



**PRELIMINARY SITE INVESTIGATION:
ELWOOD FORESHORE AREA, ELWOOD, VIC.**

Prepared for:

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Acronyms & Units

ABC	Ambient Background Concentration	meq	Milliequivalents
ACL	Added Contaminant Limits	mg	Milligram
ACM	Asbestos Containing Materials	mg/kg	Milligram per Kilogram
ADWG	Australian Drinking Water Guidelines	mg/L	Milligram per Litre
agl	Above Ground Level	mg/m³	Milligram per cubic meter
AHD	Australian Height Datum	MGA	Map Grid of Australia
ANZECC	Australian and New Zealand Environment Conservation Council	mm	Millimetre
ARMC	Agriculture and Resource Management Council of Australia and New Zealand	MMBW	Melbourne Metropolitan Board of Works
ANZ		MW	Monitoring well
AS	Australian Standard	N	Nitrogen
ASLP	Australian Standard Leaching Procedure	N/A	Not Applicable
ASS	Acid Sulphate Soil	NAPL	Non-Aqueous Phase Liquid
AST	Aboveground Storage Tank	NATA	National Association of Testing Authorities
B(a)P	Benzo(a)Pyrene	ND	Non-Detectable
bgl	Below ground level	NDD	Non-Destructive Digging
BH	Borehole	NEPC	National Environment Protection Council
BPEM	Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills	NEPM	National Environment Protection Measure
BTEX	Benzene, toluene, ethylbenzene, xylenes	NHMRC	National Health and Medical Research Council
BTEXN	Benzene, toluene, ethylbenzene, xylenes, naphthalene	OCP	Organochlorine Pesticides
btoc	Below top of casing	OPP	Organophosphate Pesticides
CCME	Canadian Council of Ministers for the Environment	PAH	Polycyclic Aromatic Hydrocarbon
CEC	Cation Exchange Capacity	PAN	Pollution Abatement Notice
CHC	Chlorinated Hydrocarbons	PASS	Potential Acid Sulphate Soil
COC	Chain of Custody	PCB	Polychlorinated Biphenyls
COPC	Contaminant of Potential Concern	PCE	Tetrachloroethylene
CRC	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment	PCPAN	Post Closure Pollution Abatement Notice
CARE		PESA	Preliminary Environmental Site Assessment
CSM	Conceptual Site Model	pH	Potential Hydrogen
CUN	Clean up Notice		
CUTEP	Clean up to the Extent Practicable		

DELWP	Department of Environment, Land, Water and Planning	PID	Photo-ionisation Detector
DNAPL	Dense Non-Aqueous Phase Liquid	PIW	Prescribed Industrial Waste
DO	Dissolved Oxygen	ppm	Parts per million
DQO	Data Quality Objectives	PSI	Preliminary Site Investigation
DSE	Department of Sustainability and Environment	PSR	Priority Sites Register
DSI	Detailed Site Investigation	QA/QC	Quality Assurance / Quality Control
EC	Electrical Conductivity	RL	Reduced Level
EIL	Ecological Investigation Level	RPD	Relative Percentage Difference
EMP	Environmental Management Plan	SAQP	Sampling, Analysis & Quality Plan
EPA	Environment Protection Authority	SCMP	Site Contamination Management Plan
ESA	Environmental Site Assessment	SEPP	State Environment Protection Policy.
ESL	Ecological Screening Level	SRW	Southern Rural Water
GIL	Groundwater Investigation Levels	SVOC	Semi-Volatile Organic Compounds
GME	Groundwater Monitoring Event	SWL	Static Water Level
GQRUZ	Groundwater Quality Restricted Use Zone	TCE	Trichloroethylene
GSV	Gas Screening Value	TDS	Total Dissolved Solids
GW	Groundwater	TEQ	Toxic Equivalence Quotient
Ha	Hectares	TIT	Triple Intercept Trap
HHRA	Human Health Risk Assessment	TOC	Top of Casing
HIL	Health Investigation Level	TP	Test Pit
HSL	Health Screening Level	TPH	Total Petroleum Hydrocarbons
IWRG	Industrial Waste Resource Guidelines	TRH	Total Recoverable Hydrocarbons
kg	Kilogram	UCL	Upper Confidence Limit
km	Kilometre	µg/m³	Micrograms per cubic meter
L	Litre	UPSS	Underground Petroleum Storage Systems
LFG	Landfill Gas	USEPA	United States Environmental Protection Agency
LNAPL	Light Non-Aqueous Phase Liquid	UST	Underground Storage Tank
LOR	Limit of Reporting	Vic	Victoria
m	Metre	VOC	Volatile Organic Compound
MAH	Monocyclic Aromatic Hydrocarbons	VVG	Visualising Victoria's Groundwater
mbgl	Metres Below Ground Level	WHO	World Health Organisation

1 INTRODUCTION

The site under investigation (approximately 9.42 ha) is described as the Elwood Foreshore Area containing a number of public use facilities and parking lots, but excluding the adjacent Elwood Park/sports pavilion and Wattie Watson Oval. The existing buildings and property are described and shown on the appended 2020 Site Feature & Level Plan by Breese Pitt Dixon surveyors (Appendix A).

It is understood that the City of Port Phillip wishes to inform its forward-going master planning for the area. Redevelopment work and the need for any further site investigations should be informed by the early identification of potential site contamination constraints.

