

REPORT N° 70012920_VAL

PROLOGIS PARK: WEST LONDON

REMEDIATION VALIDATION REPORT

CONFIDENTIAL

DECEMBER 2016

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Project No: 70012920

Date: December 2016

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1 INTRODUCTION

1.1 INTRODUCTION AND BACKGROUND

WSP | Parsons Brinckerhoff was commissioned by Prologis UK Ltd (the Client) to provide a validation report for the remedial works required to mitigate the identified potential pollutant linkages associated with the commercial development at Prologis Park; West London located at Ironbridge Road North, Hillingdon, Middlesex (the Site).

The works validated within this report been undertaken in accordance with the WSP | Parsons Brinckerhoff Remediation Method Statement and Options Appraisal Report, dated 16th October 2015 (Ref: 70004909_RMS_Stockley Phase 3) and approved by the London Borough of Hillingdon (LBH) (Planning Ref: 37977/APP/2016).

The Remediation Method Statement (RMS) was based on the findings of various phases of Ground investigation undertaken by WSP | Parsons Brinckerhoff as detailed in the Geo-Environmental Assessment report submitted to LBH (Ref: 70004909). Reference to this report should be made for further information and explicit details, although the findings are summarised below.

1.2 PROPOSED DEVELOPMENT

The development is a hybrid application for a phased comprehensive redevelopment of the Site to provide an overall maximum gross floor space of 45,000 m² of light industrial uses (Use Class B1c and / or Use Class B2) and / or storage and distribution uses (Use Class B8) and ancillary offices, together with servicing, parking, access roads and open space is proposed. Full planning permission has been granted by LBH for Phase 1 containing 18,900 m² of floor space in two buildings up to 16.2 metres in height (to ridge), together with associated highways works, open space, hard and soft landscaping, car parking and associated infrastructure. Outline planning permission has been sought for Phase 2 for up to 26,100 m² of floor space.

In order to achieve a level building formation platform, it is understood that the elevated central portion of the site will be re-profiled. This involved the removal of former infrastructure (including the existing sheet pile walls) and re-grading of the site with the intention to retain all site material where practical.

1.3 REGULATORY CONTEXT

This validation report has been undertaken with due regard to Contaminated Land Guidance documents issued by the Department for Environment, Food and Rural Affairs (and its predecessors) including Contaminated Land Report 11 (CLR 11). The methods used to develop the remediation strategy that this report validates, followed a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor pollutant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990).

1.4 SCOPE OF WORKS

The scope of services with respect to this commission included:

- Remediation supervision (full-time);
- Regulatory liaison;
- Earthworks watching brief, and

→ Production of the Remediation Verification Report.

1.5 ROLES AND RESPONSIBILITIES

The principal parties involved in this project are summarised in **Table 1.1**, below.

Table 1.1: Roles and Responsibilities

ROLE	COMPANY
Employer	Prologis UK Ltd
Principal Contractor	VolkersFitzpatrick
Remediation Designer and Environmental Consultant	WSP Parsons Brinckerhoff
Laboratory	i2 Laboratories

1.6 REPORT STRUCTURE

The structure of this verification report is as follows:

- Site information and environmental setting;
- Previous reports;
- Conceptual site Mmodel and relevant pollutant linkages;
- Remediation strategy;
- Remediation works; and,
- Verification works.

1.7 CONFIDENTIALITY AND LIMITATIONS

This report is addressed to and may be relied upon by Prologis UK Ltd.

This assessment has been prepared for the sole use and reliance of the above named party. This report has been prepared in line with the WSP | Parsons Brinckerhoff proposal and associated notes. This report shall not be relied upon or transferred to any other parties without the express written authorisation of WSP | Parsons Brinckerhoff. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP | Parsons Brinckerhoff's General Limitations are provided as **Appendix A**.

2 SITE INFORMATION & ENVIRONMENTAL SETTING

2.1 SITE LOCATION

The Site is located within Stockley Park, in the London Borough of Hillingdon. The Site is rectangular in shape. Access is via Ironbridge Road North to the east of the Site, which forms the eastern boundary. The site is approximately 12 hectares in area and is centred at National Grid Reference 507267, 180159. A site location plan is provided as **Figure 1**.

2.2 SITE DESCRIPTION

The main central portion of the site is predominantly open, cleared land with sparse vegetation. A moderately dense copse of semi-mature trees is present in the north east of the Site and there is dense, overgrown vegetation along the western and southern boundaries of the site. The perimeter of the Site is secured with metal fencing.

The central and north eastern portions of the Site are raised at a height of approximately 2 to 3 m above the remainder of the Site. A central 'T' shaped area was engineered using sheet piling and was designed as part of a former re-development, which was not completed.

The Site is predominantly soft standing with the exception of access roads and a car parking area in the south east of the Site.

Temporary portacabins used by Stockley Park Management are located adjacent to the car park in the south east of the Site.

Water features in the form of lined ponds are present along the eastern boundary. A site feature/layout plan is presented as **Figure 2**.

2.3 GEOLOGY

The British Geological Survey (BGS) Map No. 269 Windsor (Solid and Drift) (1:50,000 Series), Map No. TQ07NE and TQ08SE (1:10,000 Series) and geological information provided in the earlier reports (refer to Section 1.3) were reviewed and a summary of the findings is presented in **Table 2.1**.

Table 2.1: Summary of Published Geology

GEOLOGICAL UNIT	DESCRIPTION	AQUIFER DESIGNATION*
In filled / Made Ground	Soft to firm brown clay with sand and gravel Recorded by Arup to be between 0.5 m to 12 m thick.	Not classified
Lynch Hill Gravel Member (hereafter referred to as River Terrace Deposits (RTD))	Sandy GRAVEL to coarse GRAVEL. Remnants are present at the edge of the site boundary. Recorded by Arup to be between 0.0 m to 3.0 m thick.	Principal Aquifer
London Clay	Firm to extremely stiff brown grey CLAY Depth not proven. Arup record >36 m.	Un-productive Aquifer

*Environment Agency (EA) Published Information

WSP | Parsons Brinckerhoff note that the 1:10,000 scale BGS map illustrates the site is encompassed in all directions by worked/Made Ground with only remnants of the Langley Silt Member present to the west of the Site.

2.4 HYDROGEOLOGY & HYDROLOGY

Groundwater level monitoring completed by WSP | Parsons Brinkerhoff in 2015 concluded that groundwater levels underlying the site resided at approximately 2.0 m bgl. Overall groundwater levels were observed to be relatively stable over the two week monitoring period. Groundwater flow was generally found to be to the southwest and was considered to be impeded by the sheet piled structure in the centre of the Site. It was also considered the 'clay cut off walls' along the northern and southern boundaries, which are expected to remain following any development and will continue to influence groundwater flow across the Site.

The generalised topography of the surrounding area falls in level towards the south-southwest. The Lynch Hill Gravel Member, where present, is classified by the Environment Agency as a Principal Aquifer. These are layers of rock or drift deposits that have high intergranular and/or fracture permeability. As such, these units usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale.

The Made Ground is not classified and the bedrock (London Clay Formation) is classified as unproductive strata (i.e. with low permeability that has a negligible significance for water supply or river base flow).

The Site is located within an area classified by the Environment Agency as having land of high vulnerability with respect to potential groundwater pollution. The soils are pre classified as high leaching potential due to an urban setting, where the 'worst case' is assumed.

The Site is not located within a groundwater Source Protection Zone (SPZ) for public water supply. Groundwater Safeguard Zones and the Groundwater Drinking Water protected Areas as defined by the Environment Agency.

A summary of licenced groundwater abstractions within a 250 m radius of the site is presented in **Table 2.2**.

Table 2.2: Summary of Licensed Groundwater Abstractions Near the Site

LICENCE NUMBER	DISTANCE DIRECTION SITE	/ DETAILS FROM
TH/039/0036/004	On site	Groundwater abstraction well used for irrigation and storage in the man-made lakes
TH/039/0036/012	250 m northeast	Stockley Park Golf Club – general washing / process washing

The Site is located within the Thames River Basin District as defined by the EA. A summary of the key hydrological features is presented in **Table 2.3**. A summary of the surface water quality for the Grand Union Canal is provided in **Table 2.4**.

A review of the EA's "what's in your backyard" website indicated that the site is not located within an indicative area of flood risk from rivers. However, isolated areas are at risk of flooding from surface water.

Table 2.3: Summary of Hydrology Features

FEATURE	DISTANCE DIRECTION SITE	/ DETAILS FROM
Lakes	On site	Constructed wetlands as part of the reclamation works. Ponds are groundwater and surface water fed. No details of water quality have been provided.
Grand Union Canal	10 m south	Artificial.
Lakes	60 m north	Artificial, as part of golf course.
Lake	500 m southeast	Formed from infilling of a formal canal spur.

Table 2.4: Summary of Surface Water Quality for The Grand Union Canal

SURFACE WATER QUALITY	CURRENT	PREDICTED BY 2015 (END OF CURRENT CYCLE)
Ecology	Good potential	Good potential
Chemical	Does not require assessment	Does not require assessment

Full details of the construction of the Grand Union Canal in the vicinity of the site are not known, but it is understood that it is founded in the London Clay. The northern wall of the canal (that bounds the site to the south) has been constructed with sheet piling.

3

PREVIOUS REPORTS

This section provides a summary of the previous use of the Site and specifically describes the phases of intrusive ground investigations undertaken in support of the reclamation scheme and the infrastructure works conducted between 1989 and 2001 and more recent ground investigations completed as part of the proposed development works.

3.1 HISTORICAL GROUND INVESTIGATIONS

STOCKLEY PARK PHASE 3 PRE-DEVELOPMENT ENVIRONMENTAL SITE INVESTIGATION BY OVE ARUP AND PARTNERS ARUP GEOTECHNICS, DATED FEBRUARY 1998

The report was designed to provide a consolidated history of the Site and to present the results of the landfill reclamation works conducted between 1989 and 1991. The report was commissioned in order to confirm the suitability of the Site for an intended commercial building and landscape design.

A summary is provided below:

- Prior to the reclamation works, the Site comprised a former brick-earth and gravel extraction pit (from late 19th century to 1935) which was subsequently in-filled from 1948 to 1961 with domestic and commercial wastes.
- Reclamation works involved the preparation of the eastern half of the Site for a commercial use and the western half to be returned to pastoral use. Arup reported that the landfill was removed between 1989 to 1991 and deposited at the north end of the Country Park Golf Course. A clay barrier was constructed to the north and west of the site to act as a barrier preventing ingress of ground gas and groundwater from the Golf Course site. A deep land drain was placed at the *'invert of a gravel filled passive gas vent constructed adjacent to the clay barrier on the golf course side at 29.3 m Ordnance Datum (OD)'*. Leachate was pumped under licence to offsite public sewers to prevent leachate entering the Site. The barrier extended 150 m along the western boundary to *'provide greater security against ingress of leachate or gas'*.
- Arup also recorded that the *'additional section of clay barrier'* along the south of the Site was constructed at this time.
- Arup also record that underground features and obstructions were removed and the resulting void was backfilled with approximately 750,000 m³ of 'inert' material. Arup record that the two ponds along the eastern boundary were constructed by providing a one metre thick compacted London Clay layer above the fill. The top 0.4 m of material in the western half of the site was not compacted.

The site investigation undertaken by Arup in December 1997 comprised eight boreholes to the top of the London Clay and 15 trial pits to maximum depth of 3.4 m bgl. Soil samples collected during the investigation were analysed for contaminants of concern and reported *'no widespread or significant contamination of the soil using ICRCL and Dutch Intervention Values (DIV 1994) as guidelines'*.

Arup concluded that the 'inert' fill used in 1989-1991 was 'generally clean' and the groundwater quality was *'generally good'* and not causing significant contamination. Concentrations of carbon dioxide and methane were below trigger levels.

STOCKLEY PARK PHASE 3 GEOTECHNICAL INTERPRETATIVE REPORT BY ARUP GEOTECHNICS, DATED DECEMBER 2000

The report assessed two historic ground investigations to provide information for the design of the foundation and infrastructure works associated with the Phase 3 development. Recommendations for the design of the foundations were based on the following information:

- Site investigation by Wimpey Laboratories in 1982, which identified the presence of landfill materials from 6 to 10 m in thickness comprising domestic refuse on London Clay or thin lenses of sand and gravel all above the London Clay.
- Site investigations by Arup in 1991 on the southeast corner of the Site recorded re-worked natural ground and construction wastes placed along the western edge of the site between 1965 and 1966.

The Arup report produced in 2000 described a site investigation undertaken between June and August 2000. Works comprised 15 No. boreholes to 40 m bgl and 43 trial pits to a maximum depth of 4.1 m bgl. Made Ground was recorded up to 12 m in thickness overlying London Clay. Gravels were only present in the south-western corner. Contamination testing was limited to hydrocarbon species which were identified in one location TP22 and was further delineated.

A number of trial pits were located over the northern clay barrier. The trial pits identified the barrier to have a slope of approximately 1:4 (as opposed to a 1:2 slope design value given in an earlier Arup report (1998)). The gravel trench used to vent landfill gas was covered by a mound of clay soil and no leachate vents were encountered.

STOCKLEY PARK PHASE 3 LAND QUALITY REPORT ARUP, DATED APRIL 2014

The Arup Land Quality Report provided a summary of the site history and ground conditions for potential purchasers. The report included a summary of the earlier Arup reports described above and a site walkover.

Arup stated that the site walkover did not reveal significant signs of ground contamination. An updated Conceptual Site Model and risk assessment was undertaken with potential sources of contamination identified as:

- Made Ground;
- Car-storage (point source contamination);
- Road salt storage;
- Electrical sub-stations; and
- Residual contamination from the remedial works that includes soil containing elevated levels of TPH.

Arup concluded that the contamination risk was '*generally low assuming some mitigation during development*' and recommended further site investigation in advance of proposed groundworks to allow for a contemporary assessment in accordance with current guidelines.

3.2 PREVIOUS REMEDIAL WORKS

STOCKLEY PARK PHASE 3 (DAWLEYWOOD) REMEDIATION REPORT BY ARUP, DATED MAY 2001

Arup was commissioned to co-ordinate, supervise intrusive investigations and subsequent remediation works of areas of contamination identified pre-2000. The ground remediation works were designed to remove hydrocarbon contamination, asbestos-cement board and underground structures.

Arup described an area of hydrocarbon contamination that was identified in the southeastern portion of the Site during excavation work for land drains. The hydrocarbon contamination was subsequently delineated in November 2000. Seven areas were identified, namely Area 1 and 2

(hydrocarbon contamination); Area 3 (UST); two hydrocarbon hotspots (Areas 4 and 7); and two underground concrete interceptor tanks (Areas 5 and 6).

Remedial target concentrations of 1,000 mg/kg for polycyclic aromatic hydrocarbons (PAH); 1,000 mg/kg for mineral oils / total petroleum hydrocarbons (TPH); 50 ppm for field based photo ionisation detector (PID) readings; and <0.1% v/v asbestos, were utilised for these works.

Arup state that '*dig and dump*' was the preferred remediation option, with overburden removed and stockpiled onsite. Contaminated material and underground structures were removed to a licensed landfill (Norlands Lane Landfill, Egham Surrey). Verification was based on visual, olfactory and PID measurements to initially delineate the extent of material removal, with the collection of side wall and base samples for validation testing. Two samples that exceeded remediation validation criteria were left in-situ, on the basis that they were considered to be representative of 'tarmac' and TPH and PAH compounds were identified in a bound form that did not pose a risk to human health receptors.

Arup recorded a total of 9,620 tonnes of mainly hydrocarbon impacted soil was excavated and removed from site. The contamination was generally encountered at a depth of 0.5 m bgl and extended to maximum depth of 2.4 m bgl. Arup recorded that the voids were backfilled with '*suitable material*' from site won and offsite sources.

In total, 36,000 litres of potentially contaminated groundwater was removed from Area 1 and deposited at the Thames Waste Management Camberley Treatment Plant. Liquid contained in the below ground tank was recorded as being disposed offsite as special waste.

Arup record that within an earth bank along the southern boundary, a layer of hydrocarbon impacted material was identified between approximately 1.8 m and 2.1 m bgl. Soil samples were collected and recorded hydrocarbon levels between <10 mg/kg and 2,300 mg/kg). No further remedial works were proposed in that area.

3.3

RECENT GROUND INVESTIGATION WORKS

An intrusive site investigation was completed by HGEL and supervised by WSP in July to September 2014. Full details are provided within the report entitled 'Prologis Park West London: Geo-Environmental Assessment', produced by WSP UK Ltd and dated March 2015.

The ground investigation was undertaken to assess the following Potential Areas of Concern (POAC):

- PAOC1 - Imported fill material;
- PAOC2 - Possible underground tank;
- PAOC3 - Disused wheel wash facility and former tank;
- PAOC4 - Void containing refuse/waste;
- PAOC5 - Electrical sub-station (north west);
- PAOC6 - Electrical sub-station (south west);
- PAOC7 - Raised mound; PAOC8 - Raised central building platform;
- PAOC9 - Gas vents; and
- PAOC10 - Clay cut off walls assessment.

3.3.1 GROUND CONDITIONS

A summary of the strata encountered during the 2014 investigation is presented below.

- **Made Ground** (0.0 - 12.5 m bgl) - Generally described as sandy gravelly CLAY. Gravels included but were not limited to flint, brick, concrete, chalk and clinker. Inclusions of plastic, wood, geotextile, tile, glass and metal;
- **Kempton Park Gravels** (2.5 – 9.0 m bgl) - Predominantly sandy GRAVEL and GRAVEL. Gravels were flint (encountered in extreme west and east of the site only); and
- **London Clay** (3.3 - >15 m bgl) - CLAY with minor inclusions of sand and silt.

3.3.2 CONTAMINANT SOURCES

A total of ten potential areas of concern were identified for further investigation (see **Section 3.3**). No evidence of notable contamination was recorded in the areas of the former underground tank, vehicle washing bays, previously recorded voids or the former sub-stations.

Soil analytical results identified the presence of asbestos within the 750,000 cubic metres (cu.m) of material imported during the reclamation of the Site. The material used to construct the raised platform area and the two discrete mounds were similar in composition to those identified within infilled material across the remainder of the site.

Table 3.1 provides details of the potential sources of contamination and a summary of risk with respect to human health, controlled waters, soil gas in accumulation in structures and ingress of contaminants into potable water supply pipes.

Table 3.1: Sources of Identified Contamination and Risk

SOURCE AREA	REVIEW OF RISK
Fill material imported during the reclamation works c750,000 cu.m	Soil chemical contaminant concentrations were below the relevant assessment criteria and therefore are not considered to pose a human health exposure risk. Within the development footprint, Asbestos Containing Material (ACM) was detected in approximately 20% of soil samples tested across the entire Site at all depths. Asbestos Containing Material (ACM) was also identified within the majority of the soil samples located in the landscaped areas within the upper 1 m. Elevated concentrations of Ammonium were detected throughout the groundwater at the Site. No distinguishable contaminant gradient was identified. Ammonium concentrations in soil leachate were also elevated in unsaturated soil across the site. Contaminants that may pose a risk to potable water supply pipes were not identified. Elevated concentrations of CO₂ were identified in two borehole locations only.
Retained Landscaped Areas	Asbestos Containing Material (ACM) was identified within the majority of the soil samples located in the landscaped areas within the upper 1 m. Contaminants that may pose a risk to potable water supply pipes were not identified.
Possible underground storage tank	No underground storage tanks were identified and no evidence of historical contamination was identified within the surrounding area.
Disused wheel wash facility	No evidence of soil contamination was identified within this area.
Void containing refuse/waste	No evidence of soil contamination was identified within this area.
Electrical sub-stations (north west and south west of site)	A slightly elevated concentration of PCB contamination was identified within the vicinity of the electrical sub-station within the north west section of the site. However, the exceedance was marginal, and is considered not to require further assessment or remedial works.
Fill material within raised mounds	The soils identified within these mounds were similar in composition to those identified within the remainder of the Site. No evidence of soil contamination was identified within this area.

SOURCE AREA

REVIEW OF RISK

Fill materials used to create the raised central building platform	The soils identified within the mounds were similar in composition to those identified within the remainder of the Site. No evidence of soil contamination was identified within this area.
Off-site leachate and gas from the adjacent landfill	Restrictions were imposed within the immediate vicinity of the Clay Barrier and thus ground investigation information in these areas is limited. However, soil, groundwater and soil gas concentrations are low in the exploratory hole closest to the Clay Barriers. Thus no direct evidence was obtained to suggest the Clay Barriers have been compromised.

3.3.3 ASBESTOS IN SOIL

A review of **Table 3.1** reveals that ACM is present within fill material present across the Site. The majority of the Site redevelopment will comprise of building footprints and hardstanding. In these areas, no mitigation measures was considered necessary as exposure pathways will be broken, however appropriate precautions were required to be implemented during construction works to ensure that site operatives are not placed at risk, such as dust suppression and appropriate PPE.

Asbestos Containing Material (ACM) was identified within the majority of the soil samples located in the landscaped areas within the upper 1 m. Further intrusive site investigation was completed by HGEL and overseen by WSP along the western and southern boundaries of the Site on the 18th and 19th February 2015 in order to characterise the asbestos in soil contaminant risk. The works involved the excavation of 34 No. hand dug pits to maximum depth of 1.0 m bgl and collection of soil samples for chemical analysis.

In all locations Made Ground was identified and generally comprised a topsoil of gravelly silty sand, over gravelly sandy clay. The gravel component commonly recorded flint, concrete, brick, charcoal, glass, ceramics, metal and clinker as being present.

A total of 37 No. soil samples were analysed for the presence of asbestos containing material, including a suspected fragment of bound asbestos cement. 18 No. soil samples were found to contain asbestos fibres, of which 12 No. recorded concentrations at <0.001% w/w. The maximum recorded soil concentration was 0.005% (w/w) crocidolite in HP110 at 0.9 m bgl.

Suspected cement bound asbestos recorded at HP115 0.5 m bgl was confirmed to be cement bound asbestos (Chrysotile) upon laboratory identification.

It should be noted that asbestos fibres were not detected in the corresponding soil sample at HP115 where the piece of cement bound asbestos was identified.

No visual or olfactory evidence of organic contamination was noted during the investigation.

3.3.4 AMMONIUM IN GROUNDWATER

The groundwater under the Site is impacted with ammonium and further investigation was completed by WSP | Parsons Brinkerhoff in 2015 to quantify the risk to controlled water receptors. Based on the results of the additional monitoring the following conclusions were drawn:

- Ammonium was recorded in the groundwater samples above the EQS within groundwater collected from every location across the Site. However it was noted that the concentrations were less than those recorded during the 2014 investigation by an average of 30-40%;
- It was anticipated that ammonium concentration would continue to decrease onsite in line with that observed and that the proposed redevelopment of the site would act to further reduce ammonium concentrations in groundwater as infiltration will be reduced;

- WSP | Parsons Brinckerhoff concluded that there would be no significant benefit from undertaking groundwater remedial action to reduce ammonium concentration as this has shown to be naturally decreasing

3.3.5 GROUND GAS

Four rounds of ground gas monitoring were undertaken between 13 August and 4 September 2014. The majority of monitoring results do not provide a gas screening value (GSV) that would suggest gas protection measures are required. However, based on elevated CO₂ readings (>5% v/v) in two locations, namely BH07 and BH10S and the presence of substantial depths of fill material, it was considered prudent that the site is classified as Characteristic Situation 2 – Low Risk according to the CIRIA Ground Gas Risk Assessment Scheme (CIRIA C665). Gas protection measures for office areas should be incorporated into the redevelopment design.

4 CONCEPTUAL SITE MODEL

4.1 INTRODUCTION

This chapter summarises the findings of the assessment and identifies the Relevant Pollutant Linkages (RPLs) where unacceptable risks exist that will require remedial measures for the protection of Human Health, Controlled Waters and the wider Environment.

4.2 ASSESSMENT

An assessment of environmental impact with respect to potentially contaminated sites is based on identifying and evaluating the following: the significance of contamination sources; the sensitivity of environmental targets; the presence of potential migration pathways; and site-specific factors.

Where a potentially significant source of contamination is identified a detailed quantitative assessment of potential pathways and targets has been undertaken to determine if a credible 'source – pathway – target' linkage may exist. In each case, where such a 'source – pathway – target' linkage may exist the associated environmental risk has been assessed based on the likelihood and severity of the risk. Risk has been classified into the following categories:

- Low No action likely to be required
- Medium Some mitigating action may be required
- High Mitigation action will be required

4.3 SOURCES

Table 4.1 provides details of the potential sources of contamination and a summary of risk with respect to human health and soil gas in accumulation in structures. All other sources were eliminated during the 2014 ground investigation.

Table 4.1: Sources of Identified Contamination and Risk

SOURCE AREA	REVIEW OF RISK
Fill material imported during the reclamation works c750,000 cu.m	Within the development footprint, Asbestos Containing Material (ACM) was detected in approximately 20% of soil samples tested across the entire site at all depths. Asbestos Containing Material (ACM) was also identified within the majority of the soil samples located in the landscaped areas within the upper 1 m. Elevated levels of CO ₂ were identified in two borehole locations only.
Retained Landscaped Areas	Asbestos Containing Material (ACM) was identified within the majority of the soil samples located in the landscaped areas within the upper 1 m.
Fill material imported during the reclamation works c750,000 cu.m	Fill material contained TPH and phenol concentrations in excess of the UK Drinking Water Standards for potable water supply pipes.

4.4 PATHWAYS

The following pathways may be active, after the development of the Site:

- Inhalation of ACM within soils and dusts from the western and southern landscaped areas;
- Migration of ground gas through pore space; and
- Direct contact.

4.5 RECEPTORS

The following are considered Critical Receptors following development of the Site:

- Female Adult Worker (Age Class AC17);
- On-site built structures (accumulation of soil gas); and
- Potable Water Supply Pipes.

WSP | Parsons Brinckerhoff has excluded maintenance / construction workers, on the basis that acute risks will largely be mitigated through the adoption of standard health and safety management practices in accordance with the CDM Regulations 2015; Health and Safety at Work Act 1974; with the provision of an appropriate level of Personal Protective Equipment (PPE); tool box talks; and associated risk assessments / method statements to protect against human health exposure to potentially contaminated soil.

On completion of the Construction Phase, a Health and Safety File for the Site should be maintained and referenced to highlight potential risks to maintenance / construction workers from acute exposure to potential contaminated land and any residual contaminants.

A summary of Relevant Pollutant Linkages are identified in **Table 4-2**, below.

Table 4-2: Relevant Pollutant Linkages that Require Remedial Action

RELEVANT POLLUTANT LINKAGE	SOURCE	PATHWAY	RECEPTOR	ASSESSMENT
RPL1	Asbestos Containing Material in Landscaped Areas within the Western and Southern section of the Site	Ingestion and Inhalation of contaminated soils and dusts generated from areas that are not covered by hardstand or other surface coverings. Inhalation of dusts from areas that are not covered by hardstand or other surface coverings.	Female Adult Worker (Age Class AC17)	High – Potential for ACM impacted soils in exposed areas to pose a risk to Human Health.
RPL2	Carbon Dioxide generated from Made Ground	Inhalation of gas concentrations released from underlying Made Ground and building up in on-site structures to potentially asphyxiation limits.	Future Site Occupants	Low to Medium – Concentrations of Carbon dioxide have been identified across the site to exceed the 5.0% v/v trigger threshold requiring gas protection measures.
RPL3	Previously unidentified contamination within Landscaped Areas and within Topsoil to be re-used across the Site	Direct Contact and Ingestion with areas not covered with hardstanding.	Female Adult Worker (Age Class AC17)	Low to Medium – Potential for ingestion & direct contact with previously unidentified contamination
RPL4	Residual contamination within the shallow Made Ground	Ingress contamination through the walls of water supply pipes	Potable water supply for the Site	Low – Potential for TPH and Phenol ingress into potable water supply

5

REMEDATION WORKS

5.1 OBJECTIVES AND SCOPE OF WORKS

The controlled water risk assessment and subsequent piling risk assessment for the Site have illustrated that underlying controlled waters and the neighbouring Grand Union Canal are not at risk from the contaminated soils at the Site. As such, remedial measures are restricted to human health and residual concentrations of contaminants within the soils, for which remedial targets have been generated for the Site, further information is provided in the Remediation Method Statement and Options Appraisal (Ref: 0004909_RMS).

The remediation strategy documented in the RMS provides the approach to the mitigation of the identified relevant pollutant linkages (RPL) at the Site. The RPL's have been identified on the basis of the GQRA and information contained in the above Sections. **Table 5.1** provides a summary of the preferred remediation options and the outlines the necessary information that needed to be collected during the development works in order to satisfy Planning Condition 22.

