: Nearmap www.nearmap.com 20221017



Legend:

- Broken Hill Hospital Boundary
- NSW Cadastre

Site Features

- KWA Proposed Location
- Kincumber House

Sample Locations

- Sample Location

JBS&G

Job No: 63879

Client: Health Infrastructure

Version: R03 Rev 0	Date 3/03/2023
Drawn By: LJ	Checked By: EA

Scale 1:2,500

0 25 50

metres

Coord. Sys. GDA 1994 MGA Zone 56

170-320 Thomas Street
Broken Hill, NSW

SAMPLE LOCATIONS

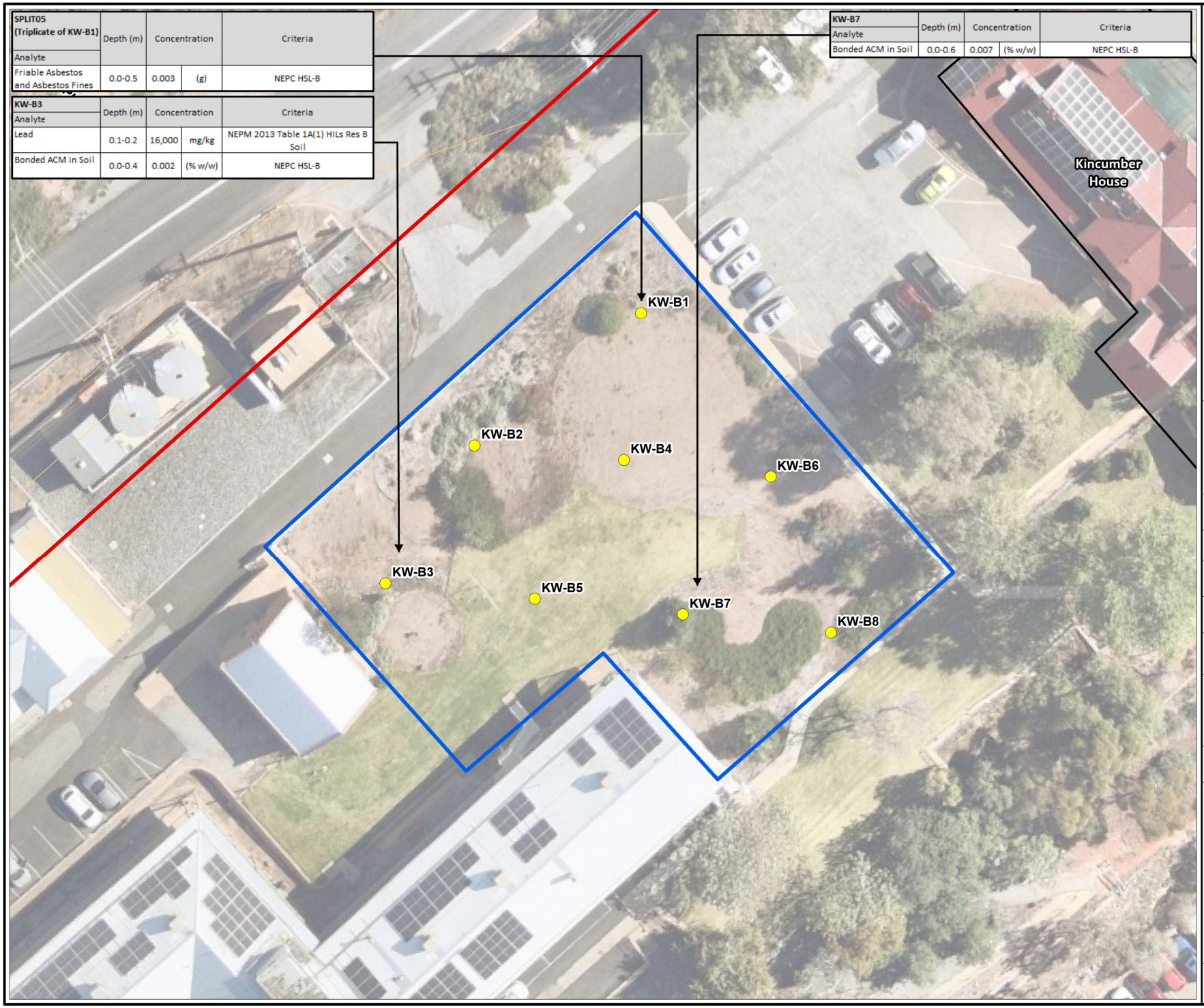
FIGURE 3

File Name: 63879_BrokenHill_R03_Rev0
Reference: Nearmap www.nearmap.com 20221017

SPLIT05 (Triplicate of KW-B1)	Depth (m)	Concentration		Criteria
Analyte				
Friable Asbestos and Asbestos Fines	0.0-0.5	0.003	(g)	NEPC HSL-B

KW-B3	Depth (m)	Concentration		Criteria
Analyte				
Lead	0.1-0.2	16,000	mg/kg	NEPM 2013 Table 1A(1) HILs Res B Soil
Bonded ACM in Soil	0.0-0.4	0.002	(% w/w)	NEPC HSL-B

