



Contaminated Land Solutions

PHASE 1 SITE INVESTIGATION

1 Adrian Street, Dover

For

Emervest Ltd

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Project No. 002NIDOP1

Prepared by

Wesson Environmental

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DRAFT



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The material and data in this report were prepared under the supervision and direction of the undersigned.

Wesson Environmental

**Prepared by: Dr. Richard Wesson
Environmental Consultant**

Date

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1.0 Introduction

1.1 General

Wesson Environmental were commissioned to carry out a Phase 1 Site Investigation of the site located at 1 Adrian Street, Dover.

The report uses documentary data (refs. 1, 2, 3).

The purpose of this report is to assess the potential risks to human, controlled water receptors and to the wider environment arising from past and present land use, and naturally occurring features present at or near the site.

1.2 Scope of report

This report aims to identify and address the following issues related to the use of the site for residential development:

1. The potential presence of any contaminants.
2. Pathways which may feasibly exist between contaminant sources and receptors.
3. Potential impact on human, controlled waters and the wider environment.

The report will conclude with a preliminary risk assessment which will address issues associated with potential contaminants on the site based on the collation of documentary data.

2.0 Site Location and Description

The site is located at National Grid Reference 631912 141240 and covers an area of 0.06ha.

Current Site Use:

The site comprises a commercial building with a former car parking area to the east.

Site Boundaries:

The site is bordered by commercial buildings with associated land to the south and west. Roads border the site to the north and east.

Surrounding Site Use:

The surrounding area is predominantly commercial.

Storage Tanks:

No tanks are located on the study site.

3.0 Site History

Historical maps have been procured from the Ordnance Survey, which show development of the site and its surrounding area from 1865 – 2019.

These maps are contained in Appendix B. Please note that maps showing no significant change to the site or surrounding area are not referred to in this section.

Site Area	Date	Scale	Surrounding Area
A number of buildings occupy the site whose use is unknown but appear to be residential and/or commercial. A small road runs north west to south east through the site	1865	1:2500	The surrounding area appears similar to the site with numerous buildings present that appear to be residential and/or commercial. A quay is present 80m to the south. An engine house and slip way is shown 90m to the south east. Workshops are shown 200m to the south. A drying ground is shown 70m to the north west with a cemetery present to the west of this feature.
	1898	1:2500	Housing is present on what was shown as the drying ground. Allotments are shown 90m south west of the site.
Buildings on the central part of the site are no longer shown and we would surmise that this is due to WWII bombing. The Western part of the site is shown as a hall. A public house is present on the south eastern part of the site.	1956	1:2500	A number of ruins are shown 50m north west of the site adjacent to the church indicating bomb damage. Buildings to the south and east of the church are no longer shown which again is likely to be due to WWII bombing. A garage is shown 80m to the north. A depot is shown 50m to the south. Housing is shown to the north of Adrian Street.
The public house is no longer present.	1970	1:1250	The depot to the south west is shown as a timber depot.
No buildings are present on the eastern part of the site. The hall is adjoined by a building to the east.	1973	1:1250	An electricity substation is shown 50m south east of the site. A ballast works is shown to the south west of the timber depot.
The building on the site is shown as a night club.	1994	1:1250	The depot and ballast works to the south west are no longer shown.
	1995	1:1250	The substation to the south east is no longer shown.

3.1 Areas of Disturbed Ground

No areas of disturbed ground are indicated on mapping.

3.2 Intended Site Use

The site is to be developed for mixed use comprising office, commercial and residential.

3.3 Historical Industrial sites

3.3.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

74 records found within 500m. Nearest:
31m SE. Unspecified Depot. Date: 1979.
59-77m SE. Quay. Dates: 1897-1979

3.3.2 Historical Tank Database

32 records found. Nearest:
117m E. Unspecified tank. Date: 1865.

3.3.3 Historical Energy Features Database

41 records found. Nearest:
41m SE. Electricity substation. Dates: 1973-1993.

3.3.4 Historical Petrol and Fuel Site Database

1 record found:
386m NW. Filling station. Date: 1988.

3.3.5 Historical Garage and Motor Vehicle Repair Database

26 records found. Nearest:
84m N. Garage. Date: 1956-1973.

3.3.6 Historical military sites

No records found

4.0 Geological Setting

4.1 Geology

Current geological maps of the region² have been consulted to provide information on geological conditions associated with the site.

Artificial/Made Ground:

No records found within 500m.

Superficial Geology:

The majority of the site is underlain by Storm Beach Deposits comprising sand and gravel.

The northern extremity is underlain by Head comprising clay, silt, sand and gravel.

Both Intergranular and mixed flow are present, and permeability is classified as very low to very high.

