Phase 1 Desk Study Assessment

Pocklington, North Yorkshire

Tanglewood Environmental Limited

Compliance Solutions For Business

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1.0 INTRODUCTION

1.1 Context and Objectives of the Phase 1 Environmental Assessment

In October 2017, Swan Environmental Services Ltd (Swan) was retained by Tanglewood Environmental Limited to undertake a Phase I (desk based) Environmental Assessment of land to the north west of Pocklington Industrial Estate, south east of Barmby Moor. The site is located in Pocklington, York, North Yorkshire, YO42 1NR. The Site location is shown in Appendix A.

The overall aim of the Phase I Environmental Assessment (Phase 1 Report) is to assess the environmental risk and to assess potentially complete pollutant linkages associated with the site.

1.2 Scope of Works

A pdf electronic copy of the Phase 1 Report will be provided, and the scope of works include:

- A review of published geological, hydrogeological and hydrological information to establish the Site's environmental setting;
- A review of published historical and current Ordnance Survey maps to establish the history of the Site and its immediate surroundings;
- A review of publicly available information from regulatory authority databases, obtained from the Groundsure database;
- Develop a conceptual site model and assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and,
- A summary of conclusions and recommendations.

2.0 INFORMATION SOURCES

One of the objectives of this Phase I Risk Assessment is to collate:

- Information concerning potential contaminants, pathways and receptors; and,
- Other relevant characteristics of the site and its surrounds.

This involves a study of the site's current and historical land use and is best achieved via a combination of desk-based research and regulatory consultation. In this case, Swan has carried out a desk study, the data gathering exercise is described in the sections that follow.

2.1 Desk Study

Swan has reviewed the following sources of information in order to characterise the site and its surrounds, including:

- Groundsure Report including historical mapping;
- BGS onshore geo Index http://mapapps2.bgs.ac.uk/geoindex/home.html;
- Environment Agency (EA) Website http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e
- Environment Agency Website http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e
- Flooding information https://flood-map-for-planning.service.gov.uk/

2.2 Risk Classification

Swan has utilised the available information, together with our experience to assess the environmental risks. Definitions of the risk terms used are provided on the following table.

Table 1 – Risk Classification

Risk	Description
Negligible	No contamination risk has been identified which is likely to affect development.
Low	No significant contaminated land risks have been encountered affecting development and a low risk that remediation will be required.
Low-Moderate	There are unlikely to be significant contaminated land issue associated with the site which will adversely affect its re-development. However, minor or localised contamination may be present requiring remediation. Remediation should be possible under a discovery strategy and with a call out service.

Moderate	Some potential contaminated land risks have been encountered or identified which may affect re- development. The risks identified are unlikely to affect the entire site or preclude development. Remediation is considered feasible as part of the development process and no further investigation is considered necessary.
Moderate-High	Some potentially significant contaminated land risks have been identified at the property that requires investigation pre planning. It is recommended that a separate remedial methodology is prepared supported by a site specific risk assessment
High	Significant potential contaminated land risks have been identified and remediation is required supported by further intrusive ground investigation, risk assessment and remedial design.

3.0 CURRENT AND HISTORIC LAND USE

3.1 Site Location

The site extends to 36.14 hectares (ha) and lies north of the A1079, Pocklington, York, North Yorkshire, YO42 1NR (The Site). The grid reference to the centre of the Site is 478334,448882.

The site is irregular in shape and is situated to the north of Pocklington Industrial Estate.

The Site location is illustrated in the current map extracts and aerial photo extract in Appendix A.

3.2 Current Land Use On-site and Surrounding Area

The Site is currently open arable land which is a mixture of arable farmland, hardstanding and woodland, and forms part of the curtilage of a World War 2 aerodrome. The Site is bound by York Road, the A1079 to the south west and the residential area of Barmby Moor to the north east with Pocklington Industrial Estate to the south west.

3.3 Historic Land Use on Site and Surrounding Area

The Groundsure historical map extracts are presented in Appendix A and the review of the key information is summarised in Table 2 below.

