

Tony Owen & Partners Pty Ltd



Preliminary Site Investigation

43-45 Beane Street, Gosford NSW

Document Control

Report Title: Preliminary Site Investigation; 43-45 Beane Street, Gosford NSW
Report Number: E26576.E01.Rev1

Copies	Recipient
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2 Original (Saved to Digital Archives)	EI Australia Suite 6.01, 55 Miller Street, PYRMONT NSW 2009

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Revision	Details	Date	Amended By
0	Original	9 December 2024	
1	Updated based on client comments	25 March 2026	MB

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Executive Summary

Background

EI Australia (EI) was engaged by Tony Owen & Partners Pty Limited to conduct a preliminary investigation at 43-45 Beane Street, Gosford in New South Wales ('the site').

The site was located approximately six hundred metres north of the Gosford central business district, within the local government area of Central Coast Council. It covered a total area of 2070m², being comprised of three lots, identified as Lots 8, 9 and 14 in Deposited Plan 18726. At the time of this investigation, the site was a vacant (undeveloped, mostly vegetated) property.

The site was designated for mixed commercial / residential development and this preliminary investigation was completed in support of the corresponding application to Central Coast Council. The aim was to appraise the environmental (potential contamination) condition of the site.

Key Findings

The key findings of this preliminary site investigation (PSI) were as follows:

- Site use was residential in nature up to around 1976, after which it became a vehicle parking lot, partly paved with concrete and bitumen. By 2014, most of the remaining structures had been demolished, allowing vegetation to propagate. By 2024, the site was vacant (vegetated) land, with remnant paving and gravel.
- Most of the site surroundings had continuously been used for residential purposes, although commercial and recreational properties were developed post 1980.
- The site was free of statutory notices and licensing agreements issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*. It was not included on the *List of NSW Contaminated Sites Notified to the EPA*.
- There was no evidence that an underground petroleum storage system had been installed on the site. No aboveground storage tank was present.
- No olfactory evidence of contamination (i.e. suspicious odour) was detected during the inspection.
- No visual evidence of contamination, including fragments of fibre cement sheeting and oil-like (petroleum hydrocarbon) staining, was encountered during the inspection, noting that access to some surface areas was restricted due to dense vegetation cover.
- Excluding any hardstand and coarse aggregate, the subsurface of the site was expected to be comprised of uncontrolled / poorly compacted fill, overlying natural, silty sandy clays, grading into (weathered) sandstone and/or shale bedrock.
- Based on the presented conceptual model, the potential for site contamination was deemed to be low.

Based on the findings of this PSI, and with consideration of EI's *Statement of Limitations (Section 7)*, it was concluded that the potential for contamination to exist on the site was low. The land was considered to be suitable for the proposed (mixed commercial and residential) development, in accordance with *State Environment Protection Policy (Resilience and Hazards) 2021*. Refer to the **Section 6** of this report for recommendations relating to the proposed development.

1. Introduction

1.1 Background and Purpose

EI Australia (EI) was engaged by Tony Owen & Partners Pty Limited to conduct a preliminary investigation at 43-45 Beane Street, Gosford in New South Wales ('the site').

The site was located approximately six hundred metres north of the Gosford central business district (CBD), within the local government area (LGA) of Central Coast Council (**Figure 1, Appendix A**). It covered a total area of 2070m², being comprised of three lots, identified as Lots 8, 9 and 14 in Deposited Plan 18726. At the time of this investigation, the site was a vacant (undeveloped, mostly vegetated) property (**Figure 2, Appendix A**).

The site was designated for mixed commercial / residential development and this preliminary investigation was completed in support of the corresponding application to Central Coast Council. The aim was to appraise the environmental (potential contamination) condition of the site. It enables the client to meet obligations under the *Contaminated Land Management Act 1997* and *State Environmental Planning Policy (Resilience and Hazards) 2021*.

1.2 Proposed Development

Based on the supplied plans (**Appendix B**), the proposed development involved the construction of two towers, one consisting of twenty six (26) storeys and the second consisting of five (5) storeys, both surrounded by landscaped areas and communal open space. Commercial units, including retail facilities, were to occupy the ground floors of the towers, while all levels above were designated for residential apartments, including *National Disability Insurance Scheme* (NDIS) affordable housing units.

Each tower would overly three levels of basement facilities, the latter requiring bulk excavations across most of the available area to depths of 6-9 metres below ground level (m BGL).

Note: Localised deeper excavations would be necessary for footings, service trenches, crane pads and lift over-run pits.

1.3 Project Objective

The objective of this preliminary site investigation (PSI) was to qualitatively assess the environmental condition of the land, by appraising the potential for contamination on the basis of field observations, historical land uses and other documentary evidence.

1.4 Scope of Work

In order to achieve the above objective, the following scope of work was completed:

- A review of geological and soil landscape maps for the project area;
- A search for WaterNSW registered groundwater bores within 500m radius of the site;
- A site walkover inspection;
- Review of site history, based on land title records, aerial photographs (dating back to 1965) and an environmental risk and planning report prepared by Lotsearch Pty Ltd;
- Searches of databases maintained by the Environment Protection Authority of New South Wales (EPA), including the *List of NSW Contaminated Sites Notified to the EPA*;
- Presentation of a conceptual site model (CSM); and
- Data interpretation and reporting.

