

Appendix E2
Contamination -
Gas pipeline



Australian Industrial Energy
Port Kembla Gas Terminal
Preliminary Site Investigation - Pipeline Alignment

November 2018

Executive summary

Australian Industrial Energy (AIE) proposes to develop the Port Kembla Gas Terminal (the project) in Port Kembla, New South Wales (NSW). The project involves the development of a liquified natural gas (LNG) import terminal including a Floating Storage and Regasification Unit (FSRU) moored at Berth 101 in the Inner Harbour and the installation of new pipeline to connect to the existing gas transmission network.

This report provides the results of a Contamination Assessment for the pipeline route from Berth 101 to the Port Kembla meter station at Cringilla. The contamination assessment for the area within the immediate vicinity of Berth 101 including the dredge area has been reported separately.

The objectives of the assessment were to:

- Assess the potential for contamination to exist on the site from past or present activities.
- Assess the potential presence of Acid Sulphate Soils (ASS).
- Assess analytical results from samples collected against applicable NSW EPA endorsed guideline levels.
- Provide recommendation for further investigation and/or options for management in relation to the proposed development (if applicable).

To achieve the above objectives, GHD completed a scope of work which included a review of publically available site information, a review of ten previous reports conducted between 2011 and 2014 (see Section 4.1.5) within the proposed alignment, a site walkover of accessible areas, opportunistic sampling and analysis for contaminants of concern and acid sulfate soils and preparation of this report.

Based on the scope of work undertaken, and subject to the limitations in Section 1.3, the following is concluded.

- Available site history information indicates development along the proposed pipeline alignment commenced between 1951 and 1961 and included the upgrade of transport infrastructure to the current standard, the reclamation of land within Tom Thumbs Lagoon and the construction of the steelworks and port facilities. The site usage has remained heavy industrial since this period and site activities appear to have been relatively unchanged since 1994.
- Based upon the findings of this investigation four potential areas of environmental concern (AEC) have been identified:
 - AEC 1 - Fill materials along the entire pipeline alignment including dredged materials, coal and coal by-product, steel production by-product (slag) and possible building demolition materials
 - AEC 2 - Spills and surface application of fuels along the entire pipeline alignment, oils and other chemicals associated with current and former industrial land uses
 - AEC 3 - Historical impacts associated with former nightsoil depot within PKCT
 - AEC 4 - Current and historical impacts associated with use of land adjacent to the alignment as workshops and fuel depots.
- AEC 1 and 2 are considered to have a moderate likelihood of contamination, fill material has been identified along the alignment whilst potentially contaminating activities have been occurring in the area since the 1950s. Limited soil sampling and analysis conducted

opportunistically as part of the concurrent WorleyParsons geotechnical investigation did not identify any widespread, gross contamination; however it is insufficient to provide a detailed understanding of the contamination status of soils along the alignment.

- AEC 3 is located within a poorly defined area within PKCT. Due to the age of the depot and the time since active use the likelihood of residual contamination from this source is considered low. Later site activities including reclamation and land filling are likely to have further reduced the contamination potential.
- AEC 4 is considered to have a moderate likelihood of contamination. Previous investigations by GHD (2011 to 2013) did not identify any contamination likely to be associated with the Underground Petroleum Storage System (UPSS) infrastructure at the PKCT refuelling depot. Impacts from current or historical sources along the alignment have not been identified by this investigation but are considered likely. Contamination from this source is likely to be localised in the context of the alignment.
- Under the proposed site usage scenario a number of potentially complete source-pathway-receptor linkages were identified within the Conceptual Site Model (CSM) for future site workers and users and intrusive maintenance workers. These include:
 - Dermal contact with contaminated soil or groundwater.
 - Inhalation of dust from contaminated soils.
 - Inhalation of vapours/gases generated by soil and groundwater contaminated by volatiles and semi-volatiles (if present).
- Preliminary waste classification of collected samples indicates that the soils sampled as part of this investigation would be classified as General Solid Waste should off-site disposal be required. This does not constitute a full waste classification of material within the pipeline alignment and additional sampling and assessment will be required in order to confirm classification of specific materials should off-site disposal be required.
- Preliminary assessment of site soils for acid sulphate soils identified actual acid sulphate (ASS) soils at BH12 and BH17. In both cases ASS was identified at depth (>12.25 m and 7.5 m) and are from buried lagoon sediments. This is consistent with the findings of the investigation within the Berth 101 investigation area.

