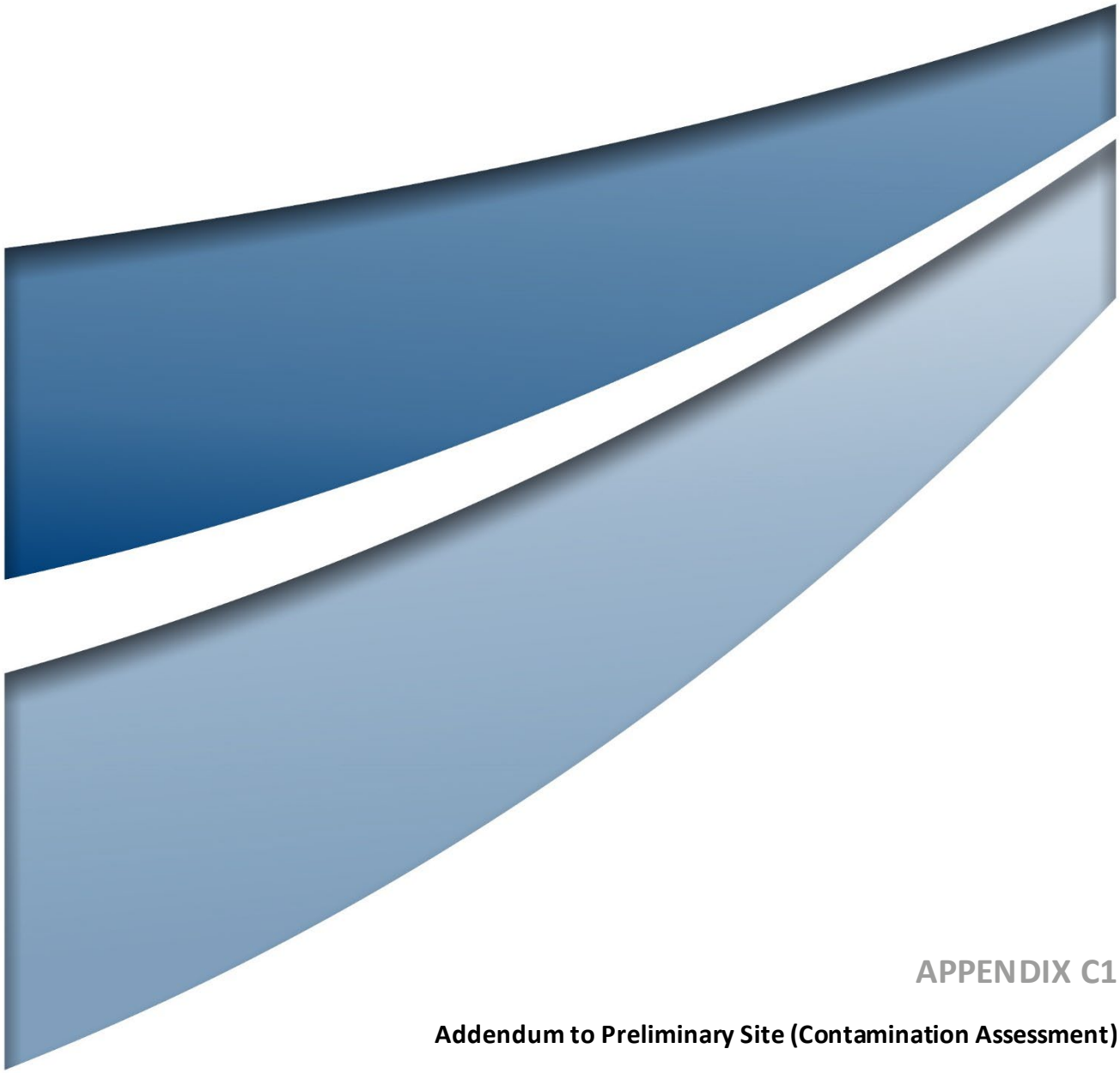


APPENDIX C1

Addendum to Preliminary Site (Contamination Assessment)

RCA ref 15737-403/1
Client ref 21450

21 September 2022

Umwelt (Australia) Pty Limited
75 York Street
Teralba NSW 2284

Attention: Marion O'Neil / Lachlan Sweeny

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Noise & Vibration
Occupational Hygiene