This PSI report was completed with reference to the EPA (2020) *Consultants Reporting on Contaminated Land*. It documents the investigation works, with discussion of the findings in regards to potential exposure pathways to human and environmental receptors. It concludes with statements concerning the potential for contamination to exist on the land and the site's suitability for its proposed (mixed commercial and residential) use.

1.5 Regulatory Framework

The following regulatory framework and guidelines were considered during this PSI:

- *Contaminated Land Management Act 1997* (the CLM Act 1997);
- *Protection of the Environment Operations Act 1997* (the POEO Act 1997);
- *Environmental Planning and Assessment Act 1979* (the EP&A Act 1979);
- *State Environmental Planning Policy (Resilience and Hazards) 2021*;
- *Central Coast Local Environmental Plan 2022*;
- NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure*;
- EPA (2017) *Guidelines for the NSW Site Auditor Scheme*; and
- EPA (2020) *Consultants Reporting on Contaminated Land*.

2. Site Description

2.1 Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 2-1**. The site locality and area are identified in **Figures 1 and 2, Appendix A**. Refer also to **Appendix B** for the site survey plan.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	43-45 Beane Street, Gosford, NSW
Location Description	Bound by: • North: Bernera Street, followed by a property under construction • East: Residential properties • South: Keeners Lane, followed by residential properties • West: Keeners Lane, followed by vacant and residential properties.
Geographical Coordinates	North-eastern corner of site (datum GDA2020-MGA56): Easting: 346013.8 Northing: 6300774.465 (Source: http://maps.six.nsw.gov.au)
Area	2,070m ² (Source: http://maps.six.nsw.gov.au)
Cadastral Identification	Lots 8, 9 and 14 in Deposited Plan 18726 (Source: http://maps.six.nsw.gov.au)
State Survey Marks	Three survey marks are in close proximity to the site (as per http://maps.six.nsw.gov.au): ▪ SS98869: on Beane Street (39m north east) ▪ SS102916: on Faunce Street (126m south west) ▪ SS98509: on Watt Street (124m south east).
LGA	Central Coast Council
Parish	Gosford
County	Northumberland
Zoning	B4: Mixed Use (<i>Central Coast Local Environmental Plan 2022</i>)

2.2 Surrounding Land Use

The site is situated within an area of mixed uses. The local sensitive receptors within close proximity (<250m) of the site are identified in **Table 2-2**.

Table 2-2 Local Land Use

Direction	Land Use Description	Potential Receptors (distance from site)
North	Commercial properties Hills Street Occupational Rehabilitation Service Residential properties	Employees and visitors (78m) Patients, staff and visitors (73m) Residents (73m)
East	Residential / commercial building Australia Wide First Aid Rumbalara Reserve	Residents, employees and visitors (180m) Employees, students and visitors (35m) Reserve users, plus flora and fauna (180m)
South	Gosford Train Station Commercial properties Residential property	Commuters and employees (230m) Employees and visitors (13m) Residents (13m)
West	Commercial properties Residential building	Employees and visitors (15m) Residents (15m)

2.3 Regional Setting

Regional topography, geology and soil landscape information is presented in **Table 2-3**. Refer also to **Appendix B** for the site survey plan.

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The area displays a slope descending from east to (north) west. Site elevations range from 32.99 metres Australian Height Datum (m AHD) at the mid-eastern boundary, down to 18.62m AHD in the north western corner.
Drainage	Likely to be consistent with the general slope of the site (i.e. from east to west). Runoff will be collected by pit and pipe services, discharging into the municipal stormwater system.
Geology	According to the GSNSW (2015) <i>Gosford - Lake Macquarie Special 1:100,000 Geological Series Sheet 9131 & Part Sheet 9231</i> , the site is underlain by a Terrigal (<i>Tngn</i>) formation, characterised by silty to peaty quartz sand, silt and clay with ferruginous and humic cementation in places and common shell layers, followed by interbedded laminite, shale, fine-to coarse-grained quartz-to quartz-lithic sandstone and red claystone.
Soil Landscape	According to the DPIE (2022) <i>eSPADE v2.1 Portal</i> , the site is located in a Warriewood (<i>wa</i>) swamp landscape, characterised by dissected sandstone plateaus, with acid leached, yellow, (siliceous) sandy earths with ironstone gravel.
Acid Sulfate Soil (ASS) Risk	According to the <i>Central Coast Local Environmental Plan 2022 - Acid Sulfate Soils Map</i> , the site is located in a <i>Class 5</i> area. On the <i>Acid Sulfate Soil Risk of the Gosford Sheet</i> (Murphy, 1997), the site is within an area of <i>No Known Occurrence</i> . Based on the map information, as well as the site's relative elevation (>18m AHD), ASS was unlikely to be present at the site.
Nearest Surface Water Features	Narara Creek, located 1.3 kilometre west. Brisbane Water, located 1.2 kilometre south.
Groundwater Flow Direction	Inferred to be an east- west direction (based on the local topography), towards Narara Creek.