Based upon the findings of the investigation, GHD recommends the following:

- Preparation and implementation of a construction environmental management plan (CEMP) to include an unexpected finds protocol (UFP) to effectively manage the identified potential contamination issues identified from both a human health and environmental perspective. This would include the assessment of materials to be disturbed across the site to inform appropriate management strategies.
- Assessment and classification of all material to be disposed of offsite as per NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste* and *Part 4: Acid Sulfate Soils* prior to off-site disposal.
- Preparation of an Acid Sulphate Soils Management Plan (ASSMP) to include measures to manage actual and potential ASS should it be encountered during pipeline construction. Where possible any disturbance (either excavation and or dewatering) of these natural sediments will need to be carefully managed.
- If the proposed pipeline alignment is likely to intersect groundwater, assessment of groundwater quality in those sections should also be carried out to inform construction management of potential contamination issues.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.3 and the assumptions and qualifications contained throughout the Report.

Table of contents

1.	Introduction	7
1.1	Background.....	7
1.2	Project objectives.....	7
1.3	Limitations.....	8
2.	Scope of work	9
3.	Site setting	10
3.1	Site identification.....	10
3.2	Current land use and proposed development	10
3.3	Topography, drainage, soil, geology & hydrogeology	11
4.	Desktop review.....	15
4.1	Site history search results.....	15
4.2	Summary of site history	25
4.3	Gaps in the site history	25
5.	Site observations.....	26
5.1	Site walkover.....	26
6.	Data quality objectives	28
6.1	Overview	28
6.2	Step 1: State the problem.....	28
6.3	Step 2: Identify the decisions.....	28
6.4	Step 3: Identify inputs to the decision	29
6.5	Step 4: Define the study boundaries.....	29
6.6	Step 5: Develop a decision rule	29
6.7	Step 6: Specify limits on decision errors.....	29
6.8	Step 7: Optimise the design for obtaining data.....	31
7.	Sampling and analysis plan	33
7.1	Incidental Sampling Program.....	33
7.2	Quality assurance / quality control plan.....	33
8.	Assessment criteria.....	35
8.1	Contamination.....	35
8.2	Waste classification	35
8.3	Acid sulphate soils	35
9.	Field investigations.....	37
9.1	Fieldwork.....	37
9.2	Soil sampling.....	37
10.	Results	39
10.1	Subsurface conditions	39
10.2	Laboratory testing	40

11.	Preliminary conceptual site model	42
11.1	Potential contamination sources and associated contaminants of potential concern	42
11.2	Potential exposure pathways	43
11.3	Potential receptors	43
11.4	Source-pathway-receptor linkages	44
12.	Conclusions and recommendations	45
13.	References	47

Table index

Table 3-1	- Site identification details	10
Table 3-2	- Topography, drainage, geology and hydrogeology	11
Table 4-1	- Contaminated sites notified to the EPA within 500 m of pipeline alignment.....	15
Table 4-2	- NSW EPA Contaminated Sites Records of Notice within 500 m of the pipeline alignment.....	16
Table 4-3	- Current and former NSW EPA licences within 500 m of the pipeline alignment	17
Table 8-1	- QASSTM (2014) acid sulphate soil action criteria	36
Table 10-1	- Subsurface conditions summary.....	39
Table 10-2	- ASS chromium reducible sulphur analysis results.....	41
Table 11-1	- Source-Pathway-Receptor Linkages	44

Figure index

Figure A	- Pipeline route (blue line) around Port Kembla district	7
Figure B	- <i>Geology of Wollongong - Port Hacking 1:100,000</i> map extract showing pipeline alignment (blue line).....	12
Figure C	- Wollongong 1:25,000 Acid Sulfate Soil Risk Map extract showing pipeline alignment (blue line).....	13
Figure D	- Public groundwater bore search results showing pipeline alignment (blue line)	14
Figure E	- NSW EPA Contaminated Sites Records of Notice within 500 m of the pipeline alignment.....	17
Figure F	- Aerial photography review areas	22