ADDENDUM TO
PRELIMINARY SITE (CONTAMINATION) ASSESSMENT
KURRI KURRI LATERAL PIPELINE PROJECT, LENAGHAN TO KURRI KURRI

1 INTRODUCTION

RCA has previously undertaken a preliminary site (contamination) assessment of the Kurri Kurri Lateral Pipeline Project (the Project) which is proposed to be located between the existing Sydney to Newcastle Pipeline (SNP[1]) at Lenaghan and the proposed Hunter Power Project (HPP) situated at Kurri Kurri. Limited constraints associated with regards to contamination were identified such that the Project footprint was considered suitable for its intended use with the:

- Removal of waste as identified or where otherwise encountered.
- Management of acid sulfate soils.
- Management of encountered or extracted groundwater.

Furthermore, an unexpected finds protocol was recommended and it was noted that a formal management plan would have to be implemented for the construction on two (2) parcels of land associated with the Project; if the intended remedial works were not completed at the time of the pipeline construction the management plan would have to be prepared specifically for the Project works.

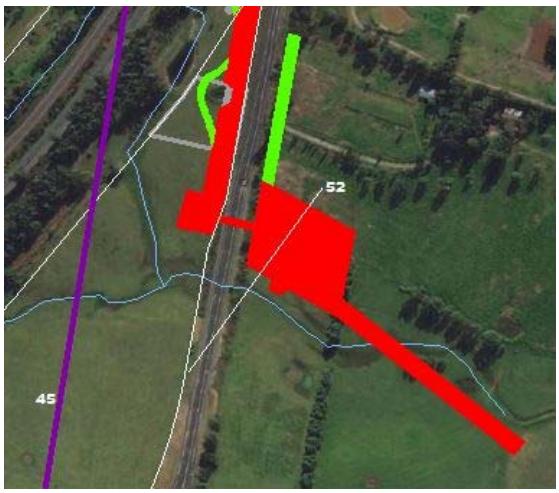
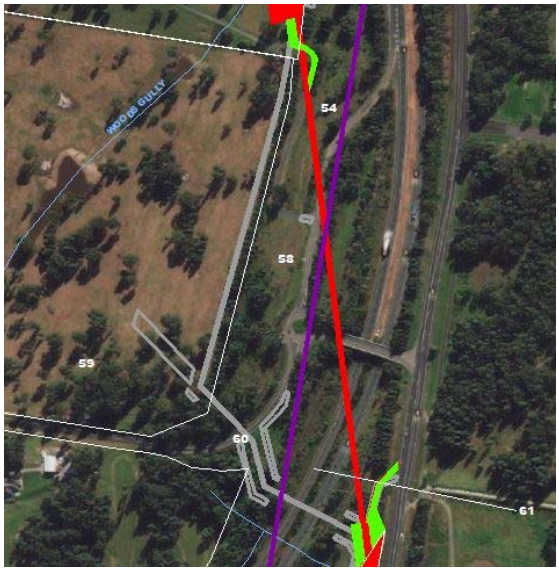
Since the completion of the report, the Project footprint has been altered in a number of areas. This addendum reports the findings of supplementary consideration of the potential presence of contamination where the Project footprint has been revised.

[1] Formerly referred to as the Plumpton to Hexham Northern Trunk.

2 DISCUSSION REGARDING PROJECT FOOTPRINT CHANGES

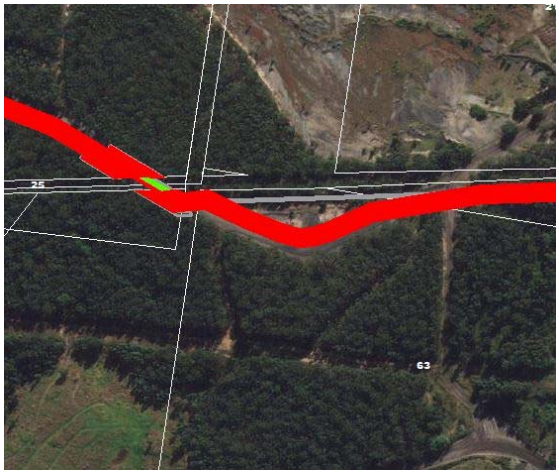
There are nine (9) areas where the Project footprint has been altered; the full footprint is presented on the attached drawings and the implications of the changes in relation to the conclusions of the previous assessment are specifically discussed in **Table 1** below.