2.4 Groundwater Bore Records and Use

An online search for groundwater bores registered with WaterNSW was conducted by EI on 13 November 2024 (<https://realtimedata.watersnsw.com.au/water.stm>). The search revealed one registered bore within a 500 metre radius of the site (GW100343, located approximately 500 metres north west). It was authorised as a 'test bore', with the standing water level recorded at 5.5m BGL. It was concluded that the local groundwater resource was not being (heavily) utilised.

2.5 Site Walkover Inspection

Site observations were recorded during a walkover inspection conducted on 19 November 2024. A summary of these observations is detailed below and photographs taken during the inspection are present in **Appendix C**.

- The site was a vacant property, covered with overgrown vegetation, exposed soil, gravel and weathered / cracked bitumen.
- The vegetation was dense (overgrown) in some parts of the site, restricting access and limiting the inspection of the ground surface.
- A small soil mound was located on the south-eastern side of the property (Lot 14). This mound was surrounded / covered by vegetation and was probably a consequence of local soil relocation (during past building demolition), rather than importation of fill.
- No visual evidence of infrastructure associated with the presence of an underground petroleum storage system (UPSS), such as metal vent pipes or a fill point, was observed on the site.

- No above-ground storage tank (AST) was present on the site.
- No olfactory indicator of contamination (i.e. suspicious odour) was detected during the inspection.
- No visual evidence of contamination, including fragments of fibre cement sheeting (FCS) and oil-like (petroleum hydrocarbon) staining, was encountered during the inspection, noting that access to some surface areas was restricted due to dense vegetation cover.
- A range of plant types was present on the site, including small to medium sized (mature) trees, shrubs, grasses and weeds. The diversity of vegetation suggested that phytotoxicity was not an issue for local soils.

3. Site History Review

3.1 Land Title Records

Land title records relating to the site were provided by the New South Wales Land Registry Services (via InfoTrack Pty Ltd). Copies of relevant documents resulting from this search are presented in **Appendix D**. A list of property ownership is provided in **Table 3-1**.

Table 3-1 Summary of Historical Property Ownership

Period	Ownership
As regards to Lot 8 in Deposited Plan 18726	
1939 to 1946	James Kibble (Retired Blacksmith)
1946 to 1948	Perpetual Trustee Company of Sydney Limited Joseph John James Earnshaw (Blacksmith) Charles Philip Hendry (Civil Servant)
1948 to 1967	Gosford Co-Operative Citrus Packing House Limited
1967 to 1970	Sheehan Hardware Pty Limited
1970 to 2013	Kevin Wilfred Booth (Garage Proprietor) / Nancye May Booth
As regards to Lot 9 in Deposited Plan 18726	
1939 to 1946	James Kibble (Retired Blacksmith)
1946 to 1947	Perpetual Trustee Company Limited Joseph John James Earnshaw (Blacksmith) Charles Philip Hendry (Civil Servant)
1947 to 1979	Francis Davis Bushell (Labourer)
1979 to 1982	Raymond Leslie Walker (School Teacher) / Pauline Helen Walker
1982 to 1994	Norman Schmidt / Ruth Gwendoline Schmidt
1997 to 2003	Margot Therese Annis-Brown Claudette Lily Mepstead Wendy Lorraine Stapleton
2003 to 2007	Brent Douglas Annis-Brown Wendy Lorraine Stapleton Claudette Lily Mepstead
2007 to 2007	Brent Douglas Annis-Brown Wendy Lorraine Stapleton Claudette Lily Mepstead
2007 to 2013	Brent Douglas Annis-Brown Wendy Lorraine Stapleton
As regards to Lot 14 in Deposited Plan 18726	
1939 to 1944	James Kibble (Retired Blacksmith)
1944 to 1952	Charles Stanley Sharp (Soldier)
1952 to 1967	Gosford Co-Operative Citrus Packing House Limited
1967 to 1970	Sheehan Hardware Pty Limited
1970 to 2013	Kevin Wilfred Booth (Garage Proprietor) / Nancye May Booth
2013 to 2021	Wai He Chai / Lai King Chai
2021 to Date	Gemi 174 Pty Ltd

3.2 Historical Aerial Photographs

The historical aerial photographs reviewed as part of this PSI were derived from on-line resources and included:

1965, 1976, 1980: available through Spatial Service NSW
(<https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html>);

2007, 2014, 2018, 2020, 2024: available through Google Earth.

A summary of the findings is given in **Table 3-2**.

