

Procedure	Details
<u>Step 3:</u> pH Testing and Neutralisation	Water pumped from the excavation should be placed in a portable tank, or appropriate holding facility, where samples can be obtained for testing. The water should be in the pH range of 6.5 to 8.5 (<i>Schedule 5 of Protection of the Environment Operations (General) Regulation 2009</i>¹⁸). If the pH is outside of this range, treatment will be necessary prior to disposal. Based on the disposal option chosen for the development, additional screening for contaminants may be required by the relevant authorities prior to disposal.
<u>Step 4:</u> On-going groundwater monitoring	In the event that extended pumping of water is necessary during the construction period, the quality of the groundwater should be monitored on a regular basis over the entire construction period. The pH should be measured and recorded on a regular basis. Immediate advice is to be sought from an experienced consultant if the pH at any location is not within 10% of the initial pH at the commencement of pumping. If required, corrective action should be taken as soon as possible. Laboratory analysis will be required on water samples as part of the corrective action to assess the quantity of neutralising agents required if treatment is necessary.

8.4 Contingency Plan

In the event the results of soil neutralisation or groundwater monitoring tests indicate a significant change in acidic conditions, the contingency plan should be implemented.

If soil monitoring indicates the presence of significantly more acidic material than expected or water monitoring indicates that the pH of the pumped water has become significantly more acidic, all excavation works should be placed on hold until further action is taken to limit the oxidation of PASS in the development area. Contingency works will be undertaken as follows:

- The depth to groundwater (i.e. the extent of de-watering) in the area of excavation will be measured;
- The pH of soils exposed to oxygen within the excavation will be measured to establish the source of the acidic conditions;
- Material found to be acidic will be excavated and neutralised in accordance with the methods presented in **Section 8.2.2**;
- Where suitable, in-place treatment involving lime addition and mixing may be adopted; and
- In the event unacceptable acidic levels are recorded by the groundwater monitoring, installation of a neutralisation trench (or similar) may be required to intercept and treat acidic groundwater prior to discharge. This could consist of an excavation filled with a sand/lime mixture designed to filter, intercept and treat groundwater flowing across the trench.

¹⁸ Schedule 5 Prescribed matter for the definition of water pollution, *Protection of Environment Operations (General) Regulation*, NSW Government, 2009, page 124 (POEO Regulation 2009)

8.5 Disposal Information

The costs associated with the treatment and off-site disposal of PASS can be significant and may affect project viability. These costs should be assessed at an early stage of the project to avoid significant future unexpected additional costs.

Section 143 of the POEO Act1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner. EIS accepts no liability whatsoever for the unlawful disposal of any waste from any site.

9 LIMITATIONS

The report limitations are outlined below:

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

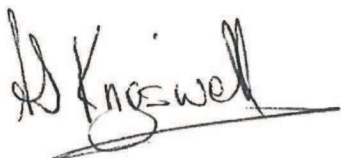
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose;
- Copyright in this report is the property of EIS. EIS has used a degree of care, skill and diligence normally exercised by consulting professionals in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report;
- If the client, or any person, provides a copy of this report to any third party, such third party must not rely on this report except with the express written consent of EIS; and
- Any third party who seeks to rely on this report without the express written consent of EIS does so entirely at their own risk and to the fullest extent permitted by law, EIS accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

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

Kind Regards



Rob Muller
Senior Environmental Scientist



Adrian Kingswell
Principal

Attachments:

- 1) Site Photos
- 2) Report Figures
- 3) Report Tables
- 4) Appendices

SITE PHOTOGRAPHS



Plate 1: the two brick buildings, car port, driveway and landscaped areas, viewed from the north of the site facing south.



Plate 2: drilling BH4 in the south-western section of the site.



Plate 3: Waradiel Creek, located to the east of the site, which is on the right of the picture.



Plate 4: the north-western section of the site, viewed facing south.

REPORT FIGURES



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

Title:

SITE LOCATION PLAN

Project:

177 RUSSEL AVENUE,
DOLLS POINT, NSW

Report No:

E29353KM

Figure No:

1

ENVIRONMENTAL INVESTIGATION SERVICES

EIS

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



REPORT TABLES