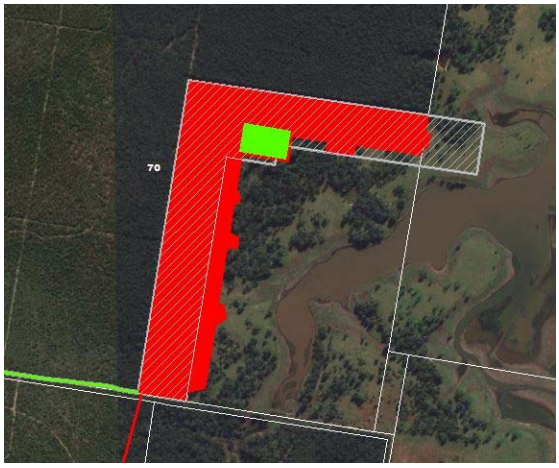
Table 1 *Comparison of Previous Assessment and Currently Proposed Footprint*

 The JGN offtake facility is now proposed on the eastern side of Lenaghans Drive on Parcel 64.	This area was not included in the previous assessment report however was sighted during the inspection of the Project footprint. The historical aerial photographs, refer **Table 2**, indicate that the area was cleared in 1954, presumed for rural residential use. There is no available 1966 photograph however the area appears unchanged in 1975. A number of structures, presumed residences and sheds, were constructed by 1987 along with dams and the area remains generally the same until current. As such it is considered that there is no activity that is likely give rise to contamination inconsistent with the findings of the previous assessment. It is noted that, while the area is outside of the mapped risk area, an acid sulfate soil assessment is at time of writing been undertaken and includes consideration of contamination in soil samples
 The Project will now utilise horizontal directional drilling (HDD) from the eastern side of the M1 (Pacific Motorway) to the western side at the approximate boundary of Parcels 56a and 56b.	This area was considered in the previous assessment. There was no known contamination in the area with the exception of some minor refuse at the surface. As such it is considered that no further assessment or management is required for this section of revised Project footprint.

 The Project footprint may[2] now extend further west by approximately 500m before turning north for approximately 800m and then correcting east back to the original Project footprint.	This area was not specifically considered in the previous assessment however portions were sighted. Remediation is proposed for Parcel 10 and comprises the excavation of contaminated material with it to then be reburied in a designated location, remediated such that it was suitable for use on site or removed from site. The revised Project footprint will potentially encounter other areas of concern such as a workshop and filled sediment ponds. While it is considered that no further assessment is required for this section of revised Project footprint, management meaures may be specified as part of the implemented remedial strategy at the site. In the event that construction is undertaken prior to the completion of remediation, a management plan for the pipeline construction works must be prepared, taking into account the potential contamination. The revised Project footprint is considered more likely to encounter additional geotechnical and contamination issues compared to the previous Project footprint.
 The proposed Project footprint has shifted west by approximately 55m into an area of previous mining (>2001 to recent). The proposed footprint is situated to the west of the Chichester Trunk Gravity Main (CTGM) at a more southern point of the footprint.	This area was not specifically considered in the previous assessment however portions were sighted. The revised Project footprint will potentially encounter land which has been subject to mining from sometime between 2001 and 2010 until recently. The current aerial indicates that the land may have been rehabilitated and as such is likely to be fill with potential geotechnical considerations. Depending on the source of the fill, there may be contamination present.

[2] RCA has been advised that both options remain under consideration.

 The Project footprint has moved approximately 40m to the south in Parcel 63. It is understood that this deviation is intended to avoid an area of fill: RCA's mapping indicates that the proposed footprint remains in the fill area however note that RCA's mapping was not based on survey data.	This area was considered in the previous assessment. The land may have been rehabilitated and as such is likely to be fill with potential geotechnical constraints for the construction. Depending on the source of the fill, there may be contamination present. This assessment is unchanged from the previous assessment, noting that likelihood of encountering fill is likely to be lessened.
 The Project footprint has moved approximately 183m to the north in Parcel 9. It is understood that this deviation is intended to avoid conflicts with potential residential land use at some stage in the future.	This area was not specifically considered in the previous assessment. Historical aerial photographs, refer **Table 3** indicate that the area was partially cleared, presumed for rural residential use, with the remainder of the area vegetated with trees. There is a vehicle track generally consistent with the current access roads. Structures are present in 1966 with some further present in 1975 at which time mining to the south and north are visible. The 1987 aerial indicates that mining activities present within close proximity to the north of the site; the land appears to have been rehabilitated by 1993. As such is likely to be fill with potential geotechnical constraints for the construction. Depending on the source of the fill, there may be contamination present.