Appendices

Appendix A – Lotsearch Report

Appendix B – Section 10.7 Planning Certificates

Appendix C – Previous report extracts

Appendix D – WorleyParsons Field Borehole Logs

Appendix E – Laboratory reports

Appendix F – Summary of laboratory results

1. Introduction

1.1 Background

Australian Industrial Energy (AIE) proposes to develop the Port Kembla Gas Terminal (the project) in Port Kembla, New South Wales (NSW). The project involves the development of a liquified natural gas (LNG) import terminal including a Floating Storage and Regasification Unit (FSRU) moored at Berth 101 in the Inner Harbour and the installation of new pipeline to connect to the existing gas transmission network.

This report provides the results of a Contamination Assessment for the pipeline route from Berth 101 to the Port Kembla meter station at Cringilla. The contamination assessment for the area within the immediate vicinity of Berth 101 including dredge area has been reported separately. For the purposes of this report, the “site” comprises the pipeline route as indicated in Graphic A, including an 8 m buffer on either side of the alignment.



Figure A - Pipeline route (blue line) around Port Kembla district

1.2 Project objectives

The objectives of the assessment were to:

- Assess the potential for contamination to exist on the site from past or present activities.
- Assess the potential presence of Acid Sulphate Soils (ASS).
- Assess analytical results from samples collected against applicable NSW EPA endorsed guideline levels.
- Provide recommendation for further investigation and/or options for management in relation to the proposed development (if applicable).

1.3 Limitations

This report: has been prepared by GHD for Australian Industrial Energy and may only be used and relied on by Australian Industrial Energy for the purpose agreed between GHD and the Australian Industrial Energy as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Australian Industrial Energy arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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

GHD has prepared this report on the basis of information provided by Australian Industrial Energy and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report, which were caused by errors, or omissions in that information.

Limited information is available on the early history of the site and therefore, some site activities may not have been identified. In addition, aerial photographs are up to 14 years apart and other site history information available prior to 1951 is limited. We cannot preclude that potentially contaminating activities took place during these periods. Allowances for uncertainties and potential unexpected finds should be made during planning and development phases.

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.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

In preparing this report, current guidelines for assessment and management of contaminated land were followed. This work has been conducted in good faith in accordance with GHD understanding of the client's brief and general accepted practice for environmental consulting.

This report was prepared for Australian Industrial Energy based on the objectives and scope of work list in Sections 1.2 and 2. No warranty, expressed or implied, is made as to the information and professional advice included in this report. Anyone using this document does so at their own risk and should satisfy themselves concerning its applicability and, where necessary, should seek expert advice in relation to the particular situation.

2. Scope of work

The work carried out by GHD to meet the above objectives included:

- Review of publically available information (e.g. topographic, geological, soil landscape, acid sulphate soil maps).
- Specific information reviewed for assessing the likelihood of potential contamination to exist at the site included: aerial photographs and council planning records, and a search of NSW Environment Protection Authority (EPA) databases.
- A site walkover in accessible areas to visually assess potential sources of contamination, observe surrounding land uses, topography, drainage, nearby sensitive receptors, and assess details of the site history and desk study to further assess potential areas of environmental concern (AEC) and contaminants of potential concern (COPC).
- Opportunistic subsurface investigation, utilising fourteen geotechnical boreholes drilled to a maximum depth of 30 m below ground level (mbgl) by truck mounted drilling rig supervised by WorleyParsons within the pipeline route.
- Laboratory analysis included:
 - Nine samples for total recoverable hydrocarbons (TRH) benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH).
 - Twelve samples for metals.
 - One sample for asbestos.
 - One sample for toxicity characteristic leaching procedure (TCLP) for chromium.
- ASS laboratory testing included:
 - 15 samples for pH screening
 - Five samples for chromium reducible sulphur suite
- Preparation of this report summarising the site history, results of fieldwork, presenting and interpreting analytical results and findings, comparing chemical concentrations to applicable guidelines, and making recommendations with respect to the objectives outlined in Section 1.2. The contamination aspects of the report were prepared with reference to NSW EPA made or approved guidelines.