Bedrock/solid geology:

Bedrock is shown as Chalk of the Newpit Chalk Formation. Fracture flow is present, and permeability is classified as very high.

4.1.1 Man Made/ Induced Hazards

Hazard	Records
Natural cavities	No records found.
Brit Pits (Currently active and closed surface and underground mineral workings)	No records found.
Surface ground workings	33 records found. Nearest: 59-77m SE. Quay. Dates: 1897-1979. 78m SE. Dock. Dates: 1961-1979. 97m W. Cemetery. Date: 1872.
Underground workings	13 records found. Nearest: 414m SW. Unspecified shaft. Date: 1979.
Historical Mineral Planning Areas	No records found
Non-coal mining	1 record found: On site. Chalk. Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Mining Cavities	10 records found. Nearest: 89m W. Snargate Street Tunnels' (North). Mineral: Chalk.
Coal Mining	No records found
Brine extraction	No records found
Gypsum extraction	No records found
Tin Mining	No records found
Clay mining	No records found
Cornwall and Devon Metalliferous Mining	No records found

4.1.2 Natural Hazards

Hazard	Risk
Shrinking/Swelling clay	Very Low
Running Sand	Low
Compressible deposits	Moderate
Collapsible deposits	Very Low
Landslides	Moderate
Ground Dissolution	Very Low
Radon	Between 3% and 5% properties are above the Action Level. Basic radon protective measures are necessary.

5.0 Environmental Setting

5.1 Hydrology and Hydrogeology

5.1.1 Groundwater

The superficial deposits are classified as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The bedrock is classified as a Principal Aquifer. This refers to geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers.

5.1.2 Soil Vulnerability

Soils are classified as being high leaching class with an infiltration value of >70% and a dilution factor of 300-550mm/year. The superficial deposits are likely to have a thickness of <3m.

5.1.3 Surface and Groundwater Abstraction Points

6 groundwater abstractions are shown within 1000m. Nearest: 683m NW. Details: Potable water supply – direct.

No surface water abstractions are shown within 1000m.

There are 17 potable water abstractions within 1000m. Nearest: 683m NW. Details: Potable water supply – direct.

5.1.1 Source Protection Zones

No records within 500m.

5.1.1 Surface water

The nearest record refers to the River Dour, located 77m to the south east.

5.1.2 Flood Risk:

No Environment Agency/Natural Resources Wales floodplains are shown within 50m of the study site.

5.1.3 Surface Water Flooding

Risk of flooding on the site is considered to be Negligible for a 1 in 100 year return period.

5.1.4 Groundwater flooding

The highest risk on site is classified as Moderate.

5.2 Sensitive Land Uses

Uses within 1km

Designation	Details
Sites of Special Scientific Interest (SSSI)	No records found
Ramsar sites	No records found
Special Areas of Conservation (SAC)	No records found
Special Protection Areas (SPA)	No records found
National Nature Reserves (NNR)	No records found
Local Nature Reserves (LNR)	1 record found: 174m W. Name: Western Heights.
Ancient Woodland	No records found.
Biosphere Reserves	No records found
Forest Parks	No records found
Marine Conservation Zones	No records found
Green Belt	No records found
Nitrate Sensitive Areas	No records found
Nitrate Vulnerable Zones (NVZ)	871m N. East Kent.
World Heritage Sites	No records found
Areas of Outstanding Natural Beauty (AONB)	No records found
National Parks (NP)	No records found
Conservation Areas	4 records found. Nearest: 61m E. Dover – Waterloo Crescent
Scheduled Ancient Monuments	5 records found. Nearest: 63m NW. South-western section of the Roman Fort of the Classis Britannica, near Albany Place
Registered parks and gardens	No records found

5.3 Landfill and Other Waste Sites

Records Searched:	Details
Active or recent landfill	No data found
Historical landfill (BGS records)	No data found
Local Authority and Mapping Records	No data found
Historical Landfills from EA/NRW	No data found
Historical waste sites	No data found
Licensed waste sites	No data found
Waste exemptions	16 records found. Nearest: 162m SE. Using waste exemption. Use of waste in the construction of entertainment or educational installations etc.

5.4 Current Land Use

There are 20 Contemporary Trade Directory Entry recorded within 250m of the study site. 4 are located within 100m:

- 10m SE. Electronic Equipment.
- 13m SE. Vehicle hire and rental
- 75m SE. Electricity substation.
- 89m N. Electricity substation.

Full details are contained in Appendix C.

5.5 Petrol and Fuel Sites

4 records found within 1000m:
304m NE. Obsolete.

