

An aerial photograph of Gatwick Airport's northern runway and taxiway. The runway is a long, straight concrete strip with white markings, including the number '26' and the letter 'L'. Several aircraft are visible on the taxiway and runway. In the foreground, a large white Airbus A380 is taxiing. To its left, a smaller white aircraft is also taxiing. Further up the runway, another white aircraft is visible. In the bottom left corner, a red and white easyJet aircraft is taxiing. The surrounding area includes green grass, taxiway lights, and airport buildings in the distance. The text 'YOUR LONDON AIRPORT' is written in white, uppercase letters, and 'Gatwick' is written in a white, cursive font below it.

YOUR LONDON AIRPORT  
*Gatwick*

*Our northern runway: making best use of Gatwick*

Preliminary Environmental Information Report  
Appendix 10.9.1: Preliminary Risk Assessment  
September 2021

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## 1 Introduction

### 1.1 General

1.1.1 This document forms Appendix 10.9.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in Chapter 5: Project Description.

1.1.2 This document provides the Preliminary Risk Assessment for the Project.

### 1.2 Preamble

1.2.1 The Preliminary Risk Assessment provides an appraisal of potential areas of land contamination likely to be affected by the Project. It utilises desk based information and data from previous ground investigations to determine whether potential contamination sources resulting from historical/existing activities could cause a risk to future site users, construction workers, adjacent site users, controlled waters and the environment during the construction and operation of the Project. This Preliminary Risk Assessment has been undertaken to identify areas of land contamination that would plausibly cause a risk and thus determine whether control measures or remediation are necessary.

### 1.3 Legislation, Policy and Guidance

1.3.1 This report has been produced in general accordance with the following:

- Water Environment (Water Framework Directive) Regulations 2017;
- Contaminated Land (England) Regulations 2006 (as amended 2012);
- Environmental Protection Act 1990;
- Environment Act 1995;

- Environmental Permitting (England and Wales) Regulations 2016 (as amended (EU Exit) 2019);
- National Planning Policy Framework (2021);
- Airports National Policy Statement (2018);
- National Networks National Policy Statement (2015);
- Department for Environmental, Food and Rural Affairs (DEFRA) Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012);
- Environment Agency (2020) Land Contamination Risk Management (LCRM)
- Construction Industry Research and Information Association (CIRIA) Document C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings (CIRIA, 2007);
- CIRIA Document C552 – Contaminated land Risk Assessment: A Guide to Good Practice (CIRIA, 2001a);
- CIRIA Document C532 – Control of Water pollution from Construction Sites: Guidance for Consultants and Contractors (CIRIA, 2001b)
- British Standard requirements for the 'Investigation of potentially contaminated sites - Code of practice' (ref. BS10175:2011+A2:2017);
- British Standard requirements for the 'Code of practice for ground investigations' (ref. BS5930:2015); and
- British Standard requirements for the 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' (ref BS8485:2015+A1:2019).

1.3.2 Where appropriate, consideration has also been given to the following:

- The potential for environmental liabilities to occur under other associated regimes, for example the Water Resources Act 1991 (as amended 2009) and the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (as amended 2019); and
- Key constraints on site redevelopment.

1.3.3 Details of the limitations of this type of assessment are described in Annex 1.

### 1.4 Data Sources

1.4.1 The assessment utilises information obtained from the following sources:

- British Geological Survey (BGS), Geology of Britain Viewer (Website: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>);
- Geological Survey of England and Wales, Sheet 302 Horsham, 1:50,000 scale;
- Environment Agency (EA) Groundwater Vulnerability mapping, 1:100,000 scale);
- Groundsure GeoInsight Report (geological and hydrogeological information provided by the BGS and EA;
- Groundsure EnviroInsight Report (landfills and other contaminative land use information provided by the EA, local planning authorities and the BGS);
- Groundsure EnviroInsight Report (recent and historical OS mapping);
- Previous geo-environmental investigation and assessment reports;
- Local Planning Authority records;
- Sussex Geodiversity Partnership records; and
- A walkover survey.

## 2 Baseline Information

### 2.1 Site History

2.1.1 A site history for Gatwick Airport has been established through review of historical mapping. A brief summary is provided in Table 2.1.1.

**Table 2.1.1: Site History**

| Date      | Description   |
|-----------|---|
| From 1870 | The site comprised numerous fields bound by trees and hedgerows with wooded areas. A number of farms were present across the site. Charlwood Park was present in the north of the Project site. Several rivers and tributaries ran across the Project site. A large 'Fish Pond' is indicated in the north of the Project site. An engine tower and gasometer were indicated to the north of Timberham Lodge and south of the Fish Pond. The London, Brighton and South Coast Railway ran north to south through central site where Gatwick Station is identified. |
| From 1879 | An unnamed road bisected the site, orientated approximately north to south. A nursery was present in the south west of the site in 1895.  |

| Date             | Description   |
|------------------|---|
| By 1896          | Gatwick Race Course had been constructed in the north east with orchards indicated in the south east.   |
| By 1913 to 1920s | Gatwick Race Course was now labelled as a Golf Course and residential dwellings were now present along the unnamed road. By 1914, a number of cottages and a wind pump were indicated across Westfield Common in the south west of the site. Between 1914 and 1919, numerous additional tracks were indicated along the rail line through the centre of the site.   |
| 1930s to 1940s   | The Project site had predominantly been developed as an aerodrome. By 1946, numerous possible drains and/or ditches were indicated across the west of the Project site.   |
| 1950s            | Major airport development had occurred by this time. However, no substantial development was indicated in the east of the site.   |
| From 1960s       | Various industrial and commercial land uses were indicated around the airport including 'Works' (Crawley Sewage Treatment Works). Crawter's Brook and the River Mole were indicated to have been partially culverted under the airport development. The course of Crawter's Brook was indicated to have been diverted by approximately 1965. Several farms across Westfield Common were no longer indicated with both the northern and main runways partially occupying this area. Gatwick Golf Course was indicated to have been expanded. Gatwick Rail Station had been renamed Gatwick Airport Station by 1961 and the A23 and A217 were first shown at this time. The central southern portion of the site was labelled as Gatwick Airport between 1961 and 1963. |
| From 1970s       | Further development of the airport had occurred. The runways had been extended across Westfield Common and the traffic control tower was now indicated. The extensive drainage and balancing pond network, and embankments were indicated to be present from around 1973. Between 1973 and 1978, a Timber Yard was indicated in the south east corner of the site along with a Greyhound Training Track. By 1976, the M23, roundabouts and car parks have been constructed to the east of the Project site with embankments either side. The M23 was indicated running westerly from the east into the A23. Main roads had been constructed into the north east and central   |

| Date       | Description  |
|------------|--|
|            | area of the Project site by around 1976. Further car parks and a large balancing pond were indicated to be present alongside the River Mole in the north east of the site. The London Road (A217) had become more established in the 1970s. By 1977 the Fish Pond in the north of the site was no longer identified as present (potentially infilled).   |
| From 1980s | Land drains were indicated to divert into a surface water feature in the north, and embankments had been constructed south of Charlwood Road, and along the eastern edge of the River Mole. By 1989, the surface water feature in the north, adjacent to Charlwood Park Farmhouse, had been potentially infilled and developed with several carparks. An electrical substation was indicated in the west of the site along with possible bunded areas (likely associated with the fire training area). The eastern most roundabout (named Airport Way Roundabout East) and several commercial buildings have been constructed including a computer centre and a further electrical substation. Further car parking areas had been constructed in the south east. Further expansion of the airport had occurred by this time, including main access roads (Airport Way Roundabout West) and South Terminal Satellite Pier, and fuel depots in the north east. Large embankments were identified to the north of the North Terminal Building along with Pier 5 and ancillary buildings / areas associated with the airport. A fire station was indicated in the central southern area of the airport development by around 1987. |
| From 2000s | A reservoir bound by embankments was indicated in the south east (adjacent to Crawley Sewage Treatment Works). Further expansion/development of the North Terminal area had occurred.  |

## 2.2 Site Walkover

2.2.1 A site walkover was undertaken on the 25 September 2019, the findings of which are presented in detail within Annex 2.

## 2.3 Environmental Setting

### Geology

2.3.1 The stratigraphic sequence beneath the Project site is shown in Table 2.3.1 and on Figures 10.6.1 and 10.6.2 (Volume 2 of the PEIR).

**Table 2.3.1: Geology**

| Strata                               | Description and Approximate Thickness  |
|--------------------------------------|--|
| Alluvium                             | This stratum is indicated to comprise clay, silt, sand and gravel. Indicated to be present across parts of the west and north of the site (likely associated with the River Mole) and also in the east (likely associated with Gatwick Stream). Likely to be up to several metres in thickness, where present. |
| Head Deposits                        | This stratum is indicated to comprise clay, silt, sand and gravel. Only indicated to be present in a small area in the centre of the site. Likely to be of very limited thickness, where present.  |
| River Terrace Deposits (River Mole)  | This stratum is indicated to comprise sand and gravel and is indicated to be present across parts of the west, centre and east of the site. Likely to be up to several metres in thickness, where present.   |
| Weald Clay Formation                 | This stratum is indicated to comprise mudstone with seams of clay-ironstone in the south east and far east of the site. It is indicated to be absent in the far south of the site. Likely to be of significant thickness beneath the site.   |
| Upper Tunbridge Wells Sand Formation | This stratum is indicated to comprise sandstone and mudstone and is only indicated to be present in the far south of the site. Likely to be of significant thickness.  |

2.3.2 No geological Sites of Special Scientific Interest (SSSIs) or Local Geological Sites (LGSs) are located within 1 km of the site.

2.3.3 The site is located within a Brick Clay Resource Mineral Safeguarding Area, relating to the Weald Clay Formation.

2.3.4 Further details on site specific geology, based on site investigations carried out across the site to date are provided in the Previous Ground Investigations section.

### Hydrogeology

2.3.5 The aquifer classification for each geological stratum are presented in Table 2.3.2.

**Table 2.3.2: Aquifer Classification**

| Strata                               | Aquifer Classification             |
|--------------------------------------|------------------------------------|
| Alluvium                             | Secondary A Aquifer                |
| Head Deposits                        | Secondary Undifferentiated Aquifer |
| River Terrace Deposits (River Mole)  | Secondary A Aquifer                |
| Weald Clay Formation                 | Unproductive Stratum               |
| Upper Tunbridge Wells Sand Formation | Secondary A Aquifer                |

2.3.6 The site is not located within a Source Protection Zone and there are no potable groundwater abstraction licences within the vicinity of the Project site.

2.3.7 One active groundwater abstraction license is recorded approximately 1 km south of the airport boundary. This is licensed for general usage (non-potable) with a permitted maximum annual volume of 47,450 m<sup>3</sup> and maximum daily volume of 130 m<sup>3</sup>.

2.3.8 Further details on site specific hydrogeology, based on site investigations carried out across the site to date are provided in the Previous Ground Investigations section.

### Hydrology

2.3.9 The main watercourse flowing through the site is the River Mole. It flows from the south and is culverted under both the main runway and existing northern runway. Upon exiting the culvert, it forms the western and northern boundary of the airport before heading north away from the airport at Hookwood.

2.3.10 Tributaries of the River Mole including Crawler's Brook, the Gatwick Stream, Man's Brook, Burstow Stream and Westfield Stream all flow through or close to the site.

2.3.11 The study area is located within a Surface Water Nitrate Vulnerable Zone (NVZ) and a Surface Water Safeguard Zone (SgZ). A NVZ is an area of land draining into water known to be polluted by nitrates. A SgZ is an area that influences the water quality at water abstraction sites at risk of failing the drinking water protection objectives.

2.3.12 There are no surface water or potable surface water abstraction licences within the vicinity of the Project site.

### Environmental Information

2.3.13 Industrial land uses, landfills and other waste facilities, and pollution incidents recorded on site and within an approximate 500 metre buffer are presented in Table 2.3.3.

**Table 2.3.3: Environmental Data**

| Environmental Data   | Approx. Distance and Direction |
|--|--------------------------------|
| <b>Part A1 and IPPC Authorised Activities</b>  |                                |
| <b>Installation Name and Detail</b>  |                                |
| Shell Hydrogen Refuelling Station – issued 2017  | On site - north                |
| Gatwick Power Station – issued 2006  | On site - south                |
| Crawley Sewage Treatment Works CHP – issued 2010   | Adjacent – south east          |
| <b>Control of Major Accident Hazards</b>   |                                |
| <b>Name and Detail</b>   |                                |
| Shell UK Oil Products Ltd – Gatwick Fuel Farm – Upper Tier   | On site - north                |
| <b>Registered Waste Sites</b>  |                                |
| <b>Name and Description</b>  |                                |
| Gatwick Waste Care Centre – Special Waste Transfer Station - <25,000 tonnes – issued 2010            | On site - central              |
| Austins Land – Landfill accepting Non-Biodegradable Wastes - >25,000 to <75,000 tonnes – issued 1978 | On site - east                 |
| Platinum International Ltd – Metal Recycling Site - <25,000 tonnes – issued 2017                     | 90 metres - south              |
| Crawley Sewage Treatment Works – Landfill - <25,000 tonnes – issued 2013                             | Adjacent – south east          |
| DJ Grab Services Ltd – Physical Treatment Facility - >25,000 to <75,000 tonnes – issued 2016         | 50 metres - north              |
| Simmonds Donald Richard Thomas – Metal Recycling Site - <25,000 tonnes – issued 1994                 | 140 metres - east              |
| Jupp Peter – Treatment of waste to produce soil - <25,000 tonnes – issued 2013                       | 280 metres - east              |

| Environmental Data  | Approx. Distance and Direction |
|---|--------------------------------|
| United Grab Hire Ltd - Physical Treatment Facility - <25,000 tonnes – issued 2013 | 390 metres - east              |
| <b>National Incidents and Records of Pollution*</b>                               |                                |
| <b>Impact Details</b>   |                                |
| Significant impact to Gatwick Stream – List 1 substance - 1999                    | On site – north east           |
| Major impact to water – List 2 substance - 2001                                   | On site – south west           |
| Major impact to water – List 2 substance (surfactants and detergents) - 2002      | On site - north                |
| Major impact to water – List 2 substance (biodegradable material or waste) - 2018 | On site - north                |
| Major impact to water – List 2 substance (sewage materials) - 2017                | On site - east                 |
| Significant impact to land and water – List 2 substance (oil or fuel) - 2014      | 20 metres - south              |
| Significant impact to water – List 2 substance (unspecified) - 2016               | On site – south east           |
| Significant impact to water – List 2 substance (gas and fuel oils) - 2002         | 90 metres - east               |
| <b>Historical Landfill Sites</b>  |                                |
| <b>Name and Description</b>   |                                |
| Gatwick Brickworks – inert waste – 1983 to 1984                                   | 240 metres north               |
| Blackcomer Wood – inert waste - 1976  | 330 metres south east          |

\* Significant/major incidents identified only

2.3.14 A number of potential sources of contamination have also been identified from historical mapping. Potential sources of contamination are shown as potential areas of concern (PAOC) in Figure 10.6.3 (Volume 2 of the PEIR).

### Ground Stability

2.3.15 The site is indicated to have the potential for small scale underground mining in relation to iron ore.

2.3.16 Areas at moderate risk for compressibility are present across the site which appear to correspond to BGS mapped areas of Alluvium.