It should be noted that, due to the length of the pipeline route (approximately six kilometres) it was not practicable to carry out a detailed intrusive investigation over a regular grid (eg 100 metres spacing). Further, even a 100 m spacing for an investigation would still leave the majority of the soil materials in the proposed route uncharacterised. The potential variability in the quality of fill, which is likely to be present throughout the alignment, has been taken into account to inform the conclusions of this report.

3. Site setting

3.1 Site identification

Site identification details and surrounding land uses are summarised in Table 3-1. The site layout and surrounding areas are shown on Figure 1. For the purposes of this assessment GHD has considered a buffer area of up to 8 m either side of the proposed pipeline route.

Table 3-1 - Site identification details

Address:	Adjacent to Springhill Road, Tom Thumb Road and Port Kembla Coal Terminal (PKCT), Port Kembla	
Title identification:	Part Lot 22 DP 1128396 Part Lot 1 and 2 DP 1125445 Part Lot 10, 11 and 12 DP 1182111 Part Lot 72 DP 1166037 Part Lot 1 DP 606434 Part Lot 1 DP 606430 Part Lot 501 DP 1035674 Part Lot 64 DP 118514 Part Lot 1 and 3 DP 606430	Part Lot 103 DP 801243 Part Lot 2, 3 and 6 DP 837554 Part Lot 2 DP 570107 Part Lot 1 DP 203783 Part Lot 1 DP 785374 Part Lot 103 DP 1141089 Part Lot 20 and 21 DP 1046295 Part Lot 81 DP 1170187
Zoning:	SP1 – Special Activities and IN3 – Heavy Industrial SEPP (Three Ports) 2013 and RE2 – Private Recreation under Wollongong Local Environmental Plan 2009 (LEP 2009)	
Area approximate:	6.15 lineal km	
Local government area:	Wollongong	
County:	Camden	
Parish:	Wollongong	
Current land use:	Industrial Ports, Transport corridors including roads and rail, Road-side reserves, Public parkland Industrial (steelworks)	
Adjoining land uses:	Industrial and coal terminal	
Site coordinates: (Zone 56 H)	306957 m E; 6185107 m N (Port Kembla end of alignment) 304708 m E, 6184221 m S (Cringilla end of alignment)	

3.2 Current land use and proposed development

The proposed pipeline will likely follow the route as shown in Figure A. The pipeline will pass through land currently occupied by PKCT, Bluescope and NSW Ports industrial facilities as well as crossing road and rail infrastructure and public parkland.

The proposed development within the pipeline alignment will involve the construction of a new 6.15 km 18" gas transmission pipeline commencing at the proposed gas terminal and connecting to the existing gas transmission network at Cringila.

The gas pipeline is proposed to be constructed progressively by a combination of trenching and horizontal directional drilling. A temporary right of way would be established along the length of the pipeline route to provide space for vehicles and stockpiles of topsoil, subsoil and vegetation and for pipeline laydown and construction. Temporary construction compounds may also be established intermittently adjacent to the right of way for the laydown of segments of gas pipeline and other construction materials as necessary.

Trenches would be progressively excavated to a depth of about 1 metre for the length of the gas pipeline route except where horizontal directional drilling would be employed. Trenches would be progressively backfilled with bedding material, subsoil and then topsoil. The backfilled areas would be progressively restored to their pre-existing landform or land use.

Horizontal directional drilling would be employed instead of trenching to avoid impacts to some surface features such as road, rail, waterways as well as area of environmental or cultural sensitivity. Initially horizontal directional drilling would require the excavation of launch and receive pits at either end of the horizontal directional drill. A horizontal directional drilling rig would then be employed to drill a conduit between the launch and receive pits. The conduit would be drilled by progressively adding drilling head lengths at the drilling rig for the length of the horizontal directional drill.

3.3 Topography, drainage, soil, geology & hydrogeology

Table 3-2 summarises topography, drainage, soil, geology and hydrogeology associated with the site. Topography, drainage, soil and geology information was obtained from the Lotsearch reports included in Appendix A.