KW-B7	Depth (m)	Concentration		Criteria
Analyte				
Bonded ACM in Soil	0.0-0.6	0.007	(% w/w)	NEPC HSL-B



Legend:

- Broken Hill Hospital Boundary
- NSW Cadastre

Site Features

- KWA Proposed Location
- Kincumber House

Sample Locations

- Sample Location

JBS&G

Job No: 63879

Client: Health Infrastructure

Version: R03 Rev 0 | Date 7/03/2023

Drawn By: LJ | Checked By: EA

Scale 1:500

0 10 20

metres

Coord. Sys. GDA 1994 MGA Zone 56

170-320 Thomas Street
Broken Hill, NSW

SOIL EXCEEDANCES

FIGURE 4

File Name: 63879_BrokenHill_R03_Rev0
Reference: Nearmap www.nearmap.com 20221017

Table A Soil Analytical Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

JBS&G

Field ID	Sampled Date	Lab Report Number	Metals & Metalloids								
			Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Mercury	Nickel	Zinc
			mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2	0.4	5	5	20	5	0.1	5	5
NEPM 2013 Table 1A(1) HILs Res B Soil			500	150	500	30000		1200	120	1200	60000
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space			100		190[#7]	220[#7]		1100		260[#7]	750[#7]
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil											
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil											
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m											
KW-B1_0.0-0.1	3/02/2023	962621	8.8	0.6	28	29	36,000	130	<0.1	22	210
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	6.8	0.5	28	27	-	220	<0.1	20	180
KW-B2_0.0-0.1	3/02/2023	962621	<2	<0.4	19	12	-	28	<0.1	12	110
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	4.7	<0.4	22	21	-	84	<0.1	19	170
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	63	<0.4	32	130	-	16,000	0.1	88	320
KW-B3_0.25-0.3	3/02/2023	962621	2.5	<0.4	13	51	-	160 - 180	<0.1	12	170
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	700	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	66	-	-	-
KW-B4_0.0-0.1	3/02/2023	967191	2.9	<0.4	16	14	-	75	<0.1	11	130
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	5	1.3	27	20	-	360	<0.1	13	380
DUP04 (Duplicate)	3/02/2023	962621	4.8	1.3	17	17	-	500	<0.1	12	350
SPLIT04 (Triplicate)	2/02/2023	35779	<4	1	15	14	-	190	<0.1	9	260
KW-B5_0.1-0.2	3/02/2023	962621	4.6	0.7	19	17	17,000	380	<0.1	7.8	210
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	2.4	<0.4	21	13	-	41	<0.1	10	58
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	9	1.1	28	29	-	200	0.1	28	410
KW-B6_0.5-0.6	3/02/2023	962621	10	0.8	21	22	-	250	<0.1	14	290
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	6.4	0.9	22	26	-	330	0.1	15	390
KW-B7_0.5-0.6	3/02/2023	962621	6.4	0.9	20	24	-	250	0.1	15	370
KW-B8_0.0-0.1	3/02/2023	962621	16	1.2	29	41	-	350	0.1	27	490
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	5	1	21	23	-	250	0.1	13	490
DUP06 (Duplicate)	3/02/2023	962621	7.6	3	21	27	-	240	<0.1	16	880
SPLIT06 (Triplicate)	2/02/2023	35779	5	0.5	16	28	-	300	0.1	9	280

Field ID	TRH							
	C6-C9 Fraction	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	20	20	50	100	100	100	20	50
NEPM 2013 Table 1A(1) HILs Res B Soil								
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space								
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil				1300	5600		180	120
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil		800	1000	3500	10000			
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil								
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m							50	280
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m							90	NL
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m							150	NL
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m							290	NL
KW-B1_0.0-0.1	<20	<20	<50	<100	<100	<100	<20	<50
KW-B1_0.0-0.5 (Primary)	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	<20	<20	<50	<100	<100	<100	<20	<50
KW-B2_0.1-0.3	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	<20	<20	<50	<100	<100	<100	<20	<50
KW-B3_0.0-0.4	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	<20	<20	<50	220	<100	220	<20	<50
KW-B3_0.25-0.3	<20	<20	<50	<100	<100	<100	<20	<50
KW-B3_0.3-0.4	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	<20	<20	<50	<100	<100	<100	<20	<50
DUP04 (Duplicate)	<20	<20	<50	<100	<100	<100	<20	<50
SPLIT04 (Triplicate)	<25	<25	<50	<100	<100	<50	<25	<50
KW-B5_0.1-0.2	<20	<20	<50	<100	<100	<100	<20	<50
KW-B5_0.1-0.4	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	<20	<20	<50	<100	<100	<100	<20	<50
KW-B7_0.0-0.6	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	<20	<20	<50	120	<100	120	<20	<50
KW-B7_0.5-0.6	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	<20	<20	<50	<100	<100	<100	<20	<50
KW-B8_0.0-0.4	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	<20	<20	<50	<100	<100	<100	<20	<50
DUP06 (Duplicate)	<20	<20	<50	110	<100	110	<20	<50
SPLIT06 (Triplicate)	<25	<25	<50	<100	<100	<50	<25	<50