Table 5-1: Summary of Remediation Strategy

RPL	ACTIONS AND VERIFICATION REQUIREMENTS	COMPLETED
RPL1 Asbestos Contaminated soils	Centred on the respective exploratory location(s) (Refer to Figure 3) each hotspot area shall be subjected to hotspot excavation as follows: Discrete shallow excavation and installation of a 100 mm capillary break layer comprised >6 mm clean graded material over which a geotextile marker layer (orange terram or similar) should be place. A minimum of 300 mm of clean site won material, overlain with 300 mm of clean imported topsoil to original ground level can then be placed. Areas that require excavation are illustrated on Figure 3. In locations where soils were impacted by asbestos and proposed ground level will be lowered, further validation sampling, following earthworks, for the presence of asbestos is required. If validation samples confirm that asbestos is still present, a hotspot excavation centred on the exceedances (ca 10 m x 10 m) will be required followed by installation of the capillary break/capping layer as detailed above. Prior to backfilling the void(s), verification testing is required to confirm the removal of impacted material has been suitably completed; This will comprise: → Collection of one sample from each sidewall of the excavation. → Sidewall samples will be taken within the centre of the sidewall at a depth midway up the wall in Made Ground soil. For dimensions greater than 10 m, additional samples will be required at a rate of one sample per 10 m length. → Dimension of the excavation and locations of the verification samples must be recorded including the approximate co-ordinates and elevation from surface. → The samples will be chemically tested using an independent UKAS and MCERTS accredited laboratory and the results submitted to the Environmental Consultant for prior approval prior to backfilling the void. → If the verification testing contain contaminants concentration in excess of the remediation guideline criteria, further excavation will be required to the following extent: • Excavation Sidewall Failures – remove material to the face for horizontal depth of 0.5 m and vertically the full depth of the excavation. Upon removal of the additional material further validation testing will be conducted in accordance with the sampling regime described above. Should the additional testing contain contaminant concentrations in excess of the remediation guideline criteria, further excavation will be required as described in the bullet points above. Sidewall verification shall comprise Asbestos testing as detailed in the RMS. Excess soil that is generated from construction works (including any Topsoil strip) can potentially	Yes

RPL	ACTIONS AND VERIFICATION REQUIREMENTS	COMPLETED
	be retained and re-used beneath hardstand areas. During groundworks appropriate PPE/RPE and mitigation methods against the release of airborne asbestos fibres (including air monitoring) are recommended.	
RPL2 Ground Gas	– Details of the membrane installation and documented evidence will be included within the WSP validation and verification report to be produced on completion of all remedial works.	Yes – Phase 1 only
RPL3 Unidentified contamination	Centred on the area of previously unidentified contamination each area shall be subjected to hotspot excavation to the extent at which visual and olfactory evidence of contamination has been removed. The excavated material can be temporarily stockpiled on Site, for pre-treatment (complex sorting) and waste classification, prior to being disposed of offsite at a suitably licenced facility or reused on site if deemed chemically suitable. The excavated material shall be stockpiled in designated bunded areas preventing the release of potentially contaminated run-off from the stockpiled material. WSP envisage there to be a total of three streams of material following the excavation and complex sorting as detailed below: 1. Contaminated – to be classified and removed from site to a suitably licenced facility: analysis will be specified by the waste hauler/disposal facility to ensure appropriate classification; 2. Potentially Contaminated – to be classified and either removed from site to a suitably licenced facility or re-used on site at suitable locations (i.e. under buildings and hard standing) – chemical analysis for re-use will be in accordance with that detailed in Table 7-3 below, and will be tested at a rate of 1 sample per 100 m³ with a minimum of three samples collected. If the material is deemed unsuitable for re-use, it will be removed from site in accordance with the above; and 3. Considered to be Suitable for re-use – this material will be chemically tested for the chemicals of concern included in Table 7-3 below. Samples will be collected at a rate of one sample per 100 m³ and a minimum of three samples. Should the material pass the remedial criteria, it will be re-used on site under buildings and hardstanding. Should it be identified to be unsuitable, it will be classified by a designated waste hauler for removal from site. Prior to backfilling the void(s), verification testing is required to confirm the removal of impacted material has been suitably completed; This will comprise: → Collection of one sample from each sidewall of the excavation and one sample from the base. → Sidewall samples will be taken within the centre of the sidewall at a depth midway up the wall in Made Ground soil, or where the visual appearance and odour indicated the possible presence of contamination. For dimensions greater than 10 m, one sample per 10 m section is required. → The base samples shall be taken at the centre of the excavation or where the visual appearance and odour indicated the possible presence of contamination. → Dimension of the excavation and locations of the verification samples must be recorded including the approximate co-ordinates and elevation from surface. → An annotated photographic record showing sides and base of the excavation is required prior to infilling. Photographs should include details of the location, date and a colour chart to allow for colour balancing. → The samples will be chemically tested using an independent UKAS and MCERTS accredited laboratory and the results submitted to the Environmental Consultant for prior approval prior to backfilling the void. → If the verification testing contain contaminants concentrations in excess of the remediation guideline criteria further excavation will be required to the following extent: • Excavation Base Failures – remove material to a vertical depth of 0.1 m; • Excavation Sidewall Failures – remove material to the face for horizontal depth of 0.5 m and vertically the full depth of the excavation. Upon removal of the additional material further validation testing will be conducted in accordance with the sampling regime described above. Should the additional testing contain contaminants levels in excess of the remediation guideline criteria, further excavation will be required as described in the bullet points above. Sidewall verification shall comprise testing as detailed in Table 7-3, below.	Yes
RPL4	– Due to the potential placement of potable water supply pipes through soils that may contain	Yes –

RPL	ACTIONS AND VERIFICATION REQUIREMENTS	COMPLETED
Protection of potable water supply	elevated levels of hydrocarbons above the UKWIR trigger values, polyethylene pipe protection measures are required. WSP recommends in consultation with the Water Supply Company, that barrier pipes and appropriate fittings are used. The locations of the service trenches must be surveyed in and the dimensions and elevations recorded and detailed on an as built drawing.	Phase 1 Only

6

VERIFICATION WORKS

The purpose of the verification report is to present evidence to demonstrate the remedial works have been undertaken in accordance with the RMS.

VolkerFitzpatrick commissioned Jager Associates Ltd to carry out the asbestos removal works of the identified hotspots of contamination under the supervision of an engineer from WSP | Parsons Brinkerhoff. Environmental samples taken by WSP | Parsons Brinkerhoff were sent to i2 Analytical UK Ltd which is an MCERTS/UKAS accredited analytical laboratory.

A WSP | Parsons Brinkerhoff Engineer attended the Stockley Phase 3 site on 10 occasions between February and September 2016 to undertake the watching brief, supervision of the hotspot removal and collection of validation samples on the below dates and a photographic record of the works included as **Appendix B**.

6.1 HOTSPOT VALIDATION

Based on information included in the RMS from previous site investigation reports, areas were identified as not suitable to remain in situ (due to asbestos containing soils in excess of 0.001%) as the upper level in areas of soft landscaping. Hotspots were excavated and subsequently validated individually, or where several hotspots were located in close proximity (e.g Hotspot 1) they were grouped together.

An area of 10 m x 10 m and 0.6 m in depth was excavated surrounding the known area of asbestos contamination and the area of work was secured to ensure no unauthorised access. All operatives working within the controlled zone were required to wear suitable PPE / RPE. The contaminated material from the excavations was transported and tipped within the fill area of Unit 2 and placed and compacted in accordance with the specification for the main works (illustrated in drawings included in **Appendix C**). This area was confirmed to be under a building footprint and not within an area that would be excavated as part of the drainage or foundation works. Further information is provided in the Jager Associates RAMS and is attached as **Appendix D**. The location of the hotspots and the associated contamination is outlined in the **Table 6.1** below and **Figure 3**.

Table 6.1: Description of Waste Classification Hotspots

HOTSPOT LOCATIONS	MAJOR CONTAMINANTS	VALIDATION SAMPLES	VALIDATION RESULTS	QUANTIFICATION (%)
Hotspot 1 - (HP107, HP108, HP109 and HP110)	Asbestos	Area 1 A/B/C/DE/F/G	- Asbestos Detected in 5 No. Samples	Sample C: 0.004 Sample C2: <0.001
Hotspot 2 - HP115	Asbestos	HP123 – A/B/C/D	Asbestos Detected in 4 No. Samples	<0.001
Hotspot 3 - HP123	Asbestos	HP123 – A/B/C/D	Asbestos Detected in 1 No. sample	<0.001

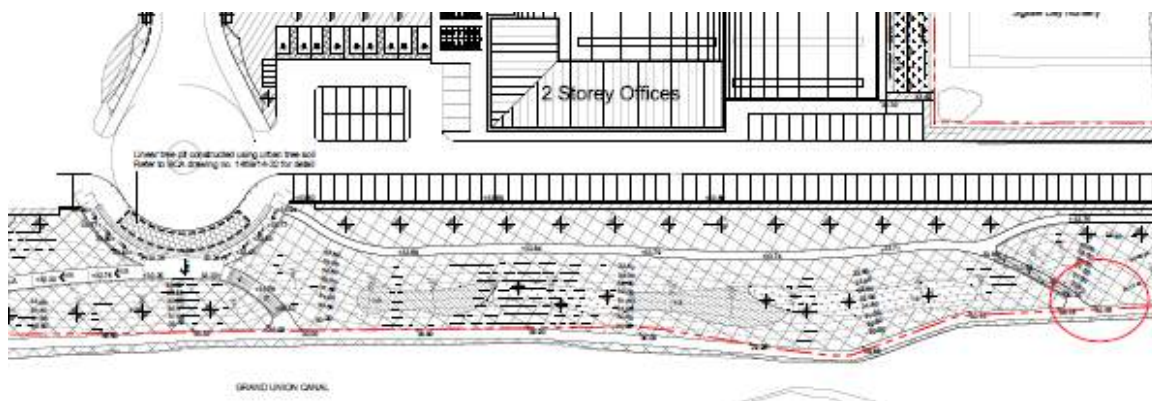
After the impacted material had been excavated, in-situ validation samples were taken from the sidewalls of the excavation and these were tested for the presence of Asbestos. A total of 14 No. validation samples were taken from a total of three hotspots. Asbestos was detected in 11 No. of the samples taken. Further quantification testing identified concentrations of Asbestos in 10 of the samples to be below the laboratory limit of detection at <0.001% and as per the RMS the material was classified as suitable to remain in situ.

Sample C taken from Hotspot 1 initially failed as asbestos was identified in the sample at concentrations above the LOD at 0.004%. As detailed in the RMS additional materials were removed along the face of the sidewall to a horizontal depth of 0.5 m. Following further excavation, the location was subsequently re-sampled (Area 1, sample C2) and asbestos was identified to be <0.001% and suitable to remain insitu. The sample locations are illustrated in **Figure 4**.

Following completion of the excavation, a capillary break layer comprising a minimum of 100 mm clean aggregate >10 mm in diameter to create a negative pore pressure, over which a geotextile membrane was placed. A total of 6 No. samples were taken of the imported site won topsoil to confirm its suitability for use. The results of the samples were compared to the assessment criteria included in the RMS. No exceedances were identified in excess of the assessment criteria and therefore this material was determined to be suitable for use in areas of soft landscaping. Screening tables of the results and laboratory certificates are provided as **Appendix E**.

6.2 UNIDENTIFIED CONTAMINATION & WATCHING BRIEF

Fragments of asbestos sheeting were identified during the landscaping works in one location along the canal in the west of the site and the location is illustrated in the below image.



Visible asbestos sheets were identified by on-site personnel and the methodology for encountering unidentified contamination outlines in the RMS was followed. The visible fragments of Asbestos sheeting were removed and the capillary break layer and orange geotextile was placed at the base and the 300 mm of site won topsoil placed on top. This material was validated as suitable to form part of the upper layer in areas of soft landscaping.

6.3 GAS MEMBRANE VALIDATION

In accordance with the remedial strategy, gas protection measures suitable for a CS2 characterisation have been installed across the Phase 2 Site in all enclosed structures in direct contact with the ground.

Volker Fitzpatrick confirmed to WSP | Parsons Brinckerhoff that the ground floor slab was cast in-situ concrete that was laid on top of a gas resistant membrane. The 1200g aluminium foiled gas membrane was installed below the slab foundation and the sides were lapped and sealed around joints and penetrations.

The membrane was installed by Prestige Air Technology Ltd and Volker Fitzpatrick has confirmed that the installation of the membrane was independently validated by ASL Ltd. The specification of the membrane is included as **Appendix F**.

Based on the information provided by the Contractor, the structures on-site have been suitably protected from the potential of ground gas intrusion.

6.4 AIR MONITORING

The developmental works at Stockley Park are subject to the Best Practice Guidance of London Councils and the Greater London Authority. VolkerFitzpatrick therefore, commissioned Environmental Scientifics Group Ltd (ESG) to undertake ambient air quality monitoring at Stockley Phase 3 during the bulk earthworks which took place during March and April 2016.

A monitor was placed along the south eastern and eastern site boundary between March and April 2016 which recorded a reading every 15 minutes. The Alert Limit was set at 250 ug/m^3 for PM 10. During March the PM 10 was exceeded on 22 times across 9 days and as a result the monitors were rigged to send immediate alerts to the Site team if the concentration was recorded above 250 ug/m^3 . This allowed VolkerFitzpatrick to take action to rectify the situation. In addition due to the number of instances recorded above the action limit, an extended hose system was installed across the access road to dampen down and minimise the release of dust. The number of instances the action limit was exceeded in April was 11 times over 6 days. Monitoring reports compiled by ESG are included as **Appendix G**.

6.5 POTABLE WATER SUPPLY

VolkerFitzpatrick has provided information confirming that Protect-line barrier pipe and fitting system has been installed at the Site. VolkerFitzpatrick has confirmed that the water supply pipe was installed by the Water Supplier, Affinity Water. The Specification of the barrier pipe is included in **Appendix H**.

7

CONCLUSION AND RECOMMENDATIONS

7.1 SUMMARY OF GROUND WORKS

WSP | Parsons Brinckerhoff considers the works completed by VolkerFitzpatrick have been completed as per the requirements of the Remediation Method Statement and Options Appraisal (2015) and the Site has been appropriately remediated to provide a development suitable for residential end use without posing unacceptable risk to the future Site occupants following conclusions have been reached:

- WSP | Parsons Brinckerhoff attended site on 10 No. occasions during the earthworks to view the excavated material and supervise and validate the hotspots excavations;
- Areas of known contamination were excavated according to the specification provided in the RMS, validated and a suitable cover layer comprising a capillary break layer, marker layer and clean site won topsoil placed to ensure no exposure pathway to future site users;
- Previously unidentified contamination was encountered during the ground works along the Canal in the East of the Site. Visible fragments of asbestos sheeting were picked and a capillary break layer, marker layer and capping material placed to break the exposure pathway;
- Suitable Gas protection Measures appropriate to CS2 classification have been installed within the structures associated with the Phase 1 Development; and,
- Adequate protection of potable water supply has been provided through the installation of a barrier pipe mitigating the risk of any permeation from contamination within the Made Ground.

Based on the information provided above, WSP | Parsons Brinckerhoff consider that the work completed by VolkerFitzpatrick validates the implementation of the remediation method statement associated with RPL1 to RPL4 for Phase 1 and RPL 1 and RPL3 for Phase 2 . Therefore, WSP | Parsons Brinckerhoff consider this Verification Report to satisfy Planning Condition 22 37977/APP/2016 in relation to the Phase 1 Development works at Stockley Phase 3.

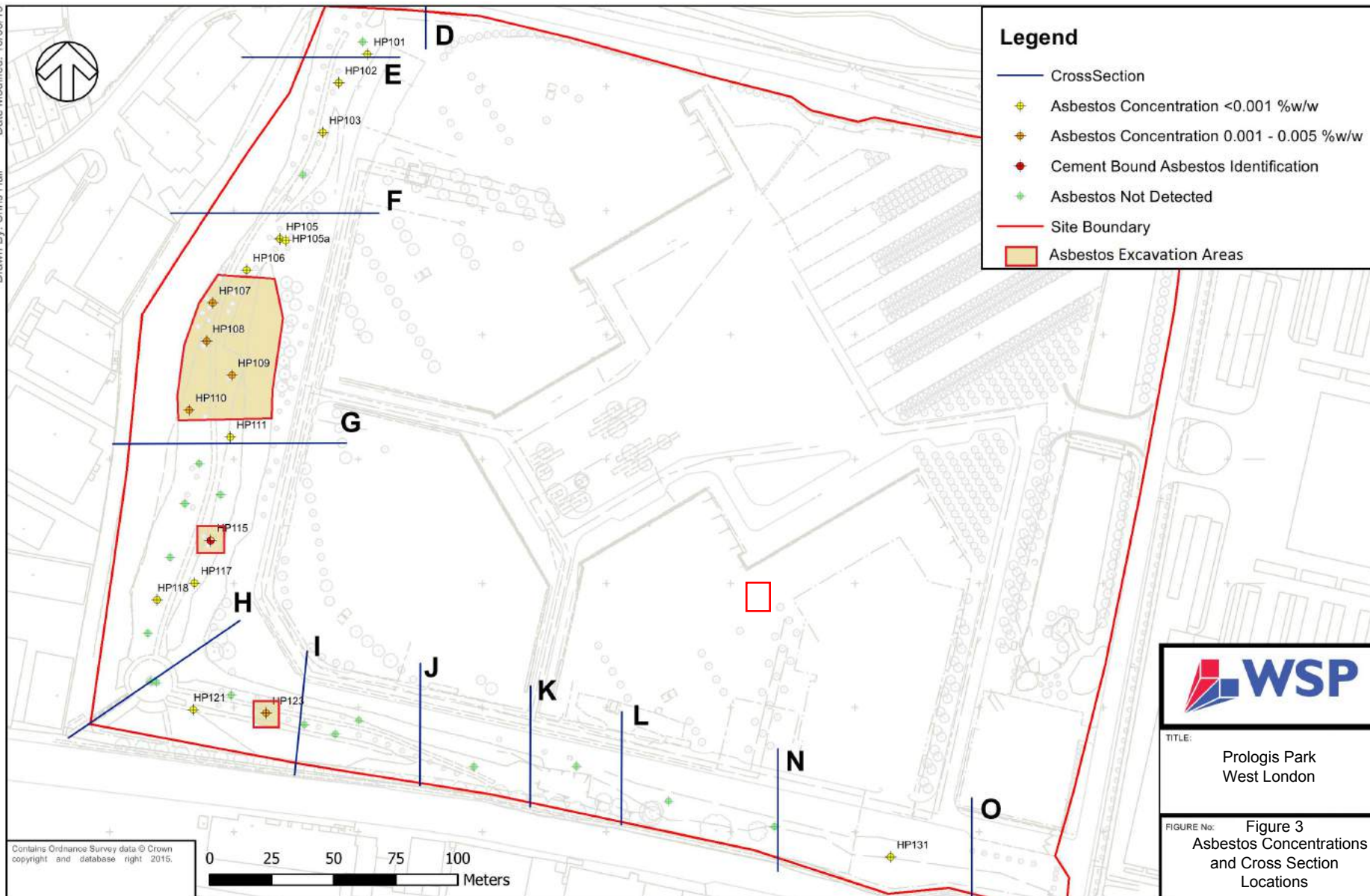
7.2 OUTSTANDING REMEDIAL ACTIONS

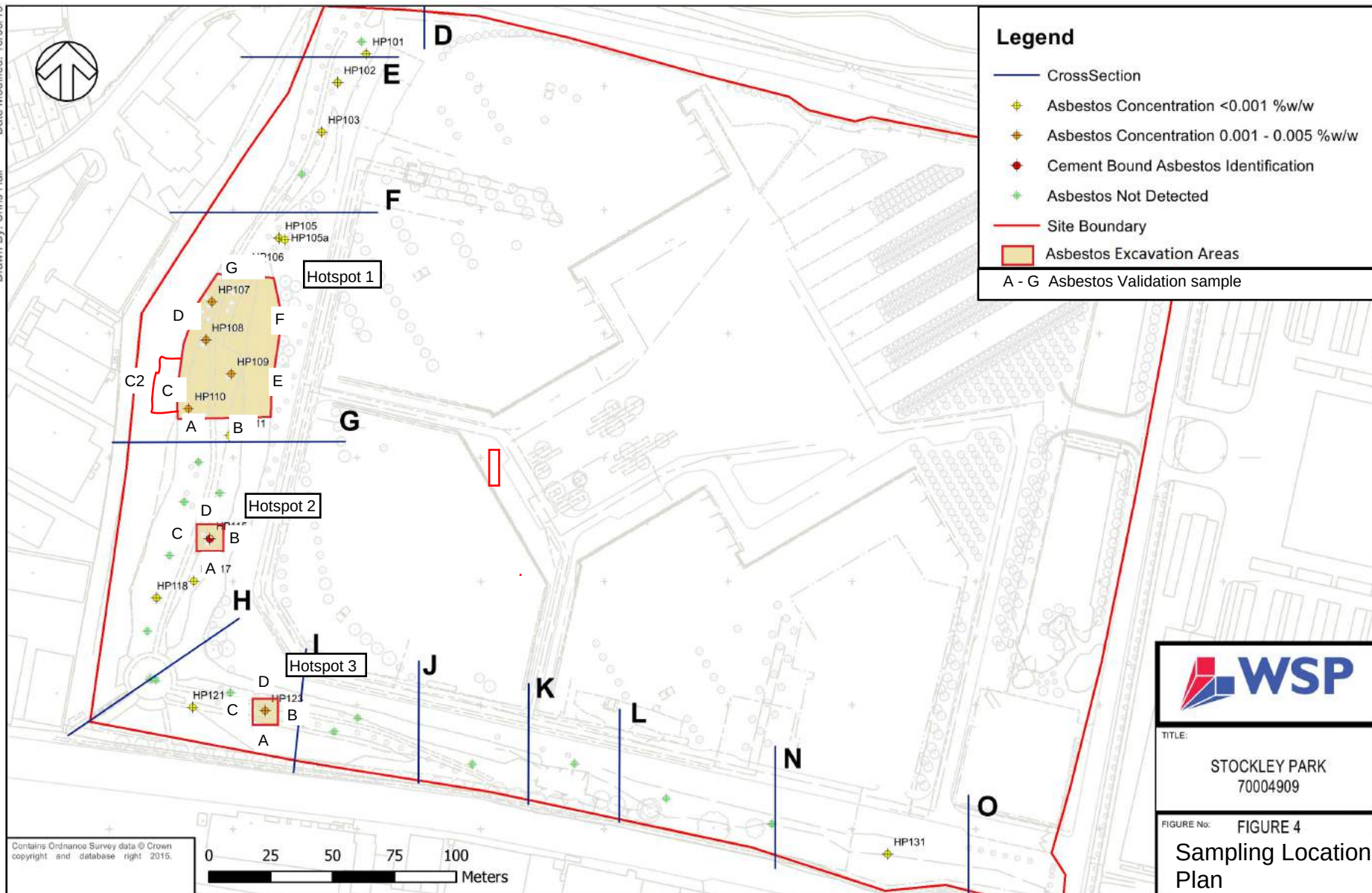
A separate validation report will be required to be completed, confirming the correct verification of RPL 2 and RPL4 associated with Phase 2 of the site development. This will ensure that the correct gas protection membrane and potable water supply pipes have been installed as per the requirements of the RMS.

Figures









Appendix A

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.
20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

- 24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
- 25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

- 26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

- 27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
- 28. The data is presented and will be compared with assessment criteria.

Appendix B



1.

2.

3.



4.



Key:

Photo 1: Hotspot 1 Excavation

Photo 2: Hotspot 1 Capillary Break Layer

Photo 3: Hotspot 1 Marker Layer

Photo 4: Marker Layer

IMPORTANT – Please Read

This drawing is for illustrative purposes only and is for use only in conjunction with associated reports relating to the project details below. WSP | Parsons Brinckerhoff accepts no liability for the mis-interpretation or use of this illustration by any other parties.



6 Devonshire Square
LONDON
EC2M 4YE

Site:
Stockley Phase 3 Validation

Appendix B

Title:
Photographic Record

Project No: 70004909	Created By: AOM	Date: December 2016
-------------------------	--------------------	------------------------

Client:
Prologis UK Ltd



1.

2.

3.



4.



Key:

Photo 1: Hotspot 2 (HP115)
Excavation

Photo 2: Hotspot 2 (HP115)
Excavation

Photo 3: Hotspot 2 (HP115)
Capillary Layer

Photo 4: Hotspot 2 (HP115)
Marker Layer

IMPORTANT – Please Read

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LONDON
EC2M 4YE

Site:
Stockley Phase 3 Validation

Appendix B

Title:
Photographic Record

Project No: 70004909	Created By: AOM	Date: December 2016
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Client:
Prologis UK Ltd



1.

2.

3.



4.



Key:

Photo 1: Hotspot 3 (HP123)
Excavation

Photo 2: Hotspot 3 (HP123)
Capillary Layer

Photo 3: Hotspot 3 (HP123)
Marker Layer

Photo 4: Hotspot 3 (HP123)
Reinstated

IMPORTANT – Please Read

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LONDON
EC2M 4YE

Site:
Stockley Phase 3 Validation

Appendix B

Title:
Photographic Record

Project No: 70004909	Created By: AOM	Date: December 2016
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Client:
Prologis UK Ltd



1.

2.

3.



4.



Key:

Photo 1 - 4: Earthworks watching Brief

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EC2M 4YE

Site:
Stockley Phase 3 Validation

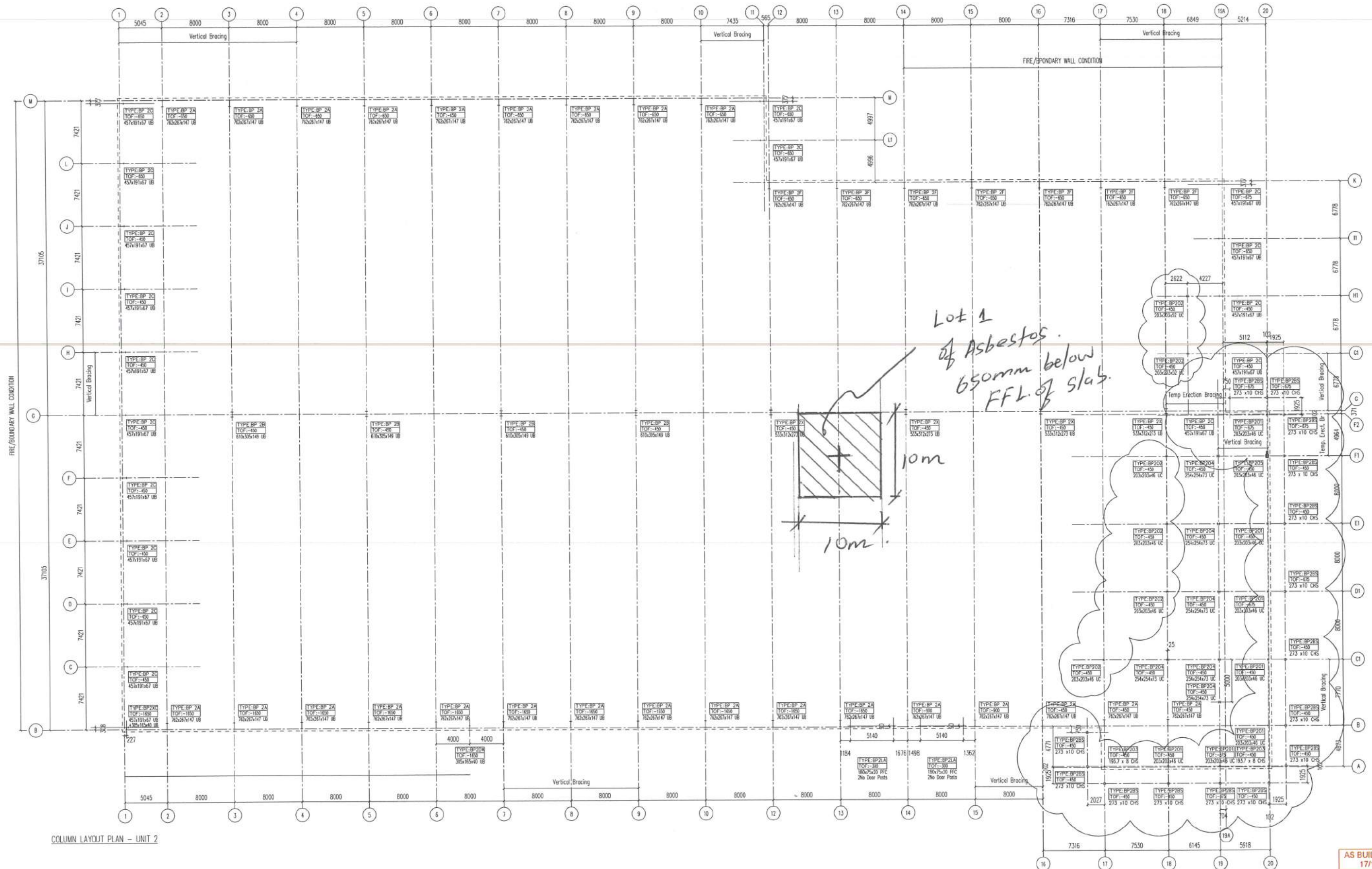
Appendix B

Title:
Photographic Record

Project No: 70004909	Created By: AOM	Date: December 2016
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Client:
Prologis UK Ltd

Appendix C



COLUMN LAYOUT PLAN - UNIT 2

AS BUILT ISSUE
17/10/16

GENERAL CONTRACTORS TO ENSURE THAT:-

1. Top Of Foundations Are Level In Accordance With The N555 Handbook (4th Edition).
2. Foundations Are Setout In Accordance With The N555 Handbook (4th Edition).
3. H.D. Bolts Are Loose In Pockets After Concrete Is Poured.
4. H.D. Bolt Threads Are Greased, Protected & Nuts Turn Freely.

H.D. Bolts & Washer Plates (Only) Supplied By Severfield (D & B) Ltd.

Design Assumptions - Grouting/Reinforcement requirements

- A. Grouting shall not be carried out under Base Plates until the structure or portion thereof is lined levelled and handed over.
- B. Piling Pre-Cast and Grouting Bases: refer to Atlas Word Method Statement for sequencing requirements to ensure stability is maintained.
- C. Before grouting commences please ensure that cone templates have been removed & the space under the base is clean & free from extraneous matter.
- D. Unless stated otherwise all H.D. bolts have been designed assuming their forces are transferred through direct bearing into the concrete. The underside of all bases & cones are to be fully grouted with high strength, free flowing non-shrink cementitious grout. (Min concrete & grout strength = 30N/mm² at 28 days).
- E. H.D. Bolt design assumes reinforced concrete foundations, (i.e. min. nominal top reinforcement steel to be provided).
- F. Temp stability calculations assume foundation concrete will have a min. cure time of 7 days prior to steel erection (min. 2/3 full strength for safe steel erection).
- G. Holding Down Bolts must never be straightened - if damaged report & remove.



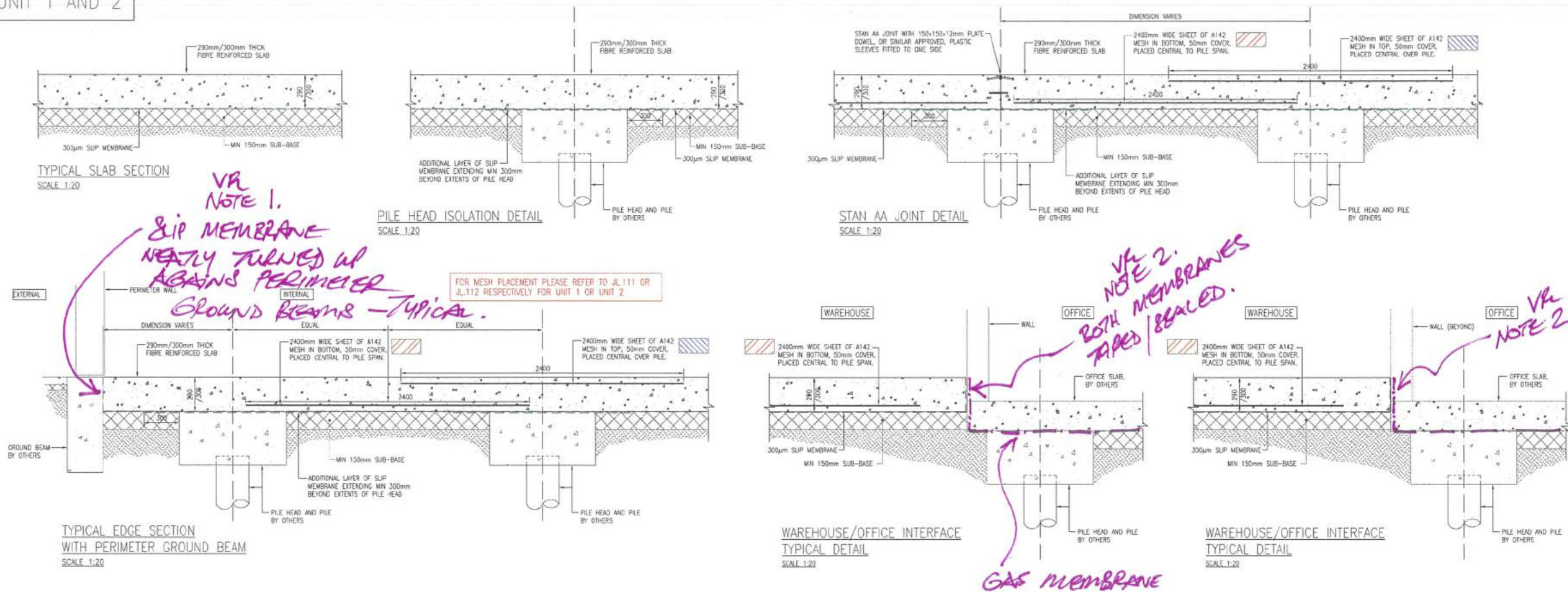
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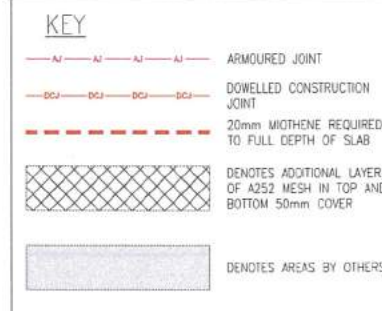
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F			
E			
D			
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B	03.05.16	S.J.M.	Base Sidel Column size changed, level near G/19A lowered.
A	27.04.16	S.J.M.	Base Sidel Columns added.

