# Tosca
# 41 High Street
# Shoreham by Sea

## Preliminary Ground Contamination
## Risk Assessment Report

ASHDOWN SITE INVESTIGATION
L • I • M • I • T • E • D

**Report No. R17-12531/ds**

**October 2017**

**Report prepared for the benefit of:**

Tosca Bar Ltd.
20a Southwick Square
Southwick
West Sussex
BN42 4FJ


ADUR & WORTHING
PLANNING SERVICES

| | |
|---|---|
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| Document Control | | |
|---|---|---|
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| Revisions | | |
|---|---|---|
| **Revision No.** | **Revision Date** | **Notes** |
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The risk assessment presented in this report follows 'source-pathway-receptor' techniques for the determination of whether a site is contaminated. This is standard practice in the UK, being intrinsic to Part 2A of the Environmental Protection Act 1990 as amended.

The report considers the proposed end users as the most sensitive human health receptors. If significant risks to construction workers are identified by the preliminary assessment attention is drawn to this, although it is noted that no assessment of risk from acute exposure has been undertaken in this connection.

This report is not intended to be either an ecological, archaeological or flood risk assessment. An appropriate specialist should be consulted about any concerns that may arise in this regard.

## EXECUTIVE SUMMARY

The following presents a summary of the main findings of the preliminary ground contamination risk assessment. It is emphasised that no reliance should be placed on any individual point until the whole of the report has been read as other sections of the report may put into context the information contained herein.

It is proposed to add an elevated terrace to the rear of the existing Tosca restaurant at High Street, Shoreham by Sea. The terrace will be approximately 1.5m above the current ground level and will be used for outdoor dining, with the area beneath the terrace used for storage.

The site currently comprises a small wooden terrace extending over the eastern part of the site, with an area of unsurfaced ground in the west.

The site was open land to the rear of a terrace of buildings fronting High Street to the north at the time of the earliest mapping referenced. A small building was shown on the site on the 1931 map, but was no longer present after the 1951 mapping review.

Reference to geological datasets indicates that the site is expected to be underlain by Head overlying White Chalk Subgroup deposits. A previous ground investigation identified the Beach and Tidal Flat Deposits to be present above the Head and the White Chalk Subgroup deposits.

The Head and White Chalk Subgroup deposits are classed as Secondary Undifferentiated and Principal aquifers, respectively. The site does not lie within an Environment Agency Source Protection Zone with regard to the protection of the quality of groundwater that is abstracted for potable supply.

The preliminary contamination risk assessment did not identify any potential complete pollutant linkages with regard to either proposed end users of the site or controlled waters.

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# 1. INTRODUCTION

It is proposed to add an elevated terrace to the rear of the existing Tosca restaurant at High Street, Shoreham by Sea. The terrace will be approximately 1.5m above the current ground level and will be used for outdoor dining, with the area beneath the terrace used for storage. A copy of the proposed development layout is presented in Appendix A.

Ashdown Site Investigation Limited was requested to provide an estimate for carrying out a preliminary ground contamination risk assessment of the site by Rex Adams of RJA Planning & Building Consultants Ltd. 1st Floor, 10 High Street, Shoreham by Sea, West Sussex, BN43 5DA. The scope of the works allowed for and the terms and conditions under which the works were to be undertaken were set out within the offer letter Q17-6407, dated 28th September 2017. The instruction to proceed was received on behalf of the client, Tosca Bar Ltd., in an email dated 12th October 2017.

The objectives of the works were to:

a) Establish the expected geology, hydrogeology and hydrology at the site;
b) Ascertain the development history and current site use; and
c) Develop a preliminary conceptual model of the site identifying potential complete pollutant linkages relating to end users of the proposed development works, to controlled waters beneath and in the vicinity of the site, or to other off-site sensitive receptors, if identified.

The preliminary conceptual model has been based on the findings of a walkover survey and reference to historical Ordnance Survey maps and published geological and environmental information obtained from various sources.

Copies of the historical maps and geo-environmental data referred to in this report are included in a separate volume[1]. It is noted that the boundary shown on the historical maps and data covers the entire footprint of the restaurant along with the proposed area of extension to the rear. The area of assessment is limited to that shown on Figure 2 of this report.

An intrusive ground investigation was undertaken at the site in August 2017 by Ashdown Site Investigation Ltd. for geotechnical assessment purposes. A Geotechnical Assessment Report was produced (report ref: R17-12343, dated August 2017) the findings of which are referred to as part of this assessment.