2 OBJECTIVES & SCOPE OF ASSESSMENT

2.1 *Assessment Objective*

The Preliminary Site Investigation (PSI) process involves a review of the physical site setting, available environmental records, the current and historical uses of a site (and immediate surrounding area), along with observations gained from an environmental site inspection to ascertain what potential site contamination issues may be present that have a bearing on further more detailed contamination investigation(s) at the site.

2.2 *Scope of Work*

The City of Port Phillip (CoPP) commissioned this PSI on the 3 March 2020. The scope of work involved in this PSI comprised:

- Documentation of the site environmental/historical information, including review of previous site investigations, aerial photos, geology, hydrogeology, historical site records, local and state government records review, EPA Victoria records, and other available desktop information;
- Review of surrounding environmental audits;
- Interviews with site occupants;
- Environmental site inspection by qualified environmental scientist;
- Preparation of PSI report detailing the site's contamination potential, including contaminants of potential concern.

3 SITE IDENTIFICATION AND REGIONAL SETTING

3.1 *Site Identification*

The site is situated in Elwood approximately 8 kilometres south-southeast of Melbourne's Central Business District, as shown on Figure 1.

The site's formal identification, setting and characteristics are outlined below on Table A. A detailed plan of the site is presented on Figure 2.

Table A. Site Identification & Characteristics

Site Address	Elwood Foreshore, Ormond Esplanade, Elwood, Vic. 3184
Approximate Area	9.41 ha (estimated, boundary arbitrary)
Site Identification	Allotment 13A at Elwood, Parish of Prahran
Local Government	City of Port Phillip
Melway Reference	67-C5
Zoning	Public Park & Recreation Zone (PPRZ)
Environmental Audit Overlay?	No
Current Site Use & Main Features	Used for recreation, sport and public uses. Natural features include: the beach, bush areas and a grassy field. Man-made feature include: kindergarten/café building, sea scout hall, angling club building, sailing club building, surf lifesavers club/restaurant building (with toilets), playground/BBQ area, two car parking lots, boat ramp and jetty.
Proposed Use	Similar to existing.
Adjacent Land Uses	North – Ormond Esplanade, then residential houses. South – Port Phillip Bay (SW) / beach reserve and residential on south side of Head St (SE). East – Parkland, including Wattie Watson Oval and Elwood Park West – Port Phillip Bay and beach reserve (NW).

Appendix A provides a detailed Features and Level Plan (BPD, 03/03/2020; ref. 10353). The plan identifies a number of unknown pits outside the south-east external walls of the Sailing Club (2^{NO}), the Angling Club (1^{NO}) and 1^{NO} outside the north-east wall of the kinder building.

3.2 Topography & Surface Water Receptors

The site is located at between 0-5.7 metres above sea level (m asl), is generally flat with no appreciable slope direction, excepting a mound at the north end, which is the highest point.

Regionally, the surrounding land is generally level. Port Phillip Bay forms the south-western site boundary. No surface water bodies are located on the site, with the closest other water body (Elster Creek) located approximately 0.6 km north of the site.

The topographic map is shown on page 6 of the appended Lot Search report for the property (Appendix B).

3.3 Geology

The site is situated on Quaternary aged coastal dune deposits towards the beach consisting of sand, silt, clay (well sorted, poorly consolidated; coastal dune and beach deposits, with some

swamp deposits); and upon Quaternary Port Melbourne Sands between the beach and the Esplanade consisting of aeolian and beach ridges (bedded and cross-bedded sand, moderately silty, with shelly fossils including bivalves and gastropods).

The geology map is shown on page 72 of the appended Lotsearch report for the property (Appendix B). The probability of acid sulphate soils across the site is indicated by Lotsearch to be extremely low (pages 79-82).

3.4 Regional Hydrogeology and Groundwater Bore Database Search

Lotsearch data relating to regional hydrogeology and groundwater are provided on pages 54 to 70 of their report (Appendix B). The following is noted:

- Expected groundwater salinity: < 1,000-3,500 mg/L
- Expected depth to groundwater: < 5 m
- Expected basement rock elevation: -43 to -38 AHD m

Details of well boreholes from the Department of Environment and Primary Industries' Water Measurement Information System, within the dataset buffer begin on page 56 of the Lotsearch report. There are no registered groundwater bores located on the site, with the nearest bores being for investigation purposes and located 136 m north-east of the site.

Based on the reported salinity, groundwater may be expected to fall within Segments A2 to C. The following beneficial uses of groundwater are protected under the *State Environment Protection Policy (Groundwaters of Victoria)* for Segments A2 to C groundwater:

- Water dependent ecosystems and species
- Potable water supply (Desirable)
- Potable water supply (Acceptable)
- Potable mineral water supply
- Agriculture and irrigation (Irrigation)
- Agriculture and irrigation (Stock Watering)
- Industrial and commercial
- Water-based recreation (Primary Contact Recreation)
- Traditional Owner cultural values
- Cultural and spiritual values
- Buildings and structures
- Geothermal properties

3.5 Anticipated Groundwater Flow Direction

The direction groundwater flow in the vicinity of the site is (in the absence of direct hydrogeological assessment) inferred to be south-westerly, perpendicular to the shoreline.

4 RECORDS REVIEW

4.1 Previous Site Investigations

A number of previous environmental reports were provided to Atma Environmental for review with salient information summarised on Table B.