5.6 Electricity cables

No records found

5.7 Underground Gas Pipelines

No records found

5.8 Environmental permits, Incidents and Registers

Industrial Sites Holding Licences/ Authorisations:	Records Held:
Sites Determined as Contaminated Land under Part 2A EPA 1990	No records found
Control of Major Accident Hazards (COMAH)	No records found
Regulated explosive sites	No records found
Hazardous substance storage/usage	No records found
Historic IPC Authorisations	No records found
Part A (1) Licensed industrial activities	No records found
Licensed pollutant release (Part A(2)/B)	5 records found. Nearest: 316m E. Process: Unloading of Petrol into Storage at Service Stations
Radioactive Substances Authorisations	No records found
Licensed Discharges to controlled waters	14 records found. Nearest: 72m E. Sewage Discharges - Sewer Storm Overflow – Water Company
Pollutant release to surface waters (Red List)	No records found
Pollutant release to public sewer	No records found
List 1 Dangerous Substances	No records found
List 2 Dangerous Substances	No records found
Pollution Incidents	3 records found. Nearest: 243m SE. Pollutant Description: Algae
Pollution inventory substances	No records found
Pollution inventory waste transfers	No records found
Pollution inventory radioactive waste	No records found

6.0 Walkover survey and other information

The site was observed to comprise a vacant building to the west with the eastern part of the site occupied by a car park. An office building was present to the south with car parking bordering the site to the west. The vacant building on the site is understood to have previously been in use as a night club. The western part of the site slope steeply to the west, whilst the car park area slopes gently east and south. The car park was surfaced with tarmac and was in good condition with raised planters present.

No storage tanks were evident on the site and there was no evidence of waste materials being present.

7.0 Risk Assessment

7.1 Potential Sources of Contamination

A number of buildings were shown on historical mapping occupying the study site with little change until post war maps. At this point, the buildings on the central part of the site are no longer present and we would surmise that this may be due to WWII bombing which would be consistent with what was observed in the wider area. The public house which occupied the south eastern part of the site is no longer shown from 1970, with buildings removed from the east of the site by 1973 mapping. Therefore, there appear to have been various changes to buildings on the site in the second half of the 20th century both as a result of bombing and development work. This is likely to have led to the presence of made ground on the site. Potential contaminants will include heavy metals, polycyclic aromatic hydrocarbons (PAH) and asbestos, the latter of which may have been present in building materials and incorporated in soils during destruction of buildings and during demolition.

7.2 Preliminary Conceptual Model

In developing the conceptual model, it is critical that not just the source of any potential contamination is assessed but also potential receptors and pathways. The future use of the site may introduce new pathways to any contaminants that may be present. A change in use of the site may also introduce human receptors to different exposure scenarios.

As discussed in section 7.1, there is considered to be potential for heavy metals, PAH compounds and asbestos to be present in site soils, particularly on the eastern part of the site. These contaminants may impact site users through pathways that include ingestion of soils, consumption of home grown produce, dermal contact and dust inhalation which may occur outdoors or indoors as a result of backtracked dust.

However, the layout of the site is such that building footprint and permanent hardstanding is present throughout with no provision for soft landscaping. Consequently, these pollution pathways are not present and there is not considered to be a human health linkage present.

Whilst the majority of the site is shown as underlain by sand and gravel that would be anticipated to have a high permeability and overlie a principal Aquifer. However, the anticipated contaminants will demonstrate a low aqueous solubility and the presence of building footprint/hardstanding means that negligible infiltration will occur. As a consequence, a controlled waters pollution linkage is not considered to be present.

Therefore, risks to human health and to controlled waters considered to be **NEGLIGIBLE**.

7.3 Ground gas

No features are indicated within 250m that have the potential to generate ground gas. Therefore, risks from ground gas are considered to be **NEGLIBLE**.

7.4 Mining

Records do not indicate the presence of mining hazards that may impact the site.

8.0 Conclusions and Recommendations

The review of documentary information indicates that there is a **NEGLIGIBLE** risk to human health and to controlled waters. Risks from ground gas are considered unlikely to be present.

All site investigations carried out in the UK should follow the principles set out in CLR11. This specifies that a phased approach should be used with a desk top study carried out in the first instance in all cases. Where this does not indicate the potential for a pollutant linkage, there is

not considered to be a requirement for further stages such as intrusive investigations that involve the physical sampling of soils⁴.

No further investigative measures are recommended. However, we suspect that the eastern part of the site is likely to have undergone WWII bomb damage and we would therefore consider it prudent to carry out a UXO risk assessment to establish likely potential risks to the project from this source. This should be made a condition of planning and carried out prior to construction work commencing.

Should during any works on the site, evidence of contamination become apparent, this should be reported to the Local Authority contaminated land officer.