PROJECT:
Valter Fitzpatrick LtdUnit 2
Stockley ParkDRAWING TITLE:
Column Layout Plan;DRAWN
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SDBLDATE
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201REV.
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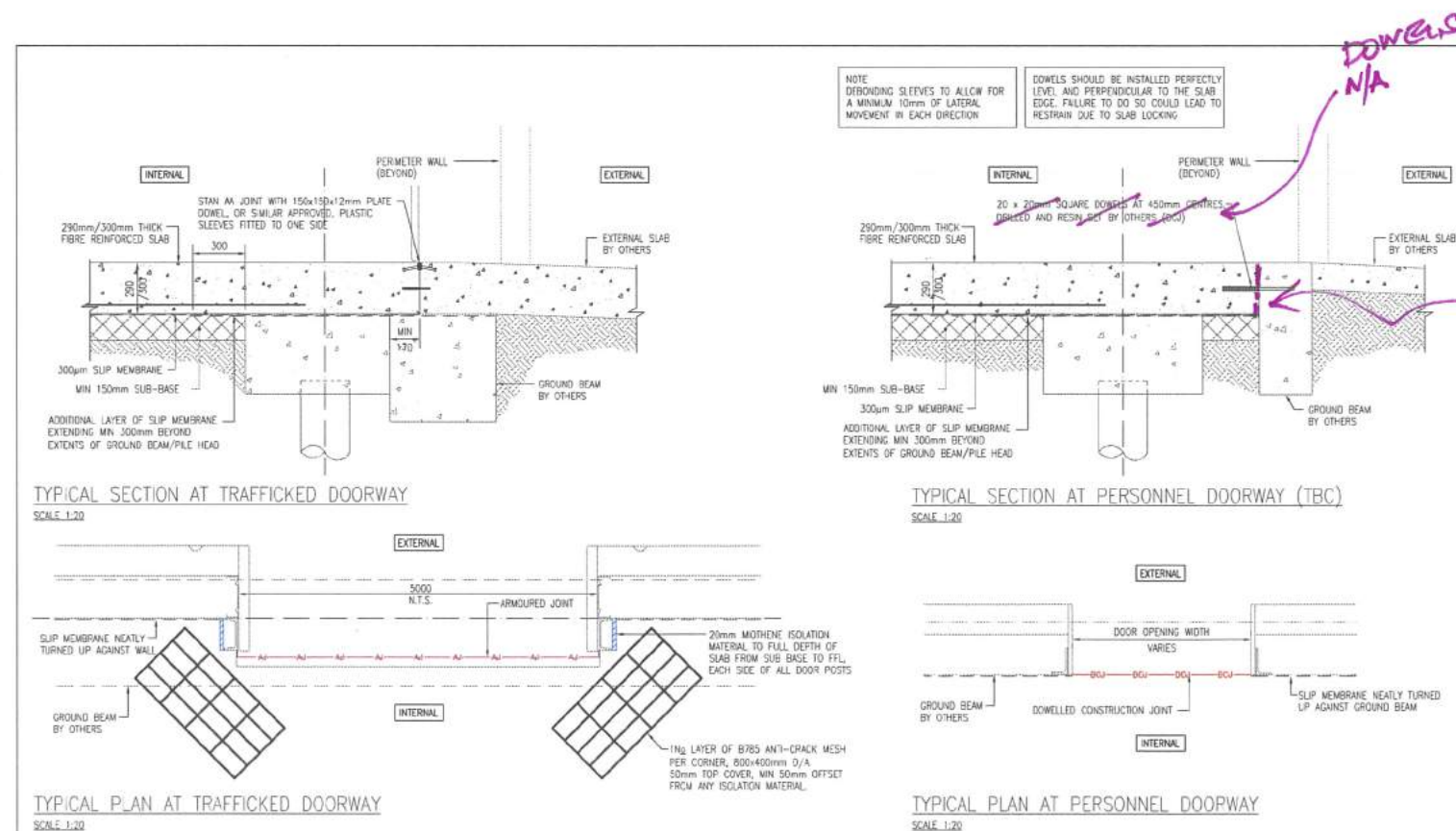
UNIT 1 AND 2



- NOTES:**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH FACE CONSULTANTS DRAWING SERIES FC.15.4928.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS.
 - ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS STATED OTHERWISE.
 - THE SUB-BASE SHALL CONSIST OF MINIMUM 150mm WELL GRADED, WELL COMPACTED MATERIAL WHICH WILL BE WELL CLOSED AT THE SURFACE. MATERIAL MUST BE NON-DEGRADABLE AND MUST NOT CONTAIN SOFT MATERIALS SUCH AS CHALK OR SANDSTONE. THE SUB-BASE SHALL BE FINISHED TO A SURFACE TOLERANCE OF $\pm 0/-10$ mm.
 - PILE HEADS AND FOUNDATIONS SHALL BE FINISHED WITH TO A SURFACE TOLERANCE OF $\pm 0/-25$ mm.
 - PRIOR TO PLACING CONCRETE, ALL ROOF AND WALL SHEETING SHALL BE COMPLETED WHERE PRACTICAL, TO PROVIDE PROTECTION FROM SUN, WIND AND RAIN. LOADING DOORS SHALL BE FIXED IN PLACE AND OPENINGS SHEETED.
 - THE SLAB IS TO BE LAID ON ONE LAYER OF 300µm (1200g) POLYTHENE, LAPPED A MINIMUM OF 150mm.
 - PILE HEADS SHALL HAVE AN ADDITIONAL LAYER OF SLIP MEMBRANE PLACED OVER THEM. THIS SHALL EXTEND A MINIMUM OF 300mm FROM ALL EDGES OF THE PILE HEAD.
 - THE MINIMUM BEARING WIDTH AT PERIMETER BEAMS AND COLUMNS PEDESTALS OR SIMILAR SHALL BE 170mm.
 - COLUMNS AND SLAB PENETRATIONS SHALL BE ISOLATED USING 20mm "MOTHENE" (OR SIMILAR APPROVED), AS PER FACE DETAIL DRAWINGS.
 - WALLS AND EXISTING SLABS SHALL BE PROTECTED FROM CONCRETE SPLASHES.
 - STEEL FIBRE REINFORCEMENT SHALL BE 45kg/m³ BEKAERT 3D 55/60 OR SIMILAR APPROVED.
 - STEEL FIBRES SHALL BE INCORPORATED INTO THE CONCRETE ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
 - A NOMINAL AMOUNT OF DRY SHAVE TOPPING WILL BE APPLIED BY MECHANICAL SPREADER TO AID IN THE SUPPRESSION OF SURFACE FIBRES. THE DOSEAGE WILL BE DETERMINED BY SITE OBSERVATIONS FROM STANFORD SITE MANAGEMENT.
 - AFTER THE FINAL POWER TROWELLING OPERATION, THE FLOOR SLAB IS TO BE SPRAYED WITH AN ACRYLIC BASED, CURING, SEALING AND HARDENING MEMBRANE, SUCH AS "SKIA PROSEAL" (OR SIMILAR APPROVED).
 - SLAB PENETRATIONS SHALL BE ISOLATED USING 20mm "MOTHENE" (OR SIMILAR APPROVED), AS PER FACE DETAIL DRAWINGS. SPECIAL CARE IS TO BE TAKEN TO ENSURE THAT THE SLIP MEMBRANE IS LAPPED AND TAPED UP THE SIDE OF THE "MOTHENE" ISOLATION.
 - PROPOSED SEALANTS MUST BE APPROVED BY FACE CONSULTANTS PRIOR TO PROCUREMENT.
 - THE TOP 20mm OF "MOTHENE" IS TO BE REMOVED AND SEALED WITH A SUITABLE SEALANT UPON COMPLETION OF THE FLOOR CASTING.
 - SPACING BETWEEN THE CENTRE LINE OF THE RACKING LEGS AND ANY SAWN OR FORMED JOINT IS TO BE A MINIMUM OF 150mm.
 - SPACING BETWEEN FIXINGS INTO THE SLAB AND ANY FORMED JOINT IS TO BE A MINIMUM 5 x HOLE DIAMETER. CARE TO BE TAKEN NOT TO OVER-TIGHTEN - MECHANICAL FIXINGS IN THE SLAB.
 - THE SLAB CAN BE USED BY LIGHT TRAFFIC 7 DAYS AFTER IT IS POURED. THE LOADS SHALL NOT EXCEED 30% OF THE DESIGN CAPACITY. THE FLOOR SHALL NOT BE LOADED TO ITS FULL DESIGN CAPACITY BEFORE 28 DAYS HAVE PASSED SINCE POURING.



PROVISIONAL



FLOOR DESIGN - UNIT 2	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN
	MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	300mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

FLOOR DESIGN - UNIT 1	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN
	MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	290mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

STANFORD

Project: UNIT 1 AND 2, PROLOGIS PARK

Location: STOCKLEY PARK WEST, HAYES

Dwg Title: TYPICAL DETAILS - SHEET 1

Scale @ A1: 1:20

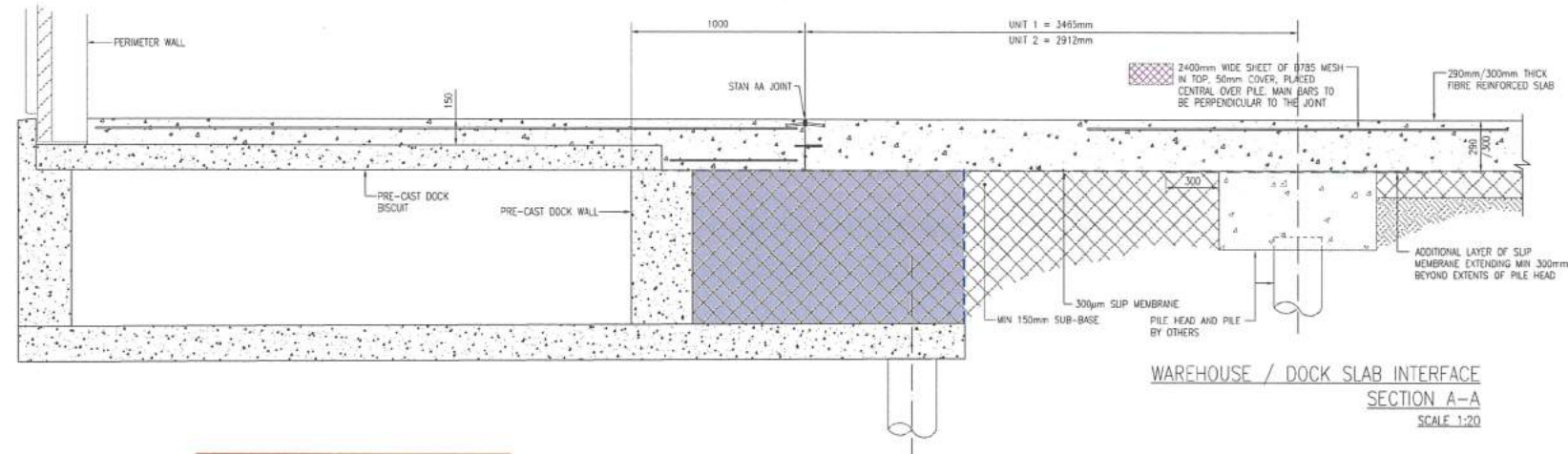
Status: PROVISIONAL

FACE CONSULTANTS LTD
Global Flooring Consultants

Drawn: MJK Date: 08.08.16 App: Date:

Dwg No: FC.15.4928.TD.201 Rev: A

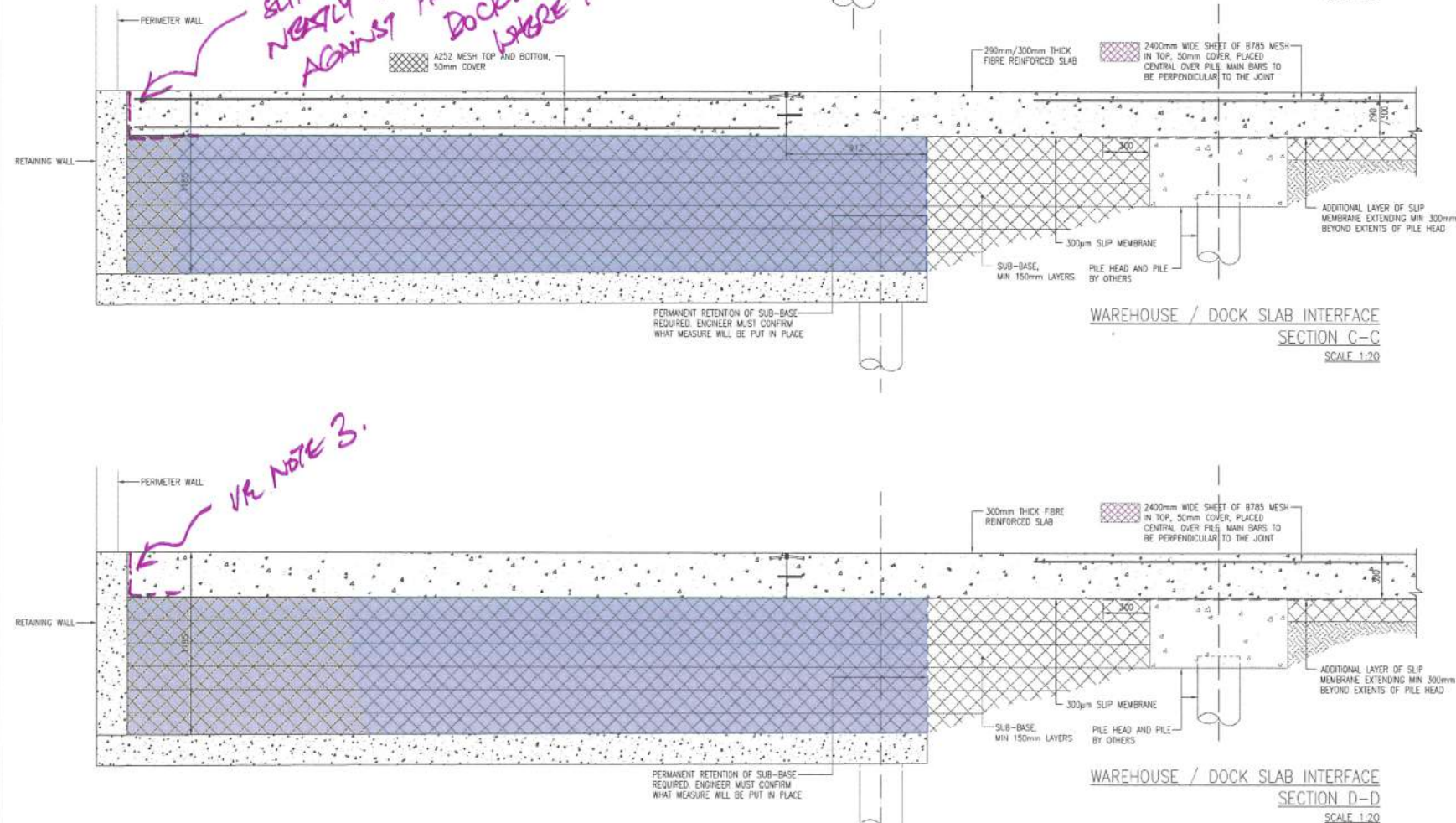
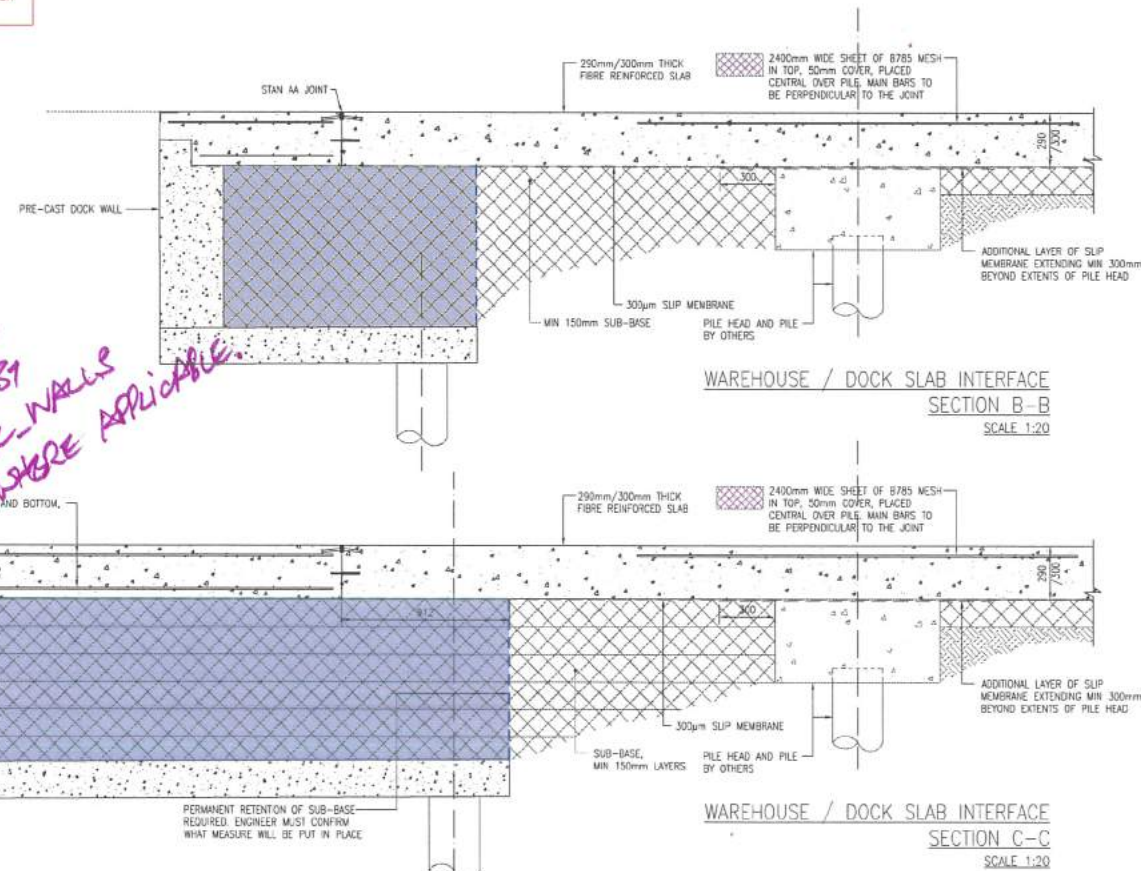
UNIT 1 AND 2



FOR MESH PLACEMENT PLEASE REFER TO JL111 OR JL112 RESPECTIVELY FOR UNIT 1 OR UNIT 2

DOCK SECTIONS TO BE CONFIRMED

VR NOTE 3.
SLIP MEMBRANE
NEARLY RETURNED
AGAINST PRECAST
DOCK WALLS
WHERE APPLICABLE.



VR NOTE 3.

WAREHOUSE / DOCK SLAB INTERFACE
SECTION D-D
SCALE 1:20

NOTES:

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- WALLS AND EXISTING SLABS SHALL BE PROTECTED FROM CONCRETE SPLASHES.
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- THE TOP 20mm OF 'MOTHENE' IS TO BE REMOVED AND SEALED WITH A 'SUITABLE SEALANT' UPON COMPLETION OF THE FLOOR CASTING.
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KEY

- ARMoured JOINT
- DOVELLED CONSTRUCTION JOINT
- 20mm MOTHENE REQUIRED TO FULL DEPTH OF SLAB
- DENOTES ADDITIONAL LAYER OF A252 MESH IN TOP AND BOTTOM 50mm COVER
- DENOTES AREAS BY OTHERS

PROVISIONAL

A	JHD	23.08.2016	Notes updated to reflect Dry Shake requirement.
Rev	Drawn	Date	Remarks/Comments

Client:

STANFORD

Project: UNIT 1 AND 2, PROLOGIS PARK

Location: STOCKLEY PARK WEST, HAYES

Dwg Title: TYPICAL DETAILS - SHEET 2

Scale @ A1:

1:20

Status: PROVISIONAL

FACE CONSULTANTS LTD
Global Flooring Consultants
Dene House, North Road
Kirkburton
Huddersfield, HD9 0RW
United Kingdom
www.face-consultants.co.uk

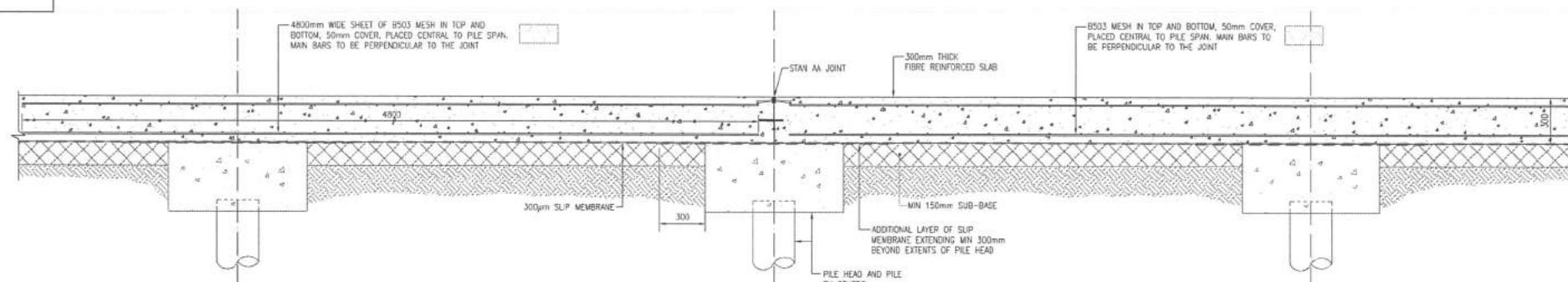
Drawn: MJK Date: 08.08.16 App: Date:

Dwg No: FC.15.4928.TD.202 Rev: A

FLOOR DESIGN - UNIT 2	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	300mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

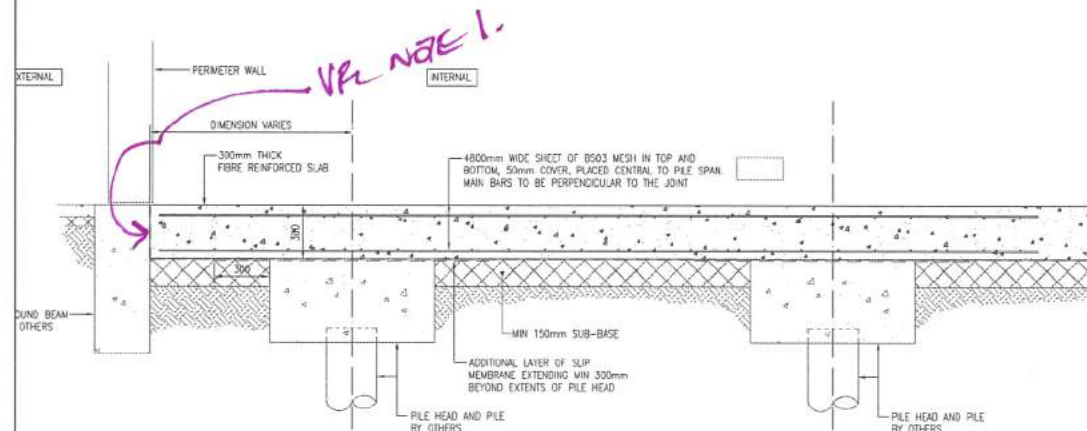
FLOOR DESIGN - UNIT 1	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	290mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

UNIT 2

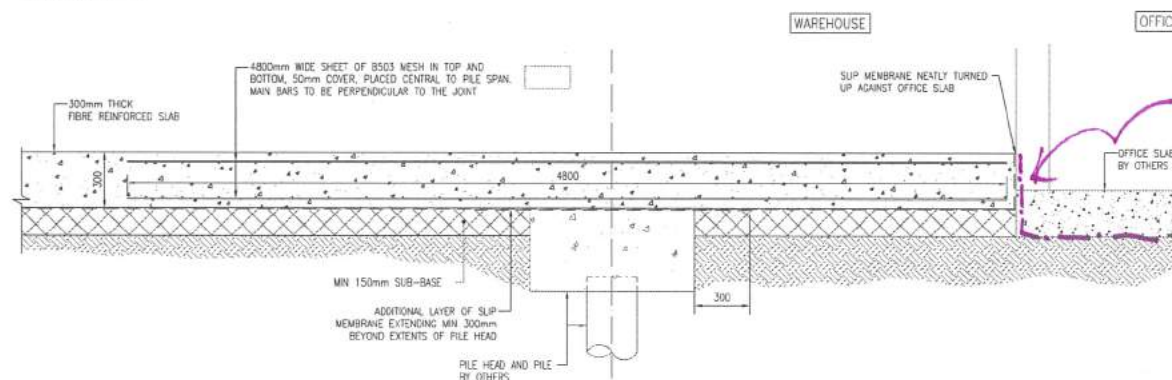


UNIT 2 - ADDITIONAL REINFORCEMENT
SECTION E-E
SCALE 1:20

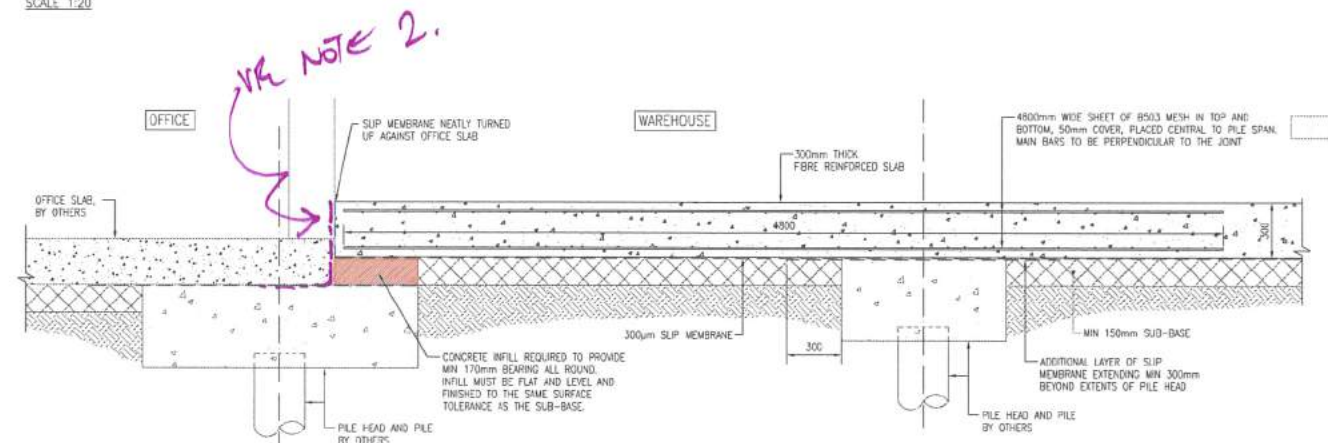
FOR MESH PLACEMENT PLEASE REFER TO JL111 OR
JL112 RESPECTIVELY FOR UNIT 1 OR UNIT 2



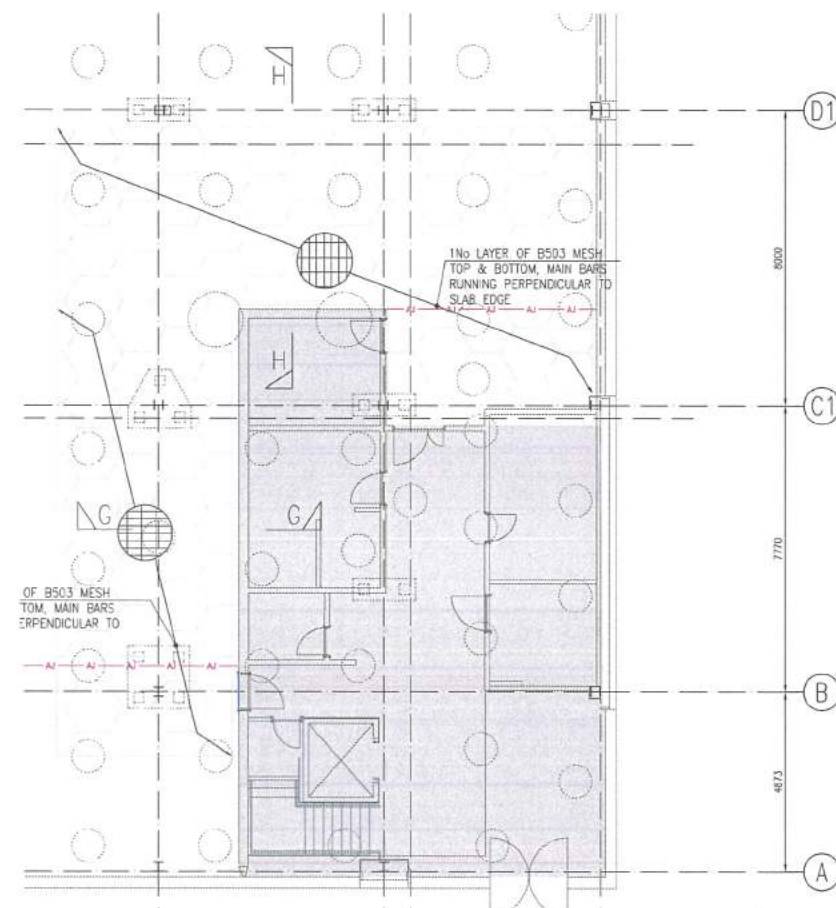
UNIT 2 - ADDITIONAL REINFORCEMENT
SECTION F-F



UNIT 2 - ADDITIONAL REINFORCEMENT
SECTION G-G
SCALE 1:20



UNIT 2 - ADDITIONAL REINFORCEMENT
SECTION H-H
SCALE 1:20



UNIT 2 - ADDITIONAL REINFORCEMENT
PLAN A
SCALE 1:100

NOTES:

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KEY

- A1 — A1 — A1 — A1 — ARMoured JOINT
- B1 — B1 — B1 — B1 — DOWELLED CONSTRUCTION JOINT
- 20mm MOTHENE REQUIRED TO FULL DEPTH OF SLAB
- DENOTES ADDITIONAL LAYER OF A252 MESH IN TOP AND BOTTOM 50mm COVER
- DENOTES AREAS BY OTHERS

PROVISIONAL

Rev	Drawn	Date	Remarks/Comments
A	JHD	23.08.2016	Notes updated to reflect Dry Shake requirement.