 The Project footprint has moved approximately 155m to the north in the first section to the west of Buchanan Road.	This area was considered in the previous assessment to have been subject to mining and filling. Historical aerial photographs, refer **Table 4**, indicate that the area to the west of Buchanan Road was partially cleared in 1954 with indications of waterway generally consistent with its current location; there is mining infrastructure across the road to the east. By 1966 there appears to be two (2) dams as well as a material stockpile and significant infrastructure across Buchanan Road. The extent of mining west of Buchanan Road is generally the same in 1975 however one of the dams looks to be partially backfilled and the stockpile redistributed across the area. The grading of the area is generally complete and there appears to have been some filling within the second dam in 1987; almost all infrastructure to the east of Buchanan Road has been removed. There doesn't appear to be any changes in 1993 except for filling of the dam which may be incidental rather than targeted. The site appears the same as 1993 in both 1998 and 2001 except for the water level in the dam. As such the eastern portion of the revised footprint may encounter fill with potential geotechnical constraints for the construction. Depending on the source of the fill, there may be contamination present.
 The Project footprint of the storage pipeline has changed shape slightly.	This area was considered in the previous assessment. There was no known contamination in the area with the exception of actual acid sulfate soils identified by the previous assessment to the east of the former storage pipeline area. The revised Project footprint reduces the potential for encountering these soils. As such it is not considered that further assessment or management is required for this section of revised footprint.

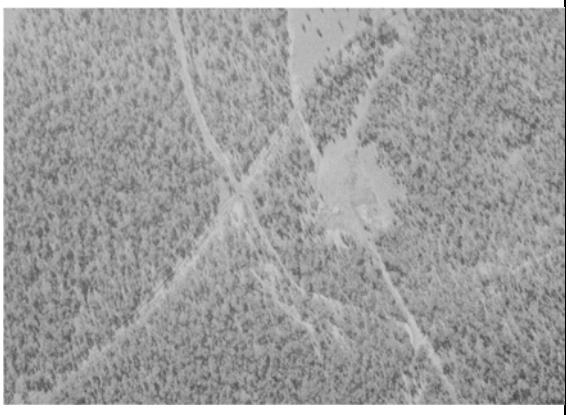
 The Project footprint includes a HDD connection through Parcel 71 to the Storage Pipeline. It is noted that this isn't a revision of the Project footprint, rather was omitted from the previous assessment.	This area was not specifically considered in the previous assessment. Review of the aerial photographs indicates that it has been generally undisturbed bushland and has been presumed to have been used as buffer land around the former smelter. No mention of the need to remediate this area is documented in the remedial plans for the smelter. Blackmans Creek runs through the site and there may have some agricultural use based on the 1954 aerial photograph noting that the smelter was constructed after 1966. A portion of the Project footprint is mapped as having an acid sulfate soil risk. As such it is considered that this revised footprint portion may require management for acid sulfate soils however no contamination is anticipated.