Table B. Previous Environmental Reports

Reference:	Report Title:	Scope:	Comments:
Noel Arnold, 26 May 2009	Letter Re: Waste Classification Information - Elwood Park Sports Pavillion	500 m ³ stockpile tested twice (2 x 10 samples)	For adjacent land. Soil classified as Category C on 95% UCL of BaP.
City of Port Phillip, 23 Nov 2010	Letter Re: 63B Ormond Esplanade, Elwood – Soil Assessment	Site assessment with nine shallow boreholes to investigate the status of the soil for use as a childcare centre	Onsite land. Max BaP concentration of 6.8 mg/kg. Found sandy fill material overlying sandy silt and clay natural material on the northern portion of the site and crushed rock fill material containing small fragments of inert building waste overlying natural material located to the south of the site buildings. Met NEPM A if excluding outlier.
Landserv, 10 March 2017	Preliminary Soil Contamination Assessment, Elwood Public Space, 63B Ormond Esplanade, Elwood, Victoria	Unknown	Not found/made available for review
Landserv, 16 June 2017	Re: Elwood Foreshore Precinct, Elwood Soil Contamination Assessment and Soil Management Plan	10 m ³ stockpile tested with 10 samples	Onsite land. PAHs, Zinc , lead, copper found >Fill. Classified Category B on 95% UCL of BaP.
Landserv, 10 July 2017	Re: Elwood Foreshore Precinct, Ormond Road, Elwood Summary of Disposal of Category b Contaminated Soil	Disposal documentation of above and three validation samples	Validation samples met NEPM C and EIL levels for metals and PAHs.
Landserv 25 July 2017	Soil Management Plan, Elwood Foreshore Precinct, Elwood, Victoria	Recaps previous works and defines a Soil Management Strategy	Where soil must be produced it is to be managed in accordance with EPA IWRGs. Should general works create exposed surface soils, an assessment of these soils be conducted to characterise suitability to remain. Maintain reports.

Although the Preliminary Soil Contamination Assessment (10 Mar 2017) was not provided, the Soil Management Plan (25 July 2017) indicated the following maximum contaminant levels from previous investigations:

- Benzo(a)pyrene - maximum concentration: 21 mg/kg

- Total Polycyclic Aromatic Hydrocarbons - maximum concentration: 210 mg/kg
- Total Petroleum Hydrocarbons (C10-C36) – maximum Concentration: 1,415 mg/kg
- Mercury – maximum concentration: 13 mg/kg
- Copper – maximum concentration: 330 mg/kg
- Lead – maximum concentration: 400 mg/kg
- Zinc - maximum concentration: 680 mg/kg

4.2 Environmental Records

In conducting an environmental site assessment, numerous government record sources were reviewed to identify already-recognised environmental conditions pertaining to the site and surrounding area. To assess the likelihood of contaminants or hazardous substances that may have migrated to the site, some records reviewed concern not only to the site itself, but also to properties within a one-kilometre radius. The following sources were reviewed in conducting this site assessment:

List of Issued Certificates and Statements of Environmental Audit (EPA Victoria)

Certificates and Statements of Environmental Audit are statutory documents that are issued after a statutory environmental audit of a property has been conducted. A Certificate of Environmental Audit is issued for a property where, following an audit, an environmental auditor believes the environmental condition of the land is suitable for any beneficial use. A Statement of Environmental Audit is issued where, following an audit, an environmental auditor believes the land is not suitable for all possible beneficial uses, but is suitable for specific uses or developments; it may contain conditions of clean-up or management of contamination.

The location of seven completed Certificates and Statements of Environmental Audit (1 km buffer) are presented on page 12 of the appended Lotsearch report for the property (Appendix B) with those on Table C identified.

The nearest of these was completed in 1999 for 133 Ormond Esplanade, a former Shell service station located ~300 m east of the site. Another two audit sites (former Mobil servo and Elwood Bus Station) lie in the same direction, 100 m further east. Of these three audits, the Mobil service station audit CARMS No. 71285-1 was completed much more recently (2016) and is more likely to provide groundwater sampling data.

The audit sites are located at such a distance as to pose a reduced risk of migrating contamination to the site under investigation.

Table C. Completed Environmental Audits - 1 km Radius

CARMS No	Transaction No	Site	Address	Suburb	Date Complete	Audit Category	Loc Conf	Distance	Direction
35926-1	8000816	FORMER SHELL SERVICE STATION 133 ORMOND ESP	ORMOND ESP	ELWOOD	02/08/1999	53X Statement	Premise Match	294m	East
42595-1	8001243	123-125 ORMOND RD	123-125 ORMOND RD	ELWOOD	12/07/2001	53X Statement	Premise Match	363m	North East
71285-1	8003338	MOBIL SERVICE STATION ELWOOD 448 ST KILDA ST	MOBIL SERVICE STATION ELWOOD 448 ST KILDA ST, ELWOOD	ELWOOD	09/09/2016	53X Statement	Premise Match	399m	South East
32414-1	8000618	FMR ELWOOD BUS STN, CNR HEAD & ST KILDA FORMER ELWOOD BUS STATION, CNR HEAD & ST KILDA STS	HEAD ST, BRIGHTON VIC 3186 HEAD ST	ELWOOD	14/10/1997	53X Certificate	Premise Match	404m	East
58258-2	8002039	475A ST KILDA ST	475A ST KILDA ST	ELWOOD	10/12/2007	53X Statement	Premise Match	439m	East
30368-1	8000507	73 GLENHUNTLY RD, ELWOOD VIC 3184	73 GLENHUNTLY RD	ELWOOD	13/02/1997	53X Statement	Premise Match	527m	North
36757-1	8000857	29-31 SCOTT ST	29-31 SCOTT ST	ELWOOD	15/06/1999	53X Statement	Premise Match	991m	North East

Groundwater Quality Restricted Use Zones (EPA Victoria website)

A groundwater quality restricted use zone (GQRUZ) is an area where, following an environmental audit, groundwater pollution remains, usually as a result of previous industrial activity. A GQRUZ is implemented when attempts have been made to clean up the groundwater and EPA determines that restrictions should remain on how the water can be used without further treatment.