Client:

STANFORD

Project: UNIT 1 AND 2, PROLOGIS PARK

Location: STOCKLEY PARK WEST, HAYES

Dwg Title: TYPICAL DETAILS - SHEET 3

Scale @ A1: 1:20

Status: PROVISIONAL

FACE CONSULTANTS LTD
Global Flooring Consultants
Dene House, North Road
Kirkcubbin
Huddersfield, HD1 0RW
United Kingdom
www.face-consultants.com

Drawn: MJK Date: 08.08.16 App: Date:

Dwg No: FC.15.4928.TD.203

Rev: A

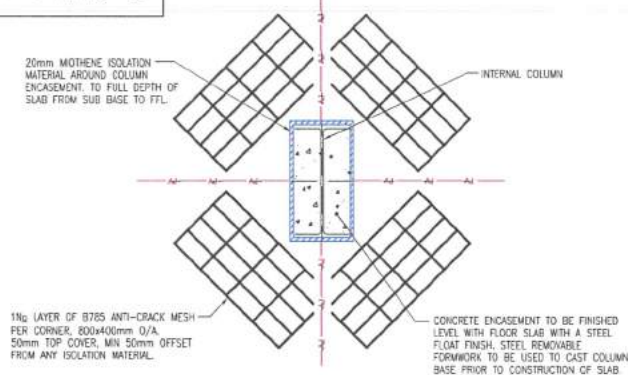
FLOOR DESIGN - UNIT 2

DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	300mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

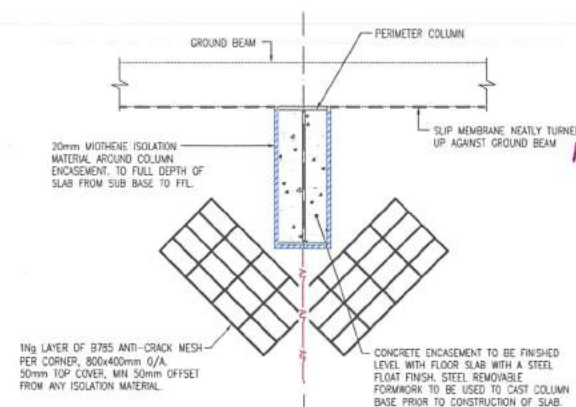
FLOOR DESIGN - UNIT 1

DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	290mm
REINFORCEMENT	BEKAERT 3D 55/60 @45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

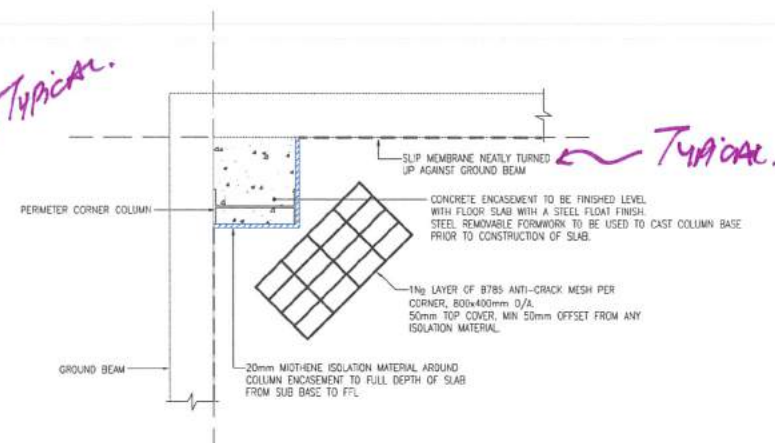
UNIT 1 AND 2



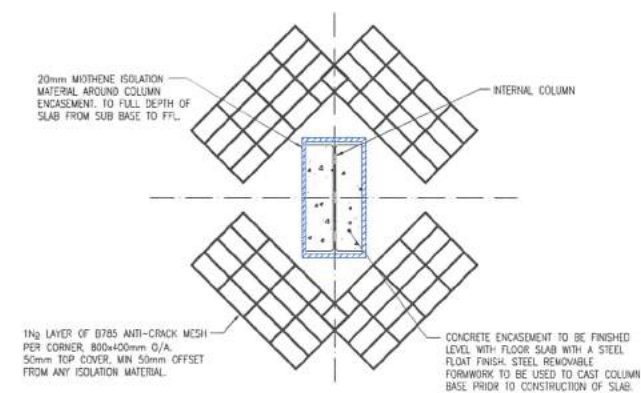
INTERNAL COLUMN ISOLATION WITH CENTRALLY LOCATED JOINTS
TYPICAL PLAN
SCALE 1:20



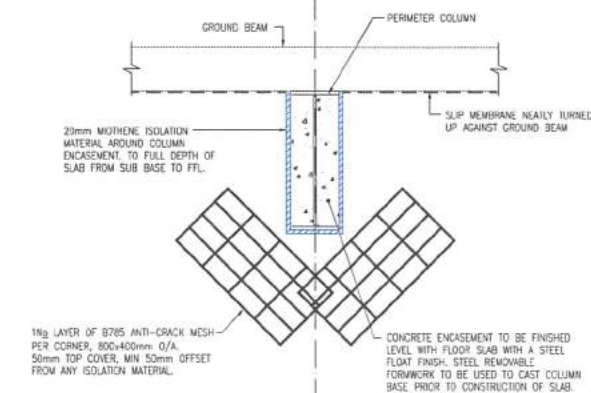
PERIMETER COLUMN ISOLATION WITH CENTRALLY LOCATED JOINT
TYPICAL PLAN
SCALE 1:20



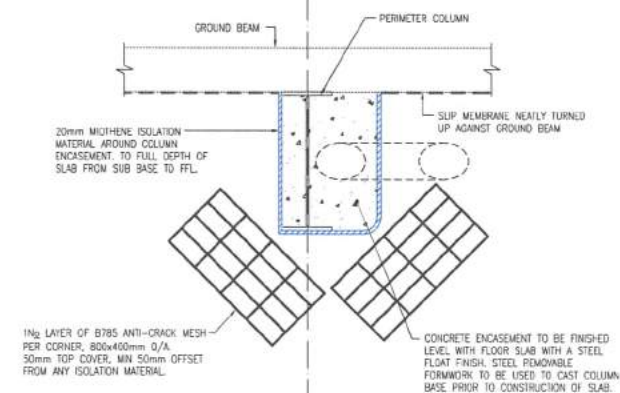
PERIMETER CORNER COLUMN ISOLATION
TYPICAL PLAN
SCALE 1:20



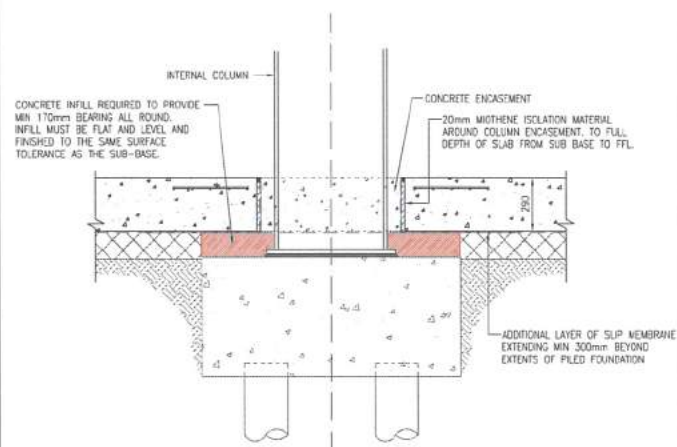
INTERNAL COLUMN ISOLATION
TYPICAL PLAN
SCALE 1:20



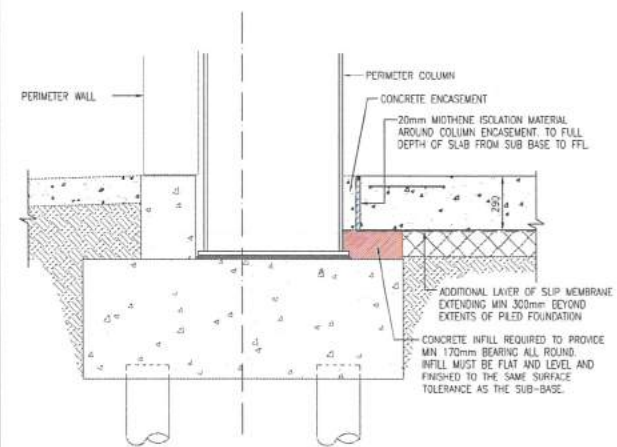
PERIMETER COLUMN ISOLATION
TYPICAL PLAN
SCALE: 1/20



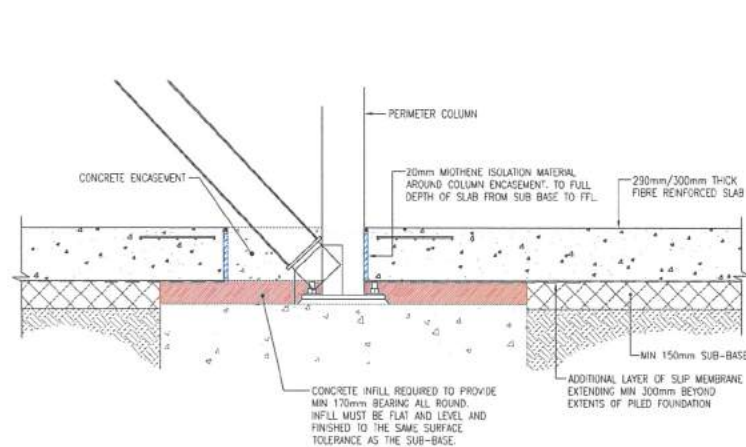
PERIMETER COLUMN BRACING ISOLATION
TYPICAL PLAN
SCALE 1:20



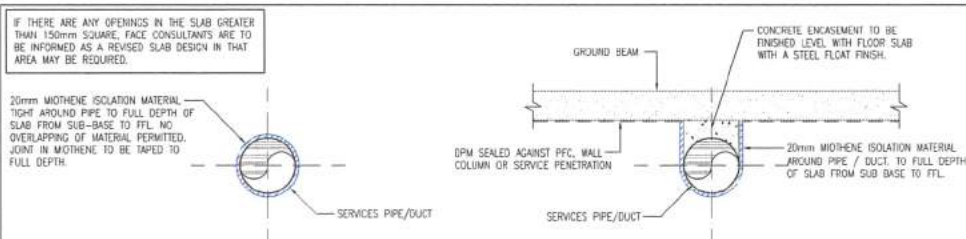
TYPICAL SECTION THROUGH INTERNAL COLUMN
SCALE 1:20



TYPICAL SECTION THROUGH PERIMETER COLUMN
SCALE 1:20



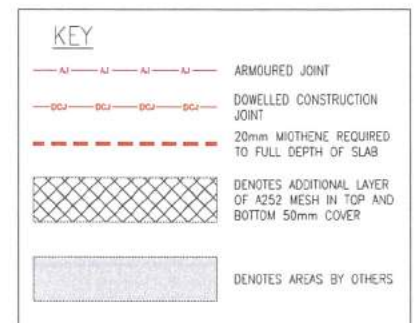
PERIMETER COLUMN BRACING
TYPICAL SECTION
SCALE 1:20



TYPICAL PLAN
PIPE / DUCT ISOLATION DETAIL
SCALE 1:20

TYPICAL PLAN
PIPE / DUCT ISOLATION DETAIL
WITHIN CLOSE PROXIMITY TO WALL
SCALE 1:20

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH FACE CONSULTANTS DRAWING SERIES FC.15.4928.
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7. THE SLAB IS TO BE LAD ON ONE LAYER OF 300µm (1200gq) POLYTHENE, LAPPED A MINIMUM OF 150mm
8. PILE HEADS SHALL HAVE AN ADDITIONAL LAYER OF SLIP MEMBRANE PLACED OVER THEM. THIS SHALL EXTEND A MINIMUM OF 300mm FROM ALL EDGES OF THE PILE HEAD
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14. A MINIMAL AMOUNT OF DRY SHAKE TAPPING WILL BE APPLIED BY MECHANICAL SPREADER TO AID IN THE SUPPRESSION OF SURFACE FIBRES. THE DOSAGE WILL BE DETERMINED BY SITE OBSERVATIONS FROM STANFORD SITE MANAGEMENT.
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PROVISIONAL

A	JHD	23.08.2016	Notes updated to reflect Dry Shake requirement.
Rev	Drawn	Date	Remarks/Comments

Client: _____

STANFORD

Project:	UNIT 1 AND 2, PROLOGIS PARK
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Location:	STOCKLEY PARK WEST, HAYES
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Dwg Title: TYPICAL DETAILS - SHEET 4

Scale @ A1: 1:20	Status: PROVISIONAL
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Global Flooring Consultants

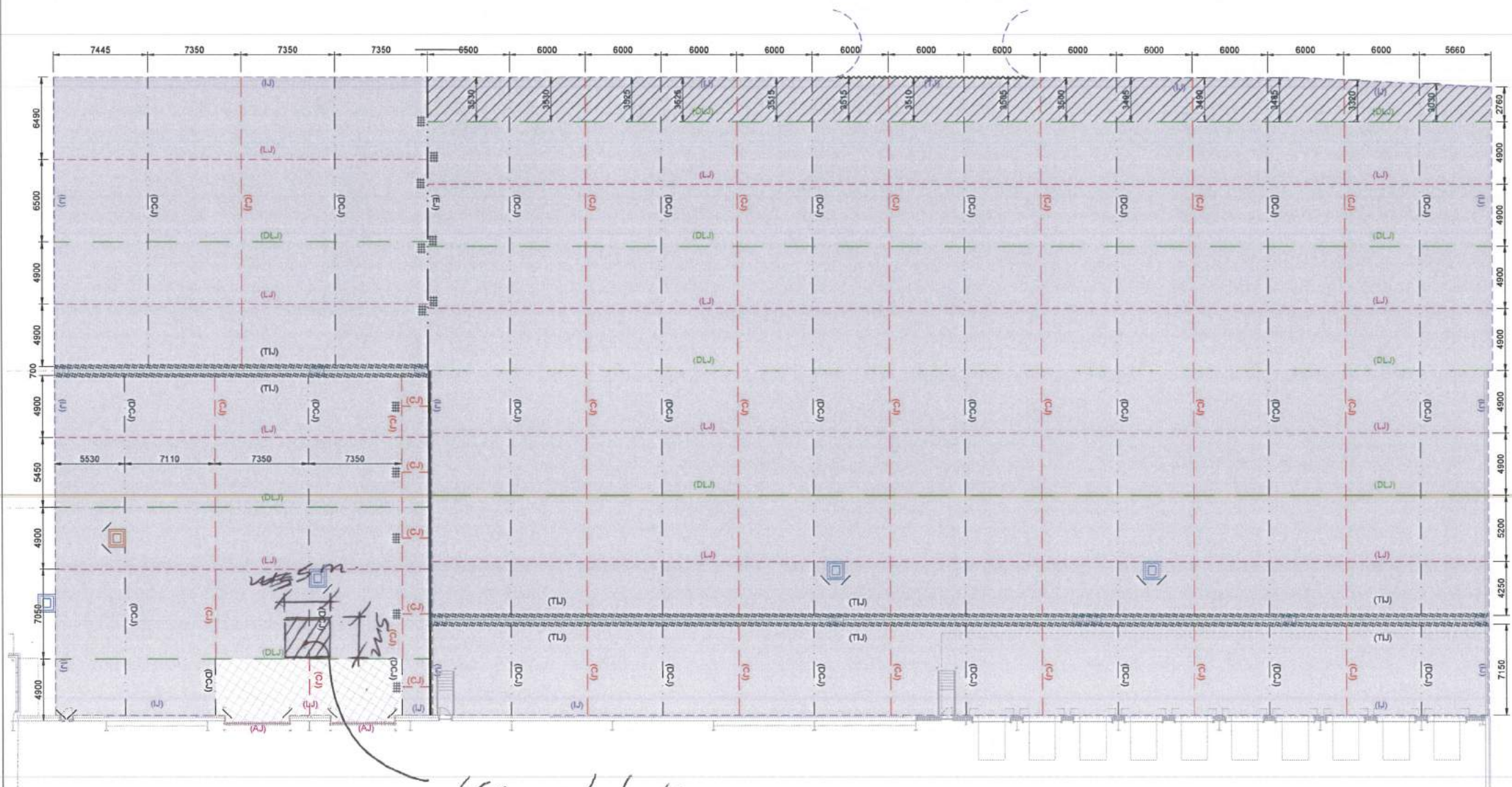
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United Kingdom
www.face-consultants.com

Drawn: MJK	Date: 08/08/18	App:	Date:
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Dwg No:	FC.15.4928.TD.204	Rev:	A
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FLOOR DESIGN – UNIT 2	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	300mm
REINFORCEMENT	BEKAERT 3D 55/60 Ø45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION

FLOOR DESIGN - UNIT 1	
DESIGN LOADS	MAXIMUM RACK LEG LOAD = 72kN MAXIMUM UDL = 50kN/m ²
SLAB THICKNESS	290mm
REINFORCEMENT	BEKAERT 3D 55/60 Ø45kg/m ³
CONCRETE STRENGTH	C32/40 (CYLINDER/CUBE)
FLOOR FLATNESS	FM2 TO TR34 4th EDITION



Key :

- (CJ) Sawn Contraction Joint
- (DCJ) Debonded Sawn Contraction Joint
- (EJ) Free Movement Expansion Joint
- (LJ) Longitudinal Joint
- (DLJ) Debonded Longitudinal Joint
- (IJ) Isolation Joint
- (TLJ) Thickened Isolation Joint
- (PIJ) Protected Isolation Joint
- (TJ) Transition Joint
- (AJ) Armoured Joint
- 2 x H12 x 1000mm (L) Anti-crack Bars (T+B) at all exposed corners
- Additional mesh to be installed to avoid sympathetic cracking
- Extent of slab c/w A252 mesh
- Extent of slab c/w A393 mesh
- SDG Sprinkler Discharge Gully (Bunded)
- Proposed Manhole
- Extent of rocker slab 300mm thick c/w 3 layers A393 mesh 1 top & 2 bottom. Refer to RPS drawing NK018094-RPS-U1-XX-DR-C-0415 for section.

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Notes

- This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
- If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.
- This drawing should be read in conjunction with all other relevant drawings, specifications and drawing:
- NK018094-0610 External Construction Layout
- NK018094-0380 Proposed Surface And Foul Water Drainage Layout
- VE Option 001
- NK018094-0311 External Manhole Cover Surround Details
- NK018094-0622 Unit 2 Hardstanding Joint Layout
- NK018094-0622 Hardstanding Joint Details
- Hardstanding is to be a minimum of 200mm thick of air entrained reinforced concrete, C32/40, in accordance with BS EN 206-1 and BS 8500 with 1 layer of A252 mesh in the top of the slab with a minimum 50mm cover. This is to be laid over 1000 gauge slip membrane and a minimum of 325mm thick Type 1 unbound mixture (to clause 903 of S.I.V.), on 3% CBR formation. Hardstanding is to be constructed in accordance with Concrete Society TR66 'External in-situ Concrete paving'.
- Mix design for concrete pavements.
All concrete is to conform to BS EN 206-1 and BS 8500-2.
Compressive strength = C32/40.
Maximum free water/cement ratio = 0.45
Minimum cement content = 340kg/m³.
Cement type = Group A (max ggbs content 35% or max pfa content 25%).
Maximum aggregate size = 20mm.
Chloride class Cl 0.40.
Minimum air content = 3.5%.
Aggregates shall be freeze/thaw resistant.
- The surface of the concrete is to be finished using a serrated float or wire brush, to provide grooves parallel to the slope of the pavement, with 100mm trowelled margins adjacent to the shutters.
- Mesh reinforcement must be adequately supported on stools during construction of hardstanding to ensure correct cover to the reinforcement. Under no circumstances will tramping on the mesh be acceptable. Cover to be minimum 50mm.
- All mesh reinforcement to be as noted on the layout and as referenced in the key.
- All dowel bars are to be smooth surfaced hot rolled mild steel with a specific characteristic strength of 250N/mm².
- Minimum lap lengths to be as follows:
H8 = 320mm
H10 = 400mm
H12 = 480mm

B	Rocker slab note updated.	BK	AG	07/07/16
A	Transverse and longitudinal joints switched as agreed with VFL 25/05/16. Level access area revised to show rocker slab.	AB	AG	27/06/16
Rev	Description	By	Ctd	Date



Sherwood House, Sherwood Avenue,
Nottingham, Nottinghamshire, NG24 1GQ
T 01636 605 700 E rpsnewark@rpsgroup.com

Client



Project Prologis, Stockley Park,
Phase 3

Title Unit 2 - Hardstanding Joint
Layout

Status Preliminary Scale 1:200 @A1 Date Created 27/01/16
Project Leader PS Drawn By IC Checked by MH

Revision	Revision	Subs
NK018094-RPS-U2-XX-DR-C-0621	B	S0

Appendix D



Jager Associates Ltd

8, WILFORD LANE
WEST BRIDGFORD
NOTTINGHAM
NG2 7QX

METHOD STATEMENT

TEL No. 0845 604 4268
FAX No. 0115 981 1180

Project: Stockley Park, Uxbridge UB11 1BF		
Client:		
Contract: Earthworks	Ref: 16/1424	Date: March 2016

METHOD STATEMENT NO. Asbestos Contaminated Material

REVISION	DATE	COMMENTS
Original	9 th March, 2016	By A C Morris

Scope:

This method statement covers the reduced level excavation of asbestos contaminated material, haulage to designated fill area, and remediation of reduced areas.

THIS DOCUMENT WILL BE REVIEWED IF/WHEN THE SCOPE OR ANY DETAILS CHANGE
--

DISTRIBUTION:

Client:
Jager Assoc:

A.Morris, File

JAGER ASSOCIATES LTD

Method Statement

Cut & Fill

1. Safety
2. Supervision and Manpower
3. Instruction and Training
4. Environmental Impacts
5. Methods of work
6. Plant and Equipment.
7. Significant Hazards and Risk Assessments.
8. COSHH.

1. SAFETY

- a) All relevant Health and Safety Rules and Codes of Practice will be adhered to at all times. The Health and Safety for Site Operations publication is in place on site to ensure this takes place.
- b) All personnel will be authorised to work on site by being entered into a Site Induction Register and the issue to each person of a site rules induction card. A full briefing of its contents will be given at the time of issue, prior to the operative commencing work on site.
- c) All persons will sign a daily register upon their arrival on site and complete the register when they depart.
- d) All plant and machinery will have relevant site worthiness Certificates and Documentation available for inspection when being brought to site.
- e) Before any excavation or digging is carried out, Jager Associates shall take all possible precautions to avoid damage to any buried services, by studying the Utility Survey drawing, CAT survey and trial holes where required. Operatives using CAT scan equipment will be trained and certified to do so. All services located will be clearly marked using spray paint.
- f) All site personnel to be equipped with safety footwear, safety helmets, high visibility vest or jacket, gloves and hearing protection. Any additional PPE deemed necessary will be available on request.
- g) A First Aid qualified operative will be on site whenever five or more operatives are undertaking works for Jager Associates.
- h) A copy of Jager Associates's Safety Policy is available for inspection.
- i) Heras fencing to be erected in line with client's instruction on Site.

2. SUPERVISION AND MANPOWER

- a) The works will be supervised by a Jager Associates Site Foreman in conjunction with WSP supervisor.
- b) Manpower will be brought to site as required.
- c) The Site will have regular visits from the Projects Manager to ensure that safe working practices are adhered to. Any issues that may arise during these operations will be attended to immediately.

Projects Manager (visiting):	Alan Morris	Mobile No. 07919 595201
Site Manager/Foreman:	Steven Rodenhurst	Mobile No. 07448 025913
WSP Supervisor:	TBA	

3. INSTRUCTION AND TRAINING

- a) We anticipate that under this contract the maximum amount of staff on site at any one time will not exceed 8 persons.
- b) All persons arriving on Site will receive a Jager Associates Site Specific Induction during which each operative will be informed of the lines of communication to Jager Associates for any accident, Incident or dangerous occurrence.

- c) In the case of plant operatives, they will have the relevant CPCS or C.I.T.B. equivalent certification for the equipment they are using, along with a copy of the plant worthiness certificate.
- d) Only trained, experienced persons shall carry out the works. As a minimum requirement the operatives implementing the works shall all have been briefed on and understood the Method Statement and Risk Assessments; and signed the Briefing Register to that effect.
A Briefing Register is kept on site to record that this is taking place.
- e) Toolbox talks will be given by Jager Associates's supervisor on a weekly basis or more frequently if conditions dictate.
- f) A Toolbox Talk will be held to ensure that all operatives understand when and how to use Spill Kits. Documented evidence of this will be maintained on site. Spill drills to be carried out and recorded.

4. ENVIRONMENTAL IMPACT ASSESSMENT

<u>Activity</u>	<u>Potential Impact</u>	<u>Preventative Action</u>
1. Use of diesel / petrol powered plant and equipment	1.1 Noise 1.2 Dust 1.3 Fuel Spillages	1.1 Site working hours to be adhered to at all times unless written agreement supersedes these. 1.2 Noise Suppressed plant to be used wherever possible. 1.3 Dust Suppression to be used wherever possible 1.4 Spill kits maintained on site at all times 1.5 Mobile plant set on drip trays whenever stationary or not in use 1.6 None mobile plant set on drip trays at all times

5. METHOD OF WORK

Date & Time of the Works

This element of the works is expected to be around 2 days.

Methodology – General

- a) Prior to commencing work on site, all personnel must sign in and receive Site Induction.
- b) Prior to commencing any work activity that may be adjacent to existing Overhead or Underground Services, or involve the excavation of Trial Holes; all personnel must receive a Method Statement and Risk Assessment briefing and sign the Briefing Register to confirm they have understood all aspects of the briefing.

Method

- a) Confirmation that all services have been identified / disconnected / decommissioned MUST be established prior to the commencement of excavation works.
- b) The locations of any existing manholes and drainage runs and other services and pipelines to be retained must also be clearly identified.
- c) All trees and vegetation to be retained or avoided due to wildlife presence or outside the designated area are to be clearly identified and identified to the operatives.
- d) The work area will also have been secured with regards to pedestrian access as this mitigates the numbers of personnel on the ground, this will alleviate the risk of accidents with personnel. The work area is to be designated a no access area with the exception of appointed site personnel
- e) A suitably qualified banksman/supervisor from WSP will be present at all times to establish and agree the extent and scope of the excavation.
- f) Setting out as necessary will be provided so that the whole of the scope is available upon commencement of the works.
- g) Operatives that are working from within 'cabs' are not required to wear any additional PPE. All other operatives associated with the works shall wear both face masks and disposable overalls and suitable footwear as required by WSP who are supervising the works.
- h) Following the identification of the access roads etc. the contaminated material will be carefully excavated and loaded into a dumper.
- i) Care will be taken not to overload the dumper – typically not more than 2/3rd full so as to avoid spillages of materials during haulage.

- j) The excavator will carefully dig out in layers and to an extent as required by the supervisor and as identified within the WSP report no. 70004909 dated 20/3/2015 – a copy of which is available on site for inspection.
- k) Care will be taken not to traffic over the contaminated materials to avoid spreading along the designated haul route.
- l) Once the excavation has been completed to the satisfaction of the WSP supervisor then further testing may be carried out to confirm the completion of the removal of the contaminated materials.
- m) Once this clearance has been provided works can re-commence on the backfill, all in accordance with section 11 of the WSP Asbestos report.
- n) The contaminated materials excavated from this excavation will be tipped within the fill area of Unit 2 and placed and compacted in accordance with the specification for the main works. This is an area that has been identified to be under the building area and not within the excavation areas for foundations and drains.
- o) As with the excavation works the operatives who remain in the cabs are exempt from additional PPE.
- p) As soon as the formation has been accepted marker geotextile will be placed from rolls to cover the formation with laps etc. with adjacent rolls as specified.
- q) Once formation has been achieved site won/imported 6F5 will be excavated/imported, loaded and placed on the formation to provide a suitable piling mat as previously identified within the main cut/fill works.
- r) Once again this will be passed by the client before the following trades move into the area.
- s) All haulage will be along designated haul routes which will be maintained as necessary.
- t) The works areas MUST be kept in a clean & tidy manner at all times.
- u) Dust control will be monitored and controlled by use of tractors and bowsers, or similar suitable damping methods.

5.1 Site Hazards

- a) All hazards shall be identified in the site induction. And will be available on site in the Site Safety File.
- b) Signs shall be posted to show dangerous and zoned areas. All signs shall be adhered to or disciplinary procedures shall be enforced.
- c) In the event of fire or emergency, the site emergency plan should be adhered to.
- d) If you come into contact with an unknown substance seek assistance.
- e) **IF IN DOUBT STOP AND SEEK ADVICE FROM A MEMBER OF THE SITE STAFF**

5.2 Permits Required

Permit to dig to be issued as required.

6. PLANT & EQUIPMENT (including, but not limited to)

D 6 dozer
Bunded diesel bowser & spill kit
Excavators
Dumpers
Rollers / compactors

CERTIFICATION & TESTING

All Machine Operators to produce current licences and 12 monthly inspection sheets on arrival.