2.3.17 A moderate risk of slope instability has been identified for a small area along the A23 embankment.

### Previous Ground Investigations

#### Introduction

2.3.18 A number of ground investigations and assessments have been undertaken across the Project site. A summary of the reports available is provided in Annex 3 and the location of the exploratory holes shown in Figure 10.6.4 (Volume 2 of the PEIR).

#### Site Specific Geology

##### Made Ground

2.3.19 Made Ground has been encountered across the majority of the site, averaging approximately 1 m thickness (generally <2 metres). Localised deeper Made Ground was encountered at between 3 metres and 3.7 metres and up to a maximum of 6.45 metres directly west of the North Terminal Building.

2.3.20 The greatest depth of Made Ground was considered to be a result of the removal of superficial deposits associated with the original course of the Gatwick Stream during construction of Pier 5.

##### Superficial Deposits

2.3.21 Superficial deposits of Alluvium, Head and River Terrace Deposits have been encountered across the site associated with former and existing watercourses. These deposits appear to have been commonly excavated to facilitate airport development.

2.3.22 The Alluvium has been encountered up to approximately 2.9 metres in thickness with an average thickness of approximately 1 metre. Localised layers of peat were identified within these deposits.

2.3.23 The River Terrace Deposits were reported to be up to 1.1 metres thickness where present.

##### Solid Geology

2.3.24 The Weald Clay Formation has been encountered across the site as part of previous investigations to a maximum depth of 35.5 metres (unproven). This comprised mudstone/siltstone with a weathered upper horizon typically comprising a stiff clay.

#### Site Specific Hydrogeology

2.3.25 Shallow groundwater was generally identified between approximately 0.8 metres and 3 metres below ground level (bgl) within the Made Ground, superficial deposits or weathered Weald Clay Formation.

2.3.26 Groundwater was identified to generally be perched and discontinuous with these deposits.

#### Reported Evidence of Contamination

2.3.27 In 2013, an investigation of a fuel leak around Pier 4 (Atkins, 2013) was undertaken due to observations of fuel impacted flood water and free phase contamination within a utilities chamber.

2.3.28 The investigation identified hydrocarbon impacted soils and groundwater with the potential source attributed to underground fuel lines. It is not known if any remediation was completed following this investigation.

2.3.29 In 2017, a ground investigation at the Boeing hangar identified loose asbestos fibres (chrysotile) within a sample of shallow Made Ground and hydrocarbon impacted perched shallow groundwater along with elevated Volatile Organic Compounds (VOCs) in soil gas samples.

2.3.30 Activities within the firefighting area have involved the burning of pools of kerosene fuel and gas in two separate basins. Firefighting foam is used to extinguish the fires.

#### Soil and Groundwater Contamination Encountered as Part of Previous Investigation

2.3.31 Historical soil and groundwater data obtained as part of the previous investigations have been compared to contemporary assessment criteria, where available. This has been undertaken using historical ground investigation data associated with exploratory holes located within those parts of the Project site where development is proposed.

2.3.32 In order to assess risks to future site users, concentrations of contaminants of concern have been compared to Suitable 4 Use Levels (S4UL) for Human Health Risk Assessment published by Land Quality Management: Chartered Institute of Environmental Health in 2015. In accordance with the copyright notice the Publication Number for RPS Group is S4UL3177.

2.3.33 The redevelopment of the Project site comprises a commercial scheme and therefore, S4ULs for a commercial land use have been used.

2.3.34 A notable exclusion from the S4ULs is lead. In the absence of a S4UL for lead, the Category 4 Screening Level (C4SL) has been selected, published by DEFRA in 2014. It is noted that the C4SL are based on the acceptance of a low level of toxicological concern, rather than the more conservative standard adopted in the derivation of S4ULs, which are based on a tolerable or minimal level of risk.

2.3.35 The site is located above Secondary A Aquifers relating to the Alluvium and River Terrace Deposits. Therefore, the results of the groundwater analysis have been compared with Environmental Quality Standards (EQS) freshwater values and where these are not available, the UK Drinking Water Standard (DWS) values. In the absence of both of the aforementioned World Health Organisation (WHO) values have been used.

2.3.36 Screening criteria used for the protection of human health and groundwater are provided in Annex 4.

2.3.37 The available ground gas data included as part of historical ground investigations has been qualitatively assessed.

2.3.38 It is of note that a number of boreholes located within the area of the northern runway recorded a pungent odour, potentially associated with organic materials, within the Alluvium.

#### Human Health Risk Assessment

2.3.39 Soil sample chemical results have not exceeded the relevant screening criteria protective of future site users.

#### Controlled Waters Screening Assessment

2.3.40 Table 2.3.4 details exploratory holes for which groundwater samples have exceeded the relevant screening criteria.

2.3.41 Certain laboratory detection levels in samples used in previous ground investigations are higher than the screening criteria. However, for the purposes of a water quality screening exercise this is considered acceptable.

Table 2.3.4: Groundwater Chemical Results Exceeding Screening Criteria

| Project Element                    | Report ID and date (refer Annex 3) | Exploratory Hole and (Target Geology)                    | Contaminant and Concentration (ug/l) (pH in pH units) | Screening Criterion (ug/l) - Exceedances in Bold |                |            |
|------------------------------------|------------------------------------|--|---|--|----------------|------------|
|                                    |                                    |  |   | EQS  | DWS            | WHO ATO    |
| Relocation of Fire Training Ground | 11 - 1999                          | TP11 (Made Ground)*                                      | Copper – 20   | <b>1</b>   | 2,000          | -          |
|                                    |                                    |  | Nickel – 130  | <b>4</b>   | <b>50</b>      | -          |
|                                    |                                    |  | Nitrite – 1,400                                       | -  | <b>100</b>     | -          |
| MA1 Main Contractor Compound       | 18 - 2010                          | BH03 (Made Ground/ RTD (RPS interpretation)/ Weald Clay) | Cadmium – 1.3   | <b>0.08</b>                                      | 5              | -          |
|                                    |                                    |  | Nickel – 99   | <b>4</b>   | <b>50</b>      | -          |
|                                    |                                    |  | Lead – 5  | <b>1.2</b>                                       | 10             | -          |
|                                    |                                    |  | Selenium – 17   | -  | <b>10</b>      | -          |
|                                    |                                    |  | Zinc – 18   | <b>10.9</b>                                      | 5,000          | -          |
|                                    |                                    |  | Ammoniacal Nitrogen – 1,900                           | <b>15</b>  | -              | -          |
|                                    |                                    |  | Sulphate – 776,220                                    | <b>400,000</b>                                   | <b>250,000</b> | -          |
|                                    |                                    |  | Nitrite - 110   | -  | <b>100</b>     | -          |
|                                    |                                    |  | 1,1 Dichloroethane – 12                               | NA   | NA             | NA         |
|                                    |                                    |  | Tetrachloroethene – 16                                | <b>10</b>  | <b>10</b>      | -          |
|                                    |                                    |  | 1,4 Dichlorobenzene – 15                              | 20   | -              | <b>0.3</b> |
| 1,2 Dichlorobenzene 48             | <b>20</b>                          | -  | <b>1</b>  |  |                |            |
| MA1 Main Contractor Compound       | 17 - 2007                          | NB1 (Weald Clay)   | Ammoniacal Nitrogen – 210                             | <b>15</b>  | -              | -          |
|                                    |                                    |  | MBAS – 90   | NA   | NA             | NA         |
|                                    |                                    |  | pH – 9.7  | <b>&gt;9</b>                                     | NA             | NA         |
|                                    |                                    |  | Total Alkalinity – 72,000                             | NA   | NA             | NA         |
|                                    |                                    |  | EPH (C10-C20) – 380                                   | -  | <b>10</b>      | -          |
|                                    |                                    |  | EPH (C20-C30) – 40                                    | -  | <b>10</b>      | -          |
|                                    |                                    | NB2 (Weald Clay)   | MBAS – 270  | NA   | NA             | NA         |
|                                    |                                    |  | Nickel – 5  | <b>4</b>   | 50             | -          |
|                                    |                                    |  | Total Alkalinity – 260,000                            | NA   | NA             | NA         |
|                                    |                                    |  | EPH (C10-C20) – 1,200                                 | -  | <b>10</b>      | -          |
|                                    |                                    |  | EPH (C20-C30) – 70                                    | -  | <b>10</b>      | -          |
| 1,1 Dichloroethane – 5             | NA                                 | NA   | NA  |  |                |            |
| Taxiway Victor                     | 36 - 2013                          | WS19 (Clay)*   | pH – 9.1  | <b>&gt;9</b>                                     | NA             | NA         |
|                                    |                                    |  | Potassium – 130,000                                   | -  | <b>12,000</b>  | -          |
|                                    |                                    |  | Manganese – 8,800                                     | <b>123</b>                                       | <b>50</b>      | -          |

NA = not available

\*Groundwater sample taken as grab sample

2.3.42 Exceedances of screening criteria for a number of contaminants of concern, including heavy metals, hydrocarbons and VOCs, have been identified within perched / groundwaters.

2.3.43 Table 2.3.5 identified exploratory holes for which soil leachate samples have exceeded the relevant screening criteria.

Table 2.3.5: Chemical Leachate Results Exceeding Screening Criteria

| Project Element              | Report ID and date<br>(refer Annex 3) | Exploratory Hole, Depth and<br>(Geology)   | Contaminant and Concentration (ug/l) | Screening Criterion (ug/l) – Exceedances in Bold |             |          |
|------------------------------|---------------------------------------|--|--------------------------------------|--|-------------|----------|
|                              |                                       |  |                                      | EQS  | DWS         | WHO ATO  |
| Charlie Box                  | 31 - 2013                             | WS08 – 0.9 metres (Made Ground)<br>WS09 – 0.9 metres (Made Ground)<br>WS05 – 2.15 metres (Made Ground) | Fluoranthene – 0.22                  | <b>0.0063</b>                                    | -           | -        |
|                              |                                       |  | Benzo(a)pyrene – 0.04                | <b>0.00017</b>                                   | <b>0.01</b> | -        |
|                              |                                       |  | Chromium - 63                        | <b>4.7</b>                                       | <b>50</b>   | -        |
|                              |                                       |  | Copper - 30                          | <b>1</b>   | 2,000       | -        |
|                              |                                       |  | Lead - 2                             | <b>1.2</b>                                       | 10          | -        |
|                              |                                       |  | Nickel - 40                          | <b>4</b>   | 50          | -        |
|                              |                                       |  | Zinc - 200                           | <b>10.9</b>                                      | 5,000       | -        |
|                              |                                       |  | Fluoranthene – 0.1                   | <b>0.0063</b>                                    | -           | -        |
|                              |                                       |  | Chromium - 28                        | <b>4.7</b>                                       | 50          | -        |
|                              |                                       |  | Nickel - 26                          | <b>4</b>   | 50          | -        |
|                              |                                       |  | Zinc - 66                            | <b>10.9</b>                                      | 5,000       | -        |
|                              |                                       |  | Ethylbenzene - 69                    | -  | -           | <b>2</b> |
|                              |                                       | m/p Xylene - 270   | <b>30</b>                            | -  | -           |          |
|                              |                                       | TPH (C6-C8 aliphatic) – 2,600  | -                                    | <b>10</b>  | -           |          |
|                              |                                       | TPH (C8-C10 aliphatic) – 14,000  | -                                    | <b>10</b>  | -           |          |
|                              |                                       | WS06 – 0.9 metres (Made Ground)  | TPH (C8-C10 aromatic) – 4,800        | -  | <b>10</b>   | -        |
|                              |                                       |  | TPH (C8-C10 aliphatic) – 1,800       | -  | <b>10</b>   | -        |
|                              |                                       |  | Chromium - 10                        | <b>4.7</b>                                       | 50          | -        |
|                              |                                       | WS06 – 1.6 metres (Clay)   | Copper - 60                          | <b>1</b>   | 2,000       | -        |
|                              |                                       |  | Lead – 3                             | <b>1.2</b>                                       | 10          | -        |
|                              |                                       |  | Nickel - 10                          | <b>4</b>   | 50          | -        |
|                              |                                       |  | Zinc - 66                            | <b>10.9</b>                                      | 5,000       | -        |
|                              |                                       |  | Fluoranthene – 1.4                   | <b>0.0063</b>                                    | -           | -        |
|                              |                                       |  | Benzo(b)fluoranthene – 0.47          | <b>0.00017</b>                                   | -           | -        |
|                              |                                       |  | Benzo(k)fluoranthene – 0.63          | <b>0.00017</b>                                   | -           | -        |
|                              |                                       |  | Benzo(a)pyrene – 0.54                | <b>0.00017</b>                                   | <b>0.01</b> | -        |
|                              |                                       |  | Indeno(123-cd)pyrene – 0.38          | <b>0.00017</b>                                   | -           | -        |
| Benzo(ghi)perylene – 0.4     | <b>0.00017</b>                        |  | -                                    | -  |             |          |
| TPH (C8-C10 aliphatic) – 590 | -                                     |  | <b>10</b>                            | -  |             |          |



2.3.44 Slight hydrocarbon odours were noted within the Made Ground encountered at WS05 and moderate hydrocarbon odours at WS08. A slight organic odour was noted within the Made Ground encountered at WS06.

2.3.45 The identified exceedances indicate leachable concentrations of heavy metals and hydrocarbons. It is considered that the exceedances for hydrocarbons are generally confined to the Made Ground and close to the boundary of the Made Ground / underlying Weald Clay Formation interface.

2.3.46 The results of leachate analysis suggest that the general quality of Made Ground identified on the site may represent a potential source in the generation of low quality perched groundwater therein.

2.3.47 The locations of the soil, leachate and groundwater exceedances are shown in Figure 10.6.5 (Volume 2 of the PEIR).

**Ground Gas Monitoring**

2.3.48 Ground gas monitoring data is available from approximately seven previous phases of ground investigations. Elevated methane (up to approximately 32.4 %), carbon dioxide (up to approx. 11%), carbon monoxide (up to approximately 313 parts per million (ppm)) and depleted oxygen have been recorded in various parts of the site together with high ground gas flow rates (up to 43.1 litres per hour (l/hr)).

2.3.49 Additionally, soil vapour sampling recorded elevated hydrocarbon vapours during a ground investigation for the construction of the Boeing hangar.

2.3.50 Potential sources of elevated ground gas were attributed to the infilled balancing pond at the North Terminal and a former fuel line at the South Terminal.

2.3.51 Characteristic Situations (CS) assigned to areas across the Project site ranged between CS1 (very low risk) and CS3 (moderate risk). The CS is determined by the modified Wilson and Card classification (CIRIA, 2007). The method uses both gas concentrations and borehole flow rates to define a CS for a site based on the limiting gas volume flow for methane and carbon dioxide.

**Unexploded Ordnance**

2.3.52 The risk of Unexploded Ordnance (UXO) has been reported for Gatwick Airport and a summary provided below.

*UXO Hazard Summary*

2.3.53 The main sources of UXO hazard arise from munitions storage/disposal activities undertaken at Gatwick and in the

surrounding area during and immediately after World War II. There were munitions supply depots surrounding Gatwick Airport supporting the Royal Air Force (RAF), Home Guard, Special Operations Executive (SOE) and the regular Army prior to the D-Day invasions in 1944.

2.3.54 At the end of World War II, some of the unused munitions at the depots were disposed of locally. This included ordnance returned to the depots which were not required in combat but were primed and fused.