[1] Geo-Environmental Data and Historical Maps (Ashdown Site Investigation Limited, Report Number R17-12531/map, dated October 2017.

## 2. WALKOVER SURVEY

The site comprises a roughly rectangular shaped plot of land located to the rear of Tosca Restaurant, 41 High Street, Shoreham-by-Sea, West Sussex and is centred on the approximate Ordnance Survey national grid reference TQ 2146 0498. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively. Photographs taken during the walkover survey are included in Appendix B.

The site is bounded to the north by the existing brick built restaurant building which comprises part of a terrace fronting High Street to the north. To the south is a footpath, adjacent to which is the River Adur. An open area used for car parking lies to the east, and a footpath lies to the west. An electricity sub-station is present within the car park to the east.

The east of the site comprises an existing wooden terrace used by the restaurant. The western part of the site comprises an area of rough surfaced open land.

## 3. ENVIRONMENTAL AND GEO-ENVIRONMENTAL DATA REVIEW

### 3.1 Geological and Hydrogeological Information

#### *3.1.1 Expected Geology, Aquifer Designation & Groundwater Vulnerability*

The stratigraphic succession that may be expected to underlie the site is presented in the following table.

*Table 1. Expected Strata, Aquifer Designation and Description*

| Type | Stratum | Aquifer Designation | Source Protection Zone |
|---|---|---|---|
| **Superficial** | Beach and Tidal Flat Deposits | Secondary Undifferentiated Aquifer | The site does not lie within an Environment Agency Source Protection Zone with regard to the protection of the quality of groundwater that is abstracted for potable supply. |
| | Head | | |
| **Bedrock** | Newhaven Chalk Formation | Principal Aquifer | |

It is noted that the intrusive investigation recorded the presence of the Beach and Tidal Flat Deposits above the Head. The Beach Deposits comprise deposits of shingle, sand, silt and clay which may be bedded or chaotic. Beach deposits may be in the form of dunes, sheets or banks. The Tidal Flat Deposits comprise commonly silt and clay with sand and gravel layers, and possible peat layers, from the tidal zone. The undifferentiated Beach and Tidal Flat Deposits comprise a composite of both of the above.

The superficial Head is a polymict deposit generally comprising clay and sandy clay with variable amounts of gravel and cobbles. The lithology of the Head reflects the nature of the parent solid strata; the gravel and cobble fraction comprising chalk and flint. The material is likely to have been disturbed by intense frost action in a periglacial environment. It is usually poorly sorted but may be stratified where it has been subject to solifluction and/or hillwash and soil creep. It may form infill to solution features within the chalk.

The White Chalk Subgroup comprises a weak, white chalk locally with flint bands together with scattered nodular flints. It may be expected to have a deeply convoluted upper surface as a result of solution weathering. The presence of natural cavities in the chalk is very rare and

solution features, if present, can be expected to be infilled with Quaternary deposits such as the Head.

The infill material may be significantly weaker than the surrounding chalk. Solution features can comprise pipes extending to several metres deep into the chalk or conical depressions and basin shaped structures.

### 3.1.2 Groundwater and Surface Water

The surface water features and groundwater and surface water abstraction licences closest to the site are presented in the following table.

*Table 2. Groundwater and Surface Water*

| Section | Discussion |
|---|---|
| **Groundwater** | No groundwater abstraction licences are indicated within 1km of the site. |
| **Surface Water** | The nearest recorded surface water feature is the River Adur, located 3m to the south of the site.<br><br>No surface water abstraction licences are indicated within 1km of the site. |

### 3.1.3 Flooding

The site lies within an Environment Agency Flood Zone 3.

The site lies within an area where the British Geological Survey report "Potential for Groundwater Flooding of Property Situated Below Ground Level" and "Potential for Groundwater Flooding to Occur at Surface".

The GeoSmart Groundwater Flood Risk (GW5) Map (GeoSmart, 2017)[2] concurs, and states that the risk of groundwater flooding at the site is 'moderate'.