Table 2 *Historical Aerial Review of Modified Project footprint, Parcel 64*

	Nil included in previous assessment report
1954	**1966**
	
1975	**1987**

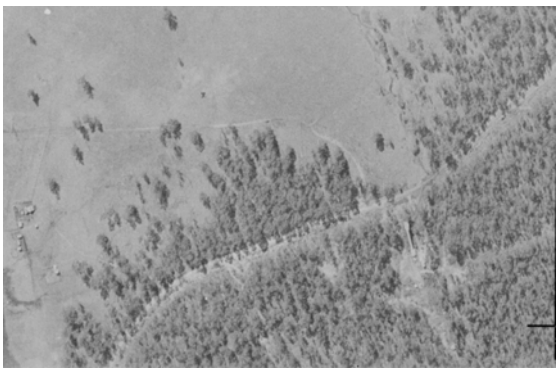
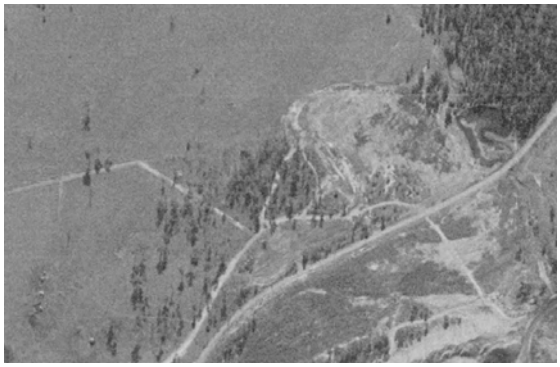
	
1993	**1998**
	
2001	**2022**

Table 3 *Historical Aerial Review Parcel 26, 24 and 9 to East of Buchanan Rd*

	
1954	**1966**

	
1975	**1987**
	
1993	**1998**
	
2001	**2022**

Table 4 *Historical Aerial Review of Parcel 9 West of Buchanan Rd*

	
1954	**1966**
	
1975	**1987**
	
1993	**1998**
	
2001	**2022**

3 CONCLUSIONS

The assessment findings of the modified Project footprint adjacent the M1 Pacific Motorway and within Parcel 70 are considered to be consistent with the previous findings; no further recommendations in regards to contamination or acid sulfate soil are considered necessary.

The modified footprint within Parcels 63 and 64 are not considered to have a higher potential than the original footprint to encounter contamination. Fill which may present potential geotechnical constraints to the construction process and, depending on the source and contamination status of the fill, may present contamination issues, is considered less likely to be encountered however the possibility cannot be discounted in Parcel 63. The potential to encounter acid sulfate soil in Parcel 64 is considered low however is, along with the potential to encounter soil contamination, the subject of current assessment.

The modified footprint is considered to have a higher potential than the original footprint to encounter fill to the east of Buchanan Road and a similar potential to the west of Buchanan Road which may present potential geotechnical constraints to the construction process and, depending on the source and contamination status of the fill, may present contamination issues. This is not inconsistent with the findings of the previous assessment report and as such the conclusions are considered to remain relevant. No further works are recommended to assess the suitability of the site for the proposed works although it is noted that it may be advantageous for programming of the works to undertake an assessment in the areas in the vicinity of Buchanan Road regarding the potential for fill to be present within the footprint.

The modified footprint, should it be selected over the original footprint, is considered to have a higher potential to encounter fill, waste and contaminated areas within Parcel 10. This Parcel is subject to intended remediation which should address the waste and contamination issues such that no further works are recommended to assess the suitability of the site for the proposed works. It is noted that there may be a management plan prepared as part of the remedial works which may impose conditions on the proposed construction works or, if construction is undertaken prior to the completion of remediation of the Parcel, a management plan will be required to outline the measures required for the protection of human health and the environment during construction. It is further noted that it may be advantageous for programming of the construction works to undertake an earlier assessment of the suspected fill areas in order to understand the potential constraints.

The modified footprint with Parcel 71 has the potential to encounter acid sulfate soils which can be managed by the previously recommended acid sulfate soil management plan. The potential for contamination is considered low such that the implementation of an unexpected finds protocol as recommended would be considered sufficient management.

Yours faithfully
RCA AUSTRALIA

Fiona Brooker
Manager of Environmental Services (BEng(Env))

ATTACHMENTS

Drawing 1 – Site Locality and Layout Plan

Drawing 2a – Potential Contamination and Acid Sulfate Soil Impacts (eastern portion)

Drawing 2b – Potential Contamination and Acid Sulfate Soil Impacts (central portion)

Drawing 2c – Potential Contamination and Acid Sulfate Soil Impacts (western portion)

Storage pipeline area
Gillieston Heights
Cessnock Road
Ashtonfield
Louth Park
Mount Vincent Road
Cliftleigh
Main Road
Loxford
Heddon Greta
Weakleys Drive
Kurri Kurri
Buchanan Road
Hunter Expressway
Buchanan
John Renshaw Drive
Black Hill

Locality Plan
N.T.S.
EPL Sites
Notified Sites

LEGEND

- Kurri Kurri lateral transmission pipeline
- Workspace areas/access tracks
- Previous alignment components
- Ironbark Colliery Mine Lease