*UXO in Made Ground*

2.3.55 Post-World War II, during the extension of Gatwick Airport, significant earthworks were undertaken in construction of the airfield.

2.3.56 A large number and wide range of live ordnance was found when excavating within Made Ground across much of the airfield. There is consequently a potential for UXO to be present within the Made Ground across the airport and just outside the airfield perimeter, as proven by these post-World War II UXO finds.

2.3.57 Records of finds to date indicate that such ordnance is likely to comprise close combat munitions such as grenades, mortars, smoke bombs, small arms ammunition, Projector, Infantry, Anti Tank (PIATs) alongside anti-tank mines and a variety of other ammunition.

2.3.58 The UXO hazard is considered to be confined to the Made Ground. However, potential for some localised munitions stores dating from World War II buried at shallow depth in the natural ground cannot be totally discounted.

**3 Preliminary Risk Assessment**

**3.1 Introduction**

3.1.1 An outline conceptual site model (CSM) consists of an appraisal of the source-pathway-receptor 'contaminant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- Source referring to the source of contamination (Hazard).
- Pathway for the contaminant to move/migrate to receptor(s).
- Receptor (Target) that could be affected by the contaminant(s).

3.1.2 Receptors include human beings, other living organisms, crops, controlled waters and buildings / structures. The National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021) used to address contaminated land through the planning process, follows the same principles as those set out under Part 2A. Further details on the Part 2A regime are presented within Annex 5.

3.1.3 Each stage of the potential pollutant linkage sequence has been assessed individually on the basis of information obtained during the walkover and desk study exercise.

**3.2 Potential Sources**

**On-site - Existing**

3.2.1 Existing on-site potential sources of contamination representing PAOC are outlined in the following Table 3.2.1 with their locations indicated on Figure 10.6.3.

**Table 3.2.1: Potential Areas of Concern (On Site - Existing)**

| PAOC ID                   | Name                                      | Activities   |
|---------------------------|---|--|
| <b>On Site - Existing</b> |   |  |
| 1                         | Enterprise rent-a-car, Europcar and Herts | Maintenance of hire vehicles, car wash and vehicle refuelling (three individual refueling points). Potential petrol and diesel underground storage tanks (USTs). |
| 2                         | Europcar                                  | Maintenance of hire vehicles, vehicle refueling. Potential petrol and diesel USTs.   |
| 3                         | Avis                                      | Maintenance of hire vehicles, car wash. Potential diesel and petrol USTs.  |
| 4                         | BP petrol filling station (PFS)           | PFS – petrol and diesel USTs.  |
| 5                         | BA hangar                                 | Servicing of aircraft.   |
| 6                         | Babcock warehouse                         | Engineering works, Potential aircraft de/anti-icing practice.  |
| 7                         | Shell PFS                                 | PFS – petrol and diesel USTs.  |
| 8                         | Stands 4 and 5                            | Maintenance of aircraft, storage of waste fuel, chemicals and oils.  |
| 9                         | Stand 130 to 136 and 140 to 145           | De/anti-icer above ground storage tanks (ASTs) and vehicle filling points.   |

| PAOC ID                                  | Name                    | Activities  |
|--|-------------------------|---|
| 10                                       | Fire Station            | Maintenance vehicle storage area.   |
| 11                                       | TCR                     | Repair of ground support vehicles, oil ATs.   |
| 12                                       | DHL                     | Waste treatment plant   |
| 13                                       | Fuel Farm               | Aviation fuel ASTs and potential underground pipeline.  |
| 14                                       | Wet tip                 | Sewage waste septic tank, lined storage lagoons for contaminated surface water runoff.                          |
| 15                                       | Fire Fighting Area      | Fire training, propane AST and underground pipe, kerosene.  |
| 16                                       | Oscar Remote Stands     | Refuelling area and vehicle wash. Fuel USTs, gas oil AST, soap AST, engine and hydraulic oil ASTs, Adblue IBCs. |
| 17                                       | Stand 574               | Maintenance of aircraft, storage of waste fuel, chemicals and oils.   |
| 18                                       | Stand 558               | Large fuel spill (2019)   |
| 19                                       | Esso PFS                | PFS – petrol and diesel USTs.   |
| 20                                       | Texaco PFS              | PFS – petrol and diesel USTs.   |
| 45 to 48, 50, 51, 53 to 55, 57, 60 to 77 | Electricity substations | Electricity substations   |

3.2.2 Made Ground, likely to be present across the Project site as a result of construction/demolition activities, is also considered to represent a potential source of contaminants of concern.

3.2.3 Made Ground and superficial deposits (in particular Alluvium including peat and organic clays) may represent potential sources of ground gas generation.

**On-site – Historical**

3.2.4 Historical on-site potential sources of contamination representing PAOC are outlined in the following table with their locations indicated on Figure 10.6.3 (Volume 2 of the PEIR).

**Table 3.2.2: Potential Areas of Concern (On Site - Historical)**

| PAOC ID                     | Name        | Activities                 |
|-----------------------------|-------------|----------------------------|
| <b>On Site - Historical</b> |             |                            |
| 21                          | Timber Yard | Potential timber treatment |

| PAOC ID               | Name                                     | Activities  |
|-----------------------|--|---|
| 22                    | Fuel Depots                              | Potential fuel tanks and pipework                                   |
| 23                    | Smithy, Engine House and Tramway Sidings | Smithy, Engine House and Tramway Sidings                            |
| 24                    | Railway Sidings                          | Railway Sidings   |
| 25 to 32              | Tank(s)                                  | Unknown use   |
| 33                    | Tanks                                    | Unknown use, dates from 1960s / 1970s                               |
| 34                    | Gasometers                               | Potential pipework, sumps   |
| 35 to 39              | Water bodies/ponds                       | Potential backfill unknown  |
| 40                    | Balancing Pond                           | Potential backfill unknown  |
| 41                    | Reservoir/pond                           | Potential backfill unknown  |
| 42                    | Pit                                      | Potential backfill unknown  |
| 43, 44, 49, 52 and 56 | Electricity substations                  | Electricity substations   |
| 58                    | Pollution Incident                       | Significant impact to water – List 2 substance (unspecified) - 2016 |

**Off-site – Existing**

3.2.5 The only existing off-site potential source of contamination representing a PAOC is outlined in the following table with its location indicated on Figure 10.6.3 (Volume 2 of the PEIR).

**Table 3.2.3: Potential Areas of Concern (Off-Site - Existing)**

| PAOC ID                    | Name        | Activities                        |
|----------------------------|-------------|-----------------------------------|
| <b>Off Site - Existing</b> |             |                                   |
| 59                         | Crawley STW | Sewage Treatment Works, CHP Plant |

**Off-site – Historical**

3.2.6 No potentially significant historical off-site sources of contamination have been identified.

**3.3 Potential Pathways**

3.3.1 The risks to future on site human health receptors via the pathways of dermal contact and ingestion will be mitigated in areas of proposed building or hardstanding as the pathway will be inactive. However, in any areas of proposed soft landscaping, the

pathways of dermal contact and ingestion could still be active. In addition, there would be potential for the airborne migration of soil/dust from these areas.

3.3.2 There is the potential for ground gas (from on or off-site sources) and volatile contaminants of concern in soil and/or groundwater (if present) beneath the site to impact future site users where buildings are proposed via the inhalation pathway in indoor areas.

3.3.3 There is the potential for contaminants of concern (if present) beneath the site to migrate beneath the Project site via perched groundwater (if present) within granular horizons of the Made Ground, the superficial deposits and the weathered Weald Clay Formation. These contaminants may impact either controlled waters receptors or off-site human health receptors via the dermal contact, ingestion and vapour inhalation pathways.

3.3.4 The surface water drainage system (where discharging to controlled waters) service corridors and/or subterranean infrastructure corridors could act as preferential pathways for the migration of any potential contaminants of concern.

3.3.5 The Weald Clay Formation is considered to be sufficiently impermeable and thick as to prevent the downward vertical migration of any contaminants within groundwater (if present) to the underlying Tunbridge Wells Sand Formation. This pathway may require consideration where piles that breach the thickness of the Weald Clay Formation are required as part of building construction.

**3.4 Potential Receptors**

3.4.1 Potential human receptors include future site users, construction workers during site development works and off-site human receptors including workers, residents and general public users on land within or adjacent to the Project site.

3.4.2 Elevated levels of ground gas and depleted oxygen levels have been detected as part of previous investigations. In addition, asbestos has been identified within Made Ground sampled from beneath the Project site. These findings would be taken into account in the design of further ground investigations and remediation strategy (where required) and Health and Safety risk assessments.

3.4.3 Head deposits are indicated to be present in a small area in the centre of the Project site. This stratum are classified as a Secondary Undifferentiated Aquifer. Given this classification, it is not considered to represent potential controlled waters receptor.

- 3.4.4 The Alluvium (indicated to be present across parts of the north, east and west) of the Project site and River Terrace Deposits (indicated to be present across parts of the west, centre and east) are classified as Secondary A Aquifers and, as such, are considered to be potential controlled waters receptors.
- 3.4.5 The Tunbridge Wells Sand Formation Secondary A Aquifer at depth is not generally considered a potential receptor given the upper level of protection afforded by the significant thickness of the overlying impermeable Weald Clay Formation. However, this stratum may become a potential receptor where piles that breach the thickness of the Weald Clay Formation are required as part of building construction.
- 3.4.6 Surface water receptors are considered to comprise the River Mole (flowing through the Project site) and its associated tributaries including Crawler's Brook, the Gatwick Stream, Man's Brook, Burstow Stream and Westfield Stream (which either flow through or close to the Project site).
- 3.4.7 The groundwater abstraction located approximately 1 km to the south of the site, is not considered a potential receptor due to the distance and it is located hydraulically up-gradient from the Project site.

## 4 Conceptual Site Model

### 4.1 Outline Conceptual Site Model

- 4.1.1 An outline CSM has been developed for the overall Project site on the basis of the site reconnaissance and desk study. It considers each element of the Project and identifies potential sources, pathways and receptors (ie potential pollutant linkages). The outline CSM is summarised in Table 4.1.1 below.

Table 4.1.1: Outline Conceptual Site Model

| Potential Source   | Contaminants of Concern   | Via  | Potential Pathways   | Linkage Potentially Active?           | Receptors  |   |   |
|--|---|--|--|---------------------------------------|--|---|---|
| <p><b>On site – existing:</b><br/>PAOC 1 to PAOC 20, PAOC 45 to 48, PAOC 50, PAOC 51, PAOC 53 to 55, PAOC 57, PAOC 60 to 77</p> <p><b>On site – historical:</b><br/>PAOC 21 to PAOC 58, PAOC 44, PAOC 49, PAOC 52, PAOC 56</p> | <p>Metals, inorganics, hydrocarbons, glycols, VOCs, SVOCs, PCBs, PFOS/PFAS, pesticides, herbicides and asbestos</p> | Soil   | Direct contact/ingestion   | ✓ <sup>1</sup>                        | Future site users<br>Construction workers  |   |   |
|  |   |  | Inhalation of volatiles  | ✓ <sup>2</sup>                        | Future site users<br>Construction workers  |   |   |
|  |   |  | Airborne migration of soil or dust   | ✓ <sup>1</sup><br>✓ <sup>1</sup>      | Future site users<br>Construction workers<br>Off-site users  |   |   |
|  |   |  | Leaching of mobile contaminants  | ✓<br>✓<br>x <sup>3</sup>              | Alluvium Secondary A Aquifer<br>River Terrace Deposits Secondary A Aquifer<br>Tunbridge Wells Sand Formation Secondary A Aquifer |   |   |
|  |   | Ground water   |  | Direct contact/ingestion              | ✓ <sup>1</sup><br>✓  | Future site users<br>Construction workers<br>Off-site users   |   |
|  |   |  |  | Inhalation of volatiles               | ✓ <sup>2</sup><br>✓  | Future site users<br>Construction workers<br>Off-site users   |   |
|  |   |  |  | Lateral migration in permeable strata | ✓<br>✓<br>✓  | Alluvium Secondary A Aquifer<br>River Terrace Deposits Secondary A Aquifer<br>River Mole and associated tributaries |   |
|  |   | <p><b>Off-site – existing:</b><br/>PAOC 59</p>   | <p>Metals, inorganics, pesticides, PCBs, treatment chemicals, pathogens, hydrocarbons and asbestos</p> | Ground water                          | Lateral migration and subsequent inhalation of volatiles   | ✓ <sup>2</sup>  | Future site users<br>Construction workers                   |
|  |   | <p><b>On and off-site:</b><br/>Made Ground / natural strata (including superficial deposits), PAOC 35 to PAOC 42 and PAOC 14 and PAOC 58 or bio-degradation of contamination</p> | <p>Carbon dioxide and methane</p>  | Ground Gas                            | Vertical and lateral migration and subsequent inhalation of ground gas   | ✓ <sup>2</sup><br>✓   | Future site users<br>Construction workers<br>Off-site users |
| Explosive risks  | ✓ <sup>2</sup><br>✓   |  |  |                                       | Future site users<br>Construction workers<br>Off-site users  |   |   |

Notes:

1 Pathway will be inactive in areas of proposed building cover and hardstanding

2 Pathway will be inactive in areas where buildings/confined spaces are not proposed

3 This pathway may be active where piles that breach the thickness of the Weald Clay Formation are required as part of building construction

## 5 Conclusions and Recommendations

- 5.1.1 The Preliminary Risk Assessment has identified a number of historical and current potential sources of contamination representing PAOC across the Project site. The outline CSM produced as part of the assessment has identified a number of potential pollutant linkages associated with these sources that may be active where areas of the Project site are proposed for development.
- 5.1.2 In order to determine requirements for further assessment, the locations of PAOC have been overlain on the boundaries of the proposed development areas and are indicated on Figure 10.6.4 (Volume 2 of the PEIR).
- 5.1.3 Recommendations for each development area have been derived in consideration of:
- PAOC located within the development area boundary;
  - whether any buildings are proposed as part of the development (thus requiring consideration of the ground gas/vapour inhalation pathway); and
  - pre-existing site investigation data, where available.
- 5.1.4 A flowchart detailing the recommendation strategy for further works is provided in Annex 6 together with a table detailing recommendations for each development area.
- 5.1.5 Where recommended, the scope of any further ground investigation will be determined on a case-by-case basis and will be agreed with the Environment Agency/relevant local planning authority prior to its implementation. Investigations may include some of the following:
- drilling of boreholes or excavation of trial pits, targeting identified PAOC and pollutant linkages;
  - installation of groundwater and gas monitoring wells;
  - collection of soil and groundwater samples with chemical analysis of these samples for contaminants of concern;
  - ground gas monitoring from wells installed at the site; and
  - assessment of ground conditions and generic quantitative risk assessment of soil and groundwater chemical analysis results to determine the potential for the identified potential pollutant linkages to remain active upon development of the area.
- 5.1.6 Where appropriate, the investigations will include geotechnical testing to provide information on land stability and inform detailed design. Following the ground investigation, a remediation strategy

will be implemented, where necessary. At this stage, the strategy is anticipated to comprise the following:

- the proposed remediation technique;
  - implementation plan setting out the objectives and requirements of the remediation;
  - validation sampling to confirm that remediation objectives have been met; and
  - verification report.
- 5.1.7 The scope of the remediation strategy will be agreed with the Environment Agency/relevant local planning authority prior to its implementation. On completion of the remediation works, a verification report will be sent to the Environment Agency/relevant local planning authority for approval. Subject to the scope of the remediation strategy, the following will be undertaken where appropriate to inform construction activities and the detailed design of the buildings:
- Piling risk assessment (in accordance with the Environment Agency guidance) including control measures (where appropriate) to mitigate risk to controlled waters during piling installation;
  - Detailed ground gas risk assessment and gas control measures during construction and to be incorporated into building design (where appropriate); and
  - Groundwater and/or surface water monitoring.
- 5.1.8 The remediation strategy will be supported by a Project wide Material Management Plan prepared in accordance with CL:AIRE Code of Practice (CL:AIRE, 2011).
- 5.1.9 Where, further ground investigation is not recommended at this stage, a discovery strategy would be implemented for that development area as a watching brief for any unanticipated or previously un-encountered contamination. RPS or another suitably trained personnel would be contacted, where any significant visual or olfactory evidence of contamination, not previously encountered, is identified by construction workers during the development works. The following shall be considered indicative of soil contamination that may require remediation:
- the presence of free phase contamination (liquid oils);
  - fibrous or cement bound materials (potentially asbestos containing materials);
  - significant staining and discolouration of exposed soils; and / or
  - olfactory evidence of hydrocarbon contamination.