Field ID	BTEX						
	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.2	0.3	1
NEPM 2013 Table 1A(1) HILs Res B Soil							
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space							
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil	65	105	125			45	
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil							
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil							
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m	0.7	480	NL			110	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m	1	NL	NL			310	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m	2	NL	NL			NL	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m	3	NL	NL			NL	
KW-B1_0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B1_0.0-0.5 (Primary)	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	-	-	-	-	-	-	-
KW-B1_0.2-0.3	-	-	-	-	-	-	-
KW-B2_0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B2_0.1-0.3	-	-	-	-	-	-	-
KW-B2_0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B3_0.0-0.4	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	-	-	-	-	-	-	-
KW-B3_0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B3_0.25-0.3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B3_0.3-0.4	-	-	-	-	-	-	-
KW-B3_0.4-0.5	-	-	-	-	-	-	-
KW-B4_0.0-0.1	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
DUP04 (Duplicate)	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
SPLIT04 (Triplicate)	<0.2	<0.5	<1	<1	<2	<1	<1
KW-B5_0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B5_0.1-0.4	-	-	-	-	-	-	-
KW-B5_0.4-0.5	-	-	-	-	-	-	-
KW-B5_0.4-1.0	-	-	-	-	-	-	-
KW-B6_0.0-0.1	-	-	-	-	-	-	-
KW-B6_0.5-0.6	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B7_0.0-0.6	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	-	-	-	-	-	-	-
KW-B7_0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B7_0.5-0.6	-	-	-	-	-	-	-
KW-B8_0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
KW-B8_0.0-0.4	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
DUP06 (Duplicate)	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-
SPLIT06 (Triplicate)	<0.2	<0.5	<0.5	<0.5	<1	<1	<1

Field ID	PAH																		
	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ calc (Zero)	Benzo(b+j)fluoranthene	Benzo(b+j+k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res B Soil						4	4	4											
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space																		170	
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil					0.7														
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																			
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil																			
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m																		5	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m																		NL	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m																		NL	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m																		NL	
KW-B1_0.0-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
KW-B1_0.0-0.5 (Primary)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5
KW-B2_0.0-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B2_0.1-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B3_0.0-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
KW-B3_0.25-0.3	<0.5	<0.5	<0.5	1.3	1.8	2.8	2.5	2.3	0.9	-	1.1	1.4	1.6	<0.5	2.7	<0.5	1.1	<0.5	1
KW-B3_0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B4_0.1-0.3 (Primary)	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP04 (Duplicate)	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SPLIT04 (Triplicate)	<0.1	<0.1	<0.1	0.1	0.15	<0.5	<0.5	<0.5	-	0.2	<0.1	-	0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.1
KW-B5_0.1-0.2	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B5_0.1-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B5_0.4-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B6_0.5-0.6	<0.5	<0.5	<0.5	0.5	0.5	1.2	0.9	0.6	<0.5	-	<0.5	<0.5	0.6	<0.5	1	<0.5	<0.5	<0.5	<0.5
KW-B7_0.0-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	<0.5	<0.5	<0.5	0.8	0.9	1.8	1.5	1.3	1.3	-	0.7	1	0.9	<0.5	2.2	<0.5	0.5	<0.5	1.5
KW-B7_0.5-0.6	<0.5	<0.5	<0.5	0.6	0.7	1.4	1.1	0.8	0.6	-	<0.5	<0.5	0.7	<0.5	1.3	<0.5	<0.5	<0.5	0.8
KW-B8_0.0-0.1	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
KW-B8_0.0-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
DUP06 (Duplicate)	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5
SPLIT06 (Triplicate)	<0.1	<0.1	0.2	0.5	0.58	0.9	0.8	0.8	-	0.8	0.4	-	0.5	<0.1	1.3	<0.1	0.3	<0.1	0.8

Data Comments

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile and crocidolite asbestos detected.Organic fibres detected.
#4 Chrysotile asbestos detected.Organic fibres detected.
#5 No trace asbestos detected.
#6 Organic fibres detected.
#7 Site specific Ecological investigation levels were calculated, consistent with NEPC (2013) based on; average soil CEC (19.3 meq/100g), average soil pH (7.7 pH units), average percentage of clay content (1.1%)

Table A Soil Analytical Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

					PCB								Organochlorine Pesticides																													
			Pyrene	PAHs (Sum of total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	Hexachlorobenzene	4,4-DDE	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	Chlordane	Chlordane (cis)	Chlordane (trans)	DDT	DDD	DDT+DDE+DDD	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Styrene	Total MAH	1,1,1,2-tetrachloroethane
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res B Soil				400								1	15								10	90					600				20			10		500	30					
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space																									180																	
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																																										
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																																										
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil																																										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m																																										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m																																										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m																																										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m																																										
Field ID	**Sampled Date**	**Lab Report Number**																																								
KW-B1_0.0-0.1	3/02/2023	962621	0.6	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	0.9	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	0.7	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B3_0.25-0.3	3/02/2023	962621	2.9	16	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	967191	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
DUP04 (Duplicate)	3/02/2023	962621	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	0.3	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	1.2	3.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	0.15	<0.05	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	2.1	12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	1.2	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	0.7	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	0.5	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP06 (Duplicate)	3/02/2023	962621	0.8	1.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	0.11	0.08	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SPLIT06 (Triplicate)	2/02/2023	35779	1.2	6.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	<0.5	<0.5	<0.5	-	<0.5

Data Comments

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace a

#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.