### 3.1.4 Mining, Natural Ground Subsidence & Radon

*Table 3. Natural Ground Subsidence Hazards*

| Section | Risk Assessment |
|---|---|
| **Coal Mining Affected Areas** | In an area that might not be affected by coal mining |
| **Non-Coal Mining Areas of Great Britain** | Rare |
| **Potential for Collapsible Ground Stability Hazards** | Very Low |
| **Potential for Compressible Ground Stability Hazards** | No Hazard Identified on site, though a moderate hazard is identified 1m to the south |
| **Potential for Ground Dissolution Stability Hazards** | Very Low |
| **Potential for Landslide Ground Stability Hazards** | Very Low |
| **Potential for Running Sand Ground Stability Hazards** | No Hazard Identified on site, though a moderate hazard is identified 1m to the south |

[2] GeoSmart Information Limited, 2017. National Groundwater Flood Risk Map (GW5)

| | |
|---|---|
| **Potential for Shrinking or Swelling Clay Ground Stability Hazards** | Very Low |
| **Radon Affected Areas** | The site is reported to be within an area where between 1% and 3% of properties are above the action level requiring radon gas protection measures to be installed in new buildings. However, no radon protective measures are reported by the British Geological Survey to be necessary in the construction of new dwellings. |
| **Radon Protection Measures** | No radon protection measures are reported by the British Geological Survey to be necessary in the construction of new dwellings or extensions. |

It should be noted that the assessment provided within the data represents a generic assessment only. Reference should be made to the previous geotechnical assessment undertaken for the site for site specific details.

## 3.2 Agency & Hydrological Data

The data has been reviewed and there are no entries within this section which are considered to pose a significant risk to the site.

## 3.3 Waste

The data has been reviewed and any entries referring to locations on, or in close proximity to, the site that may pose a potential risk are discussed within the following table.

*Table 4. Waste Data*

| Section | Discussion |
|---|---|
| **Historical Landfill Sites** | Ropetackle Road landfill is located 175m north west of the Site; the landfill received inert, commercial and household waste between 31st December 1945 and 31st December 1949. |

## 3.4 Hazardous Substance

The data has been reviewed and there are no entries within this section which are considered to pose a significant risk to the site.

## 3.5 Industrial Land Use

The data has been reviewed and any entries referring to locations on, or in close proximity to, the site that may pose a potential risk are discussed within the following table.

*Table 5. Agency & Hydrogeological Data*

| Section | Discussion |
|---|---|
| **Contemporary Trade Directory Entries** | Adur Blinds and Curtains (inactive) blinds, awnings and canopies located 34m north west of the Site. |

### 3.6 Sensitive Land Use

There are no sensitive land uses on or in the vicinity of the site that are considered to be at risk from the proposed development.

## 4. HISTORICAL MAP REVIEW

Historical Ordnance Survey maps covering the area of the site have been reviewed and are summarised in the following table.

It is noted that each map presents information applicable at the time of the survey (or revision date) and is subject to surveying and cartographic errors and/or advances. Revisions to maps are made at irregular intervals and it is possible that significant developments may have taken place on or within the vicinity of the site that are not shown on the maps.

'In the Vicinity of the Site' generally refers to features of relevance within approximately 250m of the site boundary, but may also include more distant features if considered to be pertinent to the assessment of the development history.

*Table 6. Summary of Significant Features Identified on Historical Maps*

| Map Details | On-Site | In the Vicinity of the Site |
|---|---|---|
| **1875 1:2,500** | The site comprises an open area of land to the north of the River Adur. | The River Adur runs east to west to the south of the site. To the north, the eastern side of a terraced building, fronting High Street, is shown on the footprint of the existing restaurant. |
| **1912 1:2,500** | The site and the area adjacent to it is labelled as a wharf. | |
| **1931 1:2,500** | A structure is shown on the eastern side of the site. | |
| **1952 1:2,500** | The site is now shown as clear of structures. | The terraced buildings to the north have been extended and now cover their existing footprint immediately adjacent to the site. |

## 5. PREVIOUS INVESTIGATION

The previous investigation comprised the excavation of a deep (10m) borehole in the centre of the area of proposed extension along with a foundation inspection pit excavated on the rear elevation of the existing restaurant building.

The borehole was excavated through a thin cover of asphalt underlain by sub-base extending to 0.2m depth, before progressing into undisturbed Beach and Tidal Flat Deposits.

The foundation inspection pit recorded made ground to be present to a depth of 0.6m immediately adjacent to the existing wall. The made ground was described as a sandy clay with gravel of brick, flint, chert and charcoal-like material.

# 6. PRELIMINARY CONTAMINATION RISK ASSESSMENT

## 6.1 Introduction

The risk assessment considers the potential sources of contamination identified, the receptors that may be present in view of the development proposals and the contaminant pathways by which these may be linked. A complete pollutant linkage is only deemed to exist where all three are present and a site is considered suitable for use where no complete pollutant linkages are identified.