Table 3-2 - Topography, drainage, geology and hydrogeology

Elevation:	Between 1 m and 16 m above Australian Height Datum (AHD) (from NSW Land and Property Information).
General slope direction:	Natural landforms along the pipeline alignment have been heavily altered by human activity. Where residual natural slope remains in the western extent of the alignment the site slopes generally south and / or east towards the nearest waterbody (Allans Creek or Inner Harbour). Areas on the southern side of Allans Creek slope to the north. All other areas and in particular the eastern extent of the alignment are generally level or with a slight grade towards Inner Harbour
Closest surface water body:	The pipeline alignment crosses Allans Creek in the south and Gurungaty Waterway in the north east. All parts of the alignment will ultimately drain into Inner Harbour (Tom Thumbs Lagoon) either through surface runoff, stormwater drainage systems. Tom Thumbs Lagoon, is a remnant saline coastal lagoon, has been progressively reclaimed by the Steelworks. The Lagoon was originally 500 ha and now has an extent of 50 ha (BES 2010, p. 15).
Drainage:	Where ground surfaces have hardstand coverage surface water drainage is generally directed to PKCT, BlueScope or public road stormwater systems, which include a number of settle ponds in PKCT area.

Where no hardstand coverage exists it is expected that surface water will penetrate ground surfaces at a rate reflective of local soils.

It is expected in high rainfall events, surface water will flow directly into the harbour or connecting tributaries.

Regional geology:

The 1:100,000 *Geological of the Wollongong-Port Hacking Sheets 9029, 9129* indicates that the site is underlain by three geological units (see Figure B). Most of the alignment is underlain by Quaternary sediments (Qal) described as quartz and lithic "fluvial" sand, silt and clay. The north western extent of the alignment is underlain by the Budgong Sandstone (Psu) of the Shoalhaven Group, described as red, brown and grey lithic sandstone. The area on the southern side of Allans Creek is underlain by the Dapto Latite Member (Psud) of the Shoalhaven Group, described as melanocratic, coarse-grained and porphyritic latite.

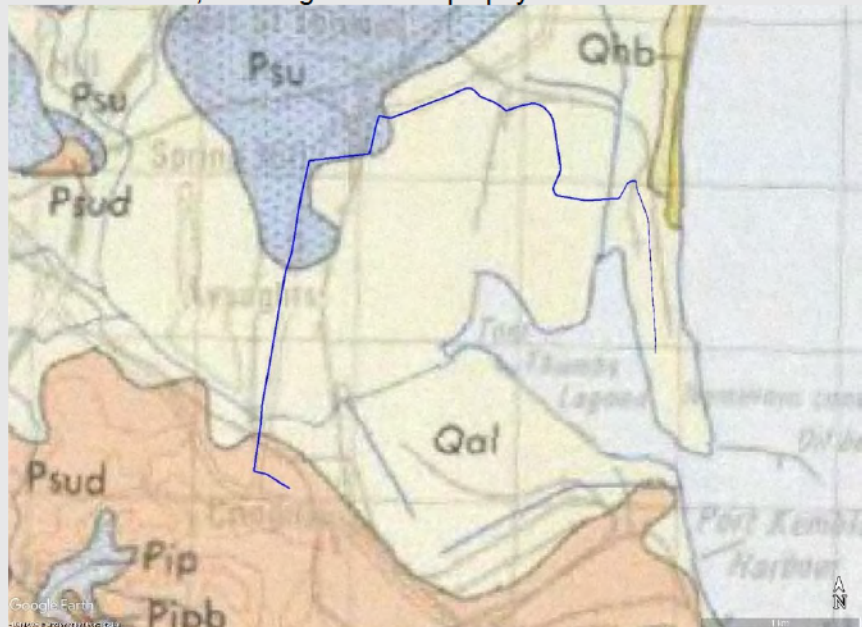


Figure B - Geology of Wollongong - Port Hacking 1:100,000 map extract showing pipeline alignment (blue line)

Soil landscape:

The *Soil Landscapes of the Wollongong-Port Hacking 1:100,000 Sheet* indicates the site is underlain by **Disturbed Terrain**. The topography of this landscape varies from level plains to undulating terrain and has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of <5%. Landfill includes soil, rock, building and waste material. The original vegetation has been completely cleared.