- 5.1.10 Any construction activities in the area of this material would cease until an appropriate plan for dealing with the contamination has been put in place.
- 5.1.11 In terms of construction workers, prior to construction works taking place specific risk assessment will be required in line with Health & Safety requirements. This will enable control measures and appropriate levels of PPE to be implemented.

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## 7 Glossary

### 7.1 Glossary of terms

**Table 7.1.1: Glossary of Terms**

| Term | Description                               |
|------|---|
| AST  | Above ground Storage Tank                 |
| AC   | Assessment criteria                       |
| BGL  | Below ground level                        |
| BGS  | British Geological Survey                 |
| BTEX | Benzene, Toluene, Ethylbenzene and Xylene |
| C4SL | Category 4 Screening Level                |
| CO   | Carbon Monoxide                           |
| CS   | Characteristic Situation                  |
| CSM  | Conceptual Site Model                     |
| DQRA | Detailed Quantitative Risk Assessment     |
| DWS  | Drinking Water Standard                   |
| EA   | Environment Agency                        |
| EIA  | Environmental Impact Assessment           |
| EQS  | Environmental Quality Standard            |
| GAC  | Generic Assessment Criteria               |
| GAL  | Gatwick Airport Limited                   |
| IBC  | Integrated Bulk Container                 |
| KM   | Kilometers                                |
| L/Hr | Litres per hour                           |
| LGS  | Local Geological Site                     |
| mb   | Millibars                                 |
| MBAS | Methylene Blue Active Substances          |
| NVZ  | Nitrate Vulnerable Zone                   |
| OS   | Ordnance Survey                           |
| PAOC | Potential Areas of Concern                |
| PCB  | Polychlorinated Biphenyl                  |
| PFAS | Perfluoroalkyl substances                 |
| PFOS | Perflyorooctane sulphonic acid            |
| PPE  | Personal Protective Equipment             |
| PPM  | Parts per million                         |
| RAF  | Royal Air Force                           |
| S4UL | Suitable 4 Use Levels                     |
| SgZ  | Safeguard Zone                            |
| SOE  | Special Operations Executive              |

| Term    | Description                                      |
|---------|--|
| SSSI    | Site of Special Scientific Interest              |
| SVOCs   | Semi Volatile Organic Compounds                  |
| TPH     | Total Petroleum Hydrocarbons                     |
| UST     | Underground Storage Tank                         |
| UXO     | Unexploded Ordnance                              |
| VOCs    | Volatile Organic Compounds                       |
| WHO     | World Health Organisation                        |
| WHO ATO | World Health Organisation Appearance Taste Odour |
| WFD     | Water Framework Directive                        |

Annex 1

Assessment Limitations



## Phase 1 - Environmental Risk Assessment / Desk Study Environmental Review

### General Notes

1. A "desk study" means that no site visits have been carried out as any part thereof, unless otherwise specified.
2. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.
3. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.
4. The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
5. No sampling or analysis has been undertaken in relation to this desk study.
6. Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
7. Where any data supplied by the Client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.
8. This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.
9. The copyright in the written materials shall remain the property of the RPS Company but with a royalty-free perpetual licence to the Client deemed to be granted on payment in full to the RPS Company by the Client of the outstanding amounts.
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These terms apply in addition to the RPS "Standard Terms & Conditions" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms & Conditions, the said Standard

Terms & Conditions shall prevail.) In the absence of such a written contract the Standard Terms & Conditions will apply.

Annex 2

Walkover Observations

Site visit was completed of Gatwick airport on the 25th of September 2019

**Table A2.1: Summary of on site activities**

| Section                | Description   |
|------------------------|---|
| Site Layout:           | <p>The site comprised Gatwick Airport and associated infrastructure including a number of hotels, offices and a railway station.</p> <p>The airport operations included two runways (main and central) located in the south of the site. A number of carparks, two commercial buildings, a British Airways Hangar and warehouse were located to the south of the runways.</p> <p>The land to the far north west of the runway comprised a fire training ground with undeveloped, (likely agricultural) land beyond.</p> <p>The main airport operations area to the north of the runways comprised a Boeing Hangar, Virgin Hangar, a number of aircraft stands and a maintenance area in the north west with car parking areas for long stay parking further to the north west. The central north area comprised a number of taxiways and aircraft stands, a cargo centre, the fire station, storage areas, a fuel farm and further car parking areas. To the north east of the runways were further aircraft stands and taxiways, the two airport terminals and a number of offices and hotels.</p> <p>The airport also comprised an eastern area located beyond the railway line and A23, which comprised a number of car parks, vehicle hire offices and workshops, hotels, offices and fast food restaurants.</p>  |
| Activity / Operations: | <p>For ease of description the site has been separated into the below areas.</p> <p><b>Eastern area:</b></p> <p>This area is located to the east of the main airport, beyond the railway line and A23. The southern portion of the eastern area comprised woodland with two ponds in the south (likely associated with adjacent sewage treatments works). The center of the eastern area was occupied by a number of long stay car parks, including self-park south, south valet and valet courtyard, as identified on Figure 5.2.1b. The long stay car parks were accessed from Ring Road South. Also located adjacent to the Ring Road to the north of the car parking areas (between self-park south robotics and the coach park on Figure 5.2.1b) were two buildings comprising maintenance areas occupied by Enterprise rent-a-car, Europcar and Herts for the maintenance of hire vehicles. The buildings were also noted to comprise car wash areas and vehicle refueling areas with three individual refueling points noted. Labelling on the refueling points indicated that underground storage tanks of petrol were located below. Two further vehicles hire company maintenance areas were noted within the south valet car parking area. One (located adjacent to the east of Pond G (Figure 5.2.1e) was occupied by Europcar and also appeared to include a refueling area with likely underground fuel storage tanks.</p> <p>An Avis vehicle maintenance area was also located in the east of the site to the south of the forecourt, leading from the south terminal. The maintenance area also appeared to be utilized for the repair of hire vehicles and included a car wash and vehicle refueling facilities with labelling on the dispensing pumps indicating both diesel and petrol underground tanks were present.</p> <p>The northern area of the east of the site comprised a multi-store car park and forecourt area (leading via aboveground covered walkways to the south terminal), a Hilton Hotel, a Marriott Hotel, two office buildings a drive in McDonalds and KFC restaurant and a petrol filling station operated by BP and associated car parking areas.</p> <p><b>South of the runways:</b></p> <p>Car parking areas were located to the southwest of the runways which predominantly appeared to be utilised as long stay parking for customers. The south east of the runway included a staff car park area (car park z on Figure 5.2.1b) with a material store to the north of the car park for storage of grit and other hardcore materials reported to be currently utilised for the development of a new slipway. A British Airways hangar was located adjacent to the east of the car park and was reported to be utilised for the servicing of aircraft. The hangar was not permitted to be accessed as part of the site walkover but appeared to comprise warehouse / maintenance area on the airside with offices to the rear. Two large above ground tanks were noted to the rear of the hangar and appeared to be sprinkler water storage tanks, however this was not confirmed. Further car parking and a warehouse noted to be occupied by Mitie (facility management) and Babcock (engineering services) were located to the south east of the runways. A disused aircraft was also located in this area, reported to be utilised for the practising of de/anti-icing however only water was reported to be used.</p> <p><b>Northeast of the runways:</b></p> <p>The north east of the runway comprised the South and North Airport Terminals and associated piers and aircraft stands. Hotels, offices and commercial buildings were also located in the landside area of the north east of the site including a police station and a Shell petrol filling station. The airside in the north east of the airport included small engineering areas (one of which was located to the south of stands 4 and 5) and another adjacent to stand 574. The engineering areas were utilised by each air firm for the maintenance of airplanes at the stands and included the storage of waste from the airplanes such as waste fuel and also small amounts of chemicals and oils for use in airplane maintenance. The majority of the non-waste chemicals were noted to be stored on bunds or in bunded stores.</p> <p>Above ground de/anti-icer storage tanks and materials were stored in the area of stands 136 to 140 just north east of the runways.</p> <p><b>Centre north of the runways:</b></p> |

| Section                             | Description  |
|-------------------------------------|--|
|                                     | <p>A fire station and airside maintenance vehicle storage area were located to the immediate north centre of the runways. Further aircraft stands and a cargo centre (comprising of terraced warehouse units) were present beyond this. The cargo centre occupants included Royal Mail, World Freight Service and Animal Aircare Ltd and TCR (air industry ground support equipment servicing). The unit occupied by TCR was utilised for the repair of ground support vehicles.</p> <p>Further car parking and a waste treatment plant occupied by DHL were located to the north of the Cargo Centre with a fuel farm comprising five large above ground tanks for the storage of aviation fuel located in the far north. The aviation fuel was reported to be transported directly to the tanks via an underground pipeline. Access was not permitted to the fuel farm as part of the site walkover. Adjacent to the fuel farm was a small waste area (referred to as the “wet tip”) where sewage waste from the aircraft was disposed of to a septic tank. In addition, the waste area comprised two lined pools for the storage of surface water from the runways / external areas and contaminated water from the runways / external areas.</p> <p><b>North west of the runways:</b></p> <p>The far northwest of the runways included an area utilised by the fire service for training purposes with undeveloped, likely agricultural land beyond. Two dummy aircraft were located in this area for fire training purposes. An above ground propane storage tank was present in the south west of the fire training area with beneath ground pipework supplying the large dummy aircraft in the centre. A land drain was noted around the fire service training area.</p> <p>The area to the north west of the runways also included a Boeing hangar, currently under development and not yet in use, a Virgin hangar, aircraft stands and a maintenance area (Oscar Remote Stands on Figure 5.2.1a), including refuelling area for ground service vehicles and vehicle wash facilities. A large long stay car parking area was also located beyond the Virgin hangar to the north west of the runways.</p> <p>The majority of the airside vehicles on-site were noted to be electric powered with numerous recharging points located around the airport.</p>  |
| <p><b>Drainage:</b></p>             | <p>Slot drains were observed in the runway, taxiway and aircraft stand areas. The site representative reported that all drainage within the airside area and possible also the landside area operated by Gatwick drains to a number of ponds located around the airport. The ponds then connect to a water treatment plant located in the north of the site, above stand 64, where the surface water is treated and tested before being discharged to the River Mole.</p> <p>The site representative reported that all drainage within the airside area can be controlled and either closed off or directed to a dedicated pond in the event of a spill.</p> <p>A vehicle refuelling and adjacent car wash were located in the landside maintenance area (Oscar Remote Stands), surface water drains were noted surrounding the vehicle refuelling area and below the vehicle wash. It was not known where the drains discharged to or if an interceptor was present, however, the site representative reported that, similarly to all drainage on-site, the drains entered an on-site pond for treatment. Three adjacent drain covers were noted in the refuelling area vicinity indicating the potential presence of an interceptors.</p> <p>Further refuelling areas and vehicle washes were noted in the eastern area of the site operated by vehicle hire firms. Dedicated surface water drainage was not noted in the vicinity of the vehicle hire maintenance areas in the east of the site excluding the Europcar maintenance area adjacent to the east of Pond G where surface water drains were noted in the vicinity of the refuelling area. It was not known if an interceptor was present in these areas.</p> <p>A septic tank for foul waste from the airplanes was reported to be located in the north of the site north of the fuel farms. This was reported to be collected and disposed of off-site.</p>   |
| <p><b>Bulk Storage / Tanks:</b></p> | <p>Five above ground bulk storage tanks of aviation fuel were observed in the fuel farm in the north of the site. The capacity of the tanks was not provided, however, given their size it is considered to be in the millions of litres. It was also not clear if the tanks extended below ground. The tanks were reported to be directly filled from an underground pipeline which was reported to extend from a dedicated port to the airport. Fuel was then reported to be connected to the airplane stands via underground pipework with a refuelling point at each aircraft stand. The fuel was reported to be piped through the underground pipework at high pressure.</p> <p>A refuelling area for the fuelling of airside support vehicles was located in the maintenance area (Oscar Remote Stands) in the centre north of the site. The refuelling area was noted to comprise eight dispensing points and five ventilation pipes indicated the presence of approximately five underground fuel storage tanks. The tanks were reported to contain diesel, petrol and gas oil. A refill point for an unleaded petrol underground storage tank was noted with labelling indicating the tank was 29,100 litres in capacity. No other refill points were identified.</p> <p>An above ground bulk storage tank of gas oil (48,500 litres capacity) was also noted in the Oscar Remote Stands area. The tank was noted to comprise an integrally bunded tank with the refill and dispensing points / hose located behind a roller shutter door within the bund. No significant staining was noted in the area. An integrally bunded tank of Adblue was also noted.</p> <p>A 6,500 litre aboveground storage tank reported to comprise soap (SC08 Stand Cleaner) was also noted in this area. The tank was located within a brick bund. The bund was not covered and was filled with an approximately 5cm deep layer of green coloured liquid. It was not clear if this represented a leak from the tank or the combination of a leak and rainwater or other contamination.</p> <p>Adjacent to the refuelling area in Oscar Remote Stands was a maintenance warehouse for the servicing of airside support vehicles. Three above ground tanks were noted on a mezzanine level within the warehouse. The tanks were reported to comprise engine and hydraulic oil and were connected by aboveground pipework to refilling and dispensing points. A bunded external store of drums of oil and intermediate bulk containers of Adblue were also noted.</p> |