Where a complete pollutant linkage is deemed to be present, an assessment of the level of risk associated with the pollutant linkage has been carried out in line with current guidance[3].

The level of risk is determined using the risk matrix presented in the following table. Classifications of probability, consequence and risk are presented in Appendix D.

*Table 7. Risk Assessment Matrix*

| | | Probability | | | |
|---|---|---|---|---|---|
| | | **Very Low** | **Low** | **Moderate** | **High** |
| **Consequence** | **Very Minor** | Negligible | Very Low | Low | Low/Moderate |
| | **Minor** | Very Low | Low | Low/Moderate | Moderate |
| | **Moderate** | Low | Low/Moderate | Moderate | High |
| | **Severe** | Low/Moderate | Moderate | High | Very High |

## 6.2 Basis of Assessment

The assessment of risk has been undertaken on the basis that the proposed development for the site comprises the provision of a new raised outdoor terrace, underlain by a half height storage area. The expected construction scheme will involve provision of a concrete slab at ground level off which the terrace will be constructed. No contact with the underlying soils will be possible by either patrons or workers at the restaurant and no new enclosed working areas will be created.

The proposed development layout is presented in Appendix A. Should the proposed development plans be altered, a revised risk assessment may be required.

## 6.3 Potential Contamination Sources Identified

The following potential source of contamination has been identified by the preliminary contamination risk assessment:

- Potential for made ground from historical demolition works

Although the potential for made ground exists due to the historical demolition of a small structure on the site, it is noted that the previous investigation did not find any evidence of made ground in the centre of the site, and only a shallow depth immediately adjacent to the

[3] Contaminated Land Risk Assessment: A guide to good practice, CIRIA C552, 2001.

existing building. In any event, there will be no viable contaminant pathways linking any potential made ground with proposed end users of the development.

Although an electricity sub-station is present within the adjacent car parking area, this is considered to be too far from the site to represent a significant potential source of contamination.

## 6.4 Preliminary Conceptual Model

The preliminary conceptual model for the proposed development is presented in Appendix C.

In the absence of any identified potential pollutant linkages, no further risk assessment is considered to be necessary.

## 6.5 Discovery Strategy

Although no complete pollutant linkages are considered to be present relating to end users of the development or controlled waters beneath the site, if, during the course of the site clearance and development works, any materials not previously identified by the investigation that are suspected of being 'contaminants' are encountered, then the following procedure should apply:

- All works in that area should cease and the site manager should be informed.
- Advice should be sought from suitably qualified and experienced personnel as to whether any further site inspection, sampling, testing and/or assessment is deemed necessary.
- If required, the conclusions of any assessment and any proposed remedial works (if required) should be agreed by the local authority.
- If necessary, full details of any remedial works should be included in a verification report for the site.