Table 3-2 Summary of Aerial Photograph Review

Photograph	Observations
1965	The site appears partially developed, featuring a combination of built-up areas, vegetated spaces, and open land, with a few structures that seem to be residential buildings. The surrounding area similarly reflects a mix of sparse residential development, with neighbouring lots containing residential properties interspersed with open land. To the west side of the site, there is Gosford Train Station.
1976	The site appears to be predominantly developed, with a large portion utilised as a parking lot, and the ground surface seems to be covered in concrete, indicating a formalised use for vehicle storage or access. Additionally, there are still some structures on the site that seem to be residential buildings, suggesting a mixed-use character. The surrounding area shows further urbanisation, with a combination of residential and commercial properties. The neighbourhood displays a mix of medium-density residential housing, green spaces, and paved areas, reflecting a developed urban setting.
1980	The site has not changed much and retains the same features, with a parking lot, some green areas, and a residential structure. The surrounding areas show signs of growth and development, reflecting ongoing urbanisation in the neighbourhood.
2007	The site remains primarily a parking lot, similar to previous observations, with some green spaces and a residential structure. The parking lot occupies the majority of the site, with clear paving visible and organised parking spaces. In the surrounding area, development remains relatively consistent, with a mix of residential and commercial properties.
2014	The site's overall features remain the same, with a mix of green areas and a residential structure. However, a few structures appear to have been removed, creating additional space now occupied by vegetation. The surrounding area continues to reflect ongoing development, with nearby lots featuring a mix of commercial and residential buildings, as well as paved areas. This highlights the gradual urbanisation of the neighbourhood while the site itself remains relatively unchanged in its fundamental use.
2018	The site has established commercial properties, with a garden implemented at the rear of the property. No significant undeveloped or green spaces remain in the immediate surroundings, marking the transition to a fully urban landscape. The surrounding areas show signs of growth and development.
2020	The site shows visible signs of activity and partial landscaping. While the area still includes bare soil in sections, patches of greenery are now evident, suggesting some level of vegetation growth or landscaping efforts. There are also visible signs of vehicles, and it appears that the site has been used as a parking lot.
2024	The site now appears vacant, with visible vegetation covering much of the area. It no longer seems to be used as a parking space, with no signs of vehicles or infrastructure associated with parking. The vegetation suggests the site has been left unused for a period, allowing natural growth to occur. This marks a shift from previous uses, indicating the site is currently inactive and awaiting potential future development.

3.3 Lotsearch Report

An environmental risk and planning report compiled by Lotsearch Pty Ltd (Reference LS066322 EL, dated 14 November 2024) was reviewed as part of this PSI. This Lotsearch report included searches of various environmental resources (databases) and plans archived by statutory authorities. It is presented in full in **Appendix E**. A summary of the relevant (historical) information follows.

- No former gasworks, waste management or liquid fuel facilities were identified on the site.
- One waste management facility was within 400m radius of the site, being recognised as the Woolworths Supermarket at 171 Man Street, Gosford (approximately 350 metres south (cross-gradient) of the site).
- No liquid fuel facilities were within 500m radius of the site.
- The site was not part of the EPA *Per- and Poly- Fluoroalkyl Substances (PFAS) Investigation Program*, Australia Government Department of Defence *PFAS Investigation Program* or *PFAS Management Program*, or Airservices Australia *National PFAS Management Program*.
- The site was not part of an Australia Government Department of Defence *Defence Controlled Area* or *Defence 3 Year Regional Contamination Investigation Program*.
- No dry cleaning, motor garage and service station businesses were believed to have operated at the site. However, such activities were operational across and up-gradient from the site between 1948-1993.
- There were no major AST areas or points within a one kilometre radius of the site.
- The site and its surroundings were not recorded as having a “naturally occurring asbestos potential”.
- No mining subsidence district was present within the surveyed area (one kilometre radius).
- The site was not identified on any Commonwealth, National or State Heritage list.
- No ecological (native vegetation (grassy woodland) and/or forest wetland) constraints were applicable to the site.
- EPA-licensed activities were formerly held for properties greater than 300m distance from the site (though not for the site itself). They related to historical (i.e. non-current) waterway management, with chemicals limited to the application of herbicides.
- The site and surrounding lands (500m radius) were predominantly residential in nature, which had been continuous from the 1950s to the current time.

3.4 EPA Online Records

In order to complement (confirm) some of the Lotsearch findings, EI conducted its own searches of databases maintained by the EPA, including:

- The public registers of statutory notices and licensing agreements issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*; and
- The *List of NSW Contaminated Sites Notified to the EPA*.

Record of Notices Under Section 58 of CLM Act 1997

An on-line search of the contaminated land public record was conducted on 4 December 2024. The contaminated land public record is a searchable database of:

- Orders made under Part 3 of the CLM Act 1997;
- Notices available to the public under Section 58 of the CLM Act 1997;
- Approved voluntary management proposals under the CLM Act 1997 that have not been fully carried out and where the approval of the EPA has not been revoked;
- Site audit statements provided to the EPA under Section 53B of the CLM Act 1997 that relate to significantly contaminated land;
- Where practicable, copies of anything formerly required to be part of the public record; and
- Actions taken by the EPA under Section 35 or 36 of the *Environmentally Hazardous Chemicals Act 1985* (EHC Act 1985).

The search confirmed that no property in the city of Gosford was subject to any regulatory notices relevant to the above legislations.