| Section                                | Description   |
|--|---|
|  | <p>Two petrol filling stations were noted on site. A Shell operated PFS was located in the north east of the site, adjacent to the Premier Inn. The forecourt area of the Shell PFS was not accessed and therefore, the number, capacity and contents of the underground tanks was not identified. The second PFS was located in the north east of the site adjacent to the McDonalds restaurant and was operated by BP. Labelling on the refill points for the underground storage tanks indicated the presence of five tanks as below:</p> <ul style="list-style-type: none"> <li>▪ 57,730 litres diesel;</li> <li>▪ 43,120 unleaded petrol;</li> <li>▪ 14,610 diesel;</li> <li>▪ 31,120 unleaded petrol; and</li> <li>▪ 14,610 unleaded petrol.</li> </ul> <p>Underground fuel storage tanks containing petrol and diesel are also considered likely to be present beneath the refuelling areas operated by vehicle hire companies in the east of the site. RPS considers that there is the potential for approximately ten underground tanks to be present between the five hire car facilities.</p> <p>Above ground de/anti-icer tanks were noted in the centre of the site in the area of stand 130 to 145. The de/anti-icer tanks comprised four 80,000 litre tanks of ECO2 and two 80,000 litre tanks of KONSIN for the de/anti-icing of the runways, taxi areas and aircraft stands. Above ground pipework connected to small generators was located between the tanks which was operated to fill de/anti-icing vehicles with the de/anti-icer when required, each vehicle was reported to hold 6,000 litres of de/anti-icer. Granular de/anti-icing material (Safegrip SF) was also stored in a covered area adjacent to the tanks. Both ECO2 and KONSIN were utilised for the de/anti-icing of the runways with Type IV reported to be utilised for the de/anti-icing of planes. Three 80,000 litre above ground storage tanks of Type IV for the de/anti-icing of planes were also located in this area. Further above ground storage tanks of de/anti-icer for the aircraft were located in integrally bunded tanks to the south of the fuel farm.</p> <p>The TCR maintenance area included two above ground oil storage tanks of 2,000 litre capacity. The tanks were located internally to the unit. Some staining of the underlying hardstanding was noted.</p> |
| Waste:                                 | <p>Waste contaminated water from spills and similar events was reported to be cleaned up by a dedicated cleaning vehicle with a vacuum function with the contaminated water then disposed of in the wet tip area, located in the north of the site immediately beyond the aviation fuel farm. The wet tip comprised two pools / pit which appeared to be concrete lined. One pool was for contaminated water and the other was for littered surface water. The surface water pool was reported to be discharged to the drainage system with any litter waste within the pool collected and crushed. Contaminated water was reported to be collected by a waste tanker and disposed of off-site. The waste tanker was reported to be operated by Sweeptank.</p> <p>Contaminated mats and granules following a spill event were also stored in the wet tip area in a covered store in metal 205 litre drums located on plastic bunds. DHL were reported to collect the waste contaminated materials.</p> <p>Containers (metal drums, boxes and intermediate bulk containers) of contaminated rags, waste oil filters, waste oil and waste chemical containers were noted on-site, stored in the air firm maintenance areas, the airside vehicle maintenance area in Oscar Remote Stand and within the TCR maintenance warehouse.</p> <p>An above ground metal waste oil tank and intermediate bulk containers of adblue were located externally to the airside vehicle maintenance area. Both were reported to be collected by DHL.</p> <p>An above ground waste oil tank was also located internally to the TCR maintenance warehouse. The tank was reported to be approximately 2,000 litres in capacity. Contaminated waste from the TCR unit was reported to be collected by Oakwood.</p>   |
| Electricity Substations /Transformers: | <p>Electricity substations were reported to be present on site and were understood to be the responsibility of Gatwick Airport. The site representative was not aware of the location of all the substations however one was noted in the south west and one in the east of the site, adjacent to Pond G. The substation adjacent to Pond G was labelled as the responsibility of UK Power Networks.</p>  |
| Visual Evidence of Contamination:      | <p>The site representative reported that, on occasions, the refuelling of planes has resulted in small spills of fuel. Spill kits were located throughout the site and all airside support vehicles were noted to carry spill kits with absorbent booms, granules and specialist clay to block drains.</p> <p>A recent large fuel spill (in 2019) was reported to have occurred in the area of stand 558. The spill was the result of ground works damaging an aviation fuel pipe which caused a large geyser of fuel given the pressure of the pipes. The airport fire service and airside support were reported to have attended the event.</p>   |
| Statutory Nuisance:                    | <p>The site representative reported no knowledge of any statutory nuisances in relation to the site.</p>  |
| Other Issues:                          | <p>No Japanese Knotweed or Giant Hogweed (invasive plant species) were readily identified on or adjacent to the site at the time of the survey. (It should be noted that the identification can be limited by the seasons and in areas of dense vegetation growth).</p>   |

## The Surrounding Area

The site is located in an area of mixed commercial, agricultural and residential area land uses. At the time of the site inspection, neighbouring land consisted of the following:

**Table A2.2: Neighbouring Land Uses**

| Direction | Description   |
|-----------|---|
| North:    | Agricultural land with residential properties beyond. |
| East:     | Agricultural land and residential properties.         |
| South:    | Agricultural land and industrial estate.              |
| West:     | Agricultural land and residential properties.         |

The River Mole was observed to run along the northern edge of the site.

Annex 3

Previous Ground Investigation Reports Summary

**Table A3.1: Summary of Existing Ground Investigation Reports**

| No | Report Title  | GAL Reference             | Date       | In Genesis Area?   | Purpose  | GI Scope  | Soil Samples?  | GW Samples?   | GW Level Monitoring? Long term? | Ground Gas Monitoring?                                      | Interpretation of Environmental Results? |
|----|---|---------------------------|------------|--|--|---|--|---|---------------------------------|---|--|
| 1  | A380 On Stand 125 – Site Investigation Report (appendix to document)                                | 2A125-00-C-911-SUR-000001 | 14/03/2012 | N (Stand 125)  | Determine structural strength of concrete and ability to handle traffic  | 4 concrete cores<br>4 WS holes<br>4 DCP tests   | 2 (metals, total TPH, PAH 16)  | N   | N                               | N   | N  |
| 2  | Geotechnical Design Report – Airfield Operations Building (AOB)                                     | 2S169-XX-C-XXX-PDR-00007  | 04/04/2012 | N (AOB)  | GDR for new AOB  | 6 WS holes<br>2 GW/Gas MW   | N  | N   | Y (2 rounds - March 2012)       | Y (2 rounds – March 2012)                                   | N - No gas RA undertaken                 |
| 3  | Airfield Taxiway Papa November (P&N)– Pavement Investigation Test Report                            | 2AFLD-00-C-911-SUR-000001 | 17/04/2018 | N (taxiway P&N – no plan or coordinates for locations of core samples) | Pavement investigation   | 11 concrete cores   | N  | N   | N                               | N   | N  |
| 4  | South Terminal Northern Extension Structural Assessment of Spare Capacity in the Existing Structure | 20206-XX-S-247-BOD-000026 | 05/06/2018 | N (extension to Bloc hotel, located in South Terminal)                 | Structural assessment for proposed extension to the existing Bloc hotel, includes SI and associated GDR (as appendices to the main report) | 2 dynamic sampling and RC follow on boreholes<br>2 GW MW<br>2 CPT<br>4 TP                                     | 2 (metals, speciated PAH, phenol, cyanide and asbestos screen)                               | N   | N                               | N   | N  |
| 5  | Phase I Environmental Site Assessment   | 10509471                  | June 2017  | N (Boeing Hangar)  | Desk study prior to construction of Boeing Hanger  | None – included review of previous Arcadis SI report  | NA   | NA  | NA                              | NA  | NA                                       |
|    | Phase II Environmental Site Assessment  | No reference              | June 2017  |  | SI prior to construction of Boeing Hangar  | 19 WS<br>2 surface water samples<br>2 sediment samples<br>4 TP<br>12 vapour boreholes<br>5 spoil heap samples | 42 (metals, cyanide, VOCs, SVOCs, PAH, phenol, EPH, asbestos, PCBs, pesticides/herbicides)   | 21 (metals, VOCs, SVOCs and EPH)<br>Surface water were also analysed for cyanide, PCBS, PFAS, PFOS and PFOA | Y (1 round)                     | N but vapour samples collected (ground gases, TPH and VOCs) | Y  |
|    | Focused Soil and Groundwater Investigation for PFAS   | 41525212                  | 09/11/2019 |  | Provide further information on PFAS, following Phase II SI   | 5 WS<br>5 MW<br>2 surface soil samples  | 12 (PFAS and asbestos screen)  | 4 (PFAS)  | Y (1 round)                     | N   | Y  |
|    | Phase 2 Gatwick Boeing Hangar Geo Environmental Interpretative Report                               | 20000-XX-B-911-PDR-000006 | July 2017  |  | SI prior to construction of Boeing Hangar  | 15 RC boreholes<br>22 TP<br>22 CPT  | 46 (metals, cyanide, speciated PAH, banded TPH, VOCs, AC and asbestos) and 10 leachate tests | 19 (metals, cyanide, phenols, speciated PAH, TPH CWG and VOC)   | Y (6 rounds over 2.5 months)    | Y (6 rounds)  | Y  |
|    | GDR – Boeing Hangar   | 20760-00-C-915-TDT-000001 | 10/11/2017 |  | GDR to enable design of hangar   | 23 CPT<br>4 TP  | N  | N   | N                               | N   | N  |



| No | Report Title   | GAL Reference                | Date           | In Genesis Area?  | Purpose   | GI Scope                                     | Soil Samples?  | GW Samples?  | GW Level Monitoring? Long term? | Ground Gas Monitoring? | Interpretation of Environmental Results? |
|----|--|------------------------------|----------------|---|---|--|--|--|---------------------------------|------------------------|--|
|    | Gatwick Boeing Hangar - Ground Investigation Report                            | 20000-XX-B-911-PDR-000001    | February 2017  |   | SI prior to construction of Boeing Hangar                                   | 13 dynamic sampling and RC boreholes<br>7 TP | 10 (metals, asbestos, PAH and TPH CWG)                       | 3 (Metals, PAH, phenols). GW samples collected during drilling         | N                               | N                      | N  |
|    | Gatwick Boeing Hangar – Geo Environmental Interpretative report                | 20760-XX-R-911-SUR-000002    | February 2017  |   | Interpretation of 20000-XX-B-911-PDR-000001 report                          | NA   | As above   |  |                                 |                        | Y  |
|    | Gatwick Hangar – Geotechnical Interpretative Report                            | 20760-XX-R-911-SRC-00002     | March 2017     |   | Interpretation of 20000-XX-B-911-PDR-000001 report                          | NA   | NA   | NA   | NA                              | NA                     | NA                                       |
| 6  | Crawters Brook Bird Netting - Ground Investigation Report                      | 20000-XX-C-871-SRC-000001    | 14/03/2016     | N (along Perimeter Road South)                          | Provide information for bird netting over Crawters Brook Stream             | 5 WS   | 4 (metals, PAHs, TPH CWG, asbestos, cyanide, phenol and WAC) | N  | N                               | N                      | N  |
| 7  | Report on a Geotechnical Investigation - Dax                                   | 20206-00-C-911-SUR-000001    | November 2012  | N (in Southern Terminal, next to end of shuttle)        | Geotechnical SI for new building  | 2 WS   | N  | N  | N                               | N                      | N  |
| 8  | Factual Ground Investigation Report - De-icing tanks                           | J13784 v2                    | 22/10/2018     | N   | Proposed to locate new free-standing bunded de-icing tanks                  | 3 WS<br>2 PBT<br>4 concrete cores<br>4 DCP   | 2 (metals, banded TPH, phenol, PAHs, WAC)                    | N  | N                               | N                      | N  |
| 9  | Ground Investigation - South Terminal International Departures Lounge (IDL)    | 20206-00-SR-900-000001 rev 1 | August 1998    | Unknown – not likely as relates to existing IDL         | Geotechnical SI for proposed extension to IDL                               | 2 CP   | N  | N  | N                               | N                      | N  |
| 10 | South Terminal External Security Building – Ground Investigation Specification | 22152-XX-C-911-SPE-000004/5  | 11/10/2017     | Not relevant – specification document, no GI undertaken |   | NA   | NA   | NA   | NA                              | NA                     | NA                                       |
| 11 | Fire Training Ground – Geotechnical and Contamination Assessment               | 106400/0100                  | September 1999 | Y (fire training area)                                  | Proposed to redevelop current fire training ground with a fire training rig | 12 TP  | 17 (metals, PAH, phenol, asbestos, TPH and TEM)              | 5 (metals, TOC, nitrate, iron, manganese, BOD and COD) from trial pits | N                               | N                      | Y  |
|    | Laboratory Analysis Letter Report  | No reference                 | 22/08/2002     |   | Unknown – very little information provided                                  | N  | 4 (inorganics and oil fingerprinting)                        | N  | N                               | N                      |  |
| 12 | Long Term Storage Lagoon Nr 1  | 22150-XX-C-870-UDT-000017    | 03/12/2013     | N (to east of South Terminal)                           | Refurbish existing storage lagoon (Pond D) – drainage calculations          | 6 WS   | N  | N  | N                               | N                      | N  |

| No | Report Title   | GAL Reference                  | Date         | In Genesis Area?                      | Purpose   | GI Scope                            | Soil Samples?  | GW Samples?   | GW Level Monitoring? Long term?                  | Ground Gas Monitoring? | Interpretation of Environmental Results? |
|----|--|--------------------------------|--------------|---------------------------------------|---|-------------------------------------|--|---|--|------------------------|--|
| 13 | Report on a Ground Investigation at New Engineering Stores   | 12255                          | March 2011   | N                                     | Provide information for foundation design of stores                                 | 14 Concrete cores<br>12 DCP<br>8 WS | N  | N   | N  | N                      | N  |
| 14 | Gatwick Batcher Plant – land contamination results and Trial Pit Narrative Document                          | 22196-00-C-864-TDT-000001      | 29/01/2018   | Y (one of construction compounds)     | Provide information of geotechnical properties of soil                              | 5 TP                                | 5 (metals, asbestos, PAHs and TPH CWG)   | N   | N  | N                      | Y  |
| 15 | Gatwick Stream Flood Attenuation – Contaminated Soil Sampling from the Control structure & Haul Road Results | 22089-XX-U-871-REP-000004      | 13/12/2013   | N                                     | Not provided  | 3 soil samples                      | 3 (metals, phenol, e-coli, PAHs, TPH CWG)  | N   | N  | N                      | N  |
| 16 | Gatwick Taxiway and AGL Rehabilitation – Pavement Site Investigation   | 20000-XX-R-XXX-SUR-000002      | 05/06/2013   | N (TPs on north side of Taxiway 42 S) | Not provided  | 25 Concrete cores<br>2 TP           | N  | N   | N  | N                      | N  |
| 17 | Gatwick Airport Maintenance Base – Groundwater Monitoring and Risk Assessment                                | 20064-XX-C-911-SUR-000001      | January 2007 | Y (one of the construction compounds) | Monitoring before, during and after demolition of buildings on the maintenance base | 4 CP<br>4 MW                        | 16 soil and 3 sediment samples (metals, asbestos, cyanide, EPH, PAH, VOCs and SVOCs) | 3 rounds carried out from 4 newly installed wells and 8 pre-existing wells (metals, EPH, PAH, VOCs and SVOCs) | 3 rounds (only 1 completed at time of reporting) | N                      | Y  |
| 18 | Report on a Ground Investigation at London Gatwick Airport South Terminal - Hangar 5 & Building P7           | 20062-00-SR-247-000001 Rev 1.0 | 15/02/2010   | Y (one of the construction compounds) | Prior to demolition of buildings, to be replaced by a logistics centre              | 3 CP and 3 MW<br>2 WS               | 12 (metals, cyanide, asbestos PAH, VOC, SVOCs)                                       | 3 (metals, cyanide, PAH, VOC, SVOCs)  | 1 round  | N                      | N  |
| 19 | Jubilee House Coach Parking – Ground Investigation Test Report   | 20700-00-S-200-TST-000001      | 11/11/2016   | N                                     | Proposed construction of new bus/coach pick-up area                                 | 3 WS<br>3 CBR                       | 1 (WAC)  | N   | N  | N                      | N  |
| 20 | Main and North Runway Rehabilitation – Ground Investigation Report   | 2000-XXC-4191-REP-00003        | 08/12/2017   | Y (northern runway)                   | Rehabilitation of runways   | 22 Cores with WS follow-on          | N – Hydrocarbon contamination noted on logs  | N   | N  | N                      | N  |
| 21 | Maintenance Base – Hangar Decommission   | Y– duplicate of Report 17      |              |                                       |   |                                     |  |   |  |                        |  |
| 22 | MSCP 7 – Ground Investigation Report   | 20000-XX-C-734-SUR-000001      | 09/01/2017   | N                                     | Proposed construction of new car park   | 6 dynamic sample with RC follow-on  | 10 (WAC)   | N   | N  | N                      | N  |