The appended Lotsearch report identified (page 14) one audit site, being the Mobil service station audit (CARMS No. 71285-1), for which a GQRUZ has been declared within the buffer distance. The GQRUZ area is of limited downgradient extent.

EPA Priority Sites Register (EPA Victoria)

The Priority Sites Register lists sites for which the EPA has issued a clean-up notice or a pollution abatement notice pursuant to sections of the *Environment Protection Act 1970*. The condition of these sites is not compatible with the current or approved use of the site without active management to reduce the risk to human health and the environment. Such management can include clean-up, monitoring and/or institutional controls.

Sites on the current EPA priority sites register do not exist within the dataset buffer (refer to Lotsearch report, page 9). Autohaus Carwash and Co Pty Ltd at 460 New St, 840 m south-east, was issued a pollution abatement notice in 2014.

Other Environmental Records Searches

In addition to the above searches, Lotsearch further undertook searches of environmental records of the following:

- PFAS Investigation and Management Programs (various) - nil results
- Defence 3 Year Regional Contamination Investigation Program - nil results
- EPAV Licensed Activities - nil results
- Former EPAV Licensed Activities - nil results
- EPAV Works Approvals - nil results
- Waste Management Facilities and Legacy Landfills - nil results
- National Waste Management Site Database - nil results
- Statewide Waste and Resource Recovery Infrastructure Plan Facilities - nil results
- EPAV Prescribed Industrial Waste sites –
 - Transporter only: 604 m north (Detail Group Pty Ltd)
- Former Waste Disposal sites (collated from various historical sources) –
 - Elsternwick Park: 720 m north-east (received municipal waste from 1920)
 - Elwood swamp: 952 m north (received inert wastes prior 1899)
- Former Gasworks (collated from various historical sources) - nil results

Acid Sulphate Soil Hazard Maps

The Lotsearch report (page 79) indicates the site has no probability of acid sulphate soil occurrence.

4.3 Historical Records

Elwood Life Saving Club Website

The Club website (<http://www.elwoodlsc.com.au/club-history/>) provides the following information on the club history and a photo of the former club buildings (Appendix C):

The Royal Life Saving Society of Australia was formed in 1894 with a branch established in Sydney. The Victorian branch was inaugurated at the Port Phillip Club Hotel in Melbourne on December 6th, 1904. ... The first Club in Victoria was established at Elwood in 1911, on the old rifle range, near Point Ormond. The Club's founding fathers were at the forefront of the push to change State legislation to allow "open sea" and "mixed-sex" bathing during daylight hours. ... The Foundation Stone of the Club's first permanent clubhouse was laid on 5th October 1918, near the beach end of Head Street... It is reckoned that, in favourable weather, crowds of up to 100,000 people flocked to Elwood Beach in the 1960s and 70s! ... The Clubhouse building was finally demolished in the early 1970s and, with the assistance of the then City of St. Kilda, new premises were erected at the present site. ... In 2004, the Club moved to the new, purpose-built premises within the John R. Conabere Pavilion.

Elwood Heritage Review, Vol.1 Thematic History Citations for Heritage Precincts

The above report (prepared by Heritage Alliance Pty Ltd for City of Port Phillip) was identified further information of the history of the foreshore area. Section 2.1 'The Developing Foreshore' and a 1920 aerial photo is reproduced in Appendix C.

The information confirms the existence of a public garden reserve and rifle range on an early Parish plan. Public recreational use is evident from prior to 1869 but it was not until the early 1900s that Elwood Beach really began to develop as recreational centre with the removal of the rifle butts in Head Street in 1907, the founding of the Elwood Lifesaving Club at Head St (1913), Elwood Sea Canoe (later named Sailing) Club (1916), a lawn bowling club (1925), bathing pavilion (1928), tennis courts (1931), a croquet club (1937), and an angling club (1939). Many of the structures were demolished or rebuilt after WWII, although the bowling club pavilion remain, now used as the kinder building. The scout hall is dated to 1958.

Historical Planning Schemes (1954, 1959, 1968, 1985)

A review of historical planning schemes for the site identified the following information:

- Year 1954: Land is zoned Parkland (with an area reserved for a roadway through the adjacent sporting grounds)
- Year 1959: Land is zoned Parkland (with area reserved for a roadway removed);
- Year 1968: Land is zoned Parkland; and
- Year 1985: Land is zoned Parkland

Extracts of the historical Planning Scheme searches are provided in Appendix C.

St Kilda Historical Society

The St Kilda Historical Society has published a web page called *Recreation on the Hill and the Beach* (A History of Elwood), reproduced in Appendix C. This reference (http://skhs.org.au/~SKHSflood/Recreation_on_the_Hill_Beach.htm) provides some hard dates for some of the current and past site features.