NOTES:
1. Aerial image taken from ArcGis Base Map 17 May 2021 (used in accordance with commercial licence)
2. Alignment shapefiles supplied by client (KKLP_Alignment_Rev 02 dwg and KKLP_Workspaces_Rev 02 dwg)

0 275 550 1,100 1,650 2,200
metres

N

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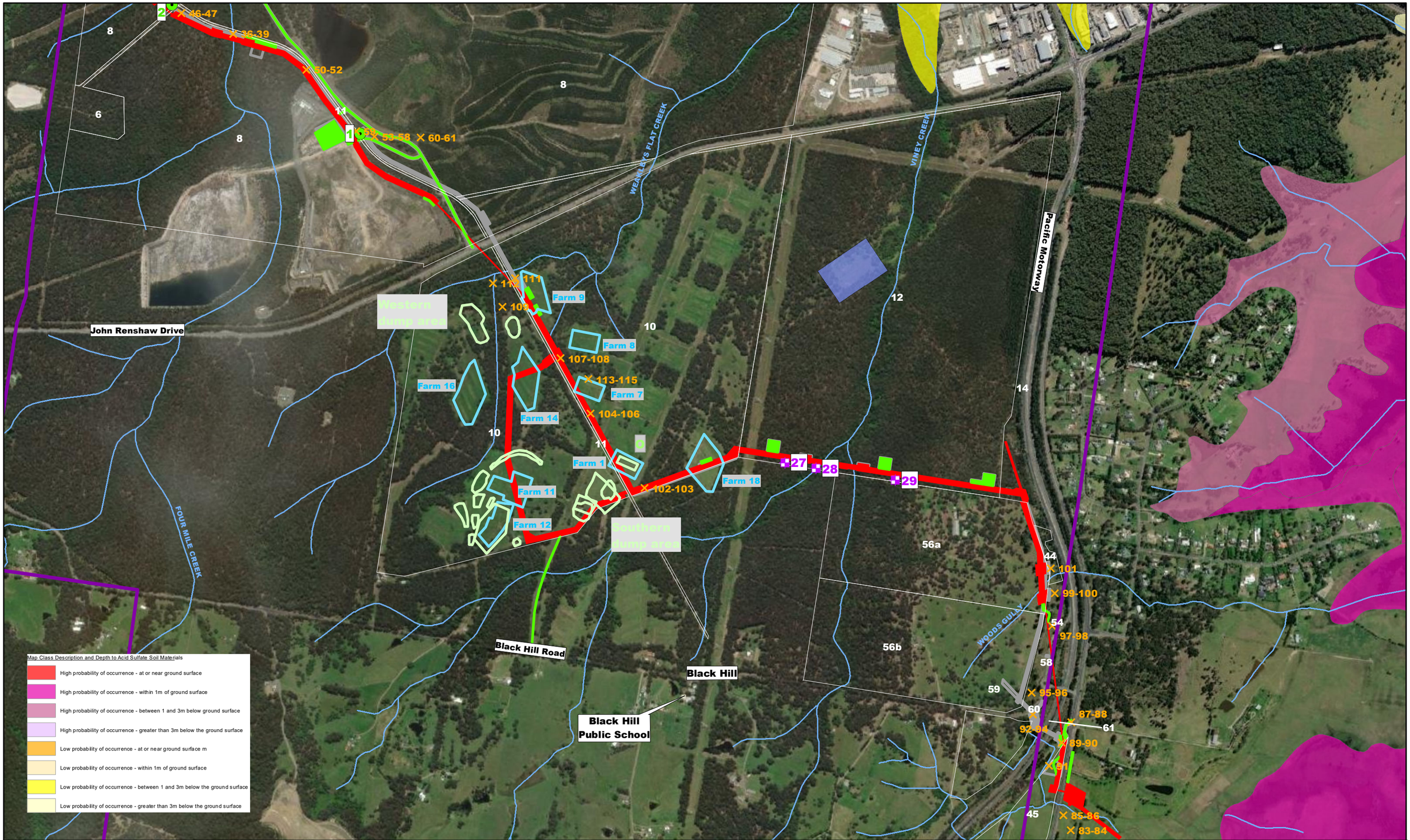
SITE LOCALITY AND LAYOUT PLAN ADDENDUM TO PRELIMINARY SITE (CONTAMINATION) ASSESSMENT KURRI KURRI LATERAL PIPELINE PROJECT