| No | Report Title  | GAL Reference                   | Date        | In Genesis Area? | Purpose   | GI Scope  | Soil Samples?  | GW Samples?   | GW Level Monitoring? Long term? | Ground Gas Monitoring?     | Interpretation of Environmental Results? |
|----|---|---------------------------------|-------------|------------------|---|---|--|---|---------------------------------|----------------------------|--|
|    | MSCP 7 – Geo-environmental Desk Study                                       | 20700-XX-U-911-TDT-0000022070   | August 2016 |                  |   | Desk Study  | N  | N   | N                               | N                          | N  |
|    | MSCP 7 – Ground Investigation Report  | 20700-XX-C-911-TDT-000001       | 12/10/2016  |                  |   | As report 20000-XX-C-734-SUR-000001                           | 10 (WAC)   | N   | N                               | N                          | Y  |
|    | MSCP 7 Site Investigation – Additional Groundwater Monitoring and Reporting | 20700-XX-C-911-TDT-000002 Rev02 | 23/07/2017  |                  |   |   | N  | N   | 4 rounds (8 months)             | N                          | N  |
| 23 | MSCP 4 – Geo-environmental Desk Study                                       | 22081-XX-U-911-TDT-000001       | 20/06/2017  |                  |   | Desk Study  | N  | N   | N                               | N                          | N  |
|    | MSCP 4 – Ground Investigation Report  | 20000-XX-B-911-TDT-000001       | 17/01/2018  | N                | Proposed construction of new car park                         | 3 dynamic samples<br>2with RC follow-on<br>3 MW<br>9 WS       | 18 (metals, PAH, TPH CWG, phenols, asbestos and WAC)                             | 3 (pH, sulphate, magnesium)                                       | 3 rounds (4 months)             | N                          | N  |
|    | MSCP 4 – Ground Investigation Report  | 22081-XX-C-911-TDT-000001       | 05/03/2018  |                  |   | As report 20000-XX-B-911-TDT-000001                           |  |   |                                 |                            | Y  |
| 24 | NT Car Park J Ditch Remediation Design Report                               | 20724-XX-X-864-ROP-000002       | 18/11/11    | N                | Investigation of ditch instability and settlement in car park | 2 RC<br>1 WS<br>4 TP<br>3 ditch water sample points           | 7 (metals, PAH, TPH, SVOCs, VOCs, TEM, asbestos and WAC)                         | 3 (metals, PAH, TPH, SVOCs and VOC)                               | N                               | N                          | Y  |
| 25 | North Terminal Extension – Interpretative Geoenvironmental Report           | 20700-XX-RP-900-000003          | 27/03/2009  |                  |   | 9 RC + 7 MW<br>10 WS +<br>8 MW<br>14 DP<br>16 Cores<br>20 DCP | 28 (metals, RPH, PAH, TPH CWG, VOCs, SVOCs and WAC) – no laboratory certificates | 5 (metals, VOCs, SVOCs, EPH and PAH) – no laboratory certificates | 4 rounds (over 1.5 months)      | 4 rounds (over 1.5 months) | Y  |
|    | North Terminal Redevelopment – Geotechnical Desktop Site Appraisal          | 20700-XX-S-247—BOD-0000241      | 01/07/52013 | N                | Proposed extension to North Terminal                          | None – desktop review   | N  | N   | N                               | N                          | N  |

| No | Report Title  | GAL Reference   | Date         | In Genesis Area? | Purpose  | GI Scope                            | Soil Samples?   | GW Samples?                                   | GW Level Monitoring? Long term? | Ground Gas Monitoring? | Interpretation of Environmental Results? |   |
|----|---|---|--------------|------------------|--|-------------------------------------|---|---|---------------------------------|------------------------|--|---|
| 26 | Gatwick Car Park Survey Zones F&G Factual Report  | 20000-XX-B-911-PDR-000005   | July 2017    | N                | Proposed overdecking of car park                                     | 5 RC + 3 MW<br>10 WS                | 14 (metals, PAH, TPH CWG, asbestos, cyanide)                  | 3 (inorganics)                                | 3 rounds (over 1 month)         | N                      | N  |   |
|    | Car Park Decking – Ground Investigation Report  | 20600-XX-C-911-TDT-000001   | 20/07/2019   |                  |  | As report 20000-XX-B-911-PDR-000005 | N   | N   | N                               | 2 rounds (2 weeks)     | N  | Y |
|    | South Terminal Decking Zones F&G – Geotechnical Design Report                               | 20600-020-U-247-SPE-000001  | 18/01/2018   |                  |  |                                     |   |   |                                 |                        |  | N |
|    | South Terminal Decking Zones F 7 G – Geotechnical Design Report Sprinkler Tank              | 20600-00-U-247-SPE-000002   | 09/07/2018   |                  | Proposed sprinkler tank base at car park F&G                         | 1 WS + 1 MW<br>2 TP                 | N   | N   | 2 rounds (2 weeks)              | N                      | NA                                       |   |
| 27 | Pier 1 and Pier 2 Developments – Contaminated Land Site Investigation Interpretative Report | 20209-XX-SR-200-000002 & 20340-XX-SR-200-000002                           | January 2010 | N                | Proposed redevelopment of Pier 1 and Pier 2                          | 1 CP + 1 MW<br>9 WS + 2 MW<br>3 TP  | 12 (metals, EPH, TPH CWG, PCBS, VOCs, PAH, WAC)               | N (wells dry)                                 | 1 round                         | N                      | Y  |   |
| 28 | Pier 4  | Not relevant – specification document, no ground investigation undertaken |              |                  |  |                                     |   |   |                                 |                        |  |   |
| 29 | Report on a Ground Investigation at Gatwick North Terminal Pier 5                           | SE-RRG-F-001  | 26/01/2011   | N                | Redevelop Pier 5 – new link bridges, 2 <sup>nd</sup> floor extension | 2 RC + 2 MW<br>3 WS                 | 5 (metals, cyanide, TPH CWG, PAH, VOC, PCB, asbestos and WAC) | N   | 1 round                         | N                      | N  |   |
|    | Pier 5 Reconfiguration – Environmental and Geotechnical Interpretative Report               | 20704-XX-BR-XXX-000001  | 12/09/2011   |                  |  | As report SE-RRG-F-001              | N   | N   | 1 round                         | N                      | Y  |   |
| 30 | Pier 6 Surveys – Log & HWD report   | 2TQ01-00-R-911-SUR-000003   | 31/07/2018   | N                | Proposed realignment of Quebec Taxiway                               | 14 Cores<br>14 DCP<br>11 TP         | N   | N   | N                               | N                      | NA                                       |   |
| 31 | Pier 6 Extension – Trial Pit Testing Report   | 20709-00-R-911-SUR-000003   | June 2013    | N                | Redevelopment of Pier 6  | 7 TP                                | 2 (metals, asbestos, cyanide, PAH, TPH CWG)                   | N   | N                               | N                      | N  |   |
|    | Gatwick Pier 6 Extension – Fuel Leakage Investigation                                       | 20709-00-C-911-STD-000001   | June 2013    |                  |  | 8 CP – 8 MW<br>5 WS – 5 MW          | N   | 2 rounds of sampling (metals, PAH, TPH CWG) – | 6 rounds (2 months)             | N                      | Y  |   |

| No | Report Title  | GAL Reference                       | Date          | In Genesis Area?                                  | Purpose  | GI Scope   | Soil Samples?                                      | GW Samples?                | GW Level Monitoring? Long term? | Ground Gas Monitoring?       | Interpretation of Environmental Results? |
|----|---|-------------------------------------|---------------|---|--|--|--|----------------------------|---------------------------------|------------------------------|--|
|    |   |                                     |               |   |  |  |  | no laboratory certificates |                                 |                              |  |
|    | Ground Gas Investigation – Pier 6 Extension   | 20709-00-C-911-STD-000002           | February 2013 |   |  | 4 CP – 4 MW<br>8 WS – 8 MW   | N  | N                          | 6 rounds (over three months)    | 6 rounds (over three months) | Y  |
|    | Gatwick North Terminal Pier 6 Extensions – Pavement Investigation Report                        | 20709-00-R-911-SUR-000007           | 10/07/2013    |   |  | 42 Cores   | N  | N                          | N                               | N                            | N  |
|    | Pier 6 Extension – Factual Ground Investigation Report  | 20709-00-R-911-SUR-000005           | June 2013     |   |  | As report 20709-00-C-911-STD-000001 (includes laboratory certificates) |  |                            |                                 |                              | N  |
|    | Pier 6 Survey Works – Stand 103 – Borehole 10 & 11 Report                                       | 2S103-00-R-911-SUR-000004           | 05/07/2018    |   |  | 2 WS with RC follow on – 2 MW  | 3 (metals, TPH CWG, PAH, SVOCs, VOCs and asbestos) | N                          | N                               | N                            | N  |
| 32 | Project Engineering List  | Not relevant – no reports in folder |               |   |  |  |  |                            |                                 |                              |  |
| 33 | Public Transport DDA Access – Ground Investigation Report                                       | 20000-XX-C-734-SUR-000002           | 09/01/2017    | Y (potential area for junction improvement works) | Improving access to local transport  | 1 WS with RC follow on – 1 MW<br>1 trial trench<br>4 TP                | 7 (metals, PAH, BTEX, PCB, WAC)                    | N                          | 2 rounds (1 week)               | N                            | N  |
|    | Public Transport DDA Access – Combined Ground Investigation Report & Geotechnical Design Report | 20000-XX-R-734-SUR-000001           | 11/04/2017    |   |  | As report 20000-XX-C-734-SUR-000002                                    |  |                            |                                 |                              | Y  |
| 34 | Redevelopment of Hangar 5 & Building P7   | Y – duplicate of report 18          |               |   |  |  |  |                            |                                 |                              |  |
| 35 | Geotechnical Report on Ground Investigation – Sub-Station G                                     | 20226-00-C-734-SRC-000001           | July 2015     | N   | Redevelop the sub-station and relocated within a car park  | 7 Cores<br>2 TP with DCPs  | 7 (metals, PAH, TPH CWG and WAC)                   | N                          | N                               | N                            | N  |
| 36 | Southern Terminal Baggage & Pier 1 – Factual Site Investigation Report                          | 20209-XX-C-XXX-REP-000001           | 28/03/2012    | N   | Redevelop the current Pier 1 – include changes to the existing piers and taxiways and new baggage facility | 22 RC<br>6 WS<br>14 CBR  | N  | N                          | N                               | N                            | N  |
|    | Pier 1 & Baggage Project Report on a Ground Investigation – Phase 3                             | 20220-00-R-911-SUR-000004           | 21/06/2013    |   |  | 4 CP with RC follow on – 2 MW<br>4 WS                                  | N  | N                          | 4 rounds (weekly)               | N                            |  |

| No | Report Title   | GAL Reference                | Date       | In Genesis Area?                      | Purpose                                    | GI Scope  | Soil Samples?  | GW Samples?                                      | GW Level Monitoring? Long term? | Ground Gas Monitoring? | Interpretation of Environmental Results? |
|----|--|------------------------------|------------|---------------------------------------|--|---|--|--|---------------------------------|------------------------|--|
|    | ST Baggage & Pier 1 Project – Contamination Survey Phase A Report                            | 20220-00-R-911-SUR-000001    | 29/04/2013 |                                       |  | 7 dynamic sample and RC follow on – 6 MW<br>9 TP<br>3 surface water samples from Gatwick Stream | 28 (metals, asbestos, TPH CWG, VOCs and SVOCs)                 | 10 (metals, inorganics, TPH CWG, VOCs and SVOCs) | 1 round                         |                        | N  |
|    | ST Baggage + Pier 1 Geoenvironmental Conceptual Site Model                                   | 20209-XX-C-900-REP-000001    | 28/09/2012 |                                       |  | None – desk based assessment  | N  | N  | N                               | N                      | N  |
|    | Contaminated Strategy Report – Gatwick Airport South Terminal Baggage & Pier 1 Project       | 20220-00-H-XXX-TDT-000001    | 23/09/2013 |                                       |  | None – desk based assessment  | N  | N  | N                               | N                      | N  |
|    | South Terminal Baggage and Pier 1 Contaminated Land Risk Assessment and Remediation Strategy | 20220-XX-C-911-BOD-000001    | 31/05/2013 |                                       |  | 12 WS with RC follow on – 12 MW<br>7 TP<br>3 surface water samples<br>19 WS<br>7 TP             | 38 (metals, BTEX, VOC, SVOCs, PAH, TPH CWG, PCBs and asbestos) | 19 (VOCs, SVOCs, PAH, TPH CWG and metals)        | 4 rounds (weekly)               |                        | Y  |
|    | ST Baggage & Pier 1 – Contaminated Land Verification Report                                  | Report corrupted – illegible |            |                                       |  | Report corrupted – illegible  |  |  |                                 |                        |  |
|    | Drawing – Findings of Contaminated Land Assessment   | 20220-XX-C-911-GA-000013     | 30/05/2013 |                                       |  | Drawing   |  |  |                                 |                        |  |
|    | Drawing – Existing Geological Conditions Layout  | 20220-XX-C-915-GA-000001     | 13/12/2012 |                                       |  | Drawing   |  |  |                                 |                        |  |
|    | Drawing – Ground Investigation Hole Location Plan  | 20220-XX-C-911-GA-000012     | 13/12/2012 |                                       |  | Drawing   |  |  |                                 |                        |  |
| 37 | Southern Terminal Baggage Project – Report on a Ground Investigation                         | 20203-00-SR-911-000014       | 18/02/2010 | N                                     | Redevelop area as strategic hub            | 2 CP – 2 MW<br>1 RC – 1 MW<br>1 WS<br>8 TP  | 5 (metals, PCBs, PAH, EPH, VOCs, phenol and asbestos)          | N  | 1 round                         | 1 round                | N  |
| 38 | Southern Terminal ULD External Storage Facility – Ground Investigation Report                | 22118-00-C-915-TST-000001    | 18/10/2017 | Y (one of the construction compounds) | New pavement and additional stillage units | 5 TP  | N  | N  | N                               | N                      | N  |

| No | Report Title   | GAL Reference   | Date         | In Genesis Area?                                     | Purpose  | GI Scope                                  | Soil Samples?   | GW Samples? | GW Level Monitoring? Long term? | Ground Gas Monitoring? | Interpretation of Environmental Results? |
|----|--|---|--------------|--|--|---|---|-------------|---------------------------------|------------------------|--|
|    | ULD External Storage Facility – Trial Pit Test Results                         | 22118-00-C-915-TST-000003   | 18/10/2017   |  |  | As above (comprised the 5 trial pit logs) |   |             |                                 |                        |  |
| 39 | Gatwick STAD Project – Ashdown House Ramp and Canopy area Report               | 20362-00-C-911-SUR-000001   | 16/01/2013   | N  | Determine bearing capacity for canopy structure  | 1 WS                                      | N   | N           | N                               | N                      | N  |
| 40 | Strategic Power Resilience Project (Control Tower) – Site Investigation Report | 20473-XX-C-XXX-SRC-000001   | 14/11/2018   | Unknown  | Determine whether leaching of diesel fuels from adjacent underground fuel tanks had occurred | 2 WS                                      | 2 (metals, PAH, EPH, GRO, BTEX, PCBs, asbestos and WAC)                           | N           | N                               | N                      | Y  |
| 41 | Taxiway and AGL Rehabilitation   | N – duplicate of report 16  |              |  |  |   |   |             |                                 |                        |  |
| 42 | UXO and EXO Surveys – New Hangar   | 20760-XX-R-911-SRC-000001   | 18/11/2016   | N  | Undertaken prior to construction of Boeing Hangar  | NA  | NA  | NA          | NA                              | NA                     | NA                                       |
| 43 | Westfield Stream Gatwick – Ground Investigation Report                         | No reference on report  | January 2015 | Y (Pond A and potential area for flood compensation) | Design of diversion of the Westfield Stream  | 3 WS with RC follow on – 1 MW<br>11 TP    | 20 (metals, asbestos, cyanide, PAH and TPH) – no laboratory certificates provided | N           | 1 round                         | N                      | Y  |
| 44 | Main and North Runway Rehabilitation   | Y – original version (v0) of report 20  |              |  |  |   |   |             |                                 |                        |  |
| 45 | Public Transport and DDA Access  | Y– duplicate of report 33 (Ground Investigation Report, ref: 20000-XX-C-734-SUR-000002) |              |  |  |   |   |             |                                 |                        |  |