Historical Maps & Plans

Melways Directory. Lotsearch presents images of Melways maps for 2009 (pg. 42), 1998 (pg. 43), 1986 (pg. 44) and 1978 (pg. 46). Surrounding roads, as existing currently, are shown in each image. In the 1986 map the kindergarten location is occupied by Elwood Bowling Club. Prior to 2009 the BBQ area was located next to Ormond Esplanade and the car parking areas appear to be informally laid out). Surrounding land use includes Elwood Park in all images.

Cartographic Plans. A 1982 cartographic map (Lotsearch, page 45) indicates the site to be within a built-up area with two significant buildings present (Sailing Club and Lifesavers?). a 1933 plan also shows two significant buildings as present plus another at the end of Head St (the former surf lifesaving club).

Melbourne Metropolitan Board of Works (MMBW). The MMBW detailed plan no. 1798 (c.

1911) was viewed. The map indicates a rifle range located parallel to Head St with target butt at the beach end. Adjacent properties south of Head St are shown as Crown land. Refer to Appendix C for a copy of the plan.

Lotsearch Historical Business Directories Search

Lotsearch (pg. 20-27) conducted a review of the Universal Business Directory and Sands & McDougall Directory records, from years 1991, 1984, 1980, 1977, 1974, 1965, 1960, 1950, 1945, 1925, 1905 & 1896.

The review indicated the Elwood Angling Club as the only on-site use (years 1960 to 1984).

Numerous and various businesses of low environmental interest (e.g. confectioners, medical practitioners, etc) are identified along Ormond Esplanade. A number of service stations are identified, but which are not matched to the site. Other businesses with a road match only, however, believed to *have* been onsite included: Elwood Kiosk, Elwood Bowling Club, Tennis Court Proprietor C E Palmer.

Dry cleaners, motor garages and service stations are not matched to the site (Lotsearch, pg. 25-27). No dry cleaners were found. The motor garages and service stations likely relate to former premises (which were audited) that existed east of the site.

Aerial Photographs

As part of the site history review, historical aerial photographs and online images from 1931 to 2019 recent were obtained and reviewed. Table D presents details of the aerial review conducted by Atma Environmental. Refer to Appendix B Lotsearch Report for copies of the historical aerial images.

Table D. Aerial Photograph Observations

Date	Notes
1931	<p>Site: The former Elwood Surf Lifesaving Club building is present at the end of Head St (no evidence of former rifle club). A lawn bowls club and building occupy the area of the current kindergarten. The kiosk building is visible in location of the current lifesaving club/restaurant. Parking is provided behind the beach area. A lawn bowls or croquet club with building occupies the area of the current playground/BBQ. The area of the angling club appears to be bush covered.</p> <p>Surrounding Area: Undeveloped parkland lies to the east, with houses south of Head St and north of Ormond Esplanade.</p>
1942	<p>Site: Two buildings now occupy the site portion near the sailing and angling clubs. Also there, a boat ramp. Two parking lot areas are clearly set out and the former surf clubhouse remains at the end of Head St.</p> <p>Surrounding Area: Area to east developed as a cricket pitch. Further east Elwood Park appears as undeveloped with some fly tipping.</p>

1951	<p>Site: No significant changes noted. A circus tent seems to lie near north of the former surf lifesaving club.</p> <p>Surrounding Area: No changes.</p>
1963	<p>Site: The sea scout hall is now visible. The parking lots are marked and a second ingress point to the Esplanade is visible.</p> <p>Surrounding Area: A pavilion is built on east side of the oval in Elwood Park.</p>
1966	<p>Site: No significant changes noted.</p> <p>Surrounding Area: No significant changes noted.</p>
1970	<p>Site: A large building near the bowls club (now kindergarten) has been removed.</p> <p>Surrounding Area: The beach front area south of the site has been beautified.</p>
1974	<p>Site: The (bowls or croquet?) area to east of the tennis court (now playground) has had the building demolished and perimeter trees removed. Area is full of parked cars. The beach building is new and distinguished by four parapets. The former lifesaving club building at end of Head St is gone.</p> <p>Surrounding Area: No significant changes apparent.</p>
1977	<p>Site: Landscaping south and east of the tennis courts is inferred. No other changes.</p> <p>Surrounding Area: No changes apparent.</p>
1982	<p>Site: The parking lots are reconfigured as per currently.</p> <p>Surrounding Area: Elwood Park to the east and pavilion are developed.</p>
1987	<p>Site: A building in the tennis court area is now visible.</p> <p>Surrounding Area: No new changes apparent.</p>
2001	<p>Site: Lady Forster Kindergarten replaces the old bowls club. Bicycle path constructed. The extant playground and BBQ area is now built. The extant restaurant replaces a section of the beach front building. Head St now terminates in a hookeye.</p> <p>Surrounding Area: Property development to north of Ormond Esplanade.</p>
2014	<p>Site: Bitumen sealing around club houses. Concrete paving in new garden material storage area.</p> <p>Surrounding Area: Redevelopment of sports pavilion to east.</p>
2019	<p>Site: No major changes visible.</p> <p>Surrounding Area: No new changes apparent.</p>

The aerial photography review indicates that the locations of a number of possible past structures. These are indicated on Figure 2. No service stations, quarries or landfills were noted in close proximity to the site.

Land Titles

Atma Environmental did not conduct a historical review of the certificates of land titles for the site as the land is presumed to have always been government owned by the City of Port Phillip, or its predecessor council(s).

5 SITE RECONNAISSANCE

Glenn Berry of Atma Environmental conducted a site visit and environmental inspection of the site on 27 March 2020.