List of NSW Contaminated Sites Notified to EPA

A search through the *List of NSW Contaminated Sites Notified to the EPA* under Section 60 of the CLM Act 1997 was conducted 4 December 2024. This list is maintained by the EPA and includes properties on which contamination has been identified, but is not deemed significant enough to warrant regulation (i.e. a formal order or notice).

The search confirmed that neither the site, nor any property in its immediate vicinity (<100m), had been notified as contaminated to the EPA (i.e. were not on the list).

POEO Public Register

A search of the *Protection of the Environment Operations Act 1997* public register was conducted on 22 November 2024. This public register contains records related to environmental protection licences, applications, notices, audits, pollution studies and reduction programs. The search confirmed that neither the site, nor any surrounding area within a 250m radius of it, were subject to any licensing agreements / notices / programs relevant to the above legislation.

3.5 Council Information

An application under the *Government Information (Public Access) Act 2009* to access property files archived by Central Coast Council was submitted during the course of this PSI. At the time of reporting no response had been received from Council.

4. Conceptual Site Model

In accordance with the NEPC (2013) *Schedule B2 - Guideline on Site Characterisation*, a CSM was developed as part of the contamination appraisal, which assessed plausible linkages between potential contamination sources, migration pathways and receptors. It is hereby presented, taking into account the findings from EI's walkover inspection and the historical search information.

4.1 Rationale

The primary purpose of this PSI was to appraise the potential for contamination to exist on the site. If such a potential is confirmed, the environmental and human-health risks associated with contamination should be evaluated.

This appraisal did not involve intrusive sampling and laboratory analysis of soils, soil vapours or groundwater. Instead, the potential for contamination was based on a desktop study, collating information from history searches and government-maintained databases, as well as a walkover inspection. Professional judgement was then applied, based on previous experience.

4.2 Summary of Site History

Based on the walkover inspection and available historical information (**Sections 2 and 3**), site use was residential in nature up to around 1976, after which it became a vehicle parking lot, partly paved with concrete and bitumen. By 2014, most of the remaining structures had been demolished, allowing vegetation to propagate. By 2024, the site was vacant (vegetated) land, with remnant paving and gravel.

Most of the site surroundings had continuously been used for residential purposes, although commercial and recreational properties were developed post 1980.

4.3 Subsurface Conditions

Excluding any hardstand and coarse aggregate, the subsurface of the site was expected to be comprised of fill and natural clay-dominated soils, overlying sandstone and shale bedrock. More specifically:

- uncontrolled and poorly compacted, gravelly / clayey sand fill (<1m thickness); overlying
- natural, silty / sandy clay of medium to high plasticity, typically stiff to hard; grading into
- (weathered) sandstone and/or shale bedrock, generally increasing in strength with depth.

4.4 Potential Contamination Sources

The site had a history of residential use, followed by utilisation as a vehicle parking area. Initial assessment indicated that the potential for contamination to exist on the land was low; however, if it was present, then the likely sources were:

- The importation of filling materials of unknown origin and quality, used to grade the site;
- Leakage from parked vehicles;
- Application of pesticides around former building perimeters;
- Weathering of exposed building fabrics containing hazardous substances (including bonded asbestos-containing materials (ACM), lead-based paints and metallic surfaces) or deposition of such in near-surface soils; and
- Migration from neighbouring (up-gradient) properties.

4.5 Contaminants of Potential Concern

Based on the sources listed in **Section 4.4**, the contaminants of potential concern (COPCs) for this site were considered to be:

- Heavy Metals (HM) - arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- Total Recoverable Hydrocarbons (TRH);
- Volatile Organic Compounds (VOC); including
 - Volatile Chlorinated Hydrocarbons (VCH); and
 - Monocyclic aromatic hydrocarbons Benzene, Toluene, Ethylbenzene, Xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Organochlorine and Organophosphorus Pesticides (OCP / OPP);
- Polychlorinated Biphenyls (PCB);
- PFAS; and
- Asbestos.

ASS and salinity were not expected to be issues for the natural soils.

Note: All other emerging chemicals regulated by the EPA through a chemical control order under the *Environmentally Hazardous Chemicals Act 1985* were not considered to be COPCs for this site.

4.6 Potential Receptors

The following potential receptors of site contamination were identified:

- Future site users / occupiers;
- On-site excavation and construction workers (during future redevelopment);
- Users of the adjacent land (during future redevelopment);
- Future intrusive (maintenance) workers;
- Ecological receptors (flora and fauna) in landscaped areas; and
- Local groundwater and Narara Creek (1.3km west).

4.7 Risk Assessment

An assessment of the potential contamination risks for the site is given in **Table 4-1**.

Table 4-1 Assessment of Potential Contamination Risk

Potential Source	Impacted Medium	COPC	Risk of Contamination
Imported fill	Soil	HM, TRH, VOC, PAH, OCP, OPP, PCB, PFAS, asbestos	Low Shallow filling was expected (≤1m thickness) and restricted to the (former) building and pavement footprints.
Leakage from vehicles	Near surface soil (parking areas)	HM (lead in particular), TRH, VOC (BTEX)	Low Site used for vehicle parking from 1976-2014; however, contamination (if present) will be restricted to shallow surface soil. No visual evidence of oil- (hydrocarbon) like staining on any accessible surface. Parking took place on pavements, which should have provided some soil protection.