Limitations of this soil landscape are dependent on the nature of fill material resulting in a mass movement hazard (subsidence), soil impermeability leading to poor drainage, low fertility and toxic material. Care must be taken when these sites are developed. A survey at a suitable scale as well as geotechnical analysis should be undertaken because of variability of materials throughout the sites. Advice from local councils should be sought concerning localised areas of disturbed terrain.

Site specific geology:
(WorleyParsons, 2018)

A concurrent geotechnical investigation of the berth and pipeline route was undertaken by WorleyParsons. To assist with the preparation of this report GHD was supplied with field logs from this investigation which have been summarised below and in Table 10-1 with locations shown in Figure 2.

Fill materials encountered generally contained coal, coal wash and slag with trace fragments of asbestos containing materials and other anthropogenic materials. Residual soils were encountered in all locations and tended towards sand in the east with increasing clay content in the western extents of the alignment. Bedrock was not encountered in the east within the depth of investigation (up to 30.0 m at BH15) but consisted of predominately siltstone or mudstone in the west

Acid Sulphate Soils:

The *Wollongong 1:25,000 Acid Sulfate Soil Risk Map* indicates that the pipeline alignment is underlain by areas of Disturbed Terrain (grey) from 2 m to > 4 m thickness or areas of No Known Occurrence (no colour). Estuarine sediments (dark pink) exist within Allans Creek, Gurungaty Waterway and Inner Harbour and are mapped as having a high probability of occurrence of acid sulphate soils.



Figure C - Wollongong 1:25,000 Acid Sulfate Soil Risk Map extract showing pipeline alignment (blue line)

Groundwater bore search:

A search of publically registered groundwater bores within 500 m of the alignment returned 61 results, of these only a single bore (GW100678) contained standing water level information. This location is on the western extent of the pipeline alignment, approximately 150 m east of the alignment and had a standing water level of 8.2 m
Bores with reliable location data are shown in Figure D below.



Figure D - Public groundwater bore search results showing pipeline alignment (blue line)

Depth to groundwater:

Based on information obtained during the concurrent WorleyParsons geotechnical investigation and the groundwater bore search groundwater along the western boundary of the site is inferred to be between 4.5 m and 8.2 m bgl.

Based on the above and recorded ground conditions it is anticipated that groundwater along the alignment will stabilise at approximately sea level. Localised ground conditions such as shallow bedrock, material porosity, material permeability, proximity to surface water bodies and tides are likely to cause variation on geographical and temporal scales.

Inferred groundwater flow direction:

Groundwater is expected to be tidally influenced in areas in close proximity to surface water bodies, with a general flow towards the nearest surface water body.

4. Desktop review

Information on the site history was obtained from:

- Review of selected aerial photographs (1951 to 2016).
- A search of NSW EPA register for listings of the site and nearby sites. The registers searched include the Contaminated Land Record of Notices and NSW Contaminated Sites Notified to EPA under the *Contaminated Land Management Act 1997*, and environmental protection licenses under the *Protection of the Environment Operations Act 1997* (POEO Act).
- A review of Wollongong City Council Section 10.7 planning certificates.
- Previous reports provided by PKCT.

The site history information is presented in Appendix A to Appendix C and a summary is provided below. Relevant historical details are shown on Figure 2.

4.1 Site history search results

Site history searches undertaken for this site and their results are summarised in Sections 4.1.1 to 4.1.5 below. Relevant site features identified in the site history searches are shown on Figure 2.

4.1.1 Historical Land Titles

Historical land titles for Lot 22 DP 1128396 and Lot 3 DP 1125445 within PKCT are available within Douglas Partners Contamination Assessment (2012) and included in Appendix C. The land titles indicate that the area has been held, wholly or in part, by a number of NSW and local government entities since 1873. These entities have included Wollongong Council, the Metropolitan Water Sewerage and Drainage Board, the Minister for Public Works, the Maritime Services Board and Port Kembla Port Corporation (proprietor of both lots since 8 August 2001).