JAGER ASSOCIATES LTD

CLIENT:

CONTRACT: *Stockley Park, Uxbridge*

METHOD STATEMENT TITLE/REF: *Asbestos Contaminated Material*

RISK ASSESSMENT TITLE/REF:

- Mobile plant
- Reversing vehicles
- Underground services
- Dust
- Asbestos

COSHH ASSESSMENT TITLE/REF: CA01 – Diesel
CA02 - Petrol

The undersigned have read and understood the above Method Statement and/or Risk Assessment

[illegible]

RISK ASSESSMENT

JAGER Assoc.Ltd

Hazard Or Work Activity Assessed :-				Ref. No.		RA16/1424/08		
HANDLING ASBESTOS								
Site Location:		Stockley Park, Uxbridge						
Likelihood / Probability: (L) 1 – No or very slim possibility 2 – Unlikely 3 – Likely 4 – Very Likely 5 – Almost Certain		Severity / Consequence: (S) 1 – No injury or illness 2 – First Aid injury or illness 3 – 3-Day injury or illness (person off work more than 3 days on light duties) 4 – Major injury or illness 5 – Fatality or disabling injury or illness			Risk Rating (RR) = L x S 15 to 25 Requires high priority action, work should be stopped until controls put into place 6 to 12 Requires 'so far as reasonably practicable' action 1 to 5 Requires no or low priority action			
SIGNIFICANT HAZARDS		Before Controls			After Controls			WHO MAYBE HARMED
		L	S	RR	L	S	RR	
Asbestos Dust inhalation		3	5	15	1	5	5	Employees ☒
Carrying fibres on clothes		5	4	20	1	4	4	
								Contractors ☒
								Official Visitors ☒
								General Public ☐
MEASURES TO CONTROL SIGNIFICANT RISK								
- Dust masks to be worn at all times when working with or handling asbestos materials. - All sources and locations of asbestos on site to be highlighted and known before work commences. - Disposable coveralls to be worn at all time when working with asbestos. - Gloves to be worn at all times. - If dust is being generated from the asbestos materials, the work are must be damped down using sprayed water. - All asbestos "pieces" to be double bagged and sealed before disposal. Large sections or full sheets to be placed directly into the asbestos skip or trailer.								
INFORMATION / INSTRUCTION / TRAINING								
Competency of operatives to be determined by previous knowledge and experience.								
PERSONAL PROTECTIVE EQUIPMENT REQUIRED FOR THIS RISK					MANUAL HANDLING ASSESSMENT/ SPECIFIC PPE OR EQUIPMENT NEEDED			
Head Protection ☒ Safety Footwear ☒ Eye Protection ☒ Hearing Protection (as required) ☒ Dust masks ☒ Safety Harness ☐ Hand Protection ☒ <i>Remember PPE is a last resort not a first option</i>					Disposable coveralls to be worn at all times when removing asbestos materials. Coveralls are not to be reused once worn. FFP3 Dust Masks to be worn.			
Assessment completed by:		Alan Morris			Date :		9/03/16	

Appendix E

		Boron (H2O Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Zinc (MS)	Cyanide(Tot) (AR)	*Asbestos Screen	Chromium vic	*Asbestos ID & Quant	Benzene	Toluene	Ethyl Benzene	Xylenes	m/p Xylenes	o Xylene	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo[a]anthracene	Chrysene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[1,2,3-cd]pyrene	
Analyte:	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Imported fill Criteria		190,000	640	230	72,000	2,300	3,600	1,800	13,000	660,000	60			35								200	84,000	85,000	64,000	22,000	520,000	23,000	54,000	89	14	100	140	14	60	
No > Criteria		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample ID	Sample Date	Date Sampled																																		
CL/160961	23928665	17/03/2016	0.9	13.2	0.32	23.9	116	95.1	0.26	206	<0.5	115.5	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	0.08	<0.08	0.9	0.34	1.46	1.31	0.74	0.73	1.04	0.47	0.86	0.61
CL/160961	23928666	17/03/2016	1.5	12.5	0.63	29.7	47.2	138.2	0.42	37.6	<0.5	114.3	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	<0.08	<0.08	0.31	0.11	1	0.9	0.51	0.5	0.79	0.32	0.63	0.53
CL/160961	23928667	17/03/2016	2.1	10.9	0.51	29.2	34.2	69.9	0.44	24.1	<0.5	97.1	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.14	0.12	0.08	0.08	0.11	<0.08	0.08	<0.08
CL/160962	23928668	17/03/2016	2	11.7	0.76	34.4	43.7	70.6	0.42	28.5	0.6	116.7	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	0.11	0.08	1.33	0.38	2.35	1.96	1.06	1.03	1.5	0.63	1.24	0.99
CL/160962	23928669	17/03/2016	1.8	10.8	0.53	32.7	36	68.2	0.52	25.9	<0.5	104.8	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	0.1	<0.08	1.17	0.36	2.14	1.74	0.96	0.94	1.28	0.53	1.03	0.8
CL/160962	23928670	17/03/2016	1.3	13.7	0.47	33.4	34	90.2	0.3	28.1	0.6	105.1	<0.5	AM	<0.1	NADIS	<10	<10	<10	<30	<20	<10	<0.08	<0.08	<0.08	<0.08	0.23	0.09	0.71	0.61	0.35	0.36	0.48	0.2	0.4	0.29
CL/160962	23928951	17/03/2016	4.4	13.6	0.24	44.2	27.4	36.6	0.11	38.6	0.9	87.1	<0.5	NAIIS	<0.1		<10	<10	<10	<30	<20	<10	<0.08	<0.08	<0.08	<0.08	0.1	<0.08	0.18	0.16	0.09	<0.08		0.12	<0.08	<0.08

Sample ID	Sample Description	Date Sampled	Analyte:	Units:	Imported fill Criteria	No > Criteria	Dibenzo[a,h]anthracene	Benzo[g,h,i]perylene	USEPA16 PAHs	Benzene	Toluene	Ethyl benzene	Xylenes	C5 - C7	>C7 - C8	C5 - C6	>C6 - C8	C5 - C10	Aliphatics >C8 - C10	Aromatics >C8 - C10	Aliphatics >C10 - C12	Aromatics >C10 - C12	Aliphatics >C12 - C16	Aromatics >C12 - C16	Aliphatics >C16 - C35	Aromatics >C16 - C35	Aliphatics >C35 - C44	Aromatics >C35 - C44	Aliphatics >C44 - C48	Aromatics >C44 - C48					
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
							0	650	0	28	59,000	17,000	6,200	28,000	59,000	3,400	8,300	0	2,100	3,700	10,000	17,000	61,100	36,000	160,000	28,000	0	28,000	0	0	0	0	0	0	0
CL/160961	23928665	17/03/2016	0.12	0.55	<9.45	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4	<4	<4	<4	<4	<4	<4	<4	<4	6.15	32.6	<4	<5.62	45.4	9.6	35.2	61.2				
CL/160961	23928666	17/03/2016	0.09	0.44	<6.45	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4	<4	<4	<4	<4	<4	<4	<4	<4		59.2	4.78	<5.62	46.4	<5.62	61.4	62.4				
CL/160961	23928667	17/03/2016	<0.08	<0.08	<1.41	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4		76.6	5.37	<5.73	51.8	<5.62	79.9	64.5			
CL/160962	23928668	17/03/2016	0.19	0.8	<13.81	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4		62	6.06	<5.73	43.3	<5.62	64.3	55.6			
CL/160962	23928669	17/03/2016	0.16	0.7	<12.15	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4	<4.08	<4		62.4	5.03	<5.73	44.6	<5.62	64.7	56.9			
CL/160962	23928670	17/03/2016	<0.08	0.26	<4.38	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4		23	5.89	<5.62	30.1	<5.62	24.8	39.8			
CL/160962	23928951	17/03/2016	<0.08	<0.08	<1.53	<0.010	<0.010	<0.010	<0.020	<0.01	<0.01	<0.2	<0.2	<0.2	<4.02	<4	<4.02	<4	<4.02	<4	<4.02	<4	<4.02	<4		99	<4	<5.65	<8.76	<5.62	103	<20			



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Analytical Report Number : 16-13189

Replaces Analytical Report Number : 16-13189, issue no. 2

Project / Site name:	Prologis Park, West London	Samples received on:	14/03/2016
Your job number:		Samples instructed on:	14/03/2016
Your order number:		Analysis completed by:	30/03/2016
Report Issue Number:	3	Report issued on:	30/03/2016
Samples Analysed:	4 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 16-13189

Project / Site name: Prologis Park, West London

Lab Sample Number				548356	548357	548358	548359	
Sample Reference				HP123(A)	HP123(B)	HP123(C)	HP123(D)	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Asbestos in Soil Screen / Identification Name				Type	N/A	ISO 17025	-	Chrysotile
Asbestos in Soil				Type	N/A	ISO 17025	Not-detected	Detected
Asbestos Quantification (Stage 2)				%	0.001	ISO 17025	-	< 0.001
Asbestos Quantification				%	0.001	ISO 17025	-	< 0.001



Analytical Report Number: 16-13189
Project / Site name: Prologis Park, West London
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

"The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
548357	HP123(B)		129	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation



Analytical Report Number : 16-13189

Project / Site name: Prologis Park, West London

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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Analytical Report Number : 16-13835

Replaces Analytical Report Number : 16-13835, issue no. 1

Project / Site name:	Prologis Park	Samples received on:	21/03/2016
Your job number:		Samples instructed on:	22/03/2016
Your order number:		Analysis completed by:	11/04/2016
Report Issue Number:	2	Report issued on:	11/04/2016
Samples Analysed:	11 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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Analytical Report Number: 16-13835

Project / Site name: Prologis Park

Lab Sample Number				552488	552489	552490	552491	552492
Sample Reference				Area 1	Area 1	Area 1	Area 1	Area 1
Sample Number				A	B	C	D	E
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2016	18/03/2016	18/03/2016	18/03/2016	18/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Chrysotile & Amosite	Chrysotile	Chrysotile	Chrysotile & Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	0.004	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	0.004	< 0.001	< 0.001



Analytical Report Number: 16-13835

Project / Site name: Prologis Park

Lab Sample Number				552493	552494	552495	552496	552497
Sample Reference				Area 1	Area 1	HP115	HP115	HP115
Sample Number				F	G	A	B	C
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2016	18/03/2016	18/03/2016	18/03/2016	18/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	Chrysotile	Chrysotile	Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001



Analytical Report Number: 16-13835

Project / Site name: Prologis Park

Lab Sample Number				552498				
Sample Reference				HP115				
Sample Number				D				
Depth (m)				None Supplied				
Date Sampled				18/03/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Amosite				
Asbestos in Soil	Type	N/A	ISO 17025	Detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001				
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001				



Analytical Report Number: **16-13835**
Project / Site name: **Prologis Park**
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

"The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
552488	Area 1		132	Loose Fibres	Chrysotile	< 0.001	< 0.001
552489	Area 1		151	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001
552490	Area 1		137	Loose Fibres & Bitumen	Chrysotile	0.004	0.004
552491	Area 1		141	Loose Fibres	Chrysotile	< 0.001	< 0.001
552492	Area 1		138	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001
552493	Area 1		129	Insulation Board/Tile	Chrysotile	< 0.001	< 0.001
552495	HP115		131	Loose Fibres	Chrysotile	< 0.001	< 0.001
552496	HP115		142	Loose Fibres	Chrysotile	< 0.001	< 0.001
552497	HP115		161	Loose Fibres	Amosite	< 0.001	< 0.001
552498	HP115		128	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation



Analytical Report Number : 16-13835

Project / Site name: Prologis Park

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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Analytical Report Number : 16-16026

Replaces Analytical Report Number : 16-16026, issue no. 1

Project / Site name:	Prologis Park West London	Samples received on:	25/04/2016
Your job number:		Samples instructed on:	25/04/2016
Your order number:		Analysis completed by:	04/05/2016
Report Issue Number:	2	Report issued on:	04/05/2016
Samples Analysed:	1 soil sample		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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Analytical Report Number: 16-16026

Project / Site name: Prologis Park West London

Lab Sample Number				564708				
Sample Reference				AREA 1C(2)				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				20/04/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Amosite				
Asbestos in Soil	Type	N/A	ISO 17025	Detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001				
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001				



Analytical Report Number: 16-16026
Project / Site name: Prologis Park West London
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

"The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
564708	AREA 1C(2)		128	Loose Fibres	Chrysotile & Amosite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation



Analytical Report Number : 16-16026

Project / Site name: Prologis Park West London

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Our Ref: EFS/162290 (Ver. 3)

Your Ref: UXB0326681

April 28, 2016



Environmental Chemistry

ESG

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Facsimile: 01283 554422

Deon Kellerman
Volker Fitzpatrick Limited
Hertford Road
Hoddesdon
Herts
Luton

For the attention of Deon Kellerman

Dear Deon Kellerman

Sample Analysis - Prologis Stockley Phase 3

Samples from the above site have been analysed in accordance with the schedule supplied.

The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 02/05/16 when they will be discarded. Please call 01283 554649 for an extension of this date.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

A handwritten signature in dark ink, appearing to read 'P A Williams', followed by a long horizontal flourish.

P Williams

Project Co-ordinator

01283 554649

TEST REPORT



Report No. EFS/162290 (Ver. 3)

Volker Fitzpatrick Limited
Hertford Road
Hoddesdon
Herts
Luton

Site: Prologis Stockley Phase 3

The 7 samples described in this report were registered for analysis by ESG on 21-Mar-2016. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 28-Apr-2016

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of PAH (MS-SIM) (80) Results (Pages 4 to 10)
Table of GRO Results (Page 11)
Table of TPH (Si) banding (UK-CWG) (Page 12)
GC-FID Chromatograms (Pages 13 to 26)
Subcontracted Analysis Reports (Pages 27 to 28)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Table of Asbestos Screening Results (Page 29)
Analytical and Deviating Sample Overview (Page 30)
Table of Additional Report Notes (Page 31)
Table of Method Descriptions (Page 32)
Table of Report Notes (Page 33)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns


Managing Director
Multi-Sector Services

Date of Issue: 28-Apr-2016

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

ESG accepts no responsibility for any sampling not carried out by our personnel.

Polycyclic Aromatic Hydrocarbons

GC/MS (SIM)

Customer and Site Details: Volker Fitzpatrick Limited: Prologis Stockley Phase 3
Sample Details: REQ ANAL ERROR **Job Number:** S16_2290
LIMS ID Number: CL1609617 **Date Booked in:** 21-Mar-16
QC Batch Number: 160353 **Date Extracted:** 25-Mar-16
Quantitation File: Initial Calibration **Date Analysed:** 30-Mar-16
Directory: 916MS17.PAH\ **Matrix:** Soil
Dilution: 1.0 **Ext Method:** Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	4.55	0.08	95
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	5.79	0.90	100
Anthracene	120-12-7	5.84	0.34	95
Fluoranthene	206-44-0	7.14	1.46	94
Pyrene	129-00-0	7.43	1.31	93
Benzo[a]anthracene	56-55-3	9.12	0.74	95
Chrysene	218-01-9	9.17	0.73	96
Benzo[b]fluoranthene	205-99-2	10.65	1.04	93
Benzo[k]fluoranthene	207-08-9	10.69	0.47	93
Benzo[a]pyrene	50-32-8	11.08	0.86	95
Indeno[1,2,3-cd]pyrene	193-39-5	12.46	0.61	97
Dibenzo[a,h]anthracene	53-70-3*	12.49	0.12	77
Benzo[g,h,i]perylene	191-24-2	12.77	0.55	90
Total (USEPA16) PAHs	-	-	< 9.45	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	123
Acenaphthene-d10	148
Phenanthrene-d10	118
Chrysene-d12	122
Perylene-d12	130

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	84
Terphenyl-d14	78

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928666	Job Number:	S16_2290
LIMS ID Number:	CL1609618	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	5.79	0.31	98
Anthracene	120-12-7	5.84	0.11	96
Fluoranthene	206-44-0	7.14	1.00	94
Pyrene	129-00-0	7.43	0.90	94
Benzo[a]anthracene	56-55-3	9.12	0.51	93
Chrysene	218-01-9	9.17	0.50	95
Benzo[b]fluoranthene	205-99-2	10.65	0.79	92
Benzo[k]fluoranthene	207-08-9	10.69	0.32	92
Benzo[a]pyrene	50-32-8	11.08	0.63	95
Indeno[1,2,3-cd]pyrene	193-39-5	12.46	0.53	65
Dibenzo[a,h]anthracene	53-70-3*	12.49	0.09	71
Benzo[g,h,i]perylene	191-24-2	12.77	0.44	91
Total (USEPA16) PAHs	-	-	< 6.45	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	116
Acenaphthene-d10	140
Phenanthrene-d10	111
Chrysene-d12	117
Perylene-d12	123

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	84

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928667	Job Number:	S16_2290
LIMS ID Number:	CL1609619	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	-	< 0.08	-
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.14	0.14	94
Pyrene	129-00-0	7.43	0.12	91
Benzo[a]anthracene	56-55-3	9.12	0.08	95
Chrysene	218-01-9	9.17	0.08	97
Benzo[b]fluoranthene	205-99-2	10.66	0.11	71
Benzo[k]fluoranthene	207-08-9	-	< 0.08	-
Benzo[a]pyrene	50-32-8	11.09	0.08	82
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.08	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 1.41	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	115
Acenaphthene-d10	137
Phenanthrene-d10	110
Chrysene-d12	110
Perylene-d12	115

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	89
Terphenyl-d14	81

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928668	Job Number:	S16_2290
LIMS ID Number:	CL1609620	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	4.55	0.11	96
Fluorene	86-73-7*	4.93	0.08	97
Phenanthrene	85-01-8	5.79	1.33	99
Anthracene	120-12-7	5.84	0.38	89
Fluoranthene	206-44-0	7.14	2.35	94
Pyrene	129-00-0	7.43	1.96	93
Benzo[a]anthracene	56-55-3	9.12	1.06	95
Chrysene	218-01-9	9.17	1.03	97
Benzo[b]fluoranthene	205-99-2	10.66	1.50	83
Benzo[k]fluoranthene	207-08-9	10.69	0.63	83
Benzo[a]pyrene	50-32-8	11.08	1.24	96
Indeno[1,2,3-cd]pyrene	193-39-5	12.46	0.99	97
Dibenzo[a,h]anthracene	53-70-3*	12.49	0.19	92
Benzo[g,h,i]perylene	191-24-2	12.77	0.80	91
Total (USEPA16) PAHs	-	-	< 13.81	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	120
Acenaphthene-d10	142
Phenanthrene-d10	114
Chrysene-d12	121
Perylene-d12	130

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	88
Terphenyl-d14	81

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928669	Job Number:	S16_2290
LIMS ID Number:	CL1609621	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	4.55	0.10	96
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	5.79	1.17	98
Anthracene	120-12-7	5.84	0.36	95
Fluoranthene	206-44-0	7.14	2.14	93
Pyrene	129-00-0	7.43	1.74	94
Benzo[a]anthracene	56-55-3	9.12	0.96	94
Chrysene	218-01-9	9.17	0.94	95
Benzo[b]fluoranthene	205-99-2	10.66	1.28	92
Benzo[k]fluoranthene	207-08-9	10.69	0.53	92
Benzo[a]pyrene	50-32-8	11.08	1.03	96
Indeno[1,2,3-cd]pyrene	193-39-5	12.46	0.80	98
Dibenzo[a,h]anthracene	53-70-3*	12.49	0.16	80
Benzo[g,h,i]perylene	191-24-2	12.77	0.70	91
Total (USEPA16) PAHs	-	-	< 12.15	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	119
Acenaphthene-d10	144
Phenanthrene-d10	116
Chrysene-d12	121
Perylene-d12	132

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	85
Terphenyl-d14	78

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928670	Job Number:	s16_2290
LIMS ID Number:	CL1609622	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	5.79	0.23	97
Anthracene	120-12-7	5.84	0.09	96
Fluoranthene	206-44-0	7.14	0.71	92
Pyrene	129-00-0	7.43	0.61	93
Benzo[a]anthracene	56-55-3	9.12	0.35	93
Chrysene	218-01-9	9.17	0.36	97
Benzo[b]fluoranthene	205-99-2	10.66	0.48	93
Benzo[k]fluoranthene	207-08-9	10.69	0.20	93
Benzo[a]pyrene	50-32-8	11.08	0.40	95
Indeno[1,2,3-cd]pyrene	193-39-5	12.46	0.29	96
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	12.77	0.26	79
Total (USEPA16) PAHs	-	-	< 4.38	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	121
Acenaphthene-d10	145
Phenanthrene-d10	116
Chrysene-d12	118
Perylene-d12	127

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	87
Terphenyl-d14	79

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons GC/MS (SIM)

Customer and Site Details:	Volker Fitzpatrick Limited: Prologis Stockley Phase 3		
Sample Details:	23928951	Job Number:	S16_2290
LIMS ID Number:	CL1609623	Date Booked in:	21-Mar-16
QC Batch Number:	160353	Date Extracted:	25-Mar-16
Quantitation File:	Initial Calibration	Date Analysed:	30-Mar-16
Directory:	916MS17.PAH\	Matrix:	Soil
Dilution:	1.0	Ext Method:	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8*	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7*	-	< 0.08	-
Phenanthrene	85-01-8	5.79	0.10	99
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.15	0.18	91
Pyrene	129-00-0	7.44	0.16	92
Benzo[a]anthracene	56-55-3	9.12	0.09	99
Chrysene	218-01-9	-	< 0.08	-
Benzo[b]fluoranthene	205-99-2	10.67	0.12	79
Benzo[k]fluoranthene	207-08-9	-	< 0.08	-
Benzo[a]pyrene	50-32-8	-	< 0.08	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.08	-
Dibenzo[a,h]anthracene	53-70-3*	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 1.53	-

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	113
Acenaphthene-d10	137
Phenanthrene-d10	110
Chrysene-d12	111
Perylene-d12	115

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	89
Terphenyl-d14	82

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Gasoline Range Organics

Customer and Site Details: Volker Fitzpatrick Limited : Prologis Stockley Phase 3

Job Number: S16 2290

Directory: E:\TES\DATA\2016\0324HSA GC9\032416 2016-03-24 15-01-59\117B1701.D

Method: HEADSPACE GC/FID

Matrix: Soil

Date Booked in: 21-Mar-16

Date extracted: 24-Mar-16

Date Analysed: 24-Mar-16, 19:53:

Units: mg/kg

* Sample data with an asterisk are not UKAS accredited.

[illegible]

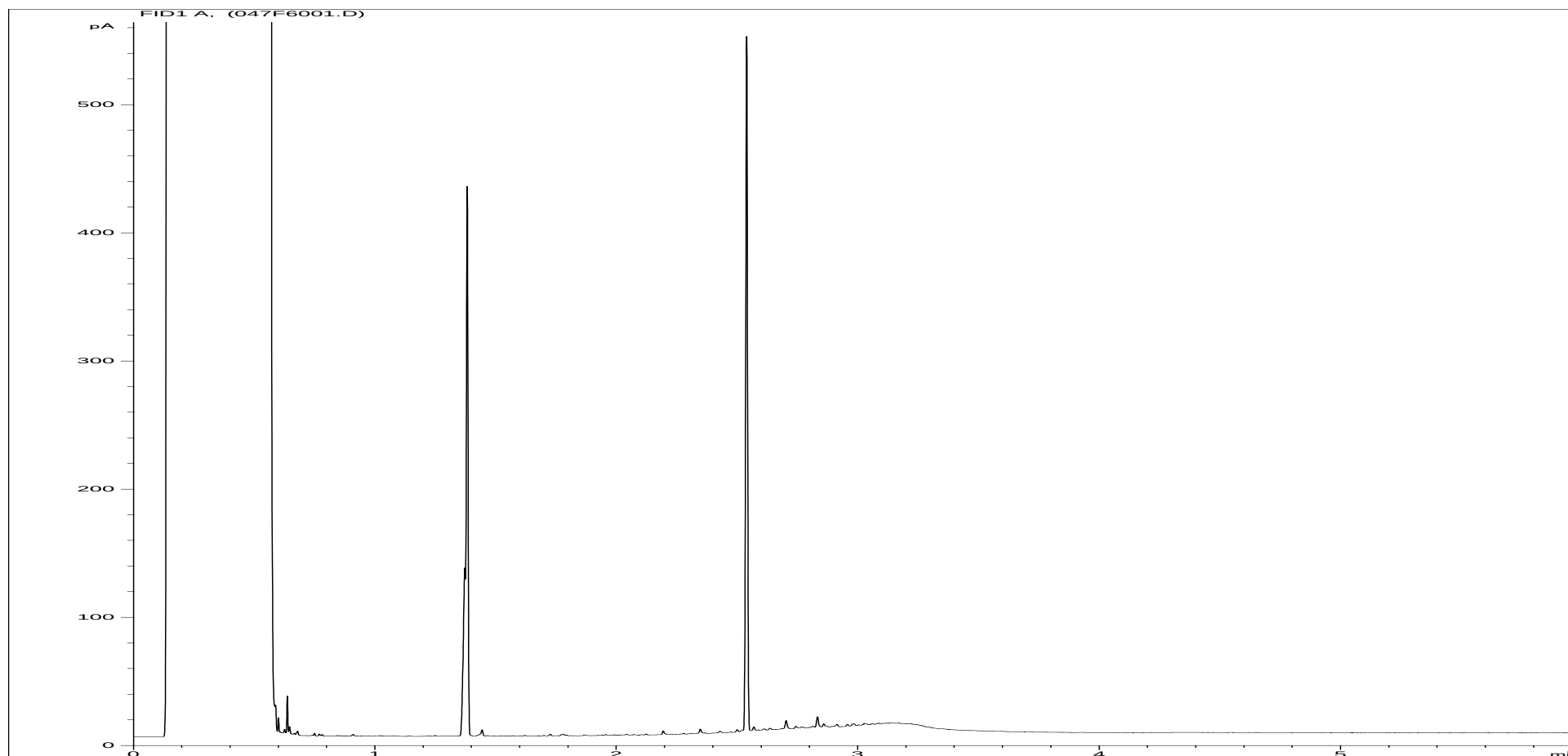
ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details:	Volker Fitzpatrick Limited : Prologis Stockley Phase 3		
Job Number:	S16_2290	Separation:	Silica gel
QC Batch Number:	160415	Eluents:	Hexane, DCM
Directory:	D:\TESIDATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\095B5701.D		
Method:	Ultra Sonic		

Matrix: Soil
Date Booked in: 21-Mar-16
Date Extracted: 11-Apr-16
Date Analysed: 11-Apr-16, 22:40:57

[illegible]

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID: CL1609617ALI

Multiplier: 16

Dilution: 1

Acquisition Method: 5UL_RUNF.M

Acquisition Date/Time: 11-Apr-16, 23:20:33

Datafile: D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\047F6001.D

Job Number: S16_2290

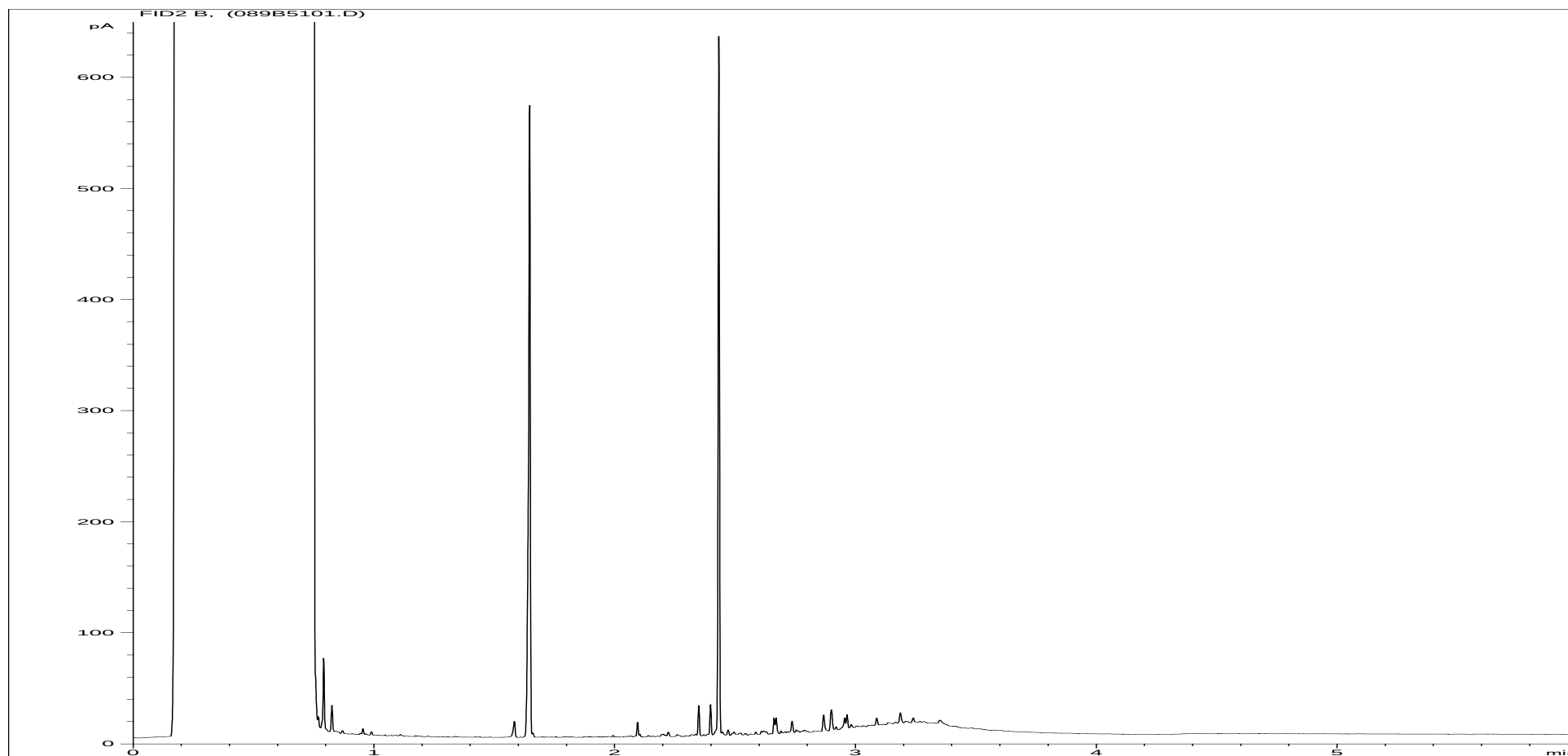
Client: Volker Fitzpatrick Limited

Site: Prologis Stockley Phase 3

Client Sample Ref: 23928665

Where individual results are flagged see report notes for status.