Weather conditions during the site inspection were fine and warm, however, the inspection was limited by the absence of internal building inspections. Refer to Figure 2 for site details and to Appendix D for photos of the site inspection. Observations made are summarised on Table E.

Table E. Environmental Site Inspection Observations

Item	Observations & Descriptions
Occupants & current Site uses / industrial processes	<p>Parkland with various users:</p> <ul style="list-style-type: none"> • Lady Forster Kindergarten and Cafe – a publicly accessible play area adjoins. • Elwood Sailing Club • Elwood Angling Club • Sea Scouts Hall • Elwood Surf Lifesaving Club/toilets/Restaurant • Tennis Courts and associated amenities building • Playground and BBQ area • Parking lots 1 and 2, including garden materials storage yard. <p>No industrial processes noted.</p>
Site surfaces	The site is covered in grass, bush or bitumen parking areas.
Site slope	The site is level with no appreciable slope excepting a 5 m high mound at the north end.
Nearby water features	No water features were found onsite. Port Phillip Bay forms the south-western boundary. There is a water sensitive urban design feature north-east of the sailing club.
Buildings & structures	Various timber and cement block buildings for various site users described above. Parking lots and fencing.
Asbestos containing materials (in buildings or observed)	Obvious ACM structures were not identified. The on-site buildings were not inspected for asbestos as this was not part of the scope of work. No asbestos in, or on soil, was observed.
Surface soils	Soils onsite were comprised mainly of shelly tan coloured sand with minor rubble and ashy impurities in places.
Site filling/cuttings	Evidence of filling (brick inclusions) was noted in the mound at north end. Slightly rubbly soils (presumed filling) were noted in several locations marked 'X' on Figure 2.
Fuel/other storage tanks	No above/below ground fuel or waste oil tanks were noted. There are no retail service stations located adjacent to the site. An above ground water tank was observed behind the Sailing Club building.
Dangerous goods	No dangerous good storage was noted. No additional evidence of chemical or other hazardous substances was identified during the site reconnaissance.
Solid wastes (deposition/storage)	None noted.

Liquid wastes (deposition/storage)	None noted.
Evidence of potential land contamination	No overt evidence of suspected land contamination (e.g. staining, odours, stressed vegetation etc.) was identified, however, minor rubble in places suggest industrial wastes may have been used in the past.
Other observations	The grassy area near the playground appeared to be more ashy than other areas. There were no undesirable ambient site odours/air quality issues. The garden material storage area had a large skip bin, concrete surfacing and was generally tidy and near empty. Fencing surrounded the area.

Site Occupant Interviews

Mr. Ross Lloyd (Elwood Sailing Club) - boat maintenance activities are not conducted onsite, only storage. There have been no concerns/observations regarding site contamination (seepages, etc). Use is limited to storage and club activities. There is no kitchen. There is an internal metal cage for storage of minor hydrocarbon fuels (~four jerry cans) with dispensing out front, or in back of the club house on hard surfaces.

Mr. Tony Byrnes (Elwood Angling Club) – minor fibre glassing chemicals (resin, acetone) for a one-off boat building project are used at site (no hydrocarbons) with any residues disposed offsite. There is a small kitchen, but no grease trap. There have been no concerns/observations regarding site contamination.

Mr. David Rylance (Elwood Surf Lifesavers) – an approved fuel cabinet stores 40-60 L petrol and 2-stroke motor oil for use in boats. Concerns/observations regarding site contamination were limited to a past toilet odour issue. Chemical uses limited to minor quantities of varnish and glue to maintain boats.

6 CONTAMINATION POTENTIAL

The following sections detail the potential for contamination (both site-sourced and migrating) to exist at the site.

6.1 Past, Current and Proposed Use of the Property

The identified site history is summarised on Table F based on a synthesis of all the site historical data collected.

Table F. Summary of Past Site Uses

Year	Site Use(s) / Developments
< 1860s	Bunerong first peoples
1860s-1890s	Garden reserve, military purposes?

+/-1900	Land reclamation
? -1907	Elwood Rifle Club, target butts removed. Elwood Park established.
1921	Original Elwood Surf Lifesaving Club building at Head St (club founded 1913)
1924	Sea Canoe (later Elwood Sailing) Club erected
1925	Elwood Bowling Club established
1931	Public tennis courts built
1937	Croquet Club (playground area?) established
1939	Elwood Angling Club moved to site from Prahran
1958	Sea Scout Hall built
1971	New Elwood Surf Lifesaving Club built
~1982	Parking Lots 1 and 2 (as existing) constructed
~2000	Kinder building and café established. Bicycling path built. Restaurant building replaces part of beach building

Future proposed site uses are understood to be similar as existing uses, with redevelopment activities over an extended period.

6.2 Potential for Site Sourced Contamination

Any commercial, mining, industrial or agricultural activity has the potential to result in site contamination; however, some activities intrinsically give rise to contamination more frequently than others. The Department of Sustainability and Environment (DSE) General Practice Note "*Potentially Contaminated Land*" (June 2005) lists specific industries and land uses that may result in a high or medium potential for contamination.

In accordance with the DSE General Practice Note, past primary site uses which present a high potential for contamination would include the rifle range. Historical site activity considered to present a medium potential for contamination would include past land reclamation (filling). Potential contaminant types and their possible on-site sources are set out on Table H.

