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99 Walker Street  
NORTH SYDNEY NSW 2060

Our ref: 22/17312  
115188  
Your ref:

Dear David

## Newcastle Gasworks (Clyde Street) Remediation Project Remediation scope changes for excavation of hotspot areas 1 to 3

### 1 Introduction

GHD Pty Ltd (GHD) was engaged by Jemena Gas Networks (NSW) Ltd (Jemena) to provide a letter to describe remediation scope changes related to hotspot area removal previously proposed as part of the Newcastle Gasworks (Clyde Street) remediation project. The former Newcastle Gasworks is located at 1 Chatham Road, Hamilton North, NSW (the site).

The Remedial Action Plan (RAP) prepared by JBS&G dated 21 November 2017 (JBS&G, 2017)<sup>1</sup> nominated three hotspot areas (Areas 1 to 3) for excavation and relocation to hydraulically down gradient of the low permeability barrier wall proposed to be constructed as part of the remedial scope. The characteristics of the three hotspot areas, as described in the RAP, are summarised in Table 1-1.

**Table 1-1 Hotspot area description**

Hotspot area	Location	Impact depth (JBS&G, 2017) (m)	Total estimated volume (JBS&G, 2017) (m <sup>3</sup> )
1	South western portion (north of former site residence)	2.55	550
2	Central western portion in location of former naphtha tank (1974)	N/A (surface tar only)	170
3	North western portion adjacent corner of Clyde and Chatham Streets	3.6	245

GHD completed additional assessment of these hotspot areas which was documented in the following letter report (GHD, 2018):

- *Soil Testing of Hotspot Areas, Newcastle Gasworks (Clyde Street) Remediation Project*, Letter dated 23 February 2018, Final (Rev 2) Ref - 115087.

<sup>1</sup> JBS&G Australia Pty Ltd. *Stage 2 Remedial Action Plan, Former Newcastle Gasworks, 1 Chatham Road, Hamilton North, NSW*. 21 November 2017. (Document Reference 51161/103834 Rev 4).

The following conclusions were made as a result of the assessment:

- Area 1 – Comparison of previous cyanide results in this area to updated guidance criteria (NEPC, 2013) indicates that the results were below the adopted land use criteria and hotspot removal is therefore not considered to be warranted. The testpitting works undertaken by GHD in this assessment and previously by JBS&G has delineated previously identified cyanide impacts. There was no evidence of cyanide contamination requiring hotspot removal and further assessment is not considered necessary.
- Area 2 – The bituminous/tar seal observed on cemented sand observed in this area is considered to be associated with the former naphtha tank base. This material is not considered to constitute a hotspot area requiring removal as part of remediation works. Further assessment is not considered necessary as the location is well defined and aligns with the survey plan provided in URS (2004) and the former location of the naphtha tank (based on site aerial photographs).
- Area 3 – There was no evidence of tarry material in this area or contamination requiring hotspot removal. Further assessment is not considered necessary as the previous location at SKMTP5 (SKM, 2013) was identified on-site based on visual assessment and landmarks on-site. Therefore delineation around this location was considered to have been complete.

The conclusions from the above letter indicated that there was no evidence of contamination in hotspot areas 1 to 3 requiring removal and excavation as part of the planned site remediation works.

It was recommended that excavation of these hotspot areas be removed from the proposed scope for site remediation works as described in the RAP (JBS&G, 2017).

### **1.1 Auditor endorsement of removing the hotspot areas from the remediation scope**

The site auditor (James Davis from Enviroview) reviewed the additional assessment letter (GHD, 2018) and provided interim auditor advice on 23 February 2018 (Ref: *Site Audit Interim Advice 30*, IA 0301-1526\_30) agreeing with the recommendations made. Specifically:

*“The findings of this report affect the assumptions made in the development of the scope of work for the Remediation Action Plan that was prepared by JBS&G. The recommendation is that the remediation areas identified as Area 1, Area 2 and Area 3 do not require remediation and should be removed from the remediation scope. The Site Auditor agrees with the recommendations made and finds that these are supported by the assessment work conducted.”*

Therefore as the auditor has endorsed GHD’s recommendation that hotspot excavation be removed from the RAP, the purpose of this letter is to describe the specific changes to the remediation scope associated with respect to omitting the excavation of these hotspot areas.