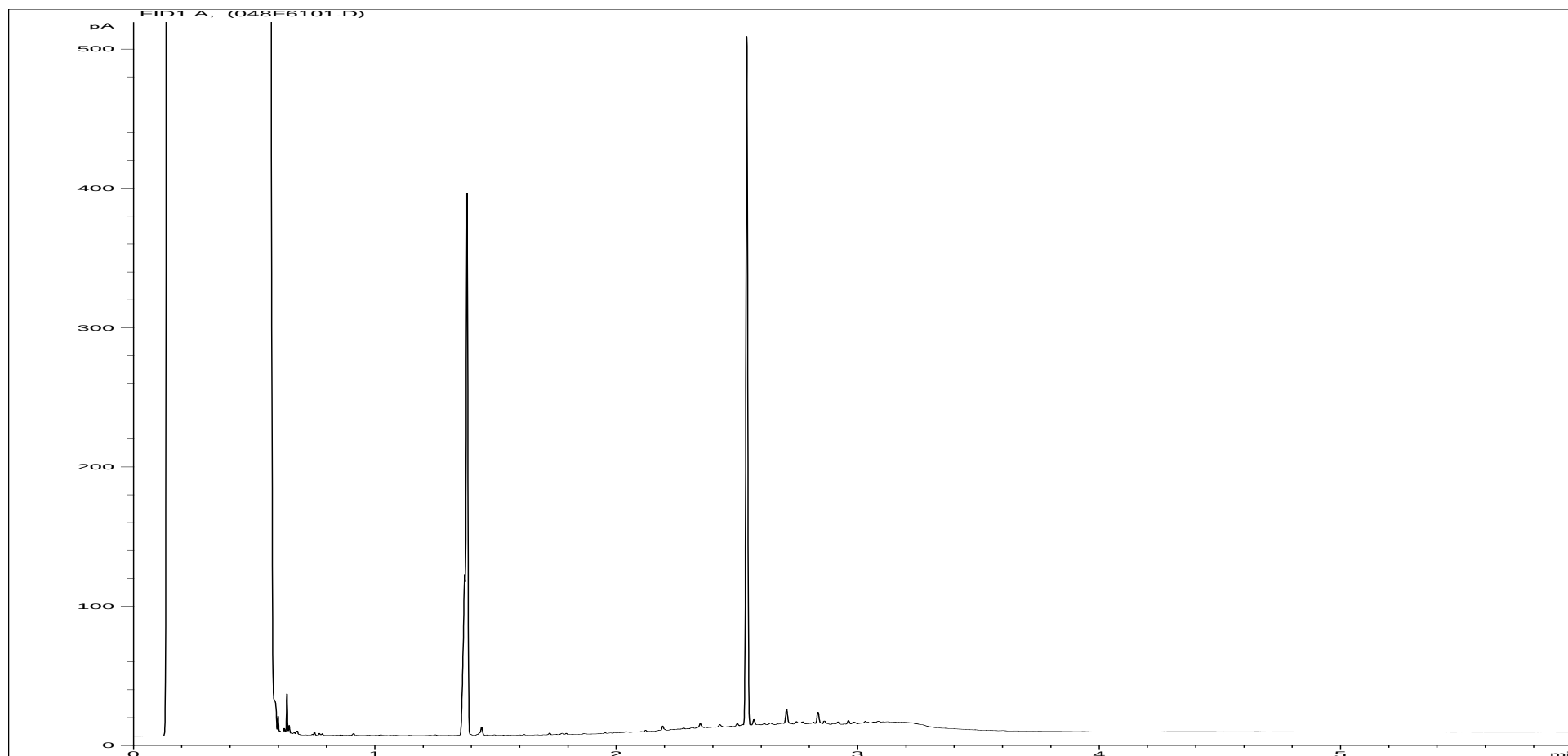
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609617ARO	Job Number:	S16_2290
Multiplier:	12	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928665
Acquisition Date/Time:	11-Apr-16, 21:20:28		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\089B5101.D		

Where individual results are flagged see report notes for status.

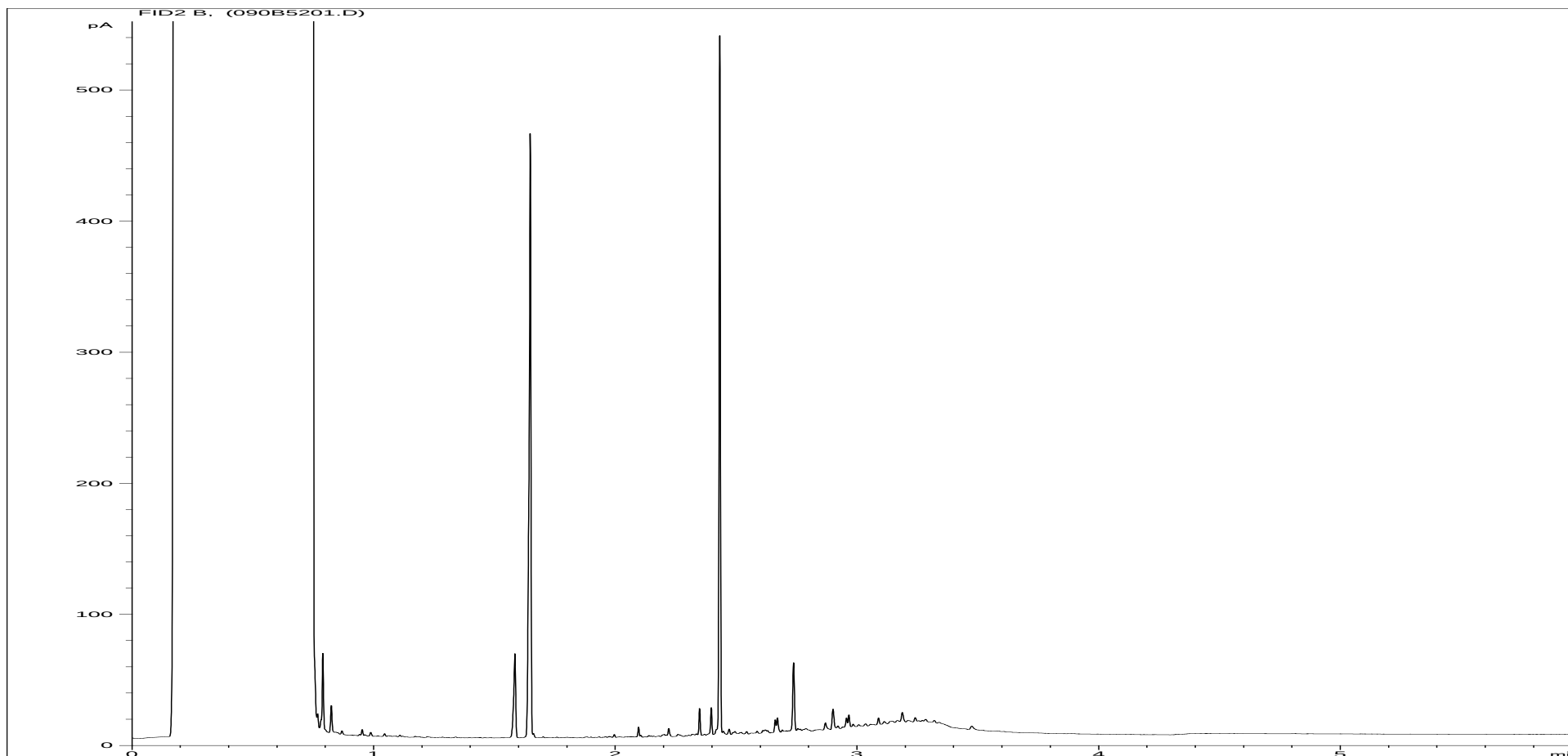
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609618ALI	Job Number:	S16_2290
Multiplier:	15.76	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928666
Acquisition Date/Time:	11-Apr-16, 23:34:02		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\048F6101.D		

Where individual results are flagged see report notes for status.

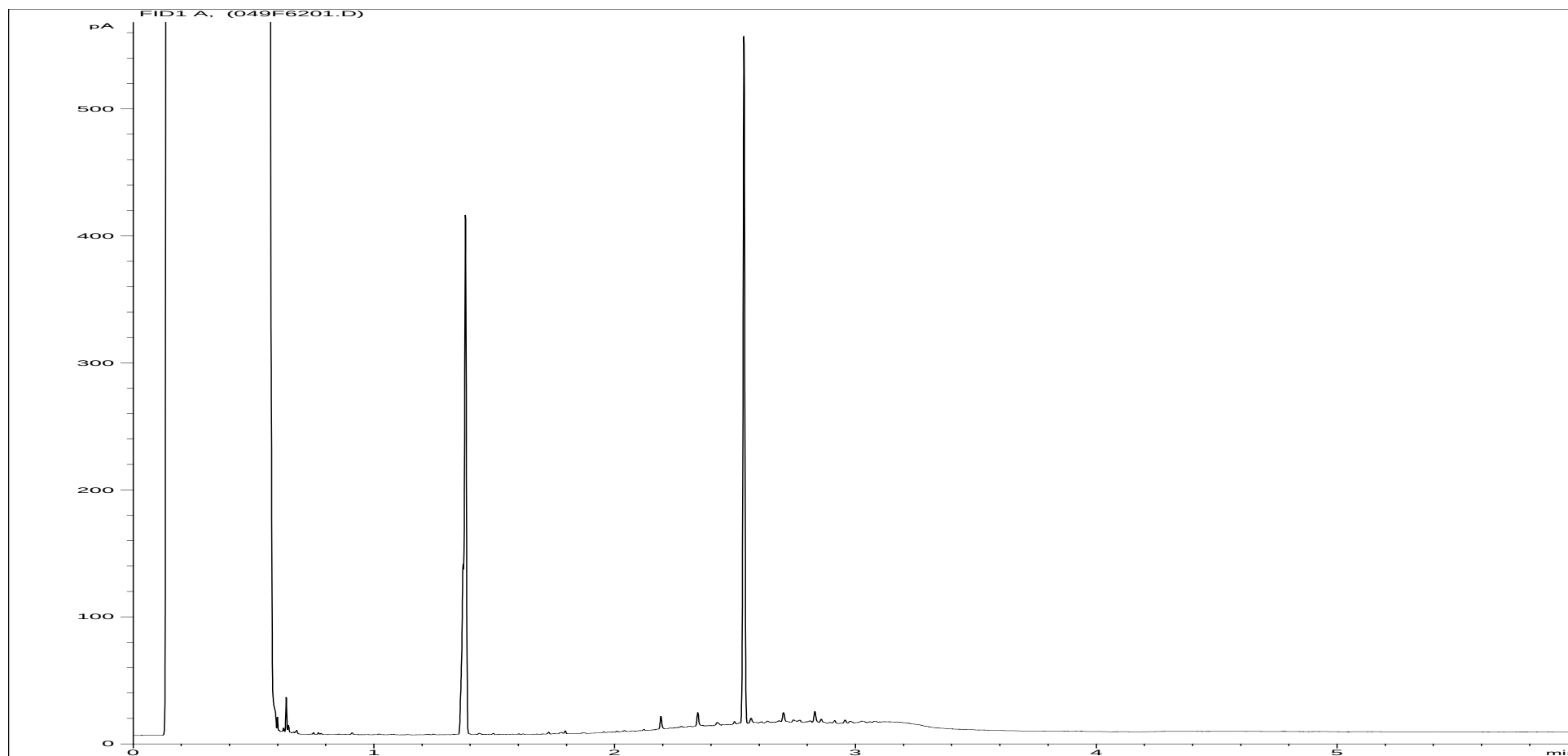
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609618ARO	Job Number:	S16_2290
Multiplier:	11.52	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928666
Acquisition Date/Time:	11-Apr-16, 21:33:55		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\090B5201.D		

Where individual results are flagged see report notes for status.

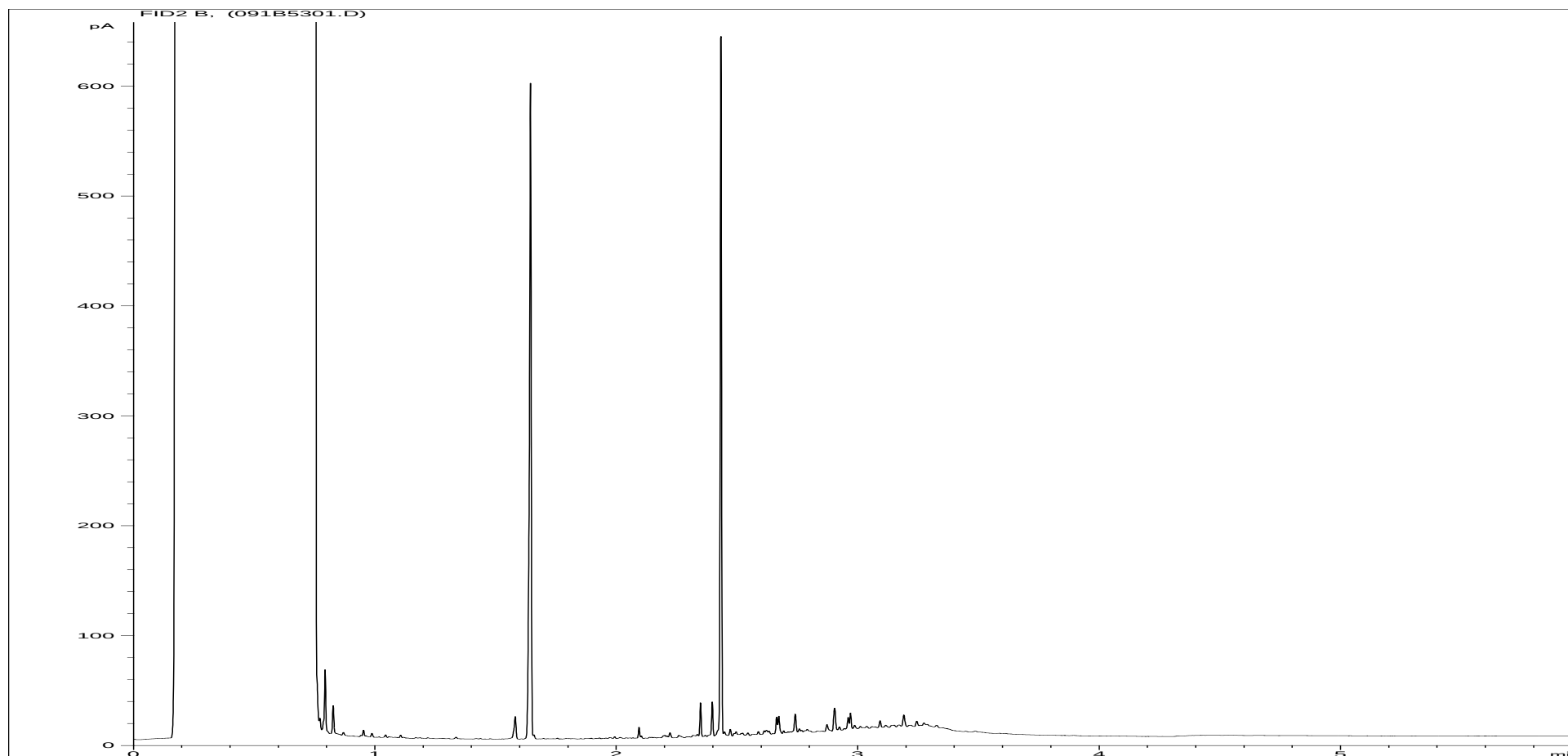
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609619ALI	Job Number:	S16_2290
Multiplier:	16.32	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928667
Acquisition Date/Time:	11-Apr-16, 23:47:29		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\049F6201.D		

Where individual results are flagged see report notes for status.

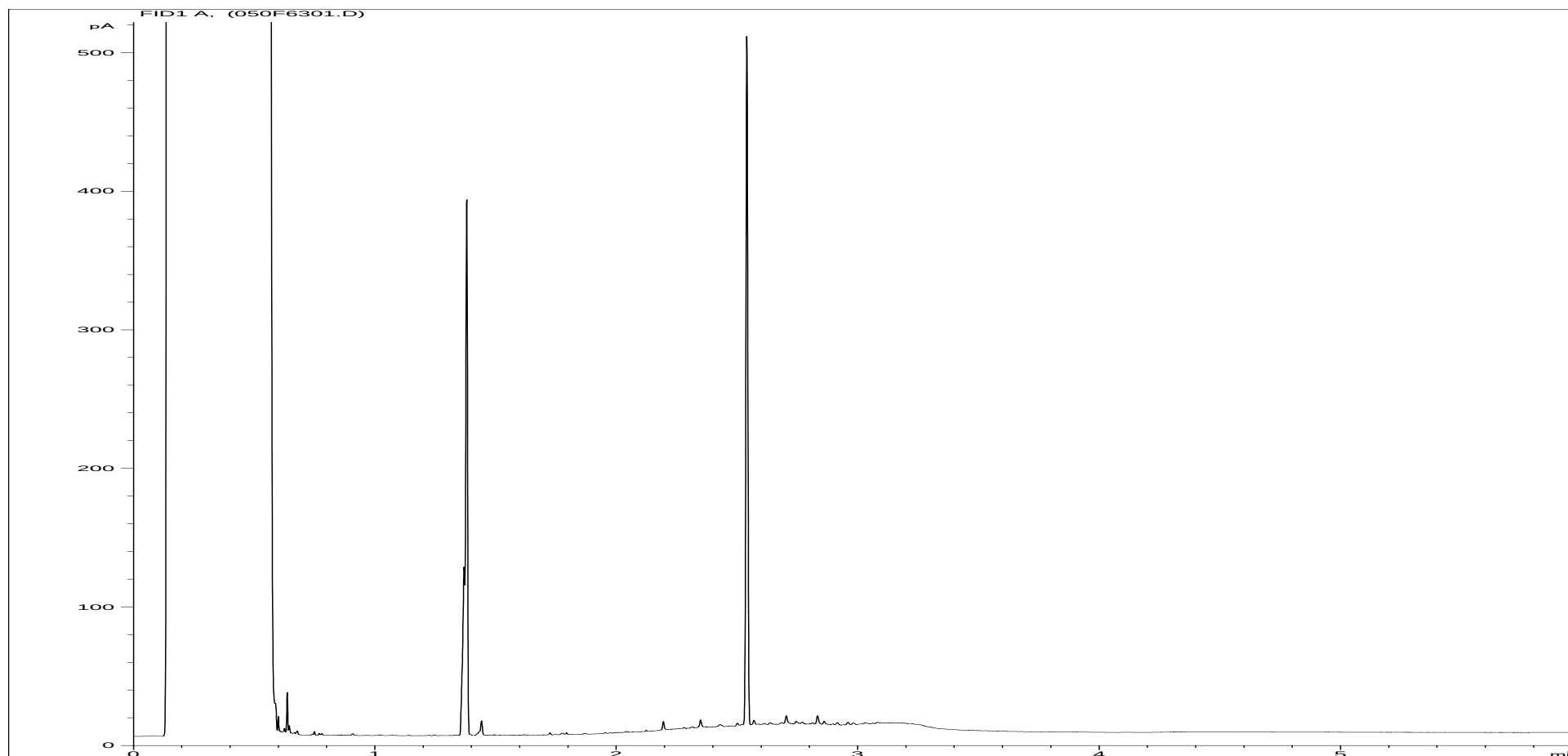
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609619ARO	Job Number:	S16_2290
Multiplier:	11.68	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928667
Acquisition Date/Time:	11-Apr-16, 21:47:17		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\091B5301.D		

Where individual results are flagged see report notes for status.

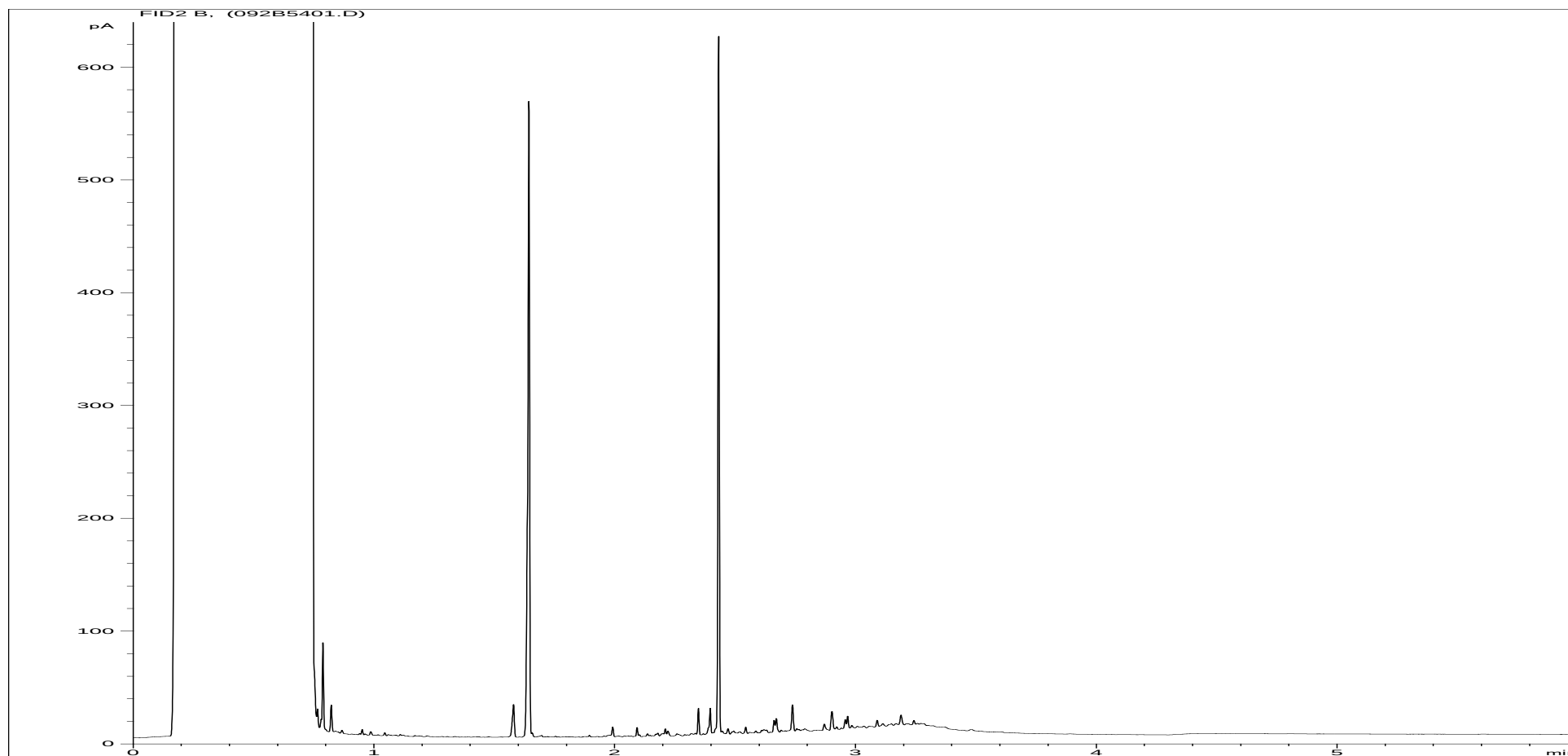
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609620ALI	Job Number:	S16_2290
Multiplier:	16.32	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928668
Acquisition Date/Time:	12-Apr-16, 00:00:50		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\050F6301.D		

Where individual results are flagged see report notes for status.

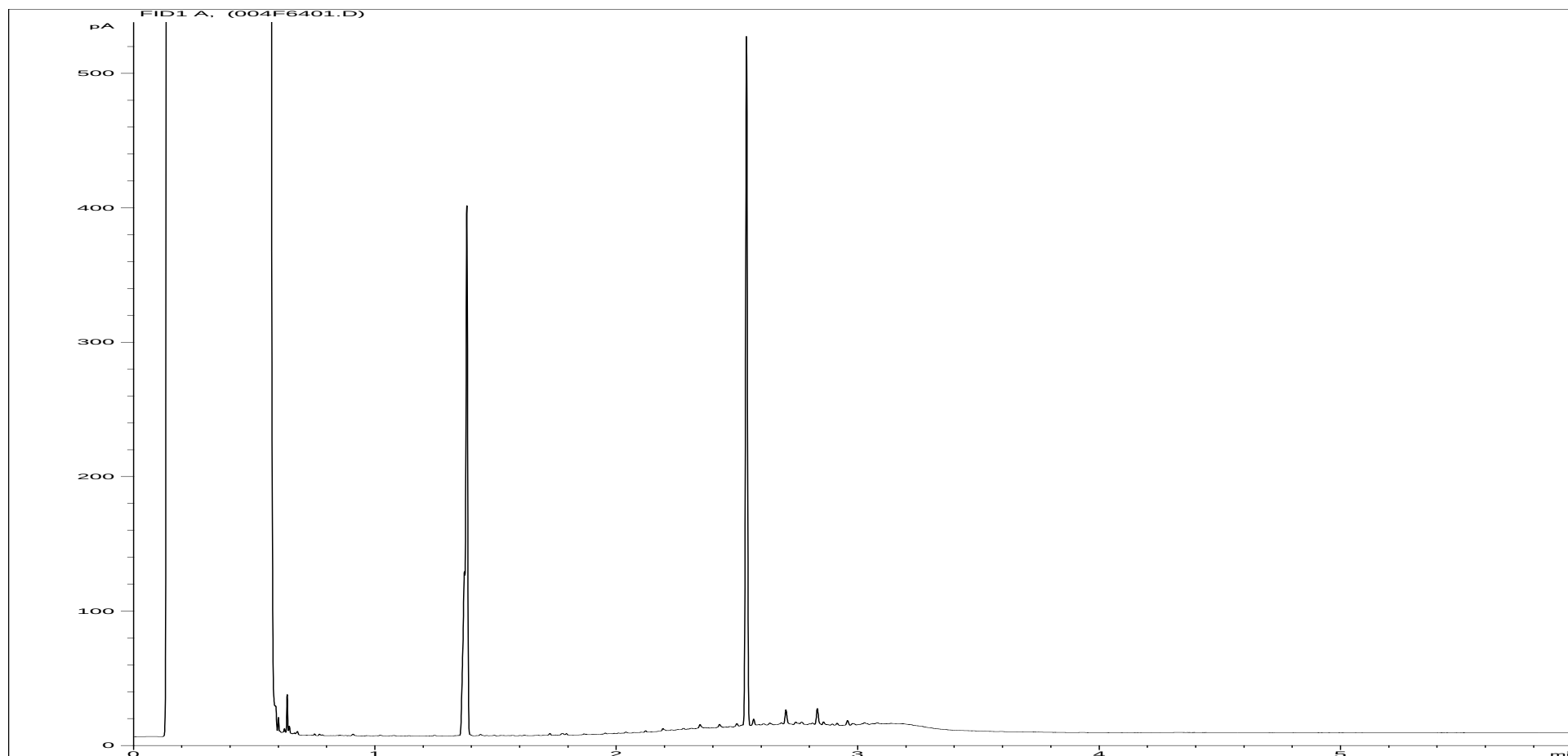
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609620ARO	Job Number:	S16_2290
Multiplier:	11.6	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928668
Acquisition Date/Time:	11-Apr-16, 22:01:05		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\092B5401.D		

Where individual results are flagged see report notes for status.

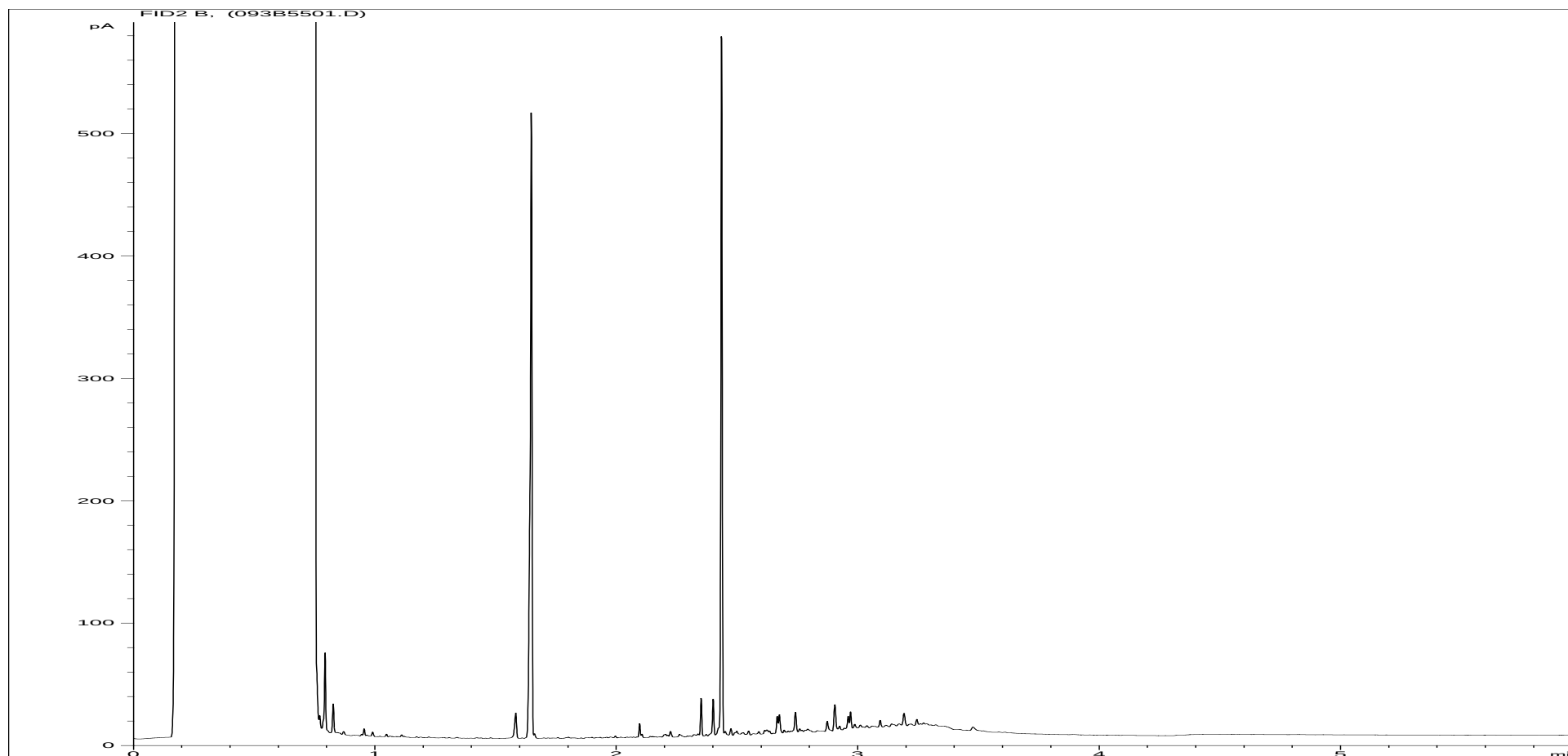
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609621ALI	Job Number:	S16_2290
Multiplier:	16.32	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928669
Acquisition Date/Time:	12-Apr-16, 00:14:13		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\004F6401.D		

Where individual results are flagged see report notes for status.