Potential Source	Impacted Medium	COPC	Risk of Contamination
The application of pesticides	Near-surface soil (≤1m depth)	HM, OPP, OPP	Low If present, expected to be limited to shallow surface soils. OCP phased out decades ago; OPP have short life-time (readily degraded) once applied.
Hazardous building materials	Near-surface soil (≤1m depth)	HM (lead in particular), asbestos	Low At the time of inspection, no hazardous building materials were observed within accessible parts of the site (including fragments of FCS).
Migration from off-site (up-gradient) sources	Soil Groundwater	HM, TRH, VOC, PFAS	Low Immediately neighbouring properties mostly used for residential and recreational purposes.

4.8 Summary of the CSM

The CSM, including the potential contamination sources, exposure pathways and human and environmental receptors, is summarised in **Table 4-2**. Based on this model, the potential for contamination to exist on the site was low. Further detailed (field-based) investigation was deemed to be unwarranted.

Under the proposed development (**Section 1.2** and **Appendix B**), bulk excavation of site soils will be conducted, in order to construct the two level, basement facilities. The off-site disposal of soils to EPA-licensed landfill facilities will alleviate any concern relating to site contamination. The waste classification process will require representative soil sampling and analysis, in accordance with the EPA (2014) *Waste Classification Guidelines*, and such tasks will incorporate analysis of the COPCs listed in **Section 4.5**.

Table 4-2 Conceptual Site Model

Potential Source	Impacted Medium	Potential Contaminants	Transport Mechanism	Exposure Pathway	Potential Receptor
Imported fill of unknown origin and quality	Soil	HM, TRH, VOC (VCH, BTEX), PAH, OCP, OPP, PCB, PFAS and asbestos	Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment	Ingestion Dermal contact Inhalation of particulates	Future site users Demolition / excavation / construction workers Adjacent site users Future intrusive workers
Leaks from vehicles		Dissolved HM, TRH, VOC (VCH, BTEX), PFAS	Atmospheric dispersion from soil to outdoor and indoor air spaces		Plants in landscaped areas
Application of pesticides					
Hazardous building materials			Volatilisation of contamination from soil and diffusion to indoor air spaces	Inhalation of vapours	
Migration from off-site (up-gradient) sources	Groundwater	Dissolved HM, TRH, VOC (VCH, BTEX), PFAS	Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment	Inhalation of vapours Biota uptake	Future site users Demolition, excavation and construction workers Adjacent site users Future intrusive workers Flora and fauna in landscaped areas Local groundwater Narara Creek

Footnotes:

The overall potential for contamination to exist on the site was deemed to be low
Risks associated with all Source-Pathway-Receptor linkages considered to be low, noting
Workers during excavation and construction, as well as future service maintenance, assumed to use personal protective equipment (PPE) as per SafeWork NSW regulations, thus eliminating S-P-R linkage

5. Conclusion

The site identified as 43-45 Beane Street and 2 Keevers Lane, Gosford in New South Wales was the subject of this PSI, the main objective of which was to appraise the potential for contamination to exist on the land. The key findings of this PSI were as follows:

- Site use was residential in nature up to around 1976, after which it became a vehicle parking lot, partly paved with concrete and bitumen. By 2014, most of the remaining structures had been demolished, allowing vegetation to propagate. By 2024, the site was vacant (vegetated) land, with remnant paving and gravel.
- Most of the site surroundings had continuously been used for residential purposes, although commercial and recreational properties were developed post 1980.
- The site was free of statutory notices and licensing agreements issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*. It was not included on the *List of NSW Contaminated Sites Notified to the EPA*.
- There was no evidence that an underground petroleum storage system had been installed on the site. No aboveground storage tank was present.
- No olfactory evidence of contamination (i.e. suspicious odour) was detected during the inspection.
- No visual evidence of contamination, including fragments of fibre cement sheeting and oil-like (petroleum hydrocarbon) staining, was encountered during the inspection, noting that access to some surface areas was restricted due to dense vegetation cover.
- Excluding any hardstand and coarse aggregate, the subsurface of the site was expected to be comprised of uncontrolled / poorly compacted fill, overlying natural, silty sandy clays, grading into (weathered) sandstone and/or shale bedrock.
- Based on the presented conceptual model, the potential for site contamination was deemed to be low.

Based on the findings of this PSI, and with consideration of EI's *Statement of Limitations (Section 7)*, it was concluded that the potential for contamination to exist on the site was low. The land was considered to be suitable for the proposed (mixed commercial and residential) development, in accordance with *State Environment Protection Policy (Resilience and Hazards) 2021*. Refer to the **Section 6** of this report for recommendations relating to the proposed development.