Of note is the holding of an area centrally on the western boundary of Lot 22 DP 1128396, which was held between 23 September 1905 and 23 December 1955 for use as a Night Soil Depot. Additional areas in the north of Lot 22 DP 1128396 were held for Sewerage Treatment Works between 29 June 1956 and 24 March 1986. The pipeline alignment potentially intersects with the former Night Soil Depot however does not appear to enter the former Sewerage Treatment Works footprint, both areas are indicated on Figure 2.

4.1.2 NSW EPA Registers

A review of NSW EPA List of Contaminated Sites Notified to EPA and Contaminated Sites: Records of Notice within 500 m of the pipeline alignment returned the following results.

Table 4-1 - Contaminated sites notified to the EPA within 500 m of pipeline alignment

Distance	Direction	Site Name	Activity	Management Class
0 m	Onsite	BHP Area 21	Metal Industry	Contamination formerly regulated under the CLM Act
0 m	Onsite	Port Kembla Steelworks Recycling Area	Unclassified	Regulation under CLM Act not required

Distance	Direction	Site Name	Activity	Management Class
0 m	Onsite	No. 2 Steelworks	Metal Industry	Regulation under CLM Act not required
60 m	North East	Port Kembla Springhill Works	Metal Industry	Regulation under CLM Act not required
167 m	South east	Port Kembla Steelworks - No. 1 Works Site	Metal Industry	Regulation under CLM Act not required
172 m	North	Greenhouse Park	Landfill	Regulation being finalised

Table 4-2 - NSW EPA Contaminated Sites Records of Notice within 500 m of the pipeline alignment

Distance	Direction	Site Name	Management Status	Contaminants of Concern
0 m	Onsite	BHP Area 21	VMP Completed	Metals (Cr, Cu, Pb, Mn, Ni and Zn, ammonia, cyanide, monoaromatic hydrocarbons, polycyclic aromatic hydrocarbons, total petroleum hydrocarbons, phenols
0 m	Onsite	No. 2 Steelworks	VMP Completed	Polycyclic aromatic hydrocarbons, petroleum hydrocarbons, metals and cyanides
172 m	North	Greenhouse Park	Current	Polycyclic aromatic hydrocarbons, petroleum hydrocarbons and other mixed contaminants from multiple sources including coal tar and lubricant oils

VMP – Voluntary Management Plan



Figure E - NSW EPA Contaminated Sites Records of Notice within 500 m of the pipeline alignment

A review of current and former NSW EPA licences issued under the *POEO Act 1997* within 500 m of the pipeline alignment returned the following results.

Table 4-3 - Current and former NSW EPA licences within 500 m of the pipeline alignment

Distance	Direction	Licence Number	Licence Holder	Activity	Status
0 m	Onsite	1625	Port Kembla Coal Terminal Limited	Coal works Shipping in bulk	Current
0 m	Onsite	3142	Australian Rail Track Corporation Limited	Railway systems activities	Current
0 m	Onsite	3693	Graincorp Operations Limited	Shipping in bulk	Current

Distance	Direction	Licence Number	Licence Holder	Activity	Status
0 m	Onsite	6092	Bluescope Steel (AIS) Pty Ltd	Agricultural fertiliser (inorganic) production Cement or lime handling Cement or lime production Coal works Coke production Crushing, grinding or separating Dangerous goods production General chemicals storage Generation of electrical power from gas Iron or steel production (iron ore) Mineral processing Railway systems activities Recovery of general waste Recovery of waste tyres Scrap metal processing Shipping in bulk Waste storage - other types of waste Waste storage - waste tyres	Current
0 m	Onsite	13421	John Holland Rail Pty Ltd	Railway systems activities	Current
0 m	Onsite	13421	Quattro P RE Services Pty Ltd	Other activities	Current
12 m	South west	3578	Australian Amalgamated Terminals Pty Limited	Shipping in bulk	Current
60 m	North east	571	Bluescope Steel Limited	Chemical storage waste generation Metal coating Metal processing Non-thermal treatment of hazardous and other waste Recovery of waste oil Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Current
208 m	South west	10095	BOC Limited	Dangerous goods production General chemicals storage	Current