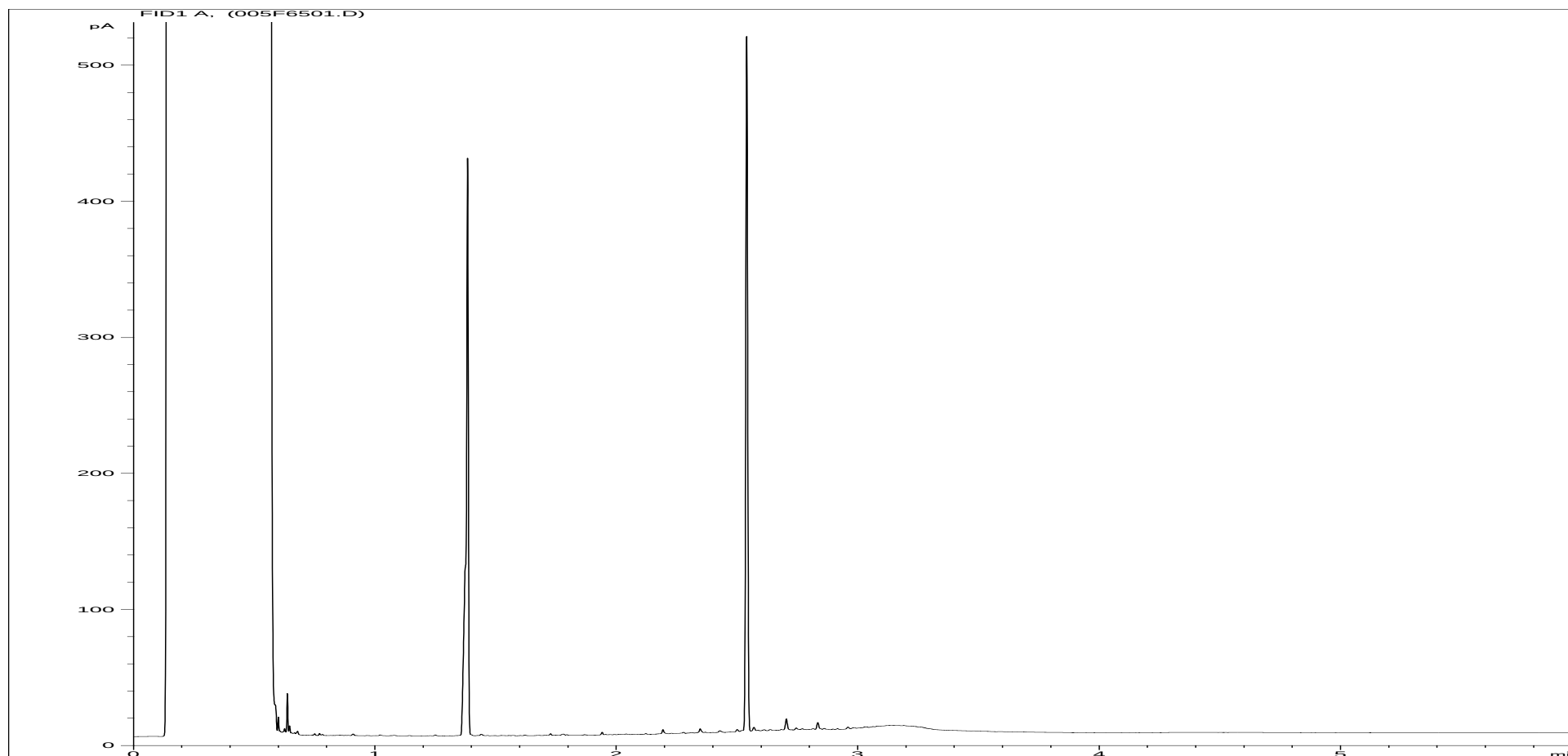
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609621ARO	Job Number:	S16_2290
Multiplier:	11.68	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928669
Acquisition Date/Time:	11-Apr-16, 22:14:21		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\093B5501.D		

Where individual results are flagged see report notes for status.

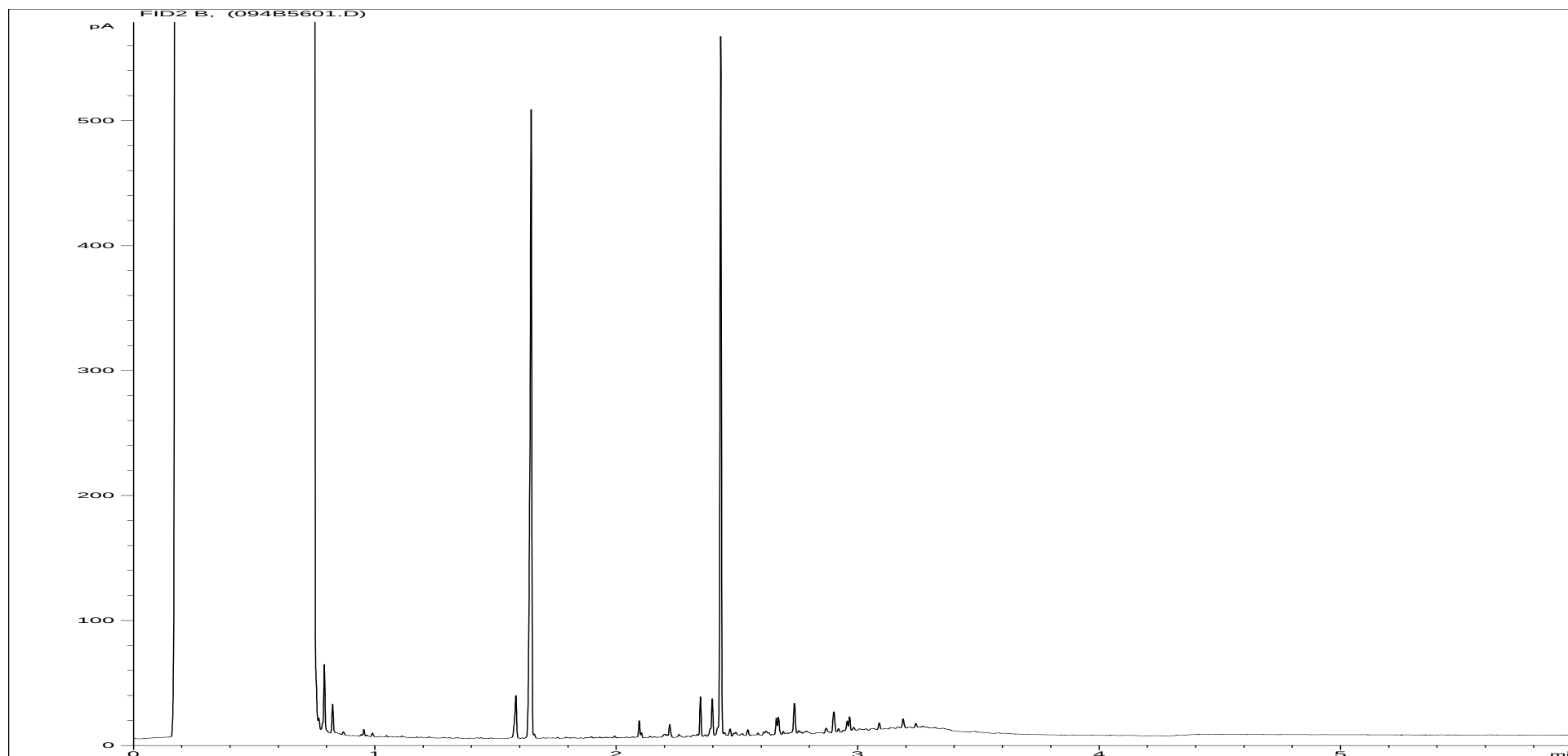
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609622ALI	Job Number:	S16_2290
Multiplier:	15.97	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928670
Acquisition Date/Time:	12-Apr-16, 00:27:33		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\005F6501.D		

Where individual results are flagged see report notes for status.

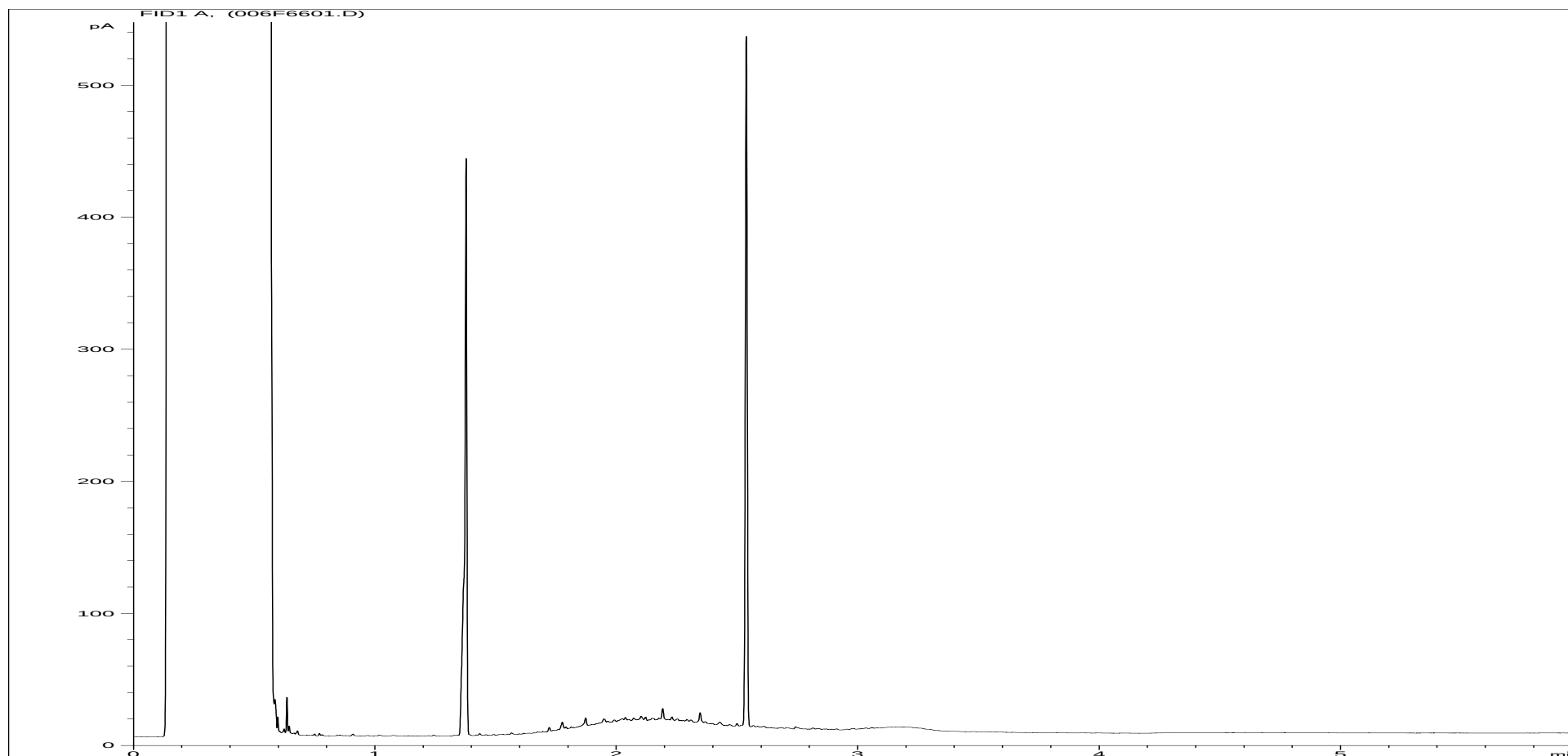
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609622ARO	Job Number:	S16_2290
Multiplier:	11.68	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928670
Acquisition Date/Time:	11-Apr-16, 22:27:47		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\094B5601.D		

Where individual results are flagged see report notes for status.

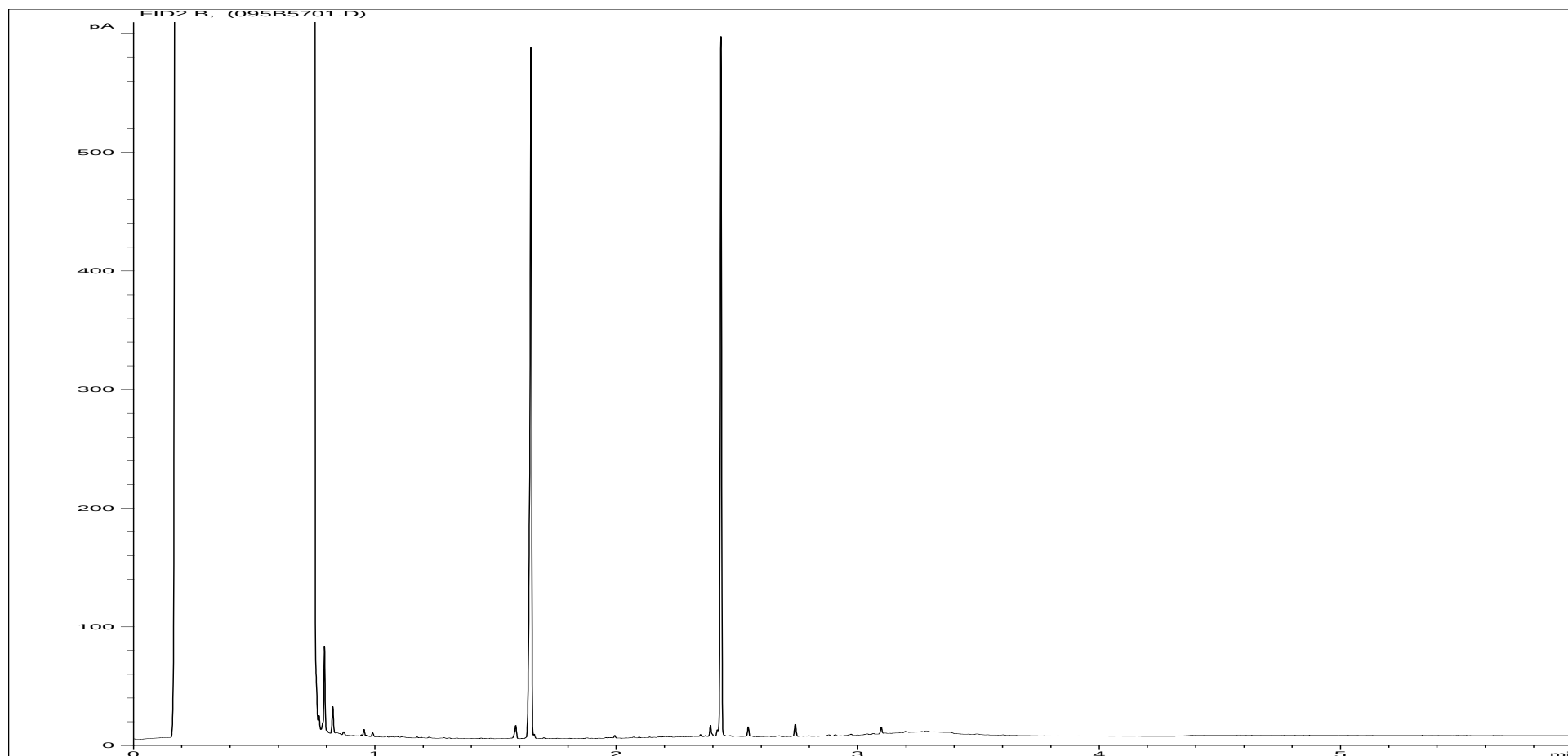
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	CL1609623ALI	Job Number:	S16_2290
Multiplier:	16.08	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928951
Acquisition Date/Time:	12-Apr-16, 00:40:58		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\006F6601.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	CL1609623ARO	Job Number:	S16_2290
Multiplier:	11.84	Client:	Volker Fitzpatrick Limited
Dilution:	1	Site:	Prologis Stockley Phase 3
Acquisition Method:	5UL_RUNF.M	Client Sample Ref:	23928951
Acquisition Date/Time:	11-Apr-16, 22:40:57		
Datafile:	D:\TES\DATA\Y2016\041116TPH_GC4\041116 2016-04-11 09-52-40\095B5701.D		

Where individual results are flagged see report notes for status.

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: ESG Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: 48119-1
PROJECT NO: 610
DATE OF ISSUE: 27.04.16

DATE SAMPLES RECEIVED: 20.04.16

DATE SAMPLES ANALYSED: 27.04.16

SAMPLE DESCRIPTION: One soil/loose aggregate sample weighing approximately 1.2kg

ANALYSIS REQUESTED: Qualitative and quantitative analysis of a soil/loose aggregate sample for mass determination of asbestos.

METHODS:

Qualitative - The sample was analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.



CONTRACT NO: 48119-1
PROJECT NO: 610
DATE OF ISSUE: 27.04.16

RESULTS: (cont.)

Table 1: Qualitative Results

ESG Job I.D: S161232

IOM sample number	Client sample number	ACM type detected	PLM result
S38716	S1605754 BH204 0.15	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

Julie Simpson

AUTHORISED BY:
J Simpson
Senior Scientific Technician

			ASBESTOS ANALYSIS RESULTS - SOIL ANALYSIS							Detection limit of Method SCI-ASB-020 is 0.001%	
			ESG Asbestos Limited Certificate of Analysis for Asbestos in Soils							Sampling has been carried out by a third party	
Client:			ESG Environmental Chemistry						Page 1 of 1		
Address:			Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent						Report No: ANO-0488-12316		
For the attention of:			Volker Fitzpatrick Limited						Report Date: 08/04/2016		
Site Address:			Prologis Stockley Phase 3						Project Number: S162290		
Sample Number	Sample Date	Sample Location	Test Date	Total Sample Dry Weight (g)	Weight of <2mm Fraction (g)	Asbestos(g) in >8mm+>2mm	Asbestos(g) in <2mm	% Asbestos by weight of Total Dried Sample	Asbestos Fibre Types Identified		
CL/1609617	17/03/16	23928665	08/04/2016					Screen Only	NAIIS		
CL/1609618	17/03/16	23928666	08/04/2016					Screen Only	NAIIS		
CL/1609619	17/03/16	23928667	08/04/2016					Screen Only	NAIIS		
CL/1609620	17/03/16	23928668	08/04/2016					Screen Only	NAIIS		
CL/1609621	17/03/16	23928669	08/04/2016					Screen Only	NAIIS		
CL/1609622	17/03/16	23928670	08/04/2016					Screen & ID	Amosite(Free Fibres)		
CL/1609623	17/03/16	23928951	08/04/2016					Screen Only	NAIIS		
Keys		NAACR = Not Analysed at Clients Request			NAIIS = No Asbestos Identified in Sample (Screens Only)			Name: Chris Mackie		Authorised Signatory:	
		* visible to naked eye			NADIS = No Asbestos Detected in Sample (ID & Quant Only)			Position: Lab Analyst			
The sample analysis for the above results was carried out using the procedures detailed in ESG Asbestos Limited in house method (SCI-ASB-020) based on HSE document MDHS 90 - Asbestos Contaminated Land - Draft 5 - November 1997 (withdrawn). Fibre identification was carried out using ESG Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of fine fraction for asbestos content only includes fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at ESG Asbestos Laboratory, Ashbourne House, Bretby Business Park, Ashby Road, Burton-upon-Trent, Staffordshire. DE15 0XD, UKAS Laboratory Number 1089.											

Customer Volker Fitzpatrick Limited
Site Prologis Stockley Phase 3
Report No S162290

Consignment No S54622
 Date Logged 21-Mar-2016

Report Due 26-Apr-2016

TPHUSI	TPH by GCFID (SI-UKCWG)>44	✓																							
Sub020	✓Asbestos ID & Quan	✓																							
Sub002a	✓Asbestos Screen	✓																							
SFAPI	Cyanide(Total) (AR)	✓																							
PAHMSUS	PAH (16) by GCMS	✓																							
KONECR	Chromium vi:																								
	Zinc (MS)	✓																							
	Selenium (MS)	✓																							
	Nickel (MS)	✓																							
	Mercury (MS)	✓																							
	Lead (MS)	✓																							
	Copper (MS)	✓																							
	Chromium (MS)	✓																							
	Cadmium (MS)	✓																							
ICPMSS	Arsenic (MS)	✓																							
ICPBOR	Boron (H20 Soluble)	✓																							
GROHSA	GRO (AA-UK) HSA-GCFID	✓																							
CustServ	REPORT A																								
BTEXHSA	BTEX-HSA Analysis	✓																							
	Description	MethodID	Sampled	Test Method Accredited to ISO17025																					
				CL/1609617	23928665	17/03/16																			
				CL/1609618	23928666	17/03/16																			
				CL/1609619	23928667	17/03/16																			
				CL/1609620	23928668	17/03/16																			
				CL/1609621	23928669	17/03/16																			
				CL/1609622	23928670	17/03/16																			
				CL/1609623	23928951	17/03/16																			
ID Number																									

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

- A The sample was received in an inappropriate container for this analysis
- B The sample was received without the correct preservation for this analysis
- C Headspace present in the sample container
- D The sampling date was not supplied so holding time may be compromised - applicable to all analysis
- E Sample processing did not commence within the appropriate holding time
- F Sample processing did not commence within the appropriate handling time

Requested Analysis Key

- Analysis Required
- Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
- No analysis scheduled
- Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

Report Number : EFS/162290

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
PAHMSUS	CL1609617- CL1609623	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from the affected analytes, Acenaphthylene, Fluorene and Dibenzo[a,h]anthracene. These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1609617- CL1609623	The Secondary process control result associated with this Test has not wholly met the requirements of the Laboratory Quality Management System (QMS). All other Process controls (including the Primary Process control) are within specification. The Laboratory believes that the validity of the data has not been affected but in line with our QMS policy we have removed accreditation from banding c21-c35 for aromatics. These circumstances should be taken into consideration when utilising the data.

Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPMS
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³ @ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

p Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Volker Fitzpatrick Limited
Site : Prologis Stockley Phase 3
Report Number : S16_2290

Note: major constituent in upper case

Appendix F

JUTA GP1 Gas Barrier

EN13967

Charachteristic	Test Method	Unit	Min	Avg	Max
PHYSICAL PROPERTIES					
Thickness	EN 1849 - 2	mm	0.5	0.6	0.7
Width	EN 1849 - 2	M	VARIOUS	VARIOUS	VARIOUS
Length	EN 1849 - 2	M	VARIOUS	VARIOUS	VARIOUS
Basis Weight	EN 1849 - 2	g/m2	330	350	380
HYDRAULIC PROPERTIES					
Water Column Test	EN20811	-	>300		
Resistance to Water Penetration	EN13967, EN1928	-	PASS		
Durability of watertightness against ageing	EN1296, EN13967, EN1928		PASS		
MECHANICAL PROPERTIES					
Resistance to static loading	EN 12730 Method B	KG	20		
Tensile strength MD	EN 12311 - 1	N/50mm	500	600	700
Tensile strength CD	EN 12311 - 1	N/50mm	380	480	580
Elongation MD	EN 12311 - 1	%	10	20	30
Elongation CD	EN 12311 - 1	%	10	20	30
Puncture Resistance (CBR)	EN 12236	KN	1.19	1.25	1.29
Resistance to tearing (nail shank) MD	EN 12310 - 1	N	270	330	400
Resistance to tearing (nail shank) CD	EN 12310 - 1	N	330	400	500
DURABILITY AND CHEMICAL RESISTANCE					
Transmission rate of volatile liquids - Diesel	ISO 6179:2010 (METHOD B)	g/m2/h	0.246		
Transmission rate of volatile liquids - Xylene	ISO 6179:2010 (METHOD B)	g/m2/h	0.571		
Transmission rate of volatile liquids - Toluene	ISO 6179:2010 (METHOD B)	g/m2/h	0.583		
Transmission rate of volatile liquids - Petrol	ISO 6179:2010 (METHOD B)	g/m2/h	0.135		
Radon Permeability	K124/02/95	m2 s-1	8 x 10-15		
Carbon Dioxide Permeability Coefficient	DIN 53380 - 2	m2 pa -1 s-1	2.58 x 10-19		
Methane Permeability Coefficient	DIN 53380 - 2	m2 pa -1 s-2	1.56 x 10-19		
Methane Permeability	ISO 15105 - 1	ml/day.m2.atm	30.66		

Above mentioned data are of informative character only. The manufacturer reserves the right to alter specifications without prior notice. It is the responsibility of all users to satisfy themselves that the above specifications are current.

Version 13.04.16



JUTA GP1

TECHNICAL DATA

Appendix G



Derwent House
Bretby Business Park
Ashby Road
Burton-Upon-Trent
Staffordshire
DE15 0YZ

Your Contact at ESG

Debi Gill
Environmental Technologist
Tel: 01283 554 400
Fax: 01283 554 361
Email: debi.gill@esg.com

**Ambient Air Quality
Monitoring Report**

Client and Address:

VolkerFitzpatrick
Hertford Road
Hoddesdon
Hertfordshire
EN11 9BX

Report Date:	7th March 2016
Version:	1
Reported By: Business Title:	Debi Gill Environmental Technologist
Approved By: Business Title: Signature:	Simon Green Environmental Team Leader 

Sampling Location:

1 : SE Boundary and 2: E Boundary

Campaign Dates:

1st - 31st March 2016

Job Number:

EN-031789/02



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EXECUTIVE SUMMARY

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 - Total Suspended Particulate Results
 - PM 10 Results
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EXECUTIVE SUMMARY

Ambient Air Monitoring Objectives

ESG were contracted by VolkerFitzpatrick to carry out Continuous Ambient Air Monitoring to determine the release of prescribed pollutants from the following locations.

The results of this campaign shall be used to demonstrate compliance with a set of Ambient Air Quality limit values for prescribed pollutants as specified in relevant guidance: ISBN 10: 1 85261 942 2 - November 2006.

VolkerFitzpatrick's operations at Stockley Park are subject to the Best Practice Guidance of London Councils and the Greater London Authority, as specified above.

As such, the Alert Limit Level is set at 250µg/m³ for PM 10.

Sample Location

1 : SE Boundary and 2: E Boundary

Clients Address

VolkerFitzpatrick
Hertford Road
Hoddesdon
Hertfordshire
EN11 9BX

ESG Address

ESG - Bretby Laboratory
Derwent House
Bretby Business Park
Ashby Road
Burton-upon-Trent
Staffordshire
DE15 0YZ

This test report shall not be reproduced, except in full, without written approval of ESG.

EXECUTIVE SUMMARY

Notable Events

PM 10 Level Recorded Above Set Alert Level - 250 µg/m³

Location	Date	Time Range	Maximum TSP µg/m³	Maximum PM 10 µg/m³	Maximum PM 2.5 µg/m³	Maximum PM 1 µg/m³
E Boundary	09/03/2016	16:00	496.7	293.6	2.2	0.60
E Boundary	11/03/2016	07:30	2930.80	2033.20	4.93	2.41
E Boundary	11/03/2016	07:45	3074.70	1982.60	3.62	1.63
E Boundary	11/03/2016	08:00	2546.20	1381.80	3.22	1.36
E Boundary	11/03/2016	08:15	3004.20	1855.30	4.15	1.71
E Boundary	11/03/2016	08:30	2531.40	1205.10	4.60	2.09
E Boundary	11/03/2016	08:45	904.70	265.50	3.88	1.93
SE Boundary	17/03/2016	13:15	431.50	332.33	11.86	1.82
SE Boundary	17/03/2016	13:45	442.03	311.57	10.48	1.63
SE Boundary	21/03/2016	08:15	408.77	328.97	17.41	2.78
SE Boundary	21/03/2016	10:45	419.07	374.07	16.21	3.49
SE Boundary	21/03/2016	12:00	354.70	317.13	22.73	5.68
SE Boundary	21/03/2016	13:45	289.30	251.60	17.72	5.24
SE Boundary	21/03/2016	14:00	445.20	376.80	26.22	5.95
SE Boundary	21/03/2016	14:15	385.20	317.70	23.30	3.55
SE Boundary	22/03/2016	07:45	321.97	256.47	23.54	6.31
SE Boundary	22/03/2016	08:30	461.17	401.33	22.81	4.30
SE Boundary	22/03/2016	15:15	419.40	332.17	14.36	1.67
SE Boundary	23/03/2016	05:45	654.80	475.83	10.98	1.90
SE Boundary	24/03/2016	11:30	403.97	285.83	9.73	2.44
SE Boundary	25/03/2016	12:30	419.63	318.33	10.06	1.90
SE Boundary	26/03/2016	13:45	499.77	402.73	14.12	2.47

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - Total Suspended Particulate - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	8.13	20.80	5.34
02/03/2016	96	9.63	33.03	5.42
03/03/2016	96	10.24	93.00	12.91
04/03/2016	96	16.73	73.60	15.64
05/03/2016	96	6.09	24.07	2.59
06/03/2016	96	5.69	11.83	2.16
07/03/2016	96	10.10	36.47	6.35
08/03/2016	96	24.79	174.77	33.08
09/03/2016	96	9.64	49.27	8.49
10/03/2016	96	14.38	101.27	17.90
11/03/2016	96	48.20	194.30	45.05
12/03/2016	96	40.34	91.57	13.26
13/03/2016	96	16.10	45.50	10.26
14/03/2016	96	26.82	121.77	24.21
15/03/2016	96	23.47	143.43	23.72
16/03/2016	96	55.59	258.73	67.24
17/03/2016	96	81.47	442.03	102.00
18/03/2016	96	28.62	282.67	51.42
19/03/2016	96	7.38	14.40	2.96
20/03/2016	96	8.58	19.70	4.51
21/03/2016	96	67.04	445.20	97.91
22/03/2016	96	66.25	461.17	87.58
23/03/2016	96	65.46	654.80	108.10
24/03/2016	96	17.20	133.17	19.60
25/03/2016	96	9.31	23.53	4.71
26/03/2016	96	10.43	20.80	5.65
27/03/2016	92	9.35	15.03	3.12
28/03/2016	96	7.25	40.33	6.54
29/03/2016	96	8.80	104.03	10.87
30/03/2016	96	14.09	64.27	7.15
31/03/2016	96	13.24	83.00	14.09

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - PM 10 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	7.29	18.60	4.97
02/03/2016	96	8.33	31.67	4.89
03/03/2016	96	7.99	64.03	8.85
04/03/2016	96	12.41	56.60	11.48
05/03/2016	96	5.45	16.87	1.86
06/03/2016	96	4.80	8.00	1.52
07/03/2016	96	7.78	25.53	4.19
08/03/2016	96	15.51	113.77	18.75
09/03/2016	96	7.56	28.10	5.37
10/03/2016	96	11.35	84.87	13.51
11/03/2016	96	28.65	102.57	23.31
12/03/2016	96	34.27	66.87	9.76
13/03/2016	96	14.05	41.90	9.97
14/03/2016	96	16.88	88.00	13.99
15/03/2016	96	15.43	105.67	13.90
16/03/2016	96	34.51	169.43	41.52
17/03/2016	96	56.15	332.33	72.18
18/03/2016	96	20.68	221.83	40.65
19/03/2016	96	6.12	11.83	2.81
20/03/2016	96	7.08	14.50	3.28
21/03/2016	96	53.54	376.80	83.29
22/03/2016	96	45.10	401.33	67.86
23/03/2016	96	42.59	475.83	78.53
24/03/2016	96	12.90	113.87	15.44
25/03/2016	96	8.24	16.20	4.05
26/03/2016	96	9.64	19.33	5.32
27/03/2016	92	8.74	14.27	2.98
28/03/2016	96	6.35	38.27	6.12
29/03/2016	96	7.39	98.57	10.07
30/03/2016	96	10.72	32.43	4.02
31/03/2016	96	8.97	70.00	9.03