CLIENT	Umwelt (Australia) Pty Ltd			RCA Ref	15737-403/1
DRAWN BY	FB	SCALE	1:40,000 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	21/09/2022	OFFICE	NEWCASTLE



LEGEND

- Approximate test pit location (Ref [11])
- Approximate photo location
- Approximate lead in soil sample
- Ironbark Colliery Mine Lease
- Ironbark Colliery Intrastructure
- Identified waste area (Ref [10])
- Approximate farm location (Ref [10])

NOTES:
1. Aerial image taken from ArcGis Base Map 17 May 2021 (used in accordance with commercial licence)
2. Alignment shapefiles supplied by client (KKLP_Alignment_Rev 02 dwg and KKLP_Workspaces_Rev 02 dwg)
3. Acid sulfate risk map obtained from datasets.seed.nsw.gov.au

0 105 210 420 630 840
metres

N

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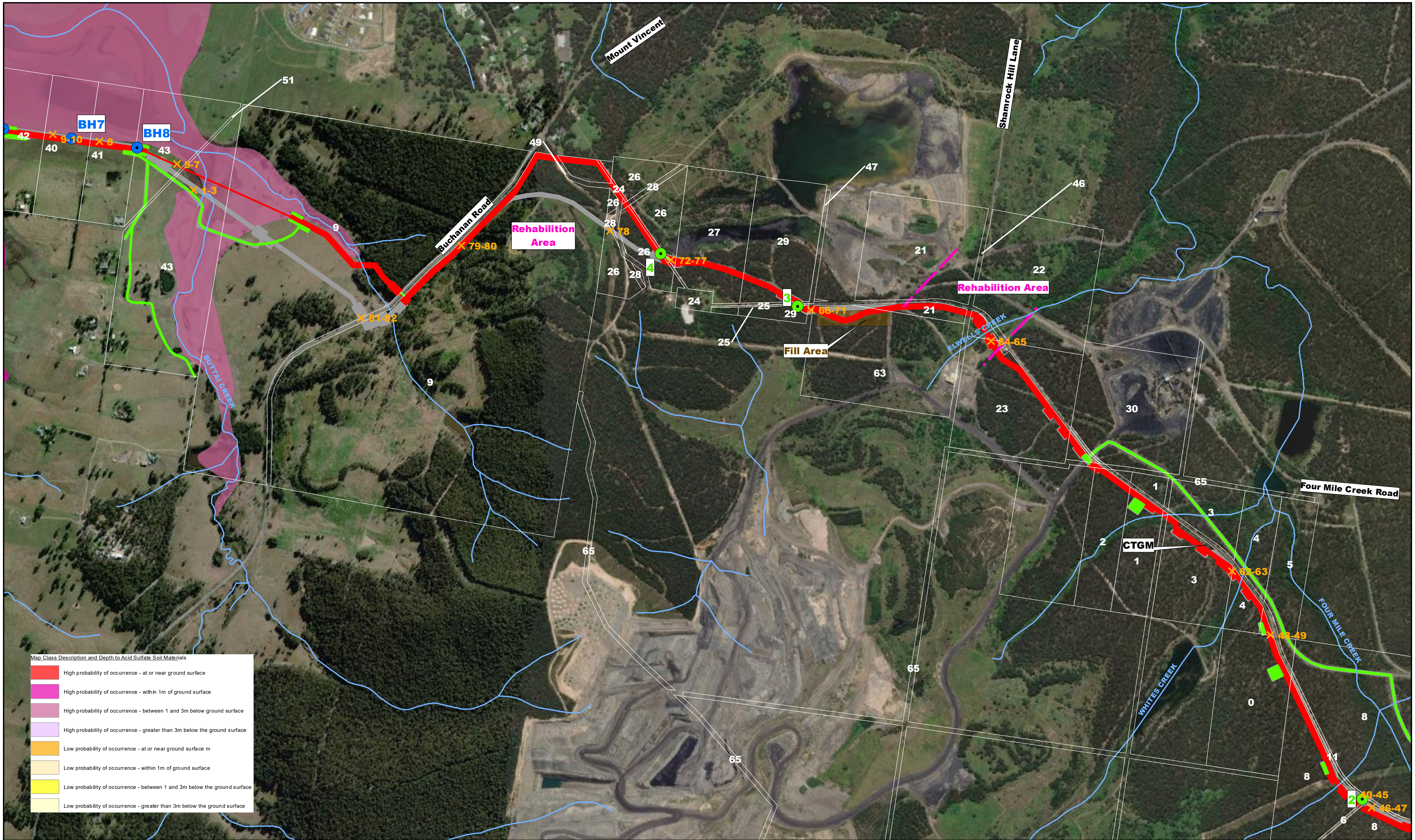
POTENTIAL CONTAMINATION AND ACID SULFATE SOIL IMPACTS ADDENDUM TO PRELIMINARY SITE (CONTAMINATION) ASSESSMENT KURRI KURRI LATERAL PIPELINE PROJECT