#3 Chrysotile and crocidolite asbestos detected.Organic fibres detected.

#4 Chrysotile asbestos detected.Organic fibres detected.

#5 No trace asbestos detected.

#6 Organic fibres detected.

#7 Site specific Ecological investigation levels were calculated, consistent with NEPC (2013) basec

Table A Soil Analytical Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

	VOC																																												
	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride	Acetone	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	tert-butylbenzene	Bromobenzene	Isopropylbenzene	1,2-dibromoethane	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	4-Methyl-2-pentanone
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res B Soil																																												
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space																																												
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																																												
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																																												
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil																																												
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m																																												
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m																																												
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m																																												
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m																																												
Field ID	**Sampled Date**	**Lab Report Number**																																												
KW-B1_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
KW-B3_0.25-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUP04 (Duplicate)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
DUP06 (Duplicate)	3/02/2023	962621	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
SPLIT06 (Triplicate)	2/02/2023	35779	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	-	<1	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	-	-

Data Comments

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace a
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile and crocidolite asbestos detected.Organic fibres detected.
#4 Chrysotile asbestos detected.Organic fibres detected.
#5 No trace asbestos detected.
#6 Organic fibres detected.
#7 Site specific Ecological investigation levels were calculated, consistent with NEPC (2013) basec

Table A Soil Analytical Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

															Asbestos											
	Methyl Ethyl Ketone	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane	Hexachlorobutadiene	Carbon disulfide	Approximate Sample Mass	Mass ACM	Mass Asbestos in ACM	FA and AF Estimation	Asbestos from ACM in Soil	Mass FA	Mass Asbestos in FA	Mass AF	Mass asbestos in AF	Asbestos from FA & AF in Soil	Mass Asbestos in FA & AF	ACM - Comment
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	g	g	g	% (w/w)	g	g	g	g	% (w/w)	g	Comment
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5												
NEPM 2013 Table 1A(1) HILs Res B Soil																									
NEPM 2013 Table 1B(1-5) Generic EIL - Urban Residential and Public Open Space																									
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																									
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																									
NEPM 2013 Table 7 Res B Soil HSL for Asbestos in Soil																		0.04					0.001		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 0-1m																									
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 1-2m																									
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay 2-4m																									
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay >4m																									
Field ID	**Sampled Date**	**Lab Report Number**																								
KW-B1_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	627	0	0	-	0	0	0	0	0	0	0	Nil
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	722	-	-	0.0025	0	-	-	-	-	<0.001	-	Nil
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	694	0	0	-	0	0	0	0	0	0	0	Nil
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	813	0	0	-	0	0	0	0	0	0	0	Nil
KW-B2_0.3-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	763	0	0	-	0	0	0	0	0	0	0	Nil
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	4	0	0	-	0	0	0	0	0	0	0	Chrysotile asbestos detected
KW-B3_0.1-0.2	3/02/2023	962621	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.25-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	1077	0	0	-	0	0	0	0	0	0	0	Nil
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	940	0	0	-	0	0	0	0	0	0	0	Nil
DUP04 (Duplicate)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	696	0	0	-	0	0	0	0	0	0	0	Nil
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	558	0	0	-	0	0	0	0	0	0	0	Nil
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	1137	0	0	-	0	0	0	0	0	0	0	Nil
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	16	0	0	-	0	0	0	0	0	0	0	Chrysotile asbestos detected
KW-B7_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	811	0	0	-	0	0	0	0	0	0	0	Nil
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
DUP06 (Duplicate)	3/02/2023	962621	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT06 (Triplicate)	2/02/2023	35779	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-

Data Comments

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace a
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile and crocidolite asbestos detected.Organic fibres detected.
#4 Chrysotile asbestos detected.Organic fibres detected.
#5 No trace asbestos detected.
#6 Organic fibres detected.
#7 Site specific Ecological investigation levels were calculated, consistent with NEPC (2013) basec

Table B Waste Classification Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