6. Recommendations

EI makes the following recommendations in relation to the future development of the site:

- Following pavement demolition and removal of associated wastes (including the vegetation), an inspection of the exposed surface should be performed by a suitably qualified environmental consultant. This inspection is to coincide with asbestos clearance reporting.
- Under the proposed development (**Section 1.2**), bulk excavation of site soils will be conducted, in order to construct the two level, basement facilities. All soil materials designated for off-site disposal, including any *virgin excavated natural material* (VENM), must be pre-classified in accordance the EPA (2014) *Waste Classification Guidelines*. In designing the SAQP for waste classification, the EPA (2022) *Sampling Design Part 1 - Application* guidelines should be referred to and the analytical suite is to include the identified COPCs (**Section 4.5**).
- Once appropriately classified, all waste materials are to be transported to EPA-licensed waste facilities by the appointed waste contractors. All tipping dockets supplied by the landfill companies are to be retained, to confirm the appropriate (lawful) disposal of wastes.
- Any material being imported to the site should be validated as suitable for the intended land use, in accordance with EPA guidelines. In particular, imported filling / landscaping material must be certified as meeting the VENM classification, prior to importation.

EI emphasises that these recommendations can be managed through the development application / approval process, in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021*.

7. Statement of Limitations

This report has been prepared for the exclusive use of Tony Owen & Partners Pty Ltd, whom is the only intended beneficiary of EI's work. The scope of the investigation carried out for the purpose of this report is limited to that agreed with Tony Owen & Partners Pty Ltd.

No other party should rely on this document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia, as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices.

The conclusion presented in this report is based on a limited assessment of historical and current uses of the site. Due to the preliminary nature of this investigation, findings are not based on actual samples collected or testing conducted by EI. EI has relied upon information provided by the client and other third parties to prepare this document, some of which could not be verified by EI due to the anecdotal or historical nature of the information.

EI's professional opinions are reasonable and based on its professional judgment, experience and training.

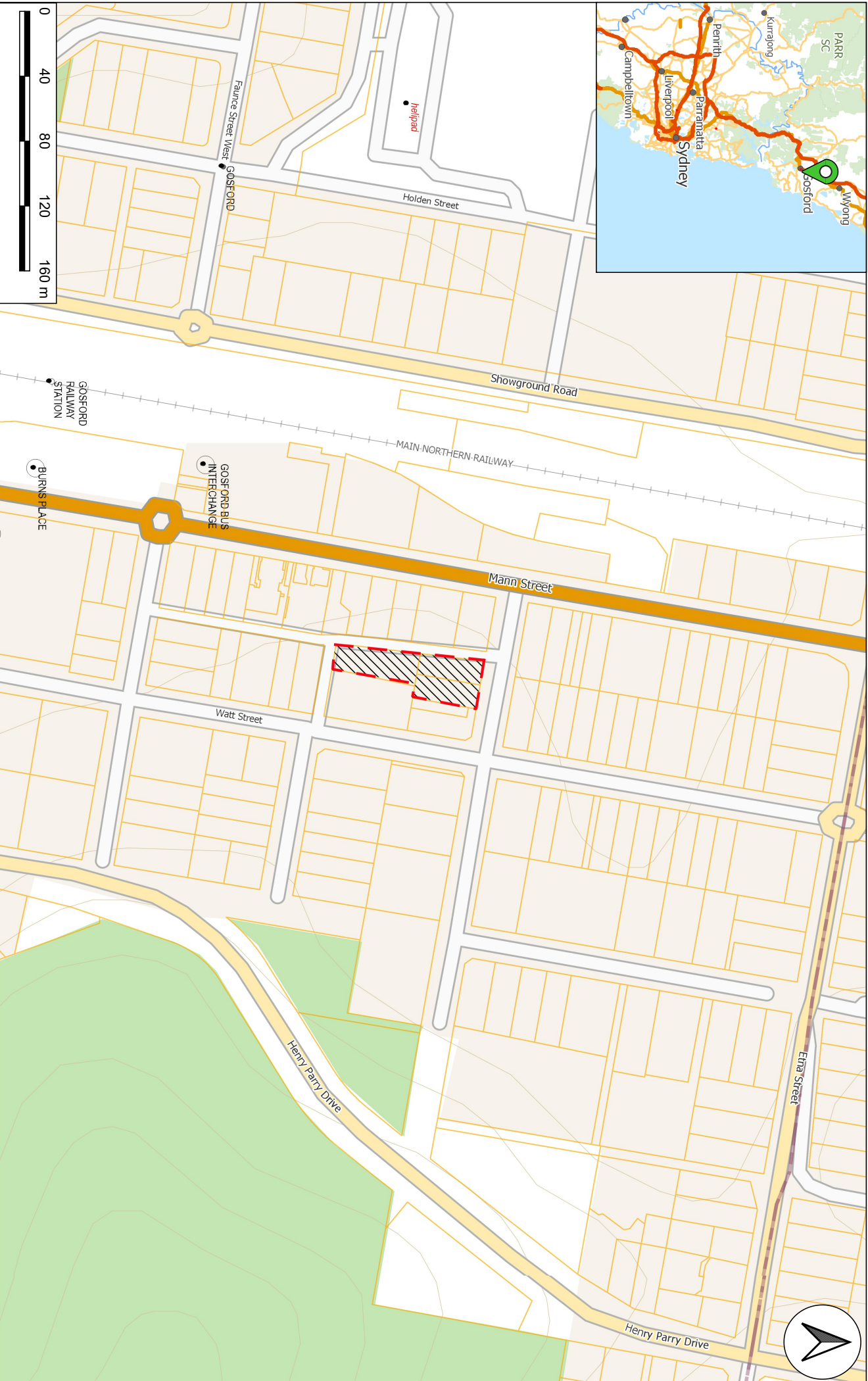
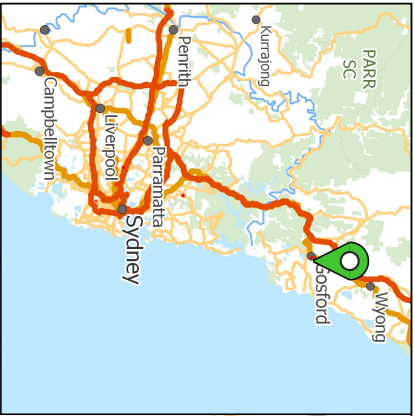
EI's professional opinions contained in this document are subject to modification if additional information is obtained through the data searches that have been initiated with government authorities.