Distance	Direction	Licence Number	Licence Holder	Activity	Status
383 m	North	218	Sydney Water Corporation	Sewage treatment processing by large plants	Current
446 m	West	20871	Benedict Recycling Pty Limited	Recovery of general waste Waste storage - other types of waste	Current
463 m	South	3577	Port Kembla Operations Pty Limited	Shipping in bulk	Current
0 m	Onsite	1110	Bitupave Ltd	Bitumen mixing	Delicensed activity still regulated by the EPA
0 m	Onsite	6141	Pacific National (NSW) Pty Ltd	Hazardous, Industrial or Group A Waste Generation or Storage	Delicensed activity still regulated by the EPA
219 m	North east	1355	Cleary Bros (Bombo) Pty Ltd	Concrete works	Delicensed activity still regulated by the EPA
351 m	West	3754	Boral Resources (Country) Pty Limited	Concrete works	Delicensed activity still regulated by the EPA
0 m	Onsite	4653	Luhrmann Environment Management Pty Ltd	Other Activities / Non Scheduled Activity - Application of Herbicides	Surrendered
0 m	Onsite	4838	Robert Orchard	Other Activities / Non Scheduled Activity - Application of Herbicides	Surrendered
0 m	Onsite	6630	Sydney Weed & Pest Management Pty Ltd	Other Activities / Non Scheduled Activity - Application of Herbicides	Surrendered
0 m	Onsite	13084	Donnelley Civil Pty Limited	Other activities	Surrendered
10 m	South east	20534	Waterway Construction s Pty Ltd	Other activities	Surrendered

Distance	Direction	Licence Number	Licence Holder	Activity	Status
29 m	South	12848	Waterway Construction Pty Ltd	Miscellaneous licensed discharge to waters (at any time)	Surrendered
108 m	South	12571	Boskalis Australia Pty Limited	Water-based extractive activity	Surrendered
108 m	West	12720	Georgiou Group Pty Ltd	Water-based extractive activity	Surrendered
108 m	West	12868	Mainland Civil Pty Limited	Miscellaneous licensed discharge to waters (at any time)	Surrendered
108 m	West	20563	Boskalis Australia Pty Limited	Water-based extractive activity	Surrendered
429 m	South	12135	Austral Construction Pty Ltd	Coal washery reject or slag landfilling	Surrendered
429 m	South	12491	Georgiou Group Pty Ltd	Coal washery reject or slag landfilling Land-based extractive activity	Surrendered
459 m	North east	11294	Endeavour Energy	Hazardous, Industrial or Group A Waste Generation or Storage	Surrendered

4.1.3 Wollongong City Council Section 10.7 (2 & 5) Certificates

The Section 10.7 (2 & 5) Certificates for the following properties were reviewed and are included in Appendix B. Due to changes in the alignment during the investigation phase and time constraints certificates were not reviewed for all lots listed in Table 3-1.

- Lot 1 DP 203783
- Lot 1 DP 606430
- Lot 1 DP 606434
- Lot 1 DP 785374
- Lots 10, 11 and 12 DP 1182111
- Lot 103 DP 1141089
- Lot 103 DP 801243
- Lot 2 DP 1125445
- Lot 2 DP 570107
- Lots 2, 3 and 6 DP 837554

- Lots 20 and 21 DP 1046295
- Lot 22 DP 1128396
- Lot 64 DP 1188514
- Lot 81 DP 1170187

Under Section 10.7 (2) Contaminated Land Management Act 1997 for Lot 1 DP 606434, it was stated that - "The land is the subject of a site audit statement within the meaning of the Contaminated Land management Act 1997". None of the other listed properties contained notifications under this section.

Under Section 10.7 (5) Contaminated Land, all sites returned the following information:

"Council's records show that because of previous uses the land may be contaminated. The services of a suitably qualified consultant should be sought to ascertain the degree of contamination, if any, on the land, and its likely effect on the land. Council's records are incomplete and there is no certainty that the land is so affected. Council has adopted Wollongong Development Control Plan 2009, which may restrict the development of the land"