			Heavy Metal								OCP																												
			Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	b-BHC	d-BHC	g-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	Chlordane	Chlordane (cis)	Chlordane (trans)	DDT	DDD	DDT+DDE+DDD	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Methoxychlor	Toxaphene	Organochlorine Pesticides EPAVic	Other Organochlorine Pesticides EPAVic
			mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2	0.4	5	5	20	5	0.1	5	5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)			100	20	100			100	4	40																												
NSW 2014 General Solid Waste SCC1 (with leached)			500	100	1900			1500	50	1050																												
NSW 2014 Restricted Solid Waste CT2 (No Leaching)			400	80	400			400	16	160																												
NSW 2014 Restricted Solid Waste SCC2 (with leached)			2000	400	7600			6000	200	4200																												
Field ID	**Sampled Date**	**Lab Report Number**																																				
KW-B1_0.0-0.1	3/02/2023	962621	8.8	0.6	28	29	36,000	130	<0.1	22	210	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	6.8	0.5	28	27	-	220	<0.1	20	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	<2	<0.4	19	12	-	28	<0.1	12	110	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	4.7	<0.4	22	21	-	84	<0.1	19	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	63	<0.4	32	130	-	16,000	0.1	88	320	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B3_0.25-0.3	3/02/2023	962621	2.5	<0.4	13	51	-	160	<0.1	12	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	962621	2.9	<0.4	16	14	-	75	<0.1	11	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	5	1.3	27	20	-	360	<0.1	13	380	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
DUP04 (Duplicate)	3/02/2023	962621	4.8	1.3	17	17	-	500	<0.1	12	350	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
SPLIT04 (Triplicate)	2/02/2023	35779	<4	1	15	14	-	190	<0.1	9	260	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-
KW-B4_0.1-0.3A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	4.6	0.7	19	17	17,000	380	<0.1	7.8	210	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	2.4	<0.4	21	13	-	41	<0.1	10	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	9	1.1	28	29	-	200	0.1	28	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	10	0.8	21	22	-	250	<0.1	14	290	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	0.15	<0.05	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	0.2	<0.1
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	6.4	0.9	22	26	-	330	0.1	15	390	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B7_0.5-0.6	3/02/2023	962621	6.4	0.9	20	24	-	250	0.1	15	370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	16	1.2	29	41	-	350	0.1	27	490	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	5	1	21	23	-	250	0.1	13	490	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1
DUP06 (Duplicate)	3/02/2023	962621	7.6	3	21	27	-	240	<0.1	16	880	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	0.11	0.08	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	0.26	<0.1
SPLIT06 (Triplicate)	2/02/2023	35779	5	0.5	16	28	-	300	0.1	9	280	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile asbestos detected.Organic fibres detected.
#4 No trace asbestos detected.
#5 Organic fibres detected.

Table B Waste Classification Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

			Organic									PAH																				PCB								TPH			
			C6-C9 Fraction	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Naphthalene_VOC	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ calc (Zero)	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			20	20	50	100	100	100	20	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	20	50	50	50
NSW 2014 General Solid Waste CT1 (No Leaching)			650													0.8																						<50				10000
NSW 2014 General Solid Waste SCC1 (with leached)			650													10																						<50				10000
NSW 2014 Restricted Solid Waste CT2 (No Leaching)			2600													3.2																						<50				40000
NSW 2014 Restricted Solid Waste SCC2 (with leached)			2600													23																						<50				40000
Field ID	**Sampled Date**	**Lab Report Number**																																									
KW-B1_0.0-0.1	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	0.9	2	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	<20	<20	<50	220	<100	220	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	0.7	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	160	53	213
KW-B3_0.25-0.3	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	1.3	1.8	2.8	2.5	2.3	0.9	1.1	1.4	1.6	<0.5	2.7	<0.5	1.1	<0.5	1	2.9	16	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	57	<50	57
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
DUP04 (Duplicate)	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
SPLIT04 (Triplicate)	2/02/2023	35779	<25	<25	<50	<100	<100	<50	<25	<50	-	<0.1	<0.1	<0.1	0.1	0.15	<0.5	<0.5	<0.5	0.2	<0.1	0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.1	0.3	1.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<50	<100	<100	<50
KW-B4_0.1-0.3A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	0.5	0.5	1.2	0.9	0.6	<0.5	<0.5	<0.5	0.6	<0.5	1	<0.5	<0.5	<0.5	<0.5	1.2	3.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	<20	<20	<50	120	<100	120	<20	<50	<0.5	<0.5	<0.5	<0.5	0.8	0.9	1.8	1.5	1.3	1.3	0.7	1	0.9	<0.5	2.2	<0.5	0.5	<0.5	1.5	2.1	12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	91	<50	91
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	0.6	0.7	1.4	1.1	0.8	0.6	<0.5	<0.5	0.7	<0.5	1.3	<0.5	<0.5	<0.5	0.8	1.2	5.9	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.7	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	58	<50	58
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<20	<20	<50	<100	<100	<100	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.5	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	<50	<50	<50
DUP06 (Duplicate)	3/02/2023	962621	<20	<20	<50	110	<100	110	<20	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.8	1.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<20	59	61	120
SPLIT06 (Triplicate)	2/02/2023	35779	<25	<25	<50	<100	<100	<50	<25	<50	-	<0.1	<0.1	0.2	0.5	0.58	0.9	0.8	0.8	0.8	0.4	0.5	<0.1	1.3	<0.1	0.3	<0.1	0.8	1.2	6.6	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<50	<100	<100	<50

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile asbestos detected.Organic fibres detected.
#4 No trace asbestos detected.
#5 Organic fibres detected.

Table B Waste Classification Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

			VOC																																							
			1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Total MAH	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NSW 2014 General Solid Waste CT1 (No Leaching)									60			200	600	26	24				10						10				172		14							14			
NSW 2014 General Solid Waste SCC1 (with leached)									108			360	1080	46.8	43.2				18						18				310		25							25.2			
NSW 2014 Restricted Solid Waste CT2 (No Leaching)									240			800	2400	104	96				40						40				688		56							56			
NSW 2014 Restricted Solid Waste SCC2 (with leached)									432			1440	4320	187.2	172.8				72						72				1240		100							100.8			
Field ID	**Sampled Date**	**Lab Report Number**																																								
KW-B1_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	<0.5	<0.5	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
KW-B3_0.25-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUP04 (Duplicate)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<0.5	<0.5	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP06 (Duplicate)	3/02/2023	962621	<0.5	<0.5	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SPLIT06 (Triplicate)	2/02/2023	35779	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	-	<1	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile asbestos detected.Organic fibres detected.
#4 No trace asbestos detected.
#5 Organic fibres detected.