Table G. Potential Contaminant Types and On-site Sources

Possible On-site Sources:	Contaminants of Potential Concern:
Historic Uncontrolled Filling & Elevated Mound	<ul style="list-style-type: none"> Industrial waste (rubble) Most commonly: heavy metals & PAHs Less frequently: asbestos, PCBs, BTEX, phenols, cyanide, sulphate
Ex-Rifle Range	<ul style="list-style-type: none"> Lead, antimony, copper Polycyclic aromatic hydrocarbons
Demolished Former Buildings (Former SLS, Croquet & Bowl Clubs)	<ul style="list-style-type: none"> Asbestos cement sheeting Metals, especially zinc, lead, copper

Bowling Green/Croquet Field	<ul style="list-style-type: none"> • OCPs • Fungicides, herbicides, etc (esp. some metals)
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Previous assessments confirm BaP, total PAHs, TRHs, mercury, copper, lead and zinc as actual contaminants on the site with maximum values reportedly exceeding human health-based investigation levels in one or more samples.

6.3 Potential for Migrating Contamination

The site inspection did not identify any nearby sub-surface point sources of potential contamination on adjacent properties.

The surrounding area has a history of residential use with a number of former service station/bus depot sites identified several hundred meters distant. Discrete offsite sources of contamination are considered as being unlikely to affect the site, although it is possible that diffuse levels of background contamination do exist, given former nearby swamplands and former landfilling activity as nearby as in Elsternwick Park.

7 CONCLUSIONS AND RECOMMENDATIONS

The site under investigation consists of approximately 9.42 ha of parkland used for various sporting, recreational and public purposes. It is not subject to an Environmental Audit Overlay, but does include a *sensitive use* in part (Lady Forster Kindergarten). Numerous buildings are currently occupied at the site by a kindergarten/café, Scouts, angling club, sailing club, surf lifesavers/restaurant and tennis court.

A review of the site's physical site setting indicates that it is located in a coastal sand belt with shallow groundwater of low-moderate salinity. Groundwater likely flows into Port Phillip Bay, directly bordering.

Previous environmental reports confirm the presence of contaminated soil at the site (up to Category B where removed). A Soil Management Plan identifies this, however, no overall site assessment regarding ongoing site uses was provided for review. The land is not on EPAV registers or databases.

Historical information identified a number of past structures and uses. The past use of land at the southern end for a rifle range presents a high potential for contamination in that area. It is apparent from past reports that filling of the land has resulted in general site contamination as expected from the historical review. In addition, potential on-site sources of contamination due to former buildings, lawn bowls and croquet fields are documented. At least one building was reportedly fire destroyed and rebuilt.

Inspection of the site identified a number of locations where minor rubble was admixed with surface soils with the grassy area near playground appearing to be slightly ashy. Several bricks

protruded from a high mound at the north end. Presently, the only fuel storage at site are some limited jerry cans of fuel (sailing club and surf lifesavers).

Detailed assessments of soil and groundwater at the site in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* and *Australian Standards AS4482.1* and *AS 4482.2* are recommended to determine the suitability of the site or parts of the site prior to any proposed new use. This should minimally include sampling of various fill and soil horizons at unbiased grid-based locations and targeted soil sampling locations taking into account the location on site and site history.

The existing Soil Contamination Management Plan should continue to be implemented (that is: eliminate/reduce waste generation if possible, or if required, manage soils in accordance with IWRGs).

Given the site contains soil contamination and its proximity to Port Phillip Bay, an investigation of groundwater should be considered to ensure CoPP meets its General Environmental Duty and Duty to Manage.

8 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

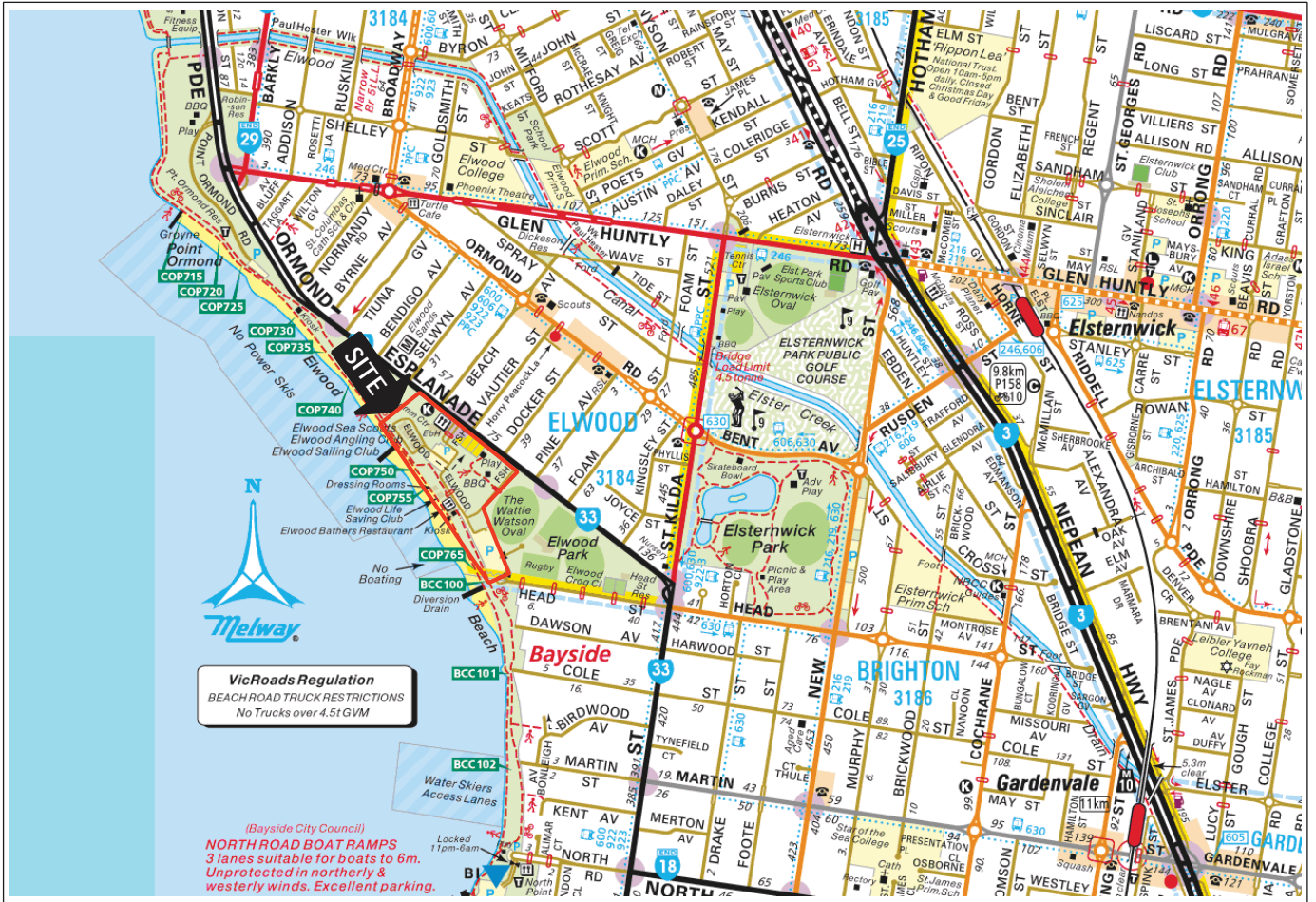
The report consists of the scope of work outlined previously. This report describes the work undertaken and has been compiled for the use of the City of Port Phillip. Its conclusions are only valid for the purpose for which it was requested.