Technical opinions may also be amended in the light of further investigation, observations, or validation testing and analysis during remedial activities. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.

References

- ASSMAC (1998) *Acid Sulfate Soil Manual*, Acid Sulfate Soils Management Advisory Committee, New South Wales Agriculture, Wollongbar, New South Wales, 28 August 1998.
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*. New South Wales Department of Environment and Conservation, DEC 2007/144, June 2007.
- DLWC (2002) *Site Investigations for Urban Salinity*, New South Wales Department of Land and Water Conservation (Local Government Salinity Initiative).
- DPIE (2022) *eSPADE v2.1 Portal*, New South Wales Department of Planning, Industry and Environment (Retrieved from www.espace.environment.nsw.gov.au)
- DUAP/EPA (1998) *Managing Land Contamination. Planning Guidelines SEPP 1995 - Remediation of Land*, New South Wales Department of Urban Affairs and Planning / Environment Protection Authority of New South Wales, August 1998.
- EnRisk (2016) *Proposed Decision Tree for Prioritising Sites Potentially Contaminated with PFASs*, Environmental Risk Services Pty Ltd, Environment Protection Authority of New South Wales, 25 February 2016.
- EPA (2014) *Waste Classification Guidelines - Part 1: Classifying Waste*, Environment Protection Authority of New South Wales, EPA 2014/0796, November 2014.
- EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme* (Third Edition), Environment Protection Authority of New South Wales, EPA 2017P0269, October 2017.
- EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines*, Environment Protection Authority of New South Wales, EPA 2020P2233, April 2020.
- EPA (2022) *Sampling Design Part 1 - Application; Contaminated Land Guidelines*, Environment Protection Authority of New South Wales, EPA 2022P3915, August 2022.
- Fitzpatrick, Powell, Bernie, Marvanek and Steve (2011) *Atlas of Australian Acid Sulphate Soils* (Version 2), Published by CSIRO, Data Collection.
- GSNSW (2015) *Gosford - Lake Macquarie Special 1:100,000 Geological Series Sheet 9131 & Part Sheet 9231* (Edition 1), Geological Survey of New South Wales, NSW Government Trade & Investment Resources & Energy, Maitland 2015.
- HEPA (2020) *PFAS National Environmental Management Plan*, National Chemicals Working Group of the Heads of the EPAs Australia and New Zealand, January 2020.
- Murphy CL (1997) *Acid Sulfate Soil Risk of the Gosford Sheet*, Department of Land and Water Conservation, Sydney (supplied by the Sydney South Coast, Geographical Information Systems Unit).
- NEPC (1999) *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, National Environmental Protection Council, December 1999.
- NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013*, National Environment Protection Council, Document OPC50357-B, 11 April 2013.
- NSW Government (2021) *State Environmental Planning Policy (Resilience and Hazards) 2021*, 2 March 2022.

Appendix A – Figures



LEGEND. Note: All locations are approximate

 Site Boundary



Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	C.Y.	Tony Owen & Partners Pty Ltd Preliminary Site Investigation 43-45 Beane Street, Gosford, NSW Site Locality Plan	Figure: 1
Approved:			
Date:	21/11/2024		
Project: E28576.E01			



LEGEND. Note: all locations are approximate

Site Boundary



Map Source:
NearMap, dated dd/mm/yy

Figure:

2

eiaustralia
Practical Solutions for Built Environments
Suite 601, 55 Miller Street, PYRMONT 2009
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Tony Owen & Partners Pty Ltd

Preliminary Site Investigation
43-45 Beane Street, Gosford, NSW
Site Layout Plan

Drawn:

C.Y.

Approved:

Date:

21/11/2024

Project: E26576_E01