Table B Waste Classification Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

			VOC																											
			Trichloroethene	Vinyl Chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane	1,2-dibromoethane	Bromobenzene	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	4-Methyl-2-pentanone	Acetone	Methyl Ethyl Ketone	Carbon disulfide	Chlorinated Hydrocarbons EPAVic	Other Chlorinated Hydrocarbons EPAVic	Hexachlorobutadiene	Isopropylbenzene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NSW 2014 General Solid Waste CT1 (No Leaching)			10	4			86		150	2000		120											4000							
NSW 2014 General Solid Waste SCC1 (with leached)			18	7.2			155		270	3600		216											7200							
NSW 2014 Restricted Solid Waste CT2 (No Leaching)			40	16			344		600	8000		480											16000							
NSW 2014 Restricted Solid Waste SCC2 (with leached)			72	28.8			620		1080	14400		864											28800							
Field ID	**Sampled Date**	**Lab Report Number**																												
KW-B1_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.3-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.1-0.2	3/02/2023	962621	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
KW-B3_0.25-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUP04 (Duplicate)	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.2	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
DUP06 (Duplicate)	3/02/2023	962621	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5
SPLIT06 (Triplicate)	2/02/2023	35779	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile asbestos detected.Organic fibres detected.
#4 No trace asbestos detected.
#5 Organic fibres detected.

Table B Waste Classification Results
Project Number: 63879
Project Name: Broken Hill Hospital Redevelopment

			BTEX						Asbestos												
			Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Approximate Sample Mass	Mass ACM	Mass Asbestos in ACM	Asbestos from ACM in Soil	FA and AF Estimation	Mass FA	Mass Asbestos in FA	Mass AF	Mass asbestos in AF	Asbestos from FA & AF in Soil	Mass Asbestos in FA & AF	ACM - Comment
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	g	g	% (w/w)	g	g	g	g	g	% (w/w)	g	Comment
EQL			0.1	0.1	0.1	0.1	0.2	0.3												
NSW 2014 General Solid Waste CT1 (No Leaching)			10	288	600			1000												
NSW 2014 General Solid Waste SCC1 (with leached)			18	518	1080			1800												
NSW 2014 Restricted Solid Waste CT2 (No Leaching)			40	1152	2400			4000												
NSW 2014 Restricted Solid Waste SCC2 (with leached)			72	2073	4320			7200												
Field ID	**Sampled Date**	**Lab Report Number**																		
KW-B1_0.0-0.1	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B1_0.0-0.5 (Primary)	3/02/2023	962621	-	-	-	-	-	-	627	0	0	0	-	0	0	0	0	0	0	Nil
SPLIT05 (Triplicate)	2/02/2023	35779	-	-	-	-	-	-	722	-	-	0	0.0025	-	-	-	-	0	-	Nil
KW-B1_0.2-0.3	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B2_0.0-0.1	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	694	0	0	0	-	0	0	0	0	0	0	Nil
KW-B2_0.1-0.3	3/02/2023	962621	-	-	-	-	-	-	813	0	0	0	-	0	0	0	0	0	0	Nil
KW-B2_0.3-0.4	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	763	0	0	0	-	0	0	0	0	0	0	Nil
KW-B3_0.0-0.4A	3/02/2023	962621	-	-	-	-	-	-	4	0	0	0	-	0	0	0	0	0	0	Chrysotile asbestos detected
KW-B3_0.1-0.2	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.25-0.3	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.3-0.4	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B3_0.4-0.5	3/02/2023	967191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	1077	0	0	0	-	0	0	0	0	0	0	Nil
KW-B4_0.1-0.3 (Primary)	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	940	0	0	0	-	0	0	0	0	0	0	Nil
DUP04 (Duplicate)	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT04 (Triplicate)	2/02/2023	35779	<0.2	<0.5	<1	<1	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-
KW-B4_0.1-0.3A	3/02/2023	962621	-	-	-	-	-	-	4	0	0	0	-	0	0	0	0	0	0	-
KW-B5_0.1-0.2	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.1-0.4	3/02/2023	962621	-	-	-	-	-	-	696	0	0	0	-	0	0	0	0	0	0	Nil
KW-B5_0.4-0.5	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B5_0.4-1.0	3/02/2023	962621	-	-	-	-	-	-	558	0	0	0	-	0	0	0	0	0	0	Nil
KW-B6_0.0-0.1	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B6_0.5-0.6	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.0-0.6	3/02/2023	962621	-	-	-	-	-	-	1137	0	0	0	-	0	0	0	0	0	0	Nil
KW-B7_0.0-0.6A	3/02/2023	962621	-	-	-	-	-	-	16	0	0	0	-	0	0	0	0	0	0	Chrysotile asbestos detected
KW-B7_0.2-0.3	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B7_0.5-0.6	3/02/2023	962621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.1	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
KW-B8_0.0-0.4	3/02/2023	962621	-	-	-	-	-	-	811	0	0	0	-	0	0	0	0	0	0	Nil
KW-B8_0.2-0.4 (Primary)	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
DUP06 (Duplicate)	3/02/2023	962621	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	-	-	-	-	-	-	-	-	-	-
SPLIT06 (Triplicate)	2/02/2023	35779	<0.2	<0.5	<1	<1	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-

#1 No asbestos detected at the reporting limit of 0.001% w/w.*Organic fibre detected.No trace asbestos detected.
#2 No asbestos detected.Organic fibres detected.No trace asbestos detected.
#3 Chrysotile asbestos detected.Organic fibres detected.
#4 No trace asbestos detected.
#5 Organic fibres detected.