WS – window sample borehole

TP – trial pit

CPT – cone penetration test

MW – monitoring well

GDR – Geotechnical Design Report

RC – rotary core

PBT – plate bearing tests

DCP – dynamic cone penetrometer test

CP – cable percussion borehole

CBR – California Bearing Ratio

Annex 4  
Screening Criteria



Table A4.1: Groundwater Screening Criteria

| Contaminant   | AA-EQS (micrograms per litre) | UK Drinking Water Standards (micrograms per litre) | WHO Health (micrograms per litre) | WHO ATO (micrograms per litre) |
|---|-------------------------------|--|-----------------------------------|--------------------------------|
| Aluminium   | -                             | 200  | -                                 | -                              |
| Ammonia (NH3 as N)  | 15                            | -  | -                                 | -                              |
| Ammonium (as NH4+)  | -                             | 500  | -                                 | -                              |
| Anthracene  | 0.1                           | -  | -                                 | -                              |
| Antimony  | -                             | 5  | -                                 | -                              |
| Arsenic   | 50                            | -  | -                                 | -                              |
| Barium  | -                             | 1000   | -                                 | -                              |
| Benzene   | 10                            | -  | -                                 | -                              |
| Benzo(a)pyrene  | 0.00017                       | -  | -                                 | -                              |
| Benzo(b)fluoranthene  | 0.00017                       | -  | -                                 | -                              |
| Benzo(k)fluoranthene  | 0.00017                       | -  | -                                 | -                              |
| Benzo(g,h,i)perylene  | 0.00017                       | -  | -                                 | -                              |
| Benzyl butyl phthalate  | 7.5                           | -  | -                                 | -                              |
| Biphenyl  | 25                            | -  | -                                 | -                              |
| Boron   | 2,000                         | -  | -                                 | -                              |
| Cadmium and its compounds - dissolved (< 40 mg/l calcium carbonate)       | <=0.08                        | -  | -                                 | -                              |
| Cadmium and its compounds - dissolved (40 - <50 mg/l calcium carbonate)   | 0.08                          | -  | -                                 | -                              |
| Cadmium and its compounds - dissolved (50 - <100 mg/l calcium carbonate)  | 0.09                          | -  | -                                 | -                              |
| Cadmium and its compounds - dissolved (100 - <200 mg/l calcium carbonate) | 0.15                          | -  | -                                 | -                              |
| Cadmium and its compounds - dissolved (>200 mg/l calcium carbonate)       | 0.25                          | -  | -                                 | -                              |
| Calcium   | -                             | 250,000  | -                                 | -                              |
| Carbon tetrachloride  | 12                            | -  | -                                 | -                              |
| Chloride  | 250,000                       | -  | -                                 | -                              |
| Chlorine (total residual oxidant)   | 2                             | -  | -                                 | -                              |
| Chloroform  | 12                            | -  | -                                 | -                              |
| 4-chloro-3-methylphenol   | 40                            | -  | -                                 | -                              |
| Chloronitro toluenes  | 10                            | -  | -                                 | -                              |
| 2-chlorophenol  | 50                            | -  | -                                 | -                              |
| 3-chlorophenol-4-chlorophenol total (or individual monochlorophenols)     | 50                            | -  | -                                 | -                              |
| Chromium III (dissolved)  | 4.7                           | -  | -                                 | -                              |
| Chromium VI (dissolved)   | 3.4                           | -  | -                                 | -                              |
| Copper (dissolved)  | 1 (bioavailable)              | -  | -                                 | -                              |
| Cyanide   | 1                             | -  | -                                 | -                              |
| Dibutyl phthalate   | 8                             | -  | -                                 | -                              |
| 3,4-dichloroaniline   | 0.2                           | -  | -                                 | -                              |
| Dichlorobenzene - total dichlorobenzene isomers                           | 20                            | -  | -                                 | -                              |

| Contaminant  | AA-EQS (micrograms per litre) | UK Drinking Water Standards (micrograms per litre) | WHO Health (micrograms per litre) | WHO ATO (micrograms per litre) |
|--|-------------------------------|--|-----------------------------------|--------------------------------|
| Dichloro-methane   | 20                            | -  | -                                 | -                              |
| 1,2-dichloroethane   | 10                            | -  | -                                 | -                              |
| 1,1-dichloroethene   | -                             | -  | 30                                | -                              |
| 1,2-dichloroethene   | -                             | -  | 50                                | -                              |
| 1,2-dibromo-3-chloropropane  | -                             | 0.1  | -                                 | -                              |
| 1,2-dichlorobenzene  | -                             | -  | -                                 | 1 to 10                        |
| 1,2-dichloropropane  | -                             | 0.1  | -                                 | -                              |
| 1,3-dichloropropene  | -                             | 0.1  | -                                 | -                              |
| 1,4-dichlorobenzene  | -                             | -  | -                                 | 0.3 to 30                      |
| 2,4-dichlorophenol   | 4.2                           | -  | -                                 | -                              |
| Diethyl phthalate  | 200                           | -  | -                                 | -                              |
| Dimethyl phthalate   | 800                           | -  | -                                 | -                              |
| Diethyl phthalate  | 20                            | -  | -                                 | -                              |
| Di(2-ethylhexyl)-phthalate (DEHP)  | 1.3                           | -  | -                                 | -                              |
| Ethylbenzene   | -                             | -  | -                                 | 2 to 200                       |
| Fluoranthene   | 0.0063                        | -  | -                                 | -                              |
| Fluoride - dissolved (<50 mg of Calcium carbonate per litre of water (mg/l)) | 1,000                         | -  | -                                 | -                              |
| Fluoride - dissolved (>50 mg/l of calcium carbonate)                         | 5,000                         | -  | -                                 | -                              |
| Hexachloro-benzene   | 0.03                          | -  | -                                 | -                              |
| Hexachloro-butadiene   | 0.10                          | -  | -                                 | -                              |
| Hexachloro-cyclohexane   | 0.02                          | -  | -                                 | -                              |
| Hydrocarbons (dissolved/emulsions)   | -                             | 10   | -                                 | -                              |
| Hydrogen Sulphide  | 0.25                          | -  | -                                 | -                              |
| Indeno(1,2,3-cd)pyrene   | 0.00017                       | -  | -                                 | -                              |
| Iron - dissolved   | 1,000                         | -  | -                                 | -                              |
| Lead and its compounds (dissolved)   | 1.2 (bioavailable)            | -  | -                                 | -                              |
| Magnesium  | -                             | 50,000   | -                                 | -                              |
| Manganese - dissolved  | 123 (bioavailable)            | -  | -                                 | -                              |
| Mercury and its compounds (dissolved)  | 1                             | -  | -                                 | -                              |
| Methylbenzene  | 50                            | -  | -                                 | -                              |
| Naphthalene  | 2                             | -  | -                                 | -                              |
| Nickel and its compounds (dissolved)   | 4 (bioavailable)              | -  | -                                 | -                              |
| Nitrate (as NO3)   | -                             | 50,000   | -                                 | -                              |
| Nitrite (as NO2)   | -                             | 100  | -                                 | -                              |
| pH (6 - 9)   | -                             | -  | -                                 | -                              |
| Pentachloro-benzene  | 0.007                         | -  | -                                 | -                              |
| Pentachloro-phenol   | 0.4                           | -  | -                                 | -                              |

| Contaminant  | AA-EQS (micrograms per litre) | UK Drinking Water Standards (micrograms per litre) | WHO Health (micrograms per litre) | WHO ATO (micrograms per litre) |
|--|-------------------------------|--|-----------------------------------|--------------------------------|
| Phenol   | 7.7                           | -  | -                                 | -                              |
| Phosphorous  | -                             | 2200   | -                                 | -                              |
| Potassium  | -                             | 12,000   | -                                 | -                              |
| Selenium   | -                             | 10   | -                                 | -                              |
| Sodium   | 170,000                       | -  | -                                 | -                              |
| Sulphate   | 400,000                       | -  | -                                 | -                              |
| Sulphide   | 0.25                          | -  | -                                 | -                              |
| Styrene  | 50                            | -  | -                                 | -                              |
| Tetrachloroethane                                      | 140                           | -  | -                                 | -                              |
| Tetrachloroethene (PCE)                                | 10                            | -  | -                                 | -                              |
| Tetrachloro-ethylene                                   | 10                            | -  | -                                 | -                              |
| Tetrachloromethane (PCM)                               | 12                            | -  | -                                 | -                              |
| Toluene  | 74                            | -  | -                                 | -                              |
| Tributyl phosphate                                     | 50                            | -  | -                                 | -                              |
| Trichloro-benzenes                                     | 0.4                           | -  | -                                 | -                              |
| Trichloroethene  | 10                            | -  | -                                 | -                              |
| Trichloro-ethylene                                     | 10                            | -  | -                                 | -                              |
| Trichloro-methane (chloroform)                         | 2.5                           | -  | -                                 | -                              |
| 1,1,1-trichloroethane                                  | 100                           | -  | -                                 | -                              |
| 1,1,2-trichloroethane                                  | 400                           | -  | -                                 | -                              |
| 2,4,6-trichlorophenol                                  | -                             | -  | 200                               | -                              |
| Vanadium (0-200 mg/l of calcium carbonate)             | 20                            | -  | -                                 | -                              |
| Vanadium (>200 mg/l calcium carbonate)                 | 60                            | -  | -                                 | -                              |
| Vinyl Chloride   | -                             | 0.5  | -                                 | -                              |
| Xylene   | 30                            | -  | -                                 | -                              |
| Zinc - dissolved plus ambient background concentration | 10.9 (bioavailable)           | -  | -                                 | -                              |

Table A4.2: Soils

| <b>Metals</b>                  |                             |                     |
|--------------------------------|-----------------------------|---------------------|
| Arsenic                        | 640                         | S4UL <sup>(a)</sup> |
| Beryllium                      | 12                          | S4UL <sup>(a)</sup> |
| Boron                          | 240000                      | S4UL <sup>(a)</sup> |
| Cadmium                        | 190                         | S4UL <sup>(a)</sup> |
| Chromium III                   | 8600                        | S4UL <sup>(a)</sup> |
| Chromium VI                    | 33                          | S4UL <sup>(a)</sup> |
| Copper                         | 68000                       | S4UL <sup>(a)</sup> |
| Lead                           | 2300                        | pC4SL               |
| Elemental Mercury              | 58 <sup>vap (25.8)</sup>    | S4UL <sup>(a)</sup> |
| Inorganic Mercury              | 1100                        | S4UL <sup>(a)</sup> |
| Methylmercury                  | 320                         | S4UL <sup>(a)</sup> |
| Nickel                         | 980                         | S4UL <sup>(a)</sup> |
| Selenium                       | 12000                       | S4UL <sup>(a)</sup> |
| Vanadium                       | 9000                        | S4UL <sup>(a)</sup> |
| Zinc                           | 730000                      | S4UL <sup>(a)</sup> |
| <b>Petroleum Hydrocarbons</b>  |                             |                     |
|                                | <b>1% SOM</b>               |                     |
| Aliphatic EC 5-6               | 3200 (304) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| Aliphatic EC >6-8              | 7800 (144) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| Aliphatic EC >8-10             | 2000 (78) <sup>sol</sup>    | S4UL <sup>(a)</sup> |
| Aliphatic EC >10-12            | 9700 (48) <sup>sol</sup>    | S4UL <sup>(a)</sup> |
| Aliphatic EC >12-C16           | 59000 (24) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| Aliphatic EC >16-35            | 1600000                     | S4UL <sup>(a)</sup> |
| Aliphatic EC >35-44            | 1600000                     | S4UL <sup>(a)</sup> |
| Aromatic EC5-7 (benzene)       | 26000 (1220) <sup>sol</sup> | S4UL <sup>(a)</sup> |
| Aromatic EC >7-8 (toluene)     | 56000(869) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| Aromatic EC >8-10              | 3500 (613) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| Aromatic EC >10-12             | 16000 (364) <sup>sol</sup>  | S4UL <sup>(a)</sup> |
| Aromatic EC >12-16             | 36000 (169) <sup>sol</sup>  | S4UL <sup>(a)</sup> |
| Aromatic EC >16-21             | 28000                       | S4UL <sup>(a)</sup> |
| Aromatic EC >21-35             | 28000                       | S4UL <sup>(a)</sup> |
| Aromatic EC >35-44             | 28000                       | S4UL <sup>(a)</sup> |
| Aliphatic + Aromatic EC >44-70 | 28000                       | S4UL <sup>(a)</sup> |
| TPH Ali/Aro                    | -                           |                     |