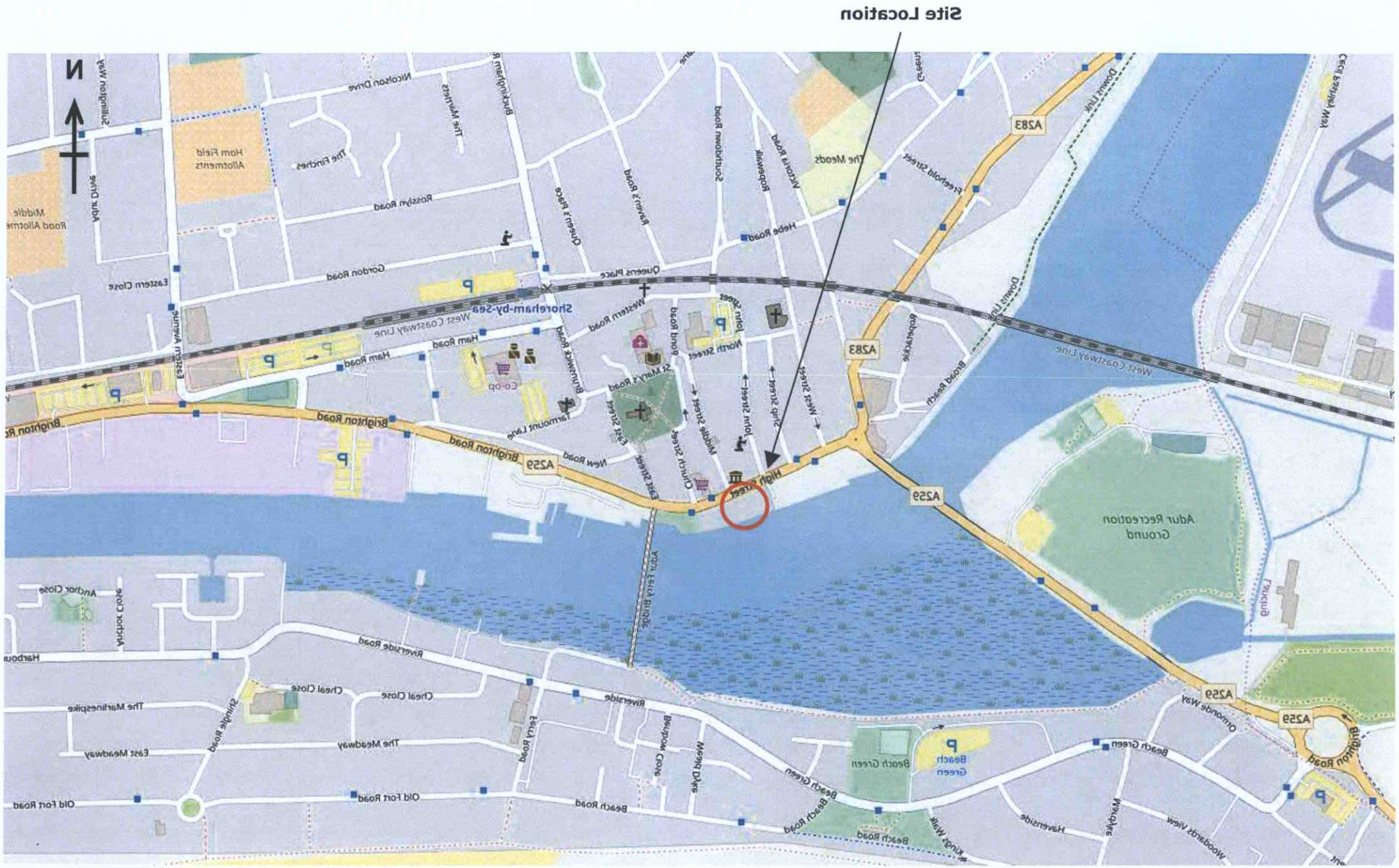
Suspected 'contamination' may take the following form, though it is noted that this list is not exhaustive and site operatives should ask if they are at all unsure of any findings:

- Soil or water looks oily and/or has an oily odour
- Soil or water has a solvent type of odour
- Significant quantities of man-made materials within fill such as paint cans, car parts, glass fragments
- Suspected asbestos containing materials (insulating boards, cement, loose fibres etc.)
- Significant volumes of clinker like or ashy material
- Sand bags, and or/ subsurface concrete structures
- Animal carcasses or evidence of animal burial pits

**Ashdown Site Investigation Ltd.**
**October 2017**

## FIGURES

Figure 1 Site Location Plan
Figure 2 Site Walkover Plan




© OpenStreetMap contributors, CC BY-SA

| | | | |
|---|---|---|---|
| ASHDOWN SITE INVESTIGATION L·I·M·I·T·E·D | Site: Tosca, High Street, Shoreham-by-Sea | Site Location Plan. Not To Scale | Figure 1 R17-12531 |