## 2 Remediation scope changes related to hotspot areas

The table below indicates the sections in the RAP (JBS&G, 2017) referencing the hotspot areas which are to be omitted from the remediation scope and are considered to be redundant as a result.

**Table 2-1 RAP references related to hotspot areas - for omission from remediation scope**

Section, page of RAP	RAP text to be omitted (with reference to hotspot areas) or GHD comment/description
<b>Executive Summary –</b> Selection of Preferred Remediation Strategy to Address MO Requirements Paragraph 4, point 3	<i>“Excavation of three areas of residual shallow soil impact (labelled 1 to 3, Figure 8) and retention of this material on the site within the area bound by the subterranean barrier wall alignment and beneath the LPBL.”</i>
<b>Section 5.2 –</b> Preferred groundwater remediation strategy Page 51, last paragraph of section	<i>“In addition to the elements listed above for remediation by hydraulic control the preferred strategy would also require excavation of three hotspot areas (Areas 1 to 3) as shown on Figure 8. Material excavated from these three areas will be capable of being retained on site below the low permeability barrier layer.”</i>
<b>Section 5.3 –</b> Nominated Groundwater Remediation Strategy and Regulatory Compliance Paragraph 1, point 3	<i>“The migrating NAPL mass adjoining the downgradient boundary will be excavated in three hotspot areas (labelled 1 to 3 on Figure 8) to address aesthetic impacts associated with groundwater seepage into Styx Creek and potential ecological risks to Styx Creek/Throsby Creek and the Hunter River;”</i>
<b>Section 6 –</b> Consideration of NAPL, Fill and Soil Remediation Options Paragraph 3, point 1	<i>“Excavation of three areas of residual shallow soil impact (labelled 1 to 3 Figure 8) and retention of this material onsite within the barrier wall area and under the barrier layer”</i>
<b>Section 7.1 -</b> Preferred Remediation Option Overview Paragraph 5, point 3	<i>“Excavation of three areas of shallow residual soil impact (labelled 1 to 3 Figure 8) and retention of this material onsite within the barrier wall area and under the barrier layer/capping layer.”</i>
<b>Section 7.4 -</b> Excavation and Onsite Retention of Hot Spot Areas 1 to 3	<i>“Material excavated from residual soil impact, including NAPL, areas as shown in Figure 8 and summarised in Table 7.1 below will be retained onsite within the barrier wall alignment and under the barrier layer. Process for excavation and retention of this material is summarised as follows (sampling requirements will be detailed within the VSAQP, Section 9.2 of this report and subject to auditor approval);</i> <ul style="list-style-type: none"> <li>• <i>Each excavation area will be marked out as directed by the Remediation/Environmental Consultant, and the Remediation Contractor will secure the areas and put in place environmental controls as necessary prior to excavation;</i></li> <li>• <i>The Remediation Contractor will establish a stockpile storage on the site for placement of excavated materials until such time as results</i></li> </ul>