Table C: TCLP Analytical Data

Project Number: 63879

Project Name: Broken Hill Hospital Redevelopment

	Metals & Metalloids			PAH	Ionic Balance			
	Arsenic	Lead	Nickel	Benzo(a)pyrene	pH of Leaching Fluid	pH (after HCL)	pH (Final)	pH (Initial)
	mg/L	mg/L	mg/L	mg/L	pH Units	pH Units	pH Units	pH Units
EQL	0.01	0.01	0.01	0.0005	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste TCLP1 (leached)	5[#1]	5[#2]	2[#3]	0.04[#4]				
NSW 2014 Restricted Solid Waste TCLP2 (leached)	20	20	8	0.16[#4]				

Field ID	Sampled Date	Lab Report Number							
DUP04	3/02/2023	967191	-	0.3	-	-	5	1.6	6.1	8.7
KW-B1_0.2-03	3/02/2023	974595	-	0.07	-	-	5	1.3	6	8.9
KW-B3_0.1-0.2	3/02/2023	967191	-	5.9	<0.01	-	5	1.6	6.2	8.8
KW-B3_0.25-0.3	3/02/2023	967191	-	-	-	<0.0005	5	1.7	5.6	8.4
KW-B3_0.3-0.4	3/02/2023	974595	-	4.2	-	-	5	1.3	5.1	9.1
KW-B5_0.1-0.2	3/02/2023	967191	-	0.24	-	-	5	1.6	5	8.7
KW-B6_0.5-0.6	3/02/2023	974595	-	0.7	-	-	5	1.4	6.2	9
KW-B7_0.2-0.3	3/02/2023	967191	-	0.06	-	<0.0005	5	1.6	6.6	8.3
KW-B7_0.5-0.6	3/02/2023	974595	-	0.19	-	-	5	1.3	6.3	8.2
KW-B8_0.0-0.1	3/02/2023	974595	-	0.16	-	-	5	1.4	5.3	9.2
KW-B8_0.2-0.4	3/02/2023	974595	-	0.81	-	-	5	1.5	6.2	9.3

Appendix C Historical Borelogs (DSI, JBS&G 2023)

SOIL BOREHOLE KW-B1

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0.1 0.2 0.3 0.4 0.5		Fill	Fill - Gravelly SAND, brown dry, well graded, medium sand inclusions of cobbles, red brick, glass, plastic, wood (<10%), refusal on rock at 0.5 m	DR	KW-B1_0.00-0.10 KW-B1_0.20-0.30 KW-B1_0.40-0.50		No odour, staining or ACM. DUP/SPLIT05 collected from 0.0-0.5 mbgs.
		0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5			Termination Depth at: 0.50 m.				End of Hole @ 0.5 mbgs. Refusal on rock, presumed natural.

SOIL BOREHOLE KW-B2

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
BE		0.1		Fill	Fill - ROADBASE, grey dry, medium gravel	DR	KW-B2_0.00-0.10		No odour, staining or ACM. 10L AQ completed from 0.0-0.1 mbgs
		0.2		Fill	Fill - Gravelly SAND, brown dry, well graded, medium sand inclusions of cobbles (<10%)	DR	KW-B2_0.10-0.30		No odour, staining or ACM. 20L AQ completed from 0.1-0.3 mbgs
		0.3		SG	Natural - Gravelly SAND, red/yellow/brown dry, well graded, medium sand inclusions cobbles (<10%), refusal on rock at 0.4 m	DR	KW-B2_0.30-0.40		No odour, staining or ACM
		0.4			Termination Depth at: 0.40 m.				End of Hole @ 0.4 mbgs. Refusal on rock, presumed natural.
		0.5							
		0.6							
		0.7							
		0.8							
		0.9							
		1							
		1.1							
		1.2							
		1.3							
		1.4							
		1.5							
		1.6							
		1.7							
		1.8							
		1.9							
		2							
		2.1							
		2.2							
		2.3							
		2.4							
		2.5							