Table 2 – Historical Land Use

Map Edition	Site	Surroundings
1890	Fields, undeveloped land	The surrounding land use is relatively agricultural in nature, Howroyd's Farm is located 10m north west of the site, Manor House is located 125m north west of the site as is St.Cathrines' Church. Residential properties are located between 10m and 500m north west of the site. An Old Gravel Pit is labelled 400m south east of the site, with Barmby Grange 400m south east. Old Marl Pit is annotated 700m south.
1909	The site use is the same as in 1890	Surrounds remain similar with the following additions;

		Residential properties to the north west have been built up and have increased in size. There is also now a gravel pit adjacent to the site boundary to the north west of the site. Hodsaw Field which is directly adjacent to the site is annotated as an Airfield.
1926-1929	The site is annotated as part of Hodsow Airfield	Surrounds remain similar with the following additions; Gravel Pit Farm is now annotated 10m south east of the site. Gravel Pit is now labelled adjacent to the North west of the site. Hodsaw Field, directly adjacent to the site is annotated as an Airfield.
1957	The site is annotated as disused Airfield	Surrounds remain similar with the following additions; Buildings are annotated south of the site, they range in distance between 10-750m. Two buildings are labelled 25m north west of the site and a cluster of buildings is now labelled 500m south.
1971	The site is annotated as disused Airfield	Surrounds remain similar; Buildings located 10-750m south of the site are now labelled as Pocklington Industrial Estate. Two buildings to the south west are now annotated as Joinery Works and Warehouse. Warehouses and Grain Drier is now labelled 250m south west. A sewage works is located 500m south of the site.
1989	The site is annotated as a disused Airfield	Pocklington Industrial Estate has expanded, more buildings annotated on site. Warehouses and Grain Drier 250m south west of the site now labelled as Silos with additional buildings and tanks.
2002 until	The site is annotated	Gravel pit is no longer labelled adjacent to the

present day	as disused Airfield	site in the north. Burton Holme Farm, Holborn Estate, Green Farm and Holborn Farm are labelled 500m north from the site as part of Barmby Moor. Blenheim House is located 50m west of the site.

4.0 CURRENT AND HISTORIC LAND USE/SITE CONDITIONS

4.1 Geology

Based on the information included within the Groundsure Report, the following ground conditions are anticipated:

Table 3 – Geology

Geological Unit	Type	Description
Superficial	Pocklington Gravel Formation and Bielby Sand Member	Sandy Gravel and Silty Gravelly Sand
Solid	Mercia Mudstone	Rhaetian Age

4.2 Historic Mining / Quarrying

The Groundsure Report identifies that the site is not within an area of past coal mining, however there was known to be surface ground workings on site (potentially part of the airfield development). In addition, there is also no non-coal mining areas identified within 1000m of the site boundary, as summarised in Table 4 below.

Table 4 – Hazard Risk Designation

Hazard	Site Risk Designation
Collapsible Ground	Very Low
Compressible Ground	Negligible
Ground Dissolution	Negligible
Landslide	Very Low
Running Sand	Very Low
Swelling / Shrinking Clay	Very Low

4.3 Hydrogeology

4.3.1 Aquifer Characteristics

According to the Groundsure report and the EA website accessed on the 27th October 2017, the site is indicated to be underlain by a Secondary B Aquifer which is understood to be associated with the underlying Mercia Mudstone.

Secondary Aquifers are defined by the Environment Agency as 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. In most cases, Secondary aquifers are aquifers previously designated as minor aquifer. The Unproductive Strata are described as deposits with low permeability that have negligible significance for water supply or river base flow

4.3.2 Groundwater Abstractions

The Groundsure report identifies 3.No known active groundwater abstraction within 1km of the site for water bottling and spray irrigation, the closest of these is 274m south east of the site for water bottling. The closest Spray Irrigation abstractions are 955m south west of the site. Six (6 No.) further groundwater abstractions were listed within 2km of the site none of which are listed as abstractions for drinking water.

4.3.3 Source Protection Zone

According to the EA website accessed on 27th October 2017, the site is not located within a Groundwater Source Protection Zone, and there are no Source Protection Zones within 500m of the site.

4.4 Hydrology

There are no surface water features on site, however an unnamed tertiary river flows towards the site boundary in the south, south west and an unnamed water body is located along the very northern boundary of the site. Is it known that there are 16 surface water features within 250m of the site

4.4.1 Surface Water Abstractions

According to the Groundsure Report, there is one surface water abstraction listed within 1km of the site. This was an active abstraction point used for spray irrigation storage with an annual volume of 22,730m^3 located 265m north of the site.

4.4.2 Flooding Potential

The government website https://flood-map-for-planning.service.gov.uk/ accessed on 27th October 2017, identifies the site as being within a Flood Zone 1 which means that land and property in a Flood Zone 1 have a low probability of flooding.

According to the Groundsure report there is a very low risk of flooding from rivers and the sea. The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection. RoFRaS data for the study site indicates the site is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

According to the Groundsure report there are British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the site. Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

4.5 Waste Disposal Sites

The Groundsure Report records no known active landfill sites or waste disposal sites within approximately 250m of the site. There are three known Environment Agency Licensed Wastes sites between 251 and 1km of the site.