9.0 Statement of Limitations

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project, without an independent check being carried out as to its suitability, and prior written authority of Wesson Environmental being obtained. This document can be relied upon by Emervest Ltd . Wesson Environmental accepts no responsibility or liability for the consequences of this document being used for any purpose other than the purpose for which it was commissioned. Any person using or relying on the document for such other purpose, agrees, and will by such use or reliance, be taken to confirm his acceptance, to indemnify Wesson Environmental for all loss or damage resulting therefrom. Wesson Environmental accepts no responsibility or liability for this document to any other party.

10.0 References

1. Ordnance Survey Maps – Collated for Wesson Environmental by Groundsure. Ref: WES-6756294.
2. Groundsure Enviro and Geo Insight. Ref: WES-6756295.
4. Model procedures for the management of land contamination (CLR11) 2004. Environment Agency

Appendix A

Figures



Figure 1. The building on the western part of the site

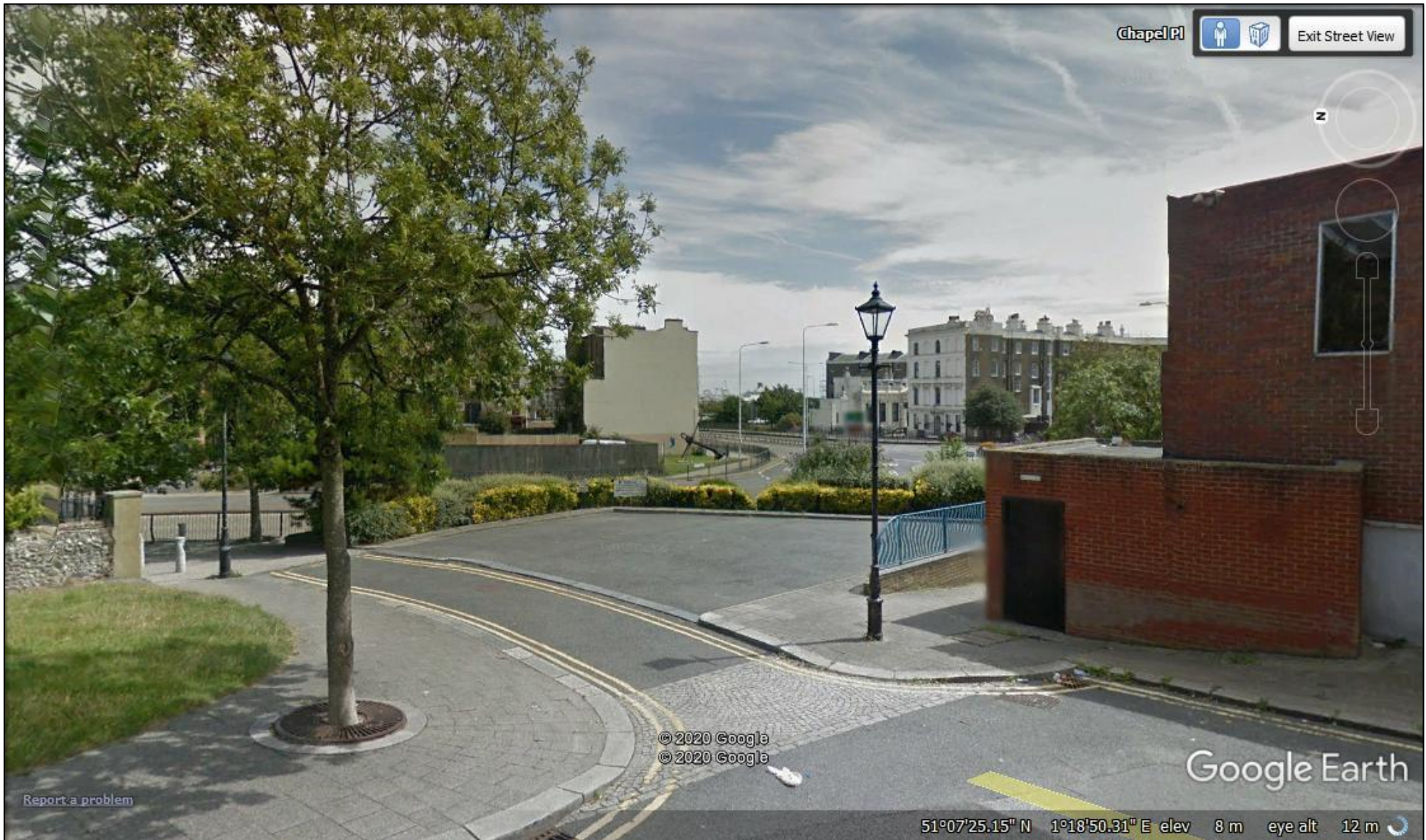


Figure 2. The eastern part of the site showing the car park.



Figure 3. The offices to the south.



Figure 4. The site from the north east.

APPENDIX B
Historical Maps

APPENDIX C
Environmental Reports