SOIL BOREHOLE KW-B3

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
BE		0.1		Fill	Fill - ROADBASE, grey dry, medium gravel	DR	KW-B3_0.00-0.10		No odour, staining or ACM
		0.2		Fill	Fill - SAND, red/brown damp, well graded, medium sand inclusions of ceramic pipe, concrete pieces, red brick fragments, tile, plastic, glass, slag and charcoal	DP	KW-B3_0.10-0.20		No odour or staining. 2x 20L AQ completed from 0.0-0.4 mbgs 1 pc PACM found.
		0.3					KW-B3_0.25-0.30		
		0.4					KW-B3_0.30-0.40		
		0.5		SG	Natural - Gravelly SAND, yellow/brown dry, well graded, medium sand inclusions of cobbles and fine gravels (<10%)	DR	KW-B3_0.40-0.50		No odour, staining or ACM
		0.6			Termination Depth at: 0.50 m.				End of Hole @ 0.5 mbgs. Refusal on rock, presumed natural.
		0.7							
		0.8							
		0.9							
		1							
		1.1							
		1.2							
		1.3							
		1.4							
		1.5							
		1.6							
		1.7							
		1.8							
		1.9							
		2							
		2.1							
		2.2							
		2.3							
		2.4							
		2.5							

SOIL BOREHOLE KW-B4

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
BE		0.1		Fill	Fill - ROADBASE, grey dry, medium gravel	DR	KW-B4_0.00-0.10		No odour, staining or ACM
		0.2		Fill	Fill - SAND, red/brown dry, well graded, medium sand inclusions of clay fines (<10%) and trace tile, red brick and cobbles (<5%)	DR	KW-B4_0.10-0.30		No odour, staining or ACM. DUP/SPLIT04 collected from 0.1-0.3 mbgs.
		0.3		SW	Natural - SAND, red/brown dry, well graded, medium sand inclusions of clay fines (<10%)	DR	KW-B4_0.30-0.40		No odour, staining or ACM
		0.4							
		0.5		SG	Natural - SAND dry, well graded, medium sand inclusions of cobbles (<10%), refusal on rock at 0.7 m	DR	KW-B4_0.50-0.70		No odour, staining or ACM
		0.6							
		0.7			Termination Depth at: 0.70 m.				End of Hole @ 0.7 mbgs at programmed depth.
		0.8							
		0.9							
		1							
		1.1							
		1.2							
		1.3							
		1.4							
		1.5							
		1.6							
		1.7							
		1.8							
		1.9							
		2							
		2.1							
		2.2							
		2.3							
		2.4							
		2.5							

SOIL BOREHOLE KW-B5

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD SFA

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0.1		Fill	Fill - SAND, red/brown damp, well graded, fine sand grass surface (0.0 - 0.1 m)	DP	KW-B5_0.10-0.20		No odour, staining or ACM. AQ completed from 0.1-0.4 mbgs
		0.4		Fill	Fill - Gravelly SAND, red/yellow/brown damp, well graded, fine sand inclusions of cobbles and coarse sand (<10%)	DP	KW-B5_0.40-0.50 KW-B5_0.90-1.00		No odour, staining or ACM. AQ completed from 0.4-1.0 mbgs
		1			Termination Depth at: 1.00 m.				End of Hole @ 1.0 mbgs. Refusal on rock, presumed natural.

SOIL BOREHOLE KW-B6

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
SFA		0.1 0.2 0.3 0.4 0.5 0.6		Fill	Fill - Gravelly SAND, brown dry, well graded, medium sand inclusions of cobbles, red brick, glass, plastic, wood (<10%), refusal on rock at 0.6 m	DR	KW-B6_0.00-0.10 KW-B6_0.20-0.30 KW-B6_0.50-0.60		No odour, staining or ACM
		0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5			Termination Depth at: 0.60 m.				End of Hole @ 0.6 mbgs. Refusal on rock, presumed natural.

SOIL BOREHOLE KW-B7

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
BE		0.1 0.2 0.3 0.4 0.5 0.6		Fill	Fill - Gravelly SAND, brown dry, well graded, medium sand inclusions of cobbles, red brick, glass, plastic, wood (<10%), refusal on rock at 0.6 m	DR	KW-B7_0.00-0.10 KW-B7_0.20-0.30 KW-B7_0.50-0.60		No odour or staining. 20L AQ completed. 10 pcs PACM found.
		0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5			Termination Depth at: 0.60 m.				End of Hole @ 0.6 mbgs. Refusal on rock, presumed natural.

SOIL BOREHOLE KW-B8

PROJECT NUMBER 63879
PROJECT NAME Broken Hill Hospital Redevelopment
CLIENT Health Infrastructure
ADDRESS 176 Thomas Street, Broken Hill, NSW

DRILLING COMPANY GTE
DRILLING DATE 03-Feb-23
DRILL RIG Excavator
DRILLING METHOD Test Pit

EASTING N/A
NORTHING N/A
COORD SYS GDA94_MGA_zone_54
COORD SOURCE
LOGGED BY AJ

COMMENTS

Drilling Method	Water (m bgl)	Depth (m bgl)	Graphic Log	Lithological Class	Lithological Description	Moisture	Samples	PID	Additional Observations
BE		0.1 0.2 0.3 0.4		Fill	Fill - SAND, brown damp, well graded, medium sand inclusions of medium gravel, clay fines, red brick fragments, glass, ceramic tile and pipe (<10%), refusal on rock at 0.4 m	DP	KW-B8_0.00-0.10 KW-B8_0.20-0.40		No odour, staining or ACM. DUP/SPLIT06 collected from 0.2-0.4 mbgs.
		0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5			Termination Depth at: 0.40 m.				End of Hole @ 0.4 mbgs. Refusal on rock, presumed natural.

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