Site: Tosca, High Street, Shoreham-by-Sea

Site Walkover plan.
Not To Scale

Figure 2
RIZ-12521

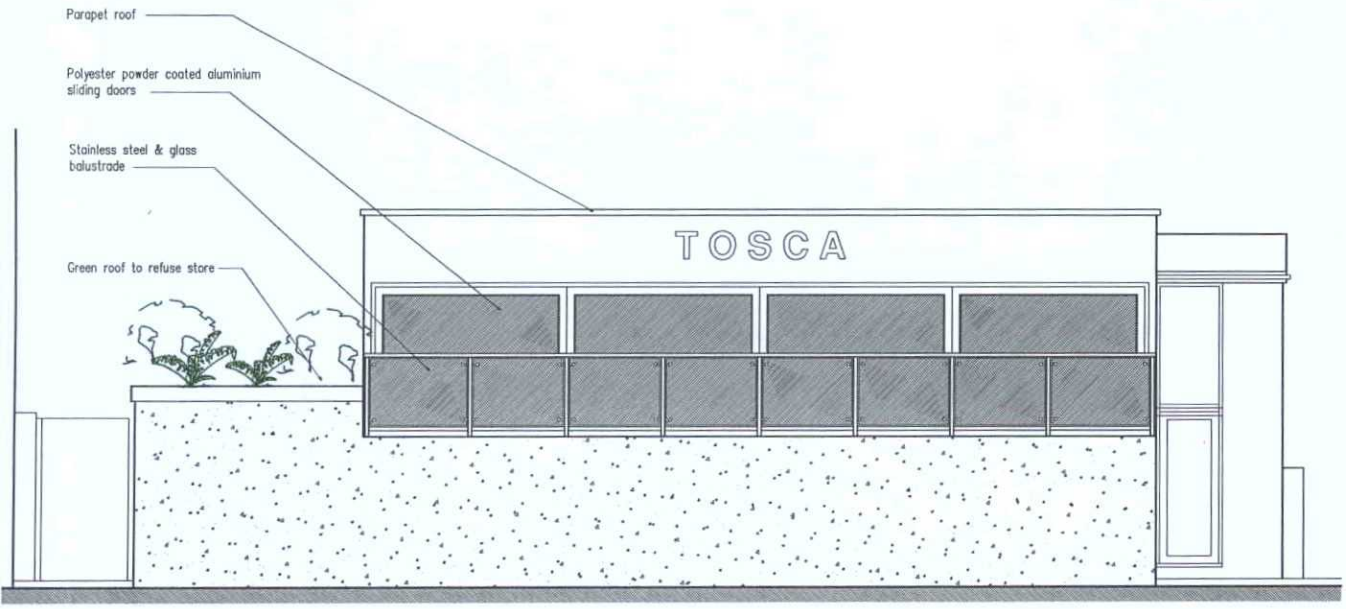
ASHDOWN SITE INVESTIGATION
D.E.T.M.I.L.

## APPENDIX A

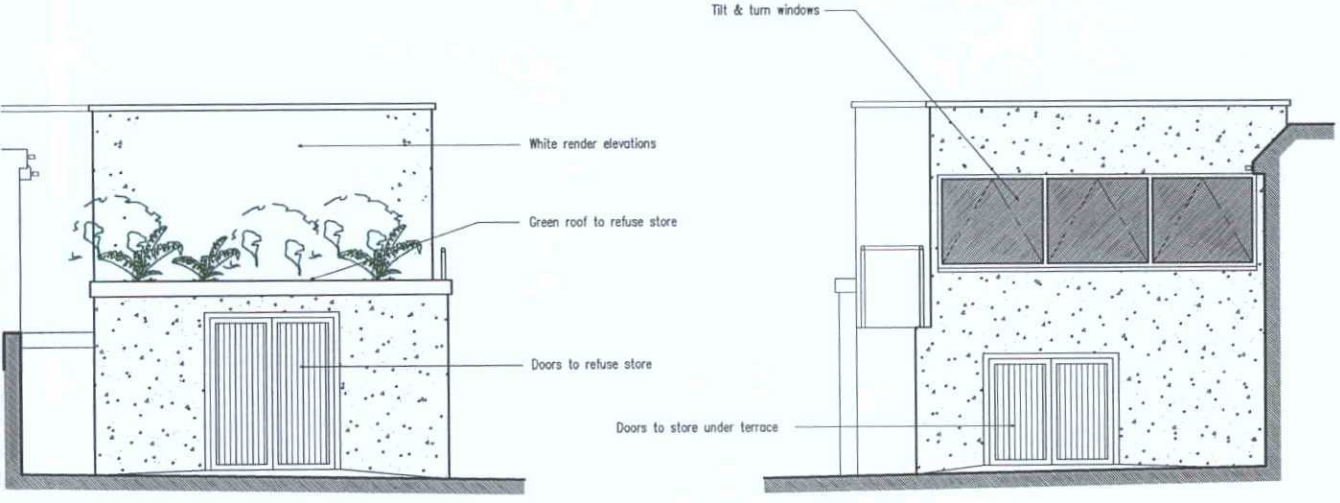
Proposed Development Plans

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

1:50 Scale Bar




South Elevation




West Elevation




East Elevation

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Chartered Institute of Architectural Technologists