4.6 Radon Risk Potential

According to the Groundsure Report, the site is not in a Radon area, as less than 1% of homes are above the action level, therefore No radon protection measures are necessary.

4.7 Environmental Sensitivity

Overall, the site setting is considered to be of relatively Low-Moderate sensitivity, due to the following reasons:

- The underlying Secondary B Aquifer;
- The absence of on-site surface water features;
- The absence of groundwater Source Protection Zone(s).
- Potential for groundwater flooding to occur.

5.0 REGULATORY INFORMATION AND CONSULTATION

5.1 Regulatory Database

The following environmental data has been obtained from a summary of information databases summarised in the Groundsure Report.

Table 5 Regulatory Databases Summary

Item	0m-249m	250m-500m	Details
Records of Part A(2) and Part B activities and enforcements	1	3	Approximately 5m south east of the site, Waste Oil Burner holds a current Part B Permit. Approximately 281m south east of the site, Bulk Cement Process holds a current Part B Permit. Approximately 2464m south east of the site, Bulk Cement Process holds a current Part B Permit. Approximately 496m south east of the site, Waste Oil Burner holds a current Part B Permit.
Environmentally Sensitive Sites (SSSI, SAC, SPA, RAMSAR, LNR)	0	0	None identified within 1km of the Site.
Landfill Site, Waste Treatment / Transfer and Disposal Sites	0	2	Environment Agency Licensed Wastes sites.

6.0 PRELIMINARY RISK ASSESSMENT

6.1 Land Quality Risk Assessment

This section of the report uses the information gathered in previous sections and aims to identify the potential Contaminants, Pathways and Receptors present on site. The elements of the Conceptual Model built in the subsections below are also used in Section 7, which considers the Potential Pollutant Linkages, their significance and acceptability in an Environmental Risk Assessment.

6.2 Contaminants (Sources)

The statutory guidance for Part IIA, DETR Circular 02/2000, defines a Contaminant as:

"a substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters".

As a result of this review, the following potential contaminant sources have been identified on site, which may impact the Site:

On-Site

- Made Ground (as site previously developed as an airfield);
- Chemicals associated with the former aviation landuse at Hodsaw Airfield. Potential contaminants include PAHs, PCBs, TPHs and Chlorinated Solvents.

Off-Site

- Chemicals associated with wider aviation use on the Hodsow airfield. Potential contaminants include PAHs, PCBs, TPHs and Chlorinated Solvents.

6.3 Receptors

The statutory guidance for Part IIA, DETR Circular 02/2000, defines a Receptor as:

"either (a) a living organism, a group of organisms, an ecological system or a piece of property which (i) is in a category listed in Table A as a type of receptor, and (ii) is being, or could be, harmed, by a contaminant; or (b) controlled waters which are being, or could be, polluted by a contaminant".

Table 6 lists all of the receptors to be considered to be present. Those that are not considered present are excluded from further assessment at this stage.

Table 6 - Potential Contaminant Receptors

Receptor	Description
Human Health	Potential future site construction workers Potential future site users (residents and site visitors) Potential future site maintenance workers Neighbouring site residents
Controlled waters	Secondary B Aquifer underlying the site.
Other	Buildings and underground services including drinking water supply pipes. No ecologically sensitive receptors have been identified within 1km of the Site.

6.4 Pathways

The statutory guidance for Part IIA, DETR Circular 02/2000, defines a Pathway as:

"One or more routes or means by, or through, which a receptor: (a) is being exposed to, or affected by, a contaminant; or (b) could be exposed or affected".

Following an assessment of the environmental and geological setting of the site and considering the proposed land use, it is considered that a number of potential pathways for contaminant impact could exist. Tables 7 below examines the human and environmental exposure pathways separately and indicate which pathways are considered further.

Table 7 Potential Contaminant Pathway and Linkages

Source	Pathway Description
On-Site Contaminant Sources	It is considered unlikely that widespread soil and groundwater contamination is present on site based on the former land use. There is potential for localised contamination to be present resulting from any aviation activities on site for example fuel leaks from maintenance works which could have occurred on site. There is also the potential that when the site was developed as an airfield, that made ground was brought onto site for use in the development works. Any localised contamination (if present) could represent an unacceptable risk to human health (construction workers or future site

	users) via ingestion, dermal contact and / or inhalation or dust / volatile vapours. Localised soil contamination (if present) may represent a risk to the underlying groundwater aquifer via leaching and migration.
Off-Site Sources	There is potential for localised contamination to be present resulting from made ground and aviation activities at the former airfield in the vicinity. Any localised contamination could represent an unacceptable risk to human health (construction workers or future site users) via ingestion, dermal contact and / or inhalation or dust / volatile vapours. Localised soil contamination may represent a risk to the underlying groundwater aquifer via leaching and migration.