It is valid only when it is in original form, and any person, entity or company other than the City of Port Phillip who rely on the report without specific reference to and permission from Atma Environmental Pty Ltd does so at their own risk.

While every care has been taken in the compilation of this report, to the extent that its conclusions are based on the analysis of the data made available by your organisation or by a third party, no responsibility or liability is accepted for consequences arising from either errors or omissions in that data, or from factors or data which were not made available to Atma Environmental Pty Ltd or which Atma Environmental Pty Ltd could not ascertain by reasonable inquiry in the ordinary course of its investigation.

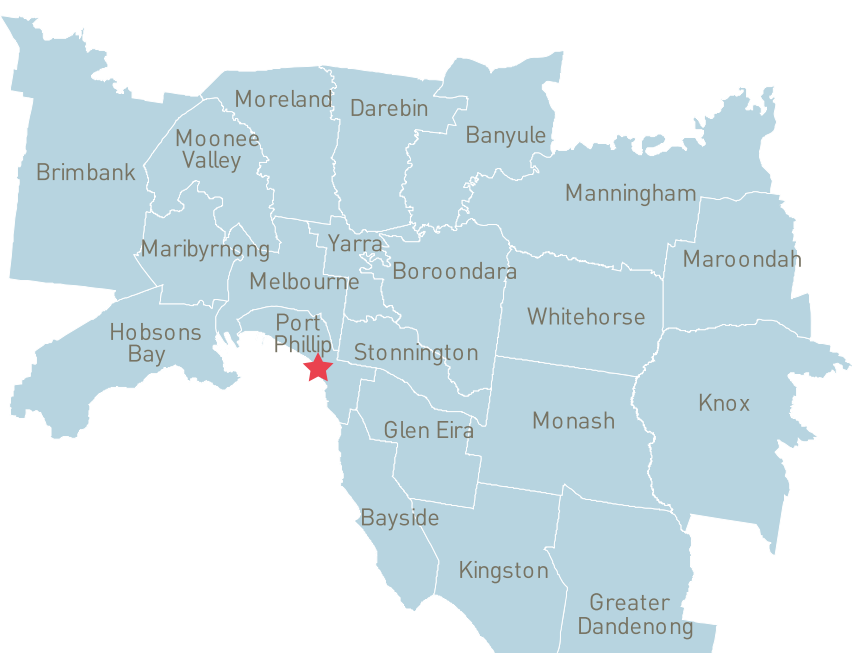
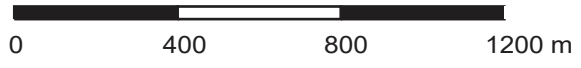
Environmental site assessments document property conditions at the time they are conducted. These conditions may change over time. The site assessment has not specifically considered above ground issues such as lead-based paint and asbestos containing building products.

Any future changes in assessment guidelines, criteria or legislative requirements may alter the outcome of this report.




Imagery: Melways 2020 (Edition 47)

Approximate Scale:



★ Approximate Site Location

Atma Environmental

Client:  **CITY OF PORT PHILLIP**


Project: #1865 Elwood - Prelim Site Investigation

Drawn by: GRB Dated: 26/03/2020 Status: Final

Figure 1. Site Location



Atma Environmental

Client:  **CITY OF PORT PHILLIP**

Project: #1865 Elwood - Preliminary Site Investigation
 Drawn by: GRB Dated: 27/03/2020 Status: Final

Figure 2. Site Details

- LEGEND:**
- Investigation Area
 - Building
 - Historical Features
 - X Rubbly/Ashy Materials Noted