PROJECT: Tosca Restaurant Shoreham-By-Sea

DRAWING TITLE: Proposed Floor Plans & Elevations

CLIENT: MMr E. Godanci

DWG NO: 14508-01

REVISION: A

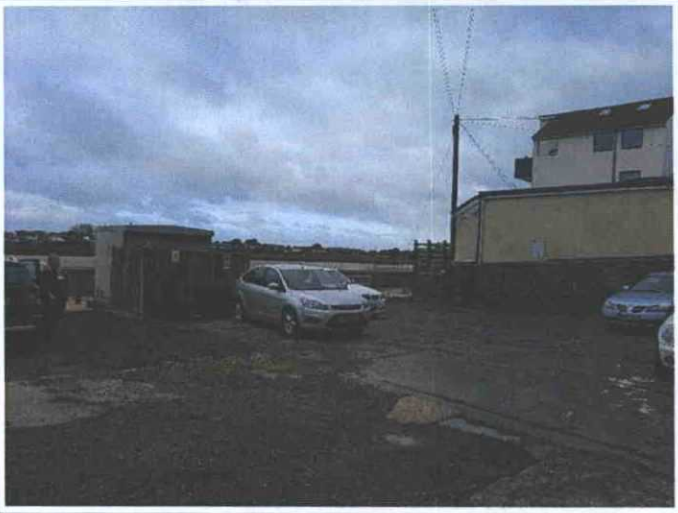
SCALE: 1:50 @ A1

DATE: 04.04.13

DRAWN: rex

## APPENDIX B

Site Walkover Photographs

| | |
|---|---|
|  | Looking north east across the site. The existing wooden terrace can be seen on the right hand side with the unsurfaced area on the left. |
|  | Looking east along the footpath adjacent to the River Adur. |
|  | Car park to the east, including an electricity sub-station. |

ASHDOWN SITE INVESTIGATION L•I•M•I•T•E•D

## APPENDIX C

Preliminary Conceptual Model

| Tosca, High Street, Shoreham-by-Sea | | | | Preliminary Conceptual Model | | | R17-12331 | |
|---|---|---|---|---|---|---|---|---|
| Potential Source | Potential Receptor | Potential Contaminants | Potential Pathway | Complete Linkage | Probability | Consequence | Risk |
| Potential made ground from historical demolition works | End Users<br>(via Water Supply Pipework) | Heavy Metals and PAH Compounds | Dermal contact with soil and dust (indoor & outdoor) | Pathway required? | | | |
| | | | Ingestion of soil and indoor dust | Pathway required by developer | | | N/A |
| | | | Consumption of home-grown produce and ingestion of soil | Pathway required by developer | | | N/A |
| | | | Inhalation of soil dust (indoor and outdoor) | Pathway required by developer | | | N/A |
| | | | Inhalation of soil vapours | Identified contaminant(s) do not pose a risk via this pathway | | | N/A |
| | | | Risk of explosion | No enclosed building proposed | | | N/A |
| | Groundwater | | Migration to groundwater | No water supply proposed | P1: Very Low | C1: Very Minor | Negligible |
| | | | Contamination of incoming services | | | | N/A |

## APPENDIX D

Classification of Probability, Consequence and Risk

| Probability of risk being realised | |
|---|---|
| Classification | Definition |
| High | There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution. |
| Moderate | There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term. |
| Low | There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term. |
| Very Low | There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term. |

| Consequence of risk being realised | | |
|---|---|---|
| Classification | Category | Definition |
| Severe | Human Health | Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. |
| | Controlled Waters | Short term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. |
| | Property | Catastrophic damage to buildings/property. |
| | Ecological Systems | A short term risk to a particular ecosystem or organisation forming part of such ecosystem. |
| Moderate | Human Health | Chronic damage to Human Health. |
| | Controlled Waters | Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). |
| | Ecological System | A significant change in a particular ecosystem or organism forming part of such ecosystem. |
| Minor | Controlled Waters | Pollution of non-sensitive water resources. |
| | Property | Significant damage to crops, buildings, structures and services. |
| | Ecological Systems | Damage to sensitive buildings/structures/services or the environment. |
| Very Minor | Human Health | Non-permanent health effects to human health (easily prevented by means such as personal protective clothing, etc). |
| | Property | Easily repairable effects of damage to buildings, structures and services. |
| | Project | Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. |

| Risk classification definitions | |
|---|---|
| Very High | There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required. |
| High | Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term. |
| Moderate | It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term. |
| Low | It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild. |
| Very Low | There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe. |