Section, page of RAP	RAP text to be omitted (with reference to hotspot areas) or GHD comment/description
	<p><i>of characterisation sampling have been obtained and remediation works have progressed to enable permanent placement of the material beneath the LPBL;</i></p> <ul style="list-style-type: none"> <li>• <i>The Remediation Contractor will provide appropriate machinery and suitably qualified operators and under guidance from the Remediation/Environmental Consultant) will chase out soil and NAPL impacts within each marked area and stockpile the material within the designated stockpile storage area(s). Nominally it is anticipated that the excavations will extend down to the depth of free groundwater within each hotspot area;</i></li> <li>• <i>The Remediation Contractor will assist the Remediation/Environmental Consultant (through provision of appropriate machinery and suitably qualified operators) to collect any samples necessary to validate the removal of material from each area, and to characterise excavated material placed in stockpile storage;</i></li> <li>• <i>The Remediation Contractor will secure the excavation areas and maintain appropriate environmental controls to meet CEMP and REMP requirements until such time as advised by the Remediation/Environmental Consultant that the areas can be reinstated with placement of appropriate material;</i></li> <li>• <i>Once the Remediation Consultant has indicated that the excavation areas can be reinstated, the Remediation Contractor will survey the final outline and depth of each area, prior to reinstatement by placement using appropriate material (as guided by the Remediation/Environmental Consultant and the RAP, VSAQP and compacting as necessary to meet Jemena design requirements; and</i></li> <li>• <i>In addition to surveying the final outline and base of each excavation area, as above, the Remediation Contractor will also survey the final elevation following reinstatement.”</i></li> </ul>
<b>Table 7.1:</b> Hotspot Volume Summary	<b>GHD comment:</b> Hotspot volume summary Table 7.1 to be omitted
<b>Section 8.1.1 -</b> Remediation Extent Ecological Requirements	<i>“In addition to the elements listed above for remediation by hydraulic control the preferred strategy would also require excavation of three hotspot areas (Areas 1 to 3) as shown on Figure 8. Material excavated from these three areas will be capable of being retained on site below the low permeability barrier layer.”</i>
<b>Section 14 –</b> Conclusions Paragraph 5, point 3	<i>“Excavation of three areas of residual soil impact (labelled 1 to 3 on Figure 8) and retention of this material onsite within the barrier wall area and under the barrier layer/capping layer.”</i>
<b>Section 14 –</b> Conclusions Paragraph 8	<i>“The preferred remediation strategy of hydraulic control and physical barrier in conjunction with excavation of hotspots in three areas is consistent with regulatory guidance given.”</i>

Section, page of RAP	RAP text to be omitted (with reference to hotspot areas) or GHD comment/description
<b>Figure 6A</b> – Estimated Extent of NAPL 0.0-2.0 mbgs	<b>GHD comment:</b> Hotspot Area 2 (TP15) with shallow NAPL identified in the figure to be omitted.
<b>Figure 6C</b> – Estimated Extent of NAPL in Sub-Surface above the Water Table	<b>GHD comment:</b> Hotspot Area 2 (TP15) with NAPL above the water table identified in the figure to be omitted.
<b>Figure 8</b> – Proposed Remedial Extent	<b>GHD comment:</b> Hotspot Areas 1 to 3 identified in the figure to be omitted.

### 3 Conclusions

The auditor has endorsed the recommendation from GHD (2018) to remove hotspot areas 1 to 3 from the remediation scope. Therefore where there are references in the RAP (JBS&G, 2017) related to hotspot areas (as indicated in Table 2-1), these items should be omitted from the remediation scope.

Sincerely  
GHD Pty Ltd



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### 4 References

- Enviroview. *Site Audit Interim Advice 30 – Review of GHD Newcastle Gasworks (Clyde Street) Remediation Project Soil Testing and Hotspot Areas Rev 2*, Letter dated 23 February 2018, Ref: IA 0301-1526\_30.
- GHD (2018). *Soil Testing of Hotspot Areas, Newcastle Gasworks (Clyde Street) Remediation Project*, Letter dated 23 February 2018, Final (Rev 2) Ref - 115087.
- JBS&G (2017). *Stage 2 Remedial Action Plan, Former Newcastle Gasworks 1 Chatham Road, Hamilton North, NSW*, 21 November 2017, (Rev 4).
- SKM (2013). *Environmental Site Assessment – Former Newcastle Gasworks, Clyde Street, Hamilton*, 30 August 2013, (Rev 4).
- URS (2004). *Supplementary Soil Investigation and Calculation of Remediation Volumes, Clyde Street, Newcastle 2*, 11 February 2004.

## **5 Limitations**

This report has been prepared by GHD for Jemena and may only be used and relied on by Jemena for the purpose agreed between GHD and Jemena as set out in this report.

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The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described throughout this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Where data supplied by Jemena or other external sources, including previous site investigation data and site plans, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by GHD for incomplete or inaccurate data supplied by others.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

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