CLIENT	Umwelt (Australia) Pty Ltd			RCA Ref	15737-403/1
DRAWN BY	FB	SCALE	1:15,000 (A3)	DRAWING No 2a	REV 0
APPROVED BY	FB	DATE	21/09/2022	OFFICE	NEWCASTLE



LEGEND

- Approximate ASS sample location
- Approximate lead in soil sample
- × Approximate photo location

NOTES:
1. Aerial image taken from ArcGis Base Map 17 May 2021 (used in accordance with commercial licence)
2. Alignment shapefiles supplied by client ((KKLP_Alignment_Rev 02 dwg and KKLP_Workspaces_Rev 02 dwg)
3. Acid sulfate risk map obtained from datasets.seed.nsw.gov.au

0 105 210 420 630 840
metres

N

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POTENTIAL CONTAMINATION AND ACID SULFATE SOIL IMPACTS ADDENDUM TO PRELIMINARY SITE (CONTAMINATION) ASSESSMENT KURRI KURRI LATERAL PIPELINE PROJECT

CLIENT	Umwelt (Australia) Pty Ltd			RCA Ref	15737-403/1
DRAWN BY	FB	SCALE	1:15,000 (A3)	DRAWING No 2b	REV 1
APPROVED BY	FB	DATE	21/09/2022	OFFICE	NEWCASTLE

Map Class Description and Depth to Acid Sulfate Soil Materials

- High probability of occurrence - at or near ground surface
- High probability of occurrence - within 1m of ground surface
- High probability of occurrence - between 1 and 3m below ground surface
- High probability of occurrence - greater than 3m below the ground surface
- Low probability of occurrence - at or near ground surface m
- Low probability of occurrence - within 1m of ground surface
- Low probability of occurrence - between 1 and 3m below the ground surface
- Low probability of occurrence - greater than 3m below the ground surface

AEC 1: Capped waste stockpile
AEC 2: Anode waste pile
AEC 4: Diesel spray area
AEC 5: Drainage lines
AEC 6: East surge pond
AEC 8: Carbon plant (western end)
PAEC 15: West surge pond
AEC 26: Bake furnace scrubber
PAEC 27: Transformer yard
AEC 29: Area east of the playing fields

LEGEND

- Approximate photo location
- Approximate ASS sample location
- Stormwater drainage channel
- Ephemeral creek
- Stormwater outfall
- Primary stockpile area
- Containmant cell
- Restricted access area

NOTES:
1. Aerial image taken from ArcGis Base Map 17 May 2021 (used in accordance with commercial licence)
2. Alignment shapefiles supplied by client (KKLP_Alignment_Rev 02 dwg and KKLP_Workspaces_Rev 02 dwg)
3. Acid sulfate risk map obtained from datasets.seed.nsw.gov.au

0 105 210 420 630 840
metres

N

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POTENTIAL CONTAMINATION AND ACID SULFATE SOIL IMPACTS ADDENDUM TO PRELIMINARY SITE (CONTAMINATION) ASSESSMENT KURRI KURRI LATERAL PIPELINE PROJECT

CLIENT	Umwelt (Australia) Pty Ltd			RCA Ref	15737-403/1
DRAWN BY	FB	SCALE	1:15,000 (A3)	DRAWING No 2c	REV 1
APPROVED BY	FB	DATE	21/09/2022	OFFICE	NEWCASTLE