| <b>BTEX</b>                        |                             |                     |
|------------------------------------|-----------------------------|---------------------|
| Benzene                            | 27                          | S4UL <sup>(a)</sup> |
| Toluene                            | 56000 (869) <sup>vap</sup>  | S4UL <sup>(a)</sup> |
| Ethylbenzene                       | 5700 (518) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| o-xylene                           | 6600 (478) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| m-xylene                           | 6200 (625) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| p-xylene                           | 5900 (576) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| MTBE                               | -                           |                     |
| <b>PAHs</b>                        |                             |                     |
| Acenaphthene                       | 84000 (57.0) <sup>sol</sup> | S4UL <sup>(a)</sup> |
| Acenaphthylene                     | 83000 (86.1) <sup>sol</sup> | S4UL <sup>(a)</sup> |
| Anthracene                         | 520000                      | S4UL <sup>(a)</sup> |
| Benzo(a)anthracene                 | 170                         | S4UL <sup>(a)</sup> |
| Benzo(a)pyrene                     | 35                          | S4UL <sup>(a)</sup> |
| Benzo(b)fluoranthene               | 44                          | S4UL <sup>(a)</sup> |
| Benzo(g,h,i)perylene               | 3900                        | S4UL <sup>(a)</sup> |
| Benzo(k)fluoranthene               | 1200                        | S4UL <sup>(a)</sup> |
| Chrysene                           | 350                         | S4UL <sup>(a)</sup> |
| Dibenzo(a,h)anthracene             | 3.5                         | S4UL <sup>(a)</sup> |
| Fluoranthene                       | 23000                       | S4UL <sup>(a)</sup> |
| Fluorene                           | 63000 (30.9) <sup>sol</sup> | S4UL <sup>(a)</sup> |
| Indeno(1,2,3-c,d)pyrene            | 500                         | S4UL <sup>(a)</sup> |
| Naphthalene                        | 190 (76.4) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| Phenanthrene                       | 22000                       | S4UL <sup>(a)</sup> |
| Pyrene                             | 54000                       | S4UL <sup>(a)</sup> |
| PAH                                | -                           |                     |
| <b>Phenols</b>                     |                             |                     |
| Phenol                             | 440 (26000) <sup>dir</sup>  | S4UL <sup>(a)</sup> |
| Chlorophenols                      | 3500                        | S4UL <sup>(a)</sup> |
| Pentachlorophenol                  | 400                         | S4UL <sup>(a)</sup> |
| <b>Chloroalkanes &amp; alkenes</b> |                             |                     |
| Chloroethene (vinyl chloride)      | 0.059                       | S4UL <sup>(a)</sup> |
| Dichloroethane                     | 0.67                        | S4UL <sup>(a)</sup> |
| <b>Chlorinated Hydrocarbons</b>    |                             |                     |
| Tetrachloroethanes                 | 270                         | S4UL <sup>(a)</sup> |

| Tetrachloroethene                         | 19                          | S4UL <sup>(a)</sup> |
|---|-----------------------------|---------------------|
| Tetrachloromethane (Carbon Tetrachloride) | 2.9                         | S4UL <sup>(a)</sup> |
| Trichloroethane                           | 660                         | S4UL <sup>(a)</sup> |
| Trichloroethene                           | 1.2                         | S4UL <sup>(a)</sup> |
| Trichloromethane (Chloroform)             | 99                          | S4UL <sup>(a)</sup> |
| <b>Explosives</b>                         |                             |                     |
| Trinitrotoluene                           | 1000                        | S4UL <sup>(a)</sup> |
| RDX                                       | 210000                      | S4UL <sup>(a)</sup> |
| HMX                                       | 110000                      | S4UL <sup>(a)</sup> |
| <b>Pesticides</b>                         |                             |                     |
| Aldrin                                    | 170                         | S4UL <sup>(a)</sup> |
| Dieldrin                                  | 170                         | S4UL <sup>(a)</sup> |
| Atrazine                                  | 9300                        | S4UL <sup>(a)</sup> |
| Dichlorvos                                | 140                         | S4UL <sup>(a)</sup> |
| Endosulfan                                | 5600 (0.003) <sup>vap</sup> | S4UL <sup>(a)</sup> |
| Hexachlorocyclohexane                     | 170                         | S4UL <sup>(a)</sup> |
| Beta-Hexachlorocyclohexane                | 65                          | S4UL <sup>(a)</sup> |
| <b>Chlorobenzenes</b>                     |                             |                     |
| Chlorobenzene                             | 56                          | S4UL <sup>(a)</sup> |
| 2- Dichlorobenzene                        | 2000 (571) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| 4- Dichlorobenzene                        | 4400 (224) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| 1,2,3-Trichlorobenzene                    | 102                         | S4UL <sup>(a)</sup> |
| 1,2,4-Trichlorobenzene                    | 220                         | S4UL <sup>(a)</sup> |
| 1,3,5-Trichlorobenzene                    | 23                          | S4UL <sup>(a)</sup> |
| 1,2,3,4-Tetrachlorobenzene                | 1700 (122) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| 1,2,3,5-Tetrachlorobenzene                | 49 (39.4) <sup>vap</sup>    | S4UL <sup>(a)</sup> |
| 1,2,4,5 Tetrachlorobenzene                | 42 (19.7) <sup>sol</sup>    | S4UL <sup>(a)</sup> |
| Pentachlorobenzene                        | 640 (43.0) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| Hexachlorobenzene                         | 110 (0.20) <sup>vap</sup>   | S4UL <sup>(a)</sup> |
| <b>Others</b>                             |                             |                     |
| Carbon Disulphide                         | 11                          | S4UL <sup>(a)</sup> |
| Hexachlorobutadiene                       | 31                          | S4UL <sup>(a)</sup> |
| 1,2 - Dichloroethane                      | 0.67                        | S4UL <sup>(a)</sup> |
| 1,1,1 - Trichloroethane                   | 660                         | S4UL <sup>(a)</sup> |
| 1,1,1,2 - Tetrachloroethane               | 110                         | S4UL <sup>(a)</sup> |
| Chlorobenzene                             | 56                          | S4UL <sup>(a)</sup> |
| 1,2 - Dichlorobenzene                     | 2000 (571) <sup>sol</sup>   | S4UL <sup>(a)</sup> |
| 1,3 - Dichlorobenzene                     | 30                          | S4UL <sup>(a)</sup> |

|                             |                  |                     |
|-----------------------------|------------------|---------------------|
| 1,4 - Dichlorobenzene       | 4400<br>(224)vap | S4UL <sup>(a)</sup> |
| 2,4,6 Trinitrotoluene (TNT) | 1000             | S4UL <sup>(a)</sup> |

Notes

Soil chemical concentrations should initially be screened against the screening criteria value outside of brackets.

<sup>vap</sup> Vapour Saturation Limit. Concentration at which soil gas within pore space reaches saturation limit. Increases in soil concentration above this criteria will not lead to increased soil gas concentrations with pore spaces. This value should not be used within the assessment it is an informative.

<sup>sol</sup> Solubility Saturation Limit. Concentration at which soil water becomes saturated with contaminant. Where this concentration is exceeded, free product may be present with pore spaces. If soils are below the water table exposure to free product upon the water table should be considered qualitatively where it may be present at the ground surface.

<sup>dir</sup> Screening criteria based on a threshold protective of direct skin contact with phenol. Values in brackets are based on health effects following long term exposure provided for illustration only.

pC4SLs have been used for lead in absence of S4ULs. Value selected is based on LLTC 2: Intake leading to blood lead concentration of 3.5 µg dL<sup>-1</sup>

When assessing total xylylene concentrations these should be compared to the lower of the lowest of the three isomers for the particular land use.

The screening values for the metals are based on a sandy loam with a SOM of 6%

S4ULs assume no free phase contamination is present.

References

<sup>(a)</sup> The LQM/CIEH S4ULs for human Health risk Assessment, 2015

<sup>(b)</sup> CL:AIRE SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination (Rev. 2), September 2014

Annex 5

Part 2A (The Contaminated Land Regime)

## Contaminated Land Definition

- A5.1 Under Section 57 of the Environmental Act 1995, Part 2A was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land.
- A5.2 Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 20011, providing a definition of ‘contaminated land’ and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.
- A5.3 According to the Act, contaminated land is defined as ‘any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:
- a. *significant harm* is being caused or there is a *significant possibility* of such harm being caused; or
  - b. *significant pollution* of controlled waters<sup>2</sup> is being caused or there is a significant possibility of such pollution being caused<sup>3</sup>
- A5.4 The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term ‘possibility of significant harm being caused’ should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.
- A5.5 The following situations are defined where harm is to be regarded as significant:
- i. Chronic or acute toxic effect, serious injury or death to humans
  - ii. Irreversible or other adverse harm to the ecological system
  - iii. Substantial damage to, or failure of, buildings

- iv. Disease, other physical damage or death of livestock or crops
- v. The pollution of controlled waters<sup>4</sup>.

A5.6 With regard to radioactivity, contaminated land is defined as ‘any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a significant possibility of such harm being caused<sup>5</sup>’.

## The Risk Assessment Methodology

A5.7 Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

## The Risk Assessment

A5.8 By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) - takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence - takes into account both the potential severity of the hazard and the sensitivity of the receptor.

A5.9 For further information please see the Contaminated Land section on the DEFRA website ([www.defra.gov.uk](http://www.defra.gov.uk)).

<sup>1</sup> In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2012; in Scotland by The Contaminated Land (Scotland) Regulations 2000, updated by the Contaminated Land (Scotland) Regulations 2005; and in Wales by The Contaminated Land (Wales) Regulations 2001, updated by the Contaminated Land (Wales) Regulations 2006.

<sup>2</sup> In Scotland the term “controlled water” has been updated to “water environment” under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

<sup>3</sup> The definition was amended in 2012 by implementation of the Water Act 2003.

<sup>4</sup> Groundwater in this context does not include waters within underground strata but above the saturated zone.

<sup>5</sup> The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

Annex 6

Requirement for Further Works



**Table A6.1: Recommendation Strategy for Further Works**

| Development Area  | PAOC ID        | Buildings Proposed? | Previous Site Investigation | Potential for pollutant linkages to remain active upon development | Recommendation for Further Assessment |
|---|----------------|---------------------|-----------------------------|--|---------------------------------------|
| Relocation of Virgin Estate Infrastructure                  | 12             | No                  | No                          | Yes  | Further Ground Investigation          |
| Virgin Hangar - Pavement                                    | 16, 45         | No                  | No                          | Yes  | Further Ground Investigation          |
| Converting 40s Stands                                       | 22, 28, 52, 65 | No                  | No                          | Yes  | Further Ground Investigation          |
| South Terminal Coaching Gates                               | 74             | No                  | Yes                         | Yes  | Further Ground Investigation          |
| Car Park Y Storage  | 36             | No                  | No                          | Yes  | Further Ground Investigation          |
| Motor Transport Facility                                    | None           | Yes                 | No                          | Yes  | Further Ground Investigation          |
| Rendezvous Point North                                      | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Satellite Airport Fire Service Facility                     | None           | Yes                 | No                          | Yes  | Further Ground Investigation          |
| Future Waste Water Treatment                                | 59             | No                  | No                          | Yes  | Further Ground Investigation          |
| Longbridge Road Roundabout Compound                         | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Flood Compensation Zone at Car Park X and V                 | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |
| Flood Compensation Area 3                                   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Gatwick Stream FAS 2  | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Museum Field Flood Plain                                    | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Pond A & River Mole Reconfiguration                         | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Relocation Substation J                                     | None           | Yes                 | No                          | Yes  | Further Assessment                    |
| Relocation Substation A                                     | None           | Yes                 | No                          | Yes  | Further Assessment                    |
| Environmental Mitigation and Enhancement (Brook Farm East)  | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Environmental Mitigation and Enhancement (Brook Farm South) | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Environmental Mitigation and Enhancement (Brook Farm West)  | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Environmental Mitigation and Enhancement (New Woodland)     | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Environmental Mitigation                                    | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Relocation of Fire Training Ground                          | 15             | Yes                 | Yes                         | Yes  | Further Ground Investigation.         |
| Taxiway Juliet West (Spur)                                  | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |
| Taxiway Juliet  | 37, 41         | No                  | Yes                         | Yes  | Further Ground Investigation.         |
| Taxiway Juliet East   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Runway Exits (Northern to Juliet)                           | 9              | No                  | No                          | Yes  | Further Ground Investigation.         |
| Northern Runway 08L/26R                                     | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |
| End Around Taxiway West                                     | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Exit Taxiway Main to East                                   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Exit Taxiway Main to North                                  | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |
| Crawter's Road Car Park                                     | 43             | No                  | No                          | None identified.   | Further Ground Investigation.         |
| Airfield Satellite Welfare Contractor Compound              | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |
| Taxiway Uniform   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Cuckoo Remote Stands – Phase 1                              | 16             | No                  | No                          | Yes  | Further Ground Investigation          |
| Tango Cut Through   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Taxiway Tango   | None           | No                  | No                          | None identified.   | Discovery Strategy                    |
| Lima Extension  | None           | No                  | Yes                         | None identified.   | Discovery Strategy                    |

| Development Area  | PAOC ID                   | Buildings Proposed?          | Previous Site Investigation | Potential for pollutant linkages to remain active upon development | Recommendation for Further Assessment |
|---|---------------------------|------------------------------|-----------------------------|--|---------------------------------------|
| Taxiway Whiskey-Victor-Zulu (Code C to Code E - 08)                   | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| Reconfigure Code 150's to Code C (Phase 2)                            | 12                        | No                           | No                          | Yes  | Further Ground Investigation          |
| Pier 7  | 35, 60                    | No                           | No                          | Yes  | Further Ground Investigation          |
| Pier 7 New Stands   | 35                        | No                           | No                          | Yes  | Further Ground Investigation          |
| Code E Hangar   | None                      | Yes (assumed open structure) | Yes                         | None identified.   | Discovery Strategy                    |
| Relocate Larkins Road Phase 2 (Diverted road surfacing and utilities) | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Care – Option 1   | 35                        | Yes                          | No                          | Yes  | Further Ground Investigation          |
| North Terminal long stay decking                                      | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| CARE Waste Facility Option 2 - landside relocation                    | 46                        | Yes                          | No                          | Yes  | Further Ground Investigation          |
| Charlie Box   | 9                         | No                           | Yes                         | Yes  | Further Ground Investigation          |
| MA1 Main Contractor Compound  | 6                         | No                           | Yes                         | Yes  | Further Ground Investigation          |
| End Around Taxiway Yankee   | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Taxiway Victor  | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| Taxiway Whiskey   | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| South Terminal IDL Expansion  | None                      | Yes                          | Yes                         | Yes  | Further Ground Investigation          |
| South Terminal Autonomous Vehicle Station                             | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| Parking - MSCP J  | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| Hotel and Office – MSCP H   | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| North Terminal Forecourt  | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| North Terminal IDL Expansion  | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| North Terminal Reclaim  | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| North Terminal Make up Points (MUPs)                                  | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| North Terminal Autonomous Vehicle Station                             | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| MSCP Y Hotel and Parking  | 40                        | No                           | No                          | Yes  | Further Ground Investigation          |
| MSCP Y elements   | 40                        | No                           | No                          | Yes  | Further Ground Investigation          |
| Parking X and V   | None                      | No                           | Yes                         | None identified.   | Discovery Strategy                    |
| Surface access  | 4, 7, 19,, 40, 53, 73, 77 | No                           | Yes                         | Yes  | Further Ground Investigation          |
| Environmental mitigation and enhancement (Church Meadow)              | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Reigate Field Welfare Contractor Compound                             | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| South Terminal Forecourt  | 1, 2, 4                   | No                           | Yes                         | Yes  | Further Ground Investigation          |
| Hotel – South Terminal (Car Rental FOH Site)                          | 70                        | Yes                          | No                          | Yes  | Further Ground Investigation          |
| Environmental mitigation and enhancement (Riverside)                  | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Environmental mitigation and enhancement (Noise Bund)                 | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Hotel and office provision  | None                      | Yes                          | No                          | Yes  | Further Ground Investigation          |
| Construction compounds  | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |
| Parking - Pentagon Field Decking                                      | None                      | No                           | No                          | None identified.   | Discovery Strategy                    |

## Recommendation Strategy for Further Works