7.0 PRELIMINARY CONCEPTUAL MODEL

7.1 Environmental Risk Assessment

This section presents the conceptual model for the proposed redevelopment of the site. Those potential contaminants, pathways and receptors that are present are now integrated within the context of potential pollutant linkages.

Table 8 Environmental Risk Assessment

Source	Potential chemicals of concern	Receptor	Potential Pathway	Potential Consequence of completed linkage	Likelihood of linkage	Significance of Risk	Explanation
Localised contamination associated with former Hodsow Airfield and general made ground	**Metal, PAH's, PCBs, TPHs and Chlorinated Solvents.**	Possible Future Site Construction workers. Possible Future site users. Possible Future site maintenance workers.	Direct Contact, ingestion and inhalation	Low to Medium	Low Likelihood	Low/Moderate	Given the age of the airfield when it became disused, it is considered that risk from organic contamination from any contamination hotspots is low. However, if any excavations for developments are to be made in future, testing of made ground and any visible areas of contamination would be advisable. Any risk can be managed through the use of appropriate PPE and good hygiene practises in-line with industry best practise if the site is to be re-developed.
		Neighbouring Site Residents	Direct Contact, ingestion and inhalation	Medium	Unlikely	Low/Moderate	Neighbouring residents are unlikely to come in to contact with any impacted soils that may be present at the site.
		Secondary Aquifer	Leaching and downward Migration	Mild	Unlikely	Very Low	Wide spread contamination on site is not anticipated. Closest groundwater (non-potable) abstractions 274m from site. Furthermore, the presence of certain areas of hardstanding over the site will reduce the infiltration of precipitation and therefore reduce the mobility of subsurface contamination (if any).

8.0 RECOMMENDATIONS AND CONCLUSIONS

8.1 Conclusion

Based on the information contained in this report, the following conclusions can be drawn:

- The site currently comprises a disused airfield.
- Historically, the site formed open fields before becoming part of Hodsaw Airfield in 1926 until 1957, when historical maps showed the site as a disused Airfield.
- The site is underlain by the Mercia Mudstone (Secondary B Aquifer). The Site is not located within a Groundwater Source Protection Zone.
- The site is not in an area where Radon protection measures area required
- There are no historic or active landfills within 500m of the site.

Potential contamination sources are considered to be localised and associated with the former Airfield use on site. The proposed hardstanding across sections of site should protect site users to a certain extent, however there is the potential for localised pockets of contamination. Made ground used in the development of the site is a potential source of contamination as is the risk of localised contamination from ay leaks or spills on the airfield and general aviation landuse.

If the site is to be redeveloped, a site walkover is suggested to determine whether there are any visible signs of contamination, chemical testing of the made ground and any localised contamination hotspots would be recommended in the future too. Therefore, based on the information contained in this report and with due regard to the current and potential for future development of the site, it is the opinion of Swan that the site represents a **Low to Moderate risk** with respect to contaminated land liability issues. Therefore, the findings of this report should not prevent successful redevelopment of the Site.

8.2 Recommendations

Based on the available information, minimal known existing land contamination issues have been identified that are considered if redevelopment of the site occurred in the future.. A summary of the recommendations is provided below:

- The advice of an environmental consultant should be sought in the event that suspected contamination is encountered if any redevelopment works were to be carried out, and a watching brief may be required.
- If redevelopment was to occur, construction workers would adopt appropriate procedures to manage health and safety risks associated with any contamination.
- Former imported materials to site (i.e. in areas which are known to be backfilled or any visible areas of contamination) should be tested chemically to check they are suitable for use and free from asbestos if any redevelopment works were to be carried out on the site in the future.

9.0 CLOSURE

This report has been prepared by Swan with all reasonable skill, care and diligence.

This report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site conditions.

This report is based on a variety of third party and some publicly available information. Swan does not and cannot guarantee the authenticity of this information.

This report is for the exclusive use of Tanglewood Environmental Limited; no warranties or guarantees are expressed or should be inferred by any third parties. Any such party relies upon the report at their risk.

Swan disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDIX A – DESK STUDY INFORMATION