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - PM 2.5 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	4.90	13.29	3.74
02/03/2016	96	5.26	11.74	2.97
03/03/2016	96	4.08	10.29	2.38
04/03/2016	96	4.50	12.78	2.37
05/03/2016	96	3.93	6.32	0.96
06/03/2016	96	2.86	4.53	0.87
07/03/2016	96	3.64	8.22	1.31
08/03/2016	96	4.31	11.54	2.17
09/03/2016	96	3.77	9.17	2.19
10/03/2016	96	6.54	54.15	8.36
11/03/2016	96	12.92	35.02	8.61
12/03/2016	96	27.16	42.28	6.71
13/03/2016	96	11.18	38.94	9.79
14/03/2016	96	5.41	9.54	1.36
15/03/2016	96	6.68	15.90	3.01
16/03/2016	96	5.94	12.46	1.70
17/03/2016	96	6.69	11.90	1.87
18/03/2016	96	3.29	8.16	1.65
19/03/2016	96	3.64	6.58	1.88
20/03/2016	96	4.09	10.67	1.90
21/03/2016	96	8.59	26.22	4.33
22/03/2016	96	7.07	27.09	4.08
23/03/2016	96	6.42	14.34	3.07
24/03/2016	96	5.01	10.18	2.02
25/03/2016	96	5.89	10.31	3.06
26/03/2016	96	6.93	15.18	4.01
27/03/2016	92	5.81	9.94	2.02
28/03/2016	96	3.27	16.31	3.01
29/03/2016	96	3.57	9.01	2.07
30/03/2016	96	4.84	7.45	1.50
31/03/2016	96	3.48	8.92	1.67

EXECUTIVE SUMMARY

Ambient Air Quality Summary

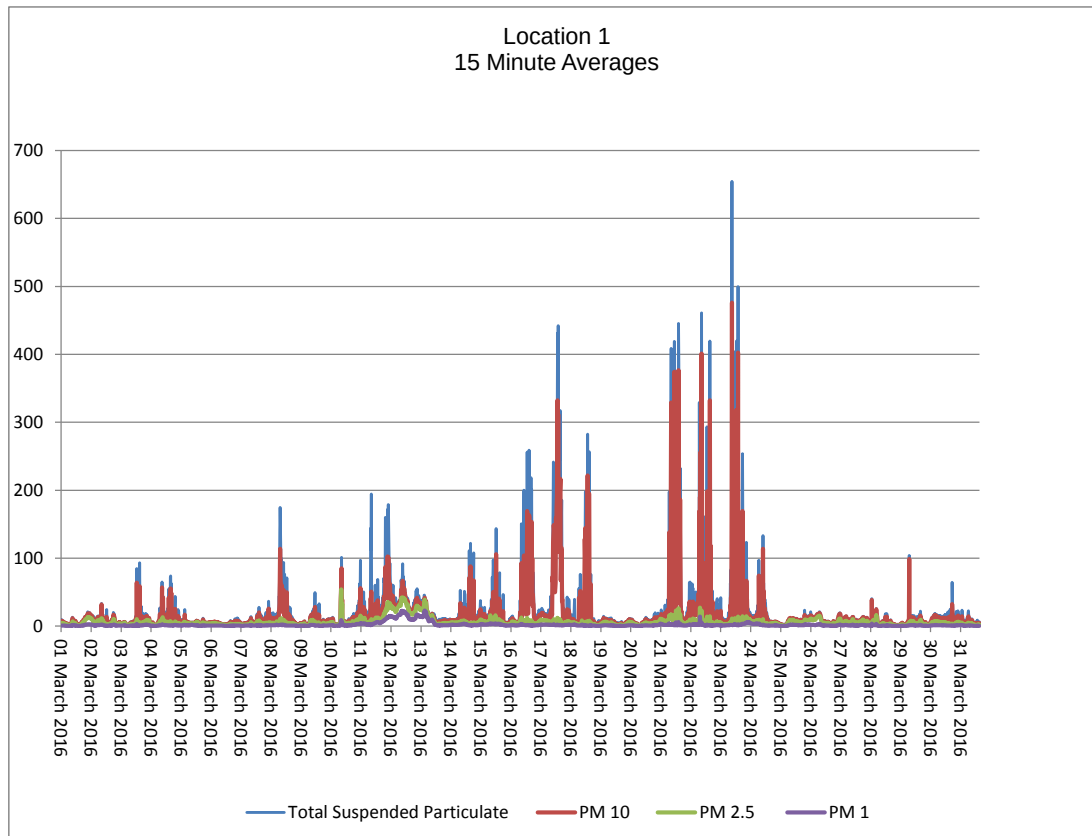
Location 1 - PM 1 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	0.99	2.77	0.76
02/03/2016	96	1.10	2.36	0.58
03/03/2016	96	0.90	2.97	0.57
04/03/2016	96	0.99	2.39	0.48
05/03/2016	96	0.96	2.03	0.36
06/03/2016	96	0.64	0.95	0.19
07/03/2016	96	0.83	1.80	0.29
08/03/2016	96	1.01	2.30	0.49
09/03/2016	96	0.77	1.91	0.45
10/03/2016	96	1.66	8.80	1.47
11/03/2016	96	5.86	15.01	3.79
12/03/2016	96	14.61	22.44	3.67
13/03/2016	96	6.18	23.04	6.31
14/03/2016	96	1.87	3.62	0.65
15/03/2016	96	2.23	4.07	0.91
16/03/2016	96	1.33	2.91	0.39
17/03/2016	96	1.71	2.62	0.32
18/03/2016	96	0.89	2.27	0.61
19/03/2016	96	0.71	1.26	0.34
20/03/2016	96	0.91	3.63	0.57
21/03/2016	96	1.93	5.95	1.00
22/03/2016	96	1.79	14.05	1.55
23/03/2016	96	2.36	6.06	1.51
24/03/2016	96	1.72	3.98	1.23
25/03/2016	96	1.31	2.78	0.68
26/03/2016	96	1.26	2.95	0.71
27/03/2016	92	1.12	1.94	0.39
28/03/2016	96	0.64	3.51	0.64
29/03/2016	96	0.75	1.71	0.40
30/03/2016	96	0.99	1.48	0.30
31/03/2016	96	0.71	1.76	0.41

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - Graph



EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - Total Suspended Particulate - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	9.37	127.70	14.98
02/03/2016	96	8.98	52.80	6.52
03/03/2016	96	9.25	30.20	6.10
04/03/2016	96	11.29	62.30	10.50
05/03/2016	96	6.46	19.30	2.58
06/03/2016	96	5.62	12.20	2.26
07/03/2016	96	10.53	31.30	6.63
08/03/2016	96	13.44	69.50	11.85
09/03/2016	96	23.99	496.70	54.91
10/03/2016	96	13.44	115.90	19.42
11/03/2016	96	194.75	3074.70	628.16
12/03/2016	96	38.00	106.20	13.75
13/03/2016	96	15.12	53.00	10.32
14/03/2016	96	12.91	34.10	4.94
15/03/2016	96	15.32	36.90	8.03
16/03/2016	96	13.39	40.30	6.86
17/03/2016	96	18.82	43.10	5.84
18/03/2016	96	9.44	61.60	7.22
19/03/2016	96	7.29	14.20	2.88
20/03/2016	96	8.62	22.10	4.81
21/03/2016	95	22.12	88.40	16.22
22/03/2016	96	43.01	208.30	38.50
23/03/2016	96	29.45	122.80	20.23
24/03/2016	96	13.97	146.10	17.92
25/03/2016	96	10.17	70.20	7.62
26/03/2016	96	10.20	19.40	4.94
27/03/2016	92	9.31	20.60	3.57
28/03/2016	96	7.19	77.50	11.01
29/03/2016	96	9.48	127.20	16.58
30/03/2016	96	11.28	42.40	6.22
31/03/2016	96	15.35	99.60	14.71

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - PM 10 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	8.39	118.50	13.36
02/03/2016	96	7.46	28.50	4.52
03/03/2016	96	7.25	20.20	4.33
04/03/2016	96	7.98	30.50	5.71
05/03/2016	96	5.54	13.80	1.76
06/03/2016	96	4.61	7.60	1.50
07/03/2016	96	7.42	20.40	3.68
08/03/2016	96	9.21	37.50	6.65
09/03/2016	96	16.15	293.60	32.29
10/03/2016	96	8.96	58.80	9.98
11/03/2016	96	112.44	2033.20	380.98
12/03/2016	96	31.09	68.50	8.96
13/03/2016	96	12.97	37.50	8.92
14/03/2016	96	9.65	21.80	2.89
15/03/2016	96	11.24	24.50	5.41
16/03/2016	96	9.86	27.30	4.02
17/03/2016	96	12.75	23.70	3.38
18/03/2016	96	6.02	11.30	2.18
19/03/2016	96	5.93	11.00	2.62
20/03/2016	96	6.91	14.50	3.23
21/03/2016	95	14.60	46.00	8.15
22/03/2016	96	24.87	168.80	24.84
23/03/2016	96	16.25	74.80	10.95
24/03/2016	96	9.41	77.90	8.82
25/03/2016	96	8.68	57.10	6.35
26/03/2016	96	9.03	18.10	4.70
27/03/2016	92	8.40	16.20	3.00
28/03/2016	96	5.44	31.60	5.77
29/03/2016	96	7.43	90.20	11.18
30/03/2016	96	8.98	28.20	4.16
31/03/2016	96	9.40	56.10	8.05

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - PM 2.5 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	4.92	19.93	3.65
02/03/2016	96	4.97	10.67	2.82
03/03/2016	96	4.26	11.32	2.33
04/03/2016	96	3.96	9.79	2.18
05/03/2016	96	3.79	6.21	0.93
06/03/2016	96	2.74	4.55	0.86
07/03/2016	96	3.29	6.80	1.02
08/03/2016	96	3.94	9.82	1.66
09/03/2016	96	4.52	14.33	2.93
10/03/2016	96	4.39	20.25	3.73
11/03/2016	96	11.32	29.09	6.44
12/03/2016	96	24.12	37.62	5.79
13/03/2016	96	10.30	34.22	8.46
14/03/2016	96	5.20	9.41	1.35
15/03/2016	96	6.24	10.39	2.55
16/03/2016	96	5.07	8.38	1.16
17/03/2016	96	5.52	8.93	1.85
18/03/2016	96	2.76	5.52	1.10
19/03/2016	96	3.57	6.36	1.78
20/03/2016	96	3.90	9.24	1.69
21/03/2016	95	6.32	10.86	2.21
22/03/2016	96	6.07	16.54	2.23
23/03/2016	96	5.36	13.87	2.29
24/03/2016	96	4.49	7.65	1.74
25/03/2016	96	5.52	9.56	2.86
26/03/2016	96	6.23	13.37	3.52
27/03/2016	92	5.45	10.73	1.86
28/03/2016	96	2.93	14.25	2.68
29/03/2016	96	3.46	14.27	2.27
30/03/2016	96	4.46	9.72	1.63
31/03/2016	96	3.57	15.59	2.19

EXECUTIVE SUMMARY

Ambient Air Quality Summary

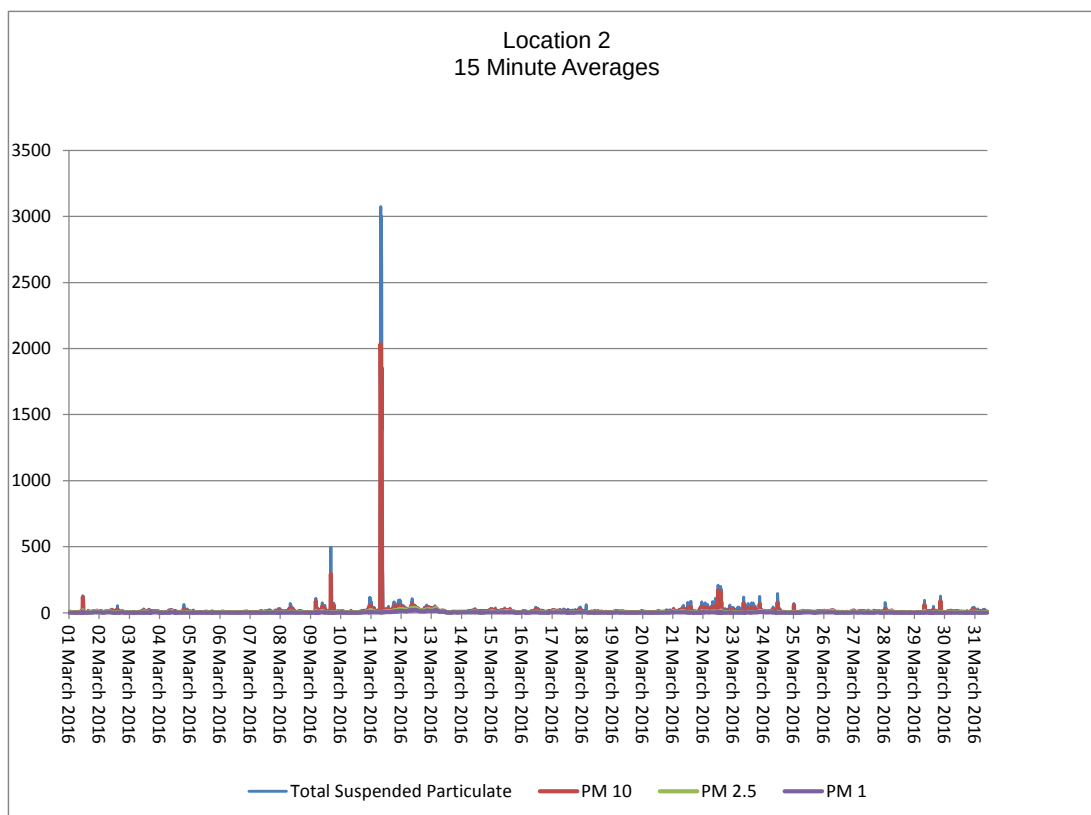
Location 2 - PM 1 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/03/2016	96	1.34	9.36	1.30
02/03/2016	96	1.33	2.84	0.74
03/03/2016	96	1.19	2.45	0.64
04/03/2016	96	1.11	2.85	0.61
05/03/2016	96	1.15	2.12	0.32
06/03/2016	96	0.76	1.08	0.22
07/03/2016	96	0.90	1.51	0.25
08/03/2016	96	1.14	2.55	0.46
09/03/2016	96	1.16	4.58	0.72
10/03/2016	96	1.49	5.92	1.19
11/03/2016	96	5.77	14.59	3.47
12/03/2016	96	14.59	22.35	3.60
13/03/2016	96	6.22	22.44	5.99
14/03/2016	96	2.08	4.02	0.66
15/03/2016	96	2.43	4.09	0.95
16/03/2016	96	1.54	2.39	0.37
17/03/2016	96	1.79	2.48	0.41
18/03/2016	96	0.92	2.34	0.54
19/03/2016	96	0.94	1.64	0.45
20/03/2016	96	1.13	3.93	0.59
21/03/2016	95	1.81	3.77	0.73
22/03/2016	96	1.64	4.12	0.60
23/03/2016	96	2.16	5.64	1.36
24/03/2016	96	1.70	3.80	1.12
25/03/2016	96	1.53	3.02	0.80
26/03/2016	96	1.40	3.24	0.72
27/03/2016	92	1.25	2.34	0.44
28/03/2016	96	0.67	3.00	0.57
29/03/2016	96	0.85	2.62	0.54
30/03/2016	96	1.03	1.98	0.33
31/03/2016	96	0.82	3.11	0.49

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - Graph



END OF REPORT



Derwent House
Bretby Business Park
Ashby Road
Burton-Upon-Trent
Staffordshire
DE15 0YZ

Your Contact at ESG

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Ambient Air Quality Monitoring Report

Client and Address:

VolkerFitzpatrick
Hertford Road
Hoddesdon
Hertfordshire
EN11 9BX

Report Date:	5th May 2016
Version:	1
Reported By: Business Title:	Debi Gill Environmental Technologist
Approved By: Business Title: Signature:	Simon Green Environmental Team Leader 

Sampling Location:

1: SE Boundary and 2: E Boundary

Campaign Dates:

1st - 30th April 2016

Job Number:

EN-031789/03

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- South
 - Total Suspended Particulate Results
 - PM 10 Results
 - PM 2.5 Results
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EXECUTIVE SUMMARY

Ambient Air Monitoring Objectives

ESG were contracted by VolkerFitzpatrick to carry out Continuous Ambient Air Monitoring to determine the release of prescribed pollutants from the following locations.

The results of this campaign shall be used to demonstrate compliance with a set of Ambient Air Quality limit values for prescribed pollutants as specified in relevant guidance: ISBN 10: 1 85261 942 2 - November 2006.

VolkerFitzpatrick's operations at Stockley Park are subject to the Best Practice Guidance of London Councils and the Greater London Authority, as specified above.

As such, the Alert Limit Level is set at 250µg/m³ for PM 10.

Sample Location

1: SE Boundary and 2: E Boundary

Clients Address

VolkerFitzpatrick
Hertford Road
Hoddesdon
Hertfordshire
EN11 9BX

ESG Address

ESG - Bretby Laboratory
Derwent House
Bretby Business Park
Ashby Road
Burton-upon-Trent
Staffordshire
DE15 0YZ

This test report shall not be reproduced, except in full, without written approval of ESG.

EXECUTIVE SUMMARY

Notable Events

PM 10 Level Recorded Above Set Alert Level - 250 $\mu\text{g}/\text{m}^3$

Location	Date	Time Range	Maximum TSP $\mu\text{g}/\text{m}^3$	Maximum PM 10 $\mu\text{g}/\text{m}^3$	Maximum PM 2.5 $\mu\text{g}/\text{m}^3$	Maximum PM 1 $\mu\text{g}/\text{m}^3$
E Boundary	01/04/2016	06:45	466.27	408.67	23.29	3.98
SE Boundary	15/04/2016	16:30	2849.90	2352.60	4.08	0.79
SE Boundary	15/04/2016	17:15	442.30	400.80	2.38	0.56
SE Boundary	19/04/2016	11:30	374.30	369.40	66.10	49.10
SE Boundary	19/04/2016	15:30	327.00	317.20	77.74	53.03
SE Boundary	26/04/2016	10:30	494.50	472.60	92.15	58.81
SE Boundary	27/04/2016	14:45	469.80	457.90	67.20	54.26
SE Boundary	28/04/2016	12:15	441.60	424.70	78.34	56.24
E Boundary	28/04/2016	12:30	469.37	391.50	38.14	7.62
SE Boundary	28/04/2016	15:00	285.00	264.30	69.68	39.36
SE Boundary	28/04/2016	15:15	354.80	291.80	70.18	39.18

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - Total Suspended Particulate - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	46.52	466.27	64.99
02/04/2016	96	13.49	47.07	7.89
03/04/2016	96	10.06	51.47	7.67
04/04/2016	96	16.99	75.73	12.15
05/04/2016	96	31.83	172.03	31.68
06/04/2016	96	13.59	154.30	15.65
07/04/2016	96	10.43	29.93	5.88
08/04/2016	96	12.09	39.97	7.48
09/04/2016	96	8.21	17.30	4.36
10/04/2016	96	17.73	93.20	13.59
11/04/2016	96	30.79	142.80	30.16
12/04/2016	96	22.72	153.47	24.30
13/04/2016	96	40.01	205.87	40.55
14/04/2016	96	26.57	147.07	23.89
15/04/2016	96	7.47	21.83	3.64
16/04/2016	96	3.03	14.37	2.52
17/04/2016	96	8.39	109.63	17.06
18/04/2016	96	31.44	210.33	38.29
19/04/2016	96	31.17	218.73	31.89
20/04/2016	96	61.06	278.93	53.95
21/04/2016	96	71.76	272.07	67.98
22/04/2016	96	46.58	271.70	56.01
23/04/2016	96	7.42	17.00	4.29
24/04/2016	96	5.51	12.03	2.28
25/04/2016	96	11.41	78.83	12.00
26/04/2016	96	7.79	30.23	5.54
27/04/2016	96	13.28	105.13	15.75
28/04/2016	96	38.59	469.37	64.68
29/04/2016	96	12.41	57.20	9.74
30/04/2016	96	6.27	13.00	2.81

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - PM 10 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	30.49	408.67	47.90
02/04/2016	96	9.96	29.87	5.16
03/04/2016	96	7.48	27.72	4.01
04/04/2016	96	12.30	59.33	7.56
05/04/2016	96	21.70	130.10	20.23
06/04/2016	96	10.50	115.70	11.48
07/04/2016	96	8.36	21.73	4.08
08/04/2016	96	9.22	22.17	4.50
09/04/2016	96	7.12	14.87	4.04
10/04/2016	96	12.59	51.57	7.17
11/04/2016	96	21.01	88.13	15.49
12/04/2016	96	14.82	81.87	13.61
13/04/2016	96	25.48	178.10	28.77
14/04/2016	96	16.43	113.13	15.40
15/04/2016	96	5.60	12.13	2.38
16/04/2016	96	2.35	10.07	1.71
17/04/2016	96	5.69	64.80	9.57
18/04/2016	96	20.82	135.00	25.59
19/04/2016	96	21.75	163.43	21.52
20/04/2016	96	40.52	188.50	32.69
21/04/2016	96	48.61	216.93	42.97
22/04/2016	96	31.57	235.67	36.25
23/04/2016	96	6.28	15.33	3.70
24/04/2016	96	4.41	8.37	1.43
25/04/2016	96	7.83	50.40	7.76
26/04/2016	96	5.72	19.43	3.61
27/04/2016	96	9.60	76.43	11.41
28/04/2016	96	27.33	391.50	51.47
29/04/2016	96	9.27	38.07	6.75
30/04/2016	96	4.85	9.67	1.98

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - PM 2.5 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	6.34	23.29	3.01
02/04/2016	96	4.79	9.17	1.96
03/04/2016	96	3.96	11.20	1.44
04/04/2016	96	5.34	7.61	0.94
05/04/2016	96	5.84	12.32	2.65
06/04/2016	96	5.26	11.00	2.13
07/04/2016	96	4.94	9.19	2.18
08/04/2016	96	5.38	10.57	2.40
09/04/2016	96	4.46	9.88	2.65
10/04/2016	96	5.72	11.77	2.23
11/04/2016	96	9.51	16.91	2.73
12/04/2016	96	4.97	14.24	1.95
13/04/2016	96	5.27	15.05	2.75
14/04/2016	96	4.47	10.72	1.45
15/04/2016	96	3.39	7.09	1.54
16/04/2016	96	1.38	3.73	0.77
17/04/2016	96	2.58	14.20	2.21
18/04/2016	96	5.01	12.43	1.74
19/04/2016	96	8.01	19.41	3.50
20/04/2016	96	13.47	22.27	3.06
21/04/2016	96	16.14	26.64	4.96
22/04/2016	96	10.03	19.43	2.97
23/04/2016	96	3.52	8.17	1.82
24/04/2016	96	2.66	4.48	0.74
25/04/2016	96	2.84	8.83	1.44
26/04/2016	96	2.41	5.56	1.13
27/04/2016	96	3.34	12.60	2.18
28/04/2016	96	4.18	38.14	4.52
29/04/2016	96	3.88	8.06	1.80
30/04/2016	96	2.59	5.07	0.98

EXECUTIVE SUMMARY

Ambient Air Quality Summary

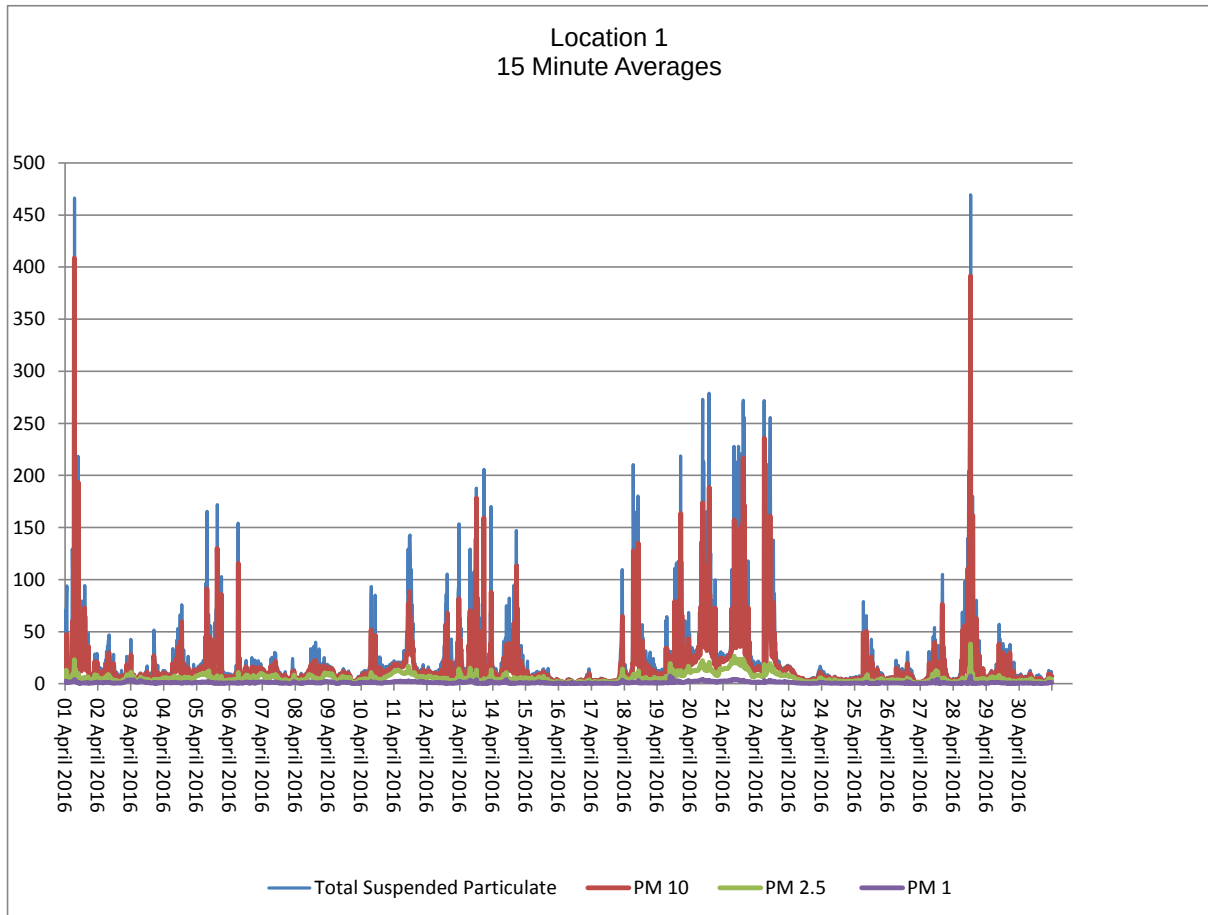
Location 1 - PM 1 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	1.25	3.98	0.75
02/04/2016	96	1.31	3.75	0.85
03/04/2016	96	1.44	3.76	0.75
04/04/2016	96	1.02	1.47	0.20
05/04/2016	96	1.04	2.31	0.45
06/04/2016	96	1.05	1.90	0.44
07/04/2016	96	1.06	2.14	0.41
08/04/2016	96	1.11	2.21	0.45
09/04/2016	96	0.94	1.98	0.53
10/04/2016	96	1.16	2.33	0.34
11/04/2016	96	1.99	3.00	0.37
12/04/2016	96	0.92	2.37	0.37
13/04/2016	96	1.23	3.85	0.76
14/04/2016	96	0.94	4.22	0.48
15/04/2016	96	0.72	2.29	0.34
16/04/2016	96	0.35	1.54	0.25
17/04/2016	96	0.64	3.62	0.60
18/04/2016	96	1.00	3.15	0.39
19/04/2016	96	1.55	7.40	0.96
20/04/2016	96	2.62	4.08	0.56
21/04/2016	96	2.72	4.36	0.83
22/04/2016	96	1.81	3.17	0.43
23/04/2016	96	0.69	1.58	0.37
24/04/2016	96	0.59	1.25	0.18
25/04/2016	96	0.64	1.65	0.32
26/04/2016	96	0.58	2.13	0.32
27/04/2016	96	0.77	4.30	0.70
28/04/2016	96	0.78	7.62	0.90
29/04/2016	96	0.80	1.48	0.33
30/04/2016	96	0.55	1.32	0.26

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 1 - Graph



EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - Total Suspended Particulate - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	27.66	204.90	28.11
02/04/2016	96	12.78	57.90	8.88
03/04/2016	96	8.26	38.00	4.84
04/04/2016	96	11.60	25.80	4.26
05/04/2016	96	23.01	159.90	25.22
06/04/2016	96	12.78	54.20	9.92
07/04/2016	96	8.64	21.10	3.76
08/04/2016	96	11.63	51.90	8.79
09/04/2016	96	7.53	16.20	4.11
10/04/2016	96	12.64	42.10	7.42
11/04/2016	96	19.14	54.80	8.63
12/04/2016	96	14.24	156.10	17.70
13/04/2016	96	32.27	170.60	35.24
14/04/2016	96	16.69	54.50	9.70
15/04/2016	96	45.54	2849.90	293.93
16/04/2016	96	3.49	15.80	2.87
17/04/2016	96	7.60	117.30	15.77
18/04/2016	96	11.14	23.50	3.64
19/04/2016	96	35.66	374.30	58.78
20/04/2016	96	29.23	108.80	12.34
21/04/2016	96	29.87	57.00	8.55
22/04/2016	96	20.57	160.90	16.18
23/04/2016	96	8.74	19.40	4.44
24/04/2016	96	5.82	14.70	2.45
25/04/2016	96	9.80	30.70	6.27
26/04/2016	92	33.92	494.50	68.91
27/04/2016	96	21.54	469.80	53.60
28/04/2016	94	30.05	441.60	66.87
29/04/2016	96	9.58	33.40	5.68
30/04/2016	96	6.45	13.40	2.94

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - PM 10 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	16.76	93.70	13.43
02/04/2016	96	9.15	32.80	5.31
03/04/2016	96	6.20	21.50	2.62
04/04/2016	96	8.85	16.50	2.33
05/04/2016	96	15.28	119.90	16.06
06/04/2016	96	9.11	28.40	4.91
07/04/2016	96	7.24	19.20	3.27
08/04/2016	96	9.56	49.10	7.91
09/04/2016	96	6.52	14.40	3.77
10/04/2016	96	9.82	29.00	4.84
11/04/2016	96	14.99	33.50	5.17
12/04/2016	96	9.69	79.70	8.88
13/04/2016	96	19.61	149.90	22.32
14/04/2016	96	10.54	28.50	5.12
15/04/2016	96	37.12	2352.60	242.97
16/04/2016	96	2.48	8.50	1.72
17/04/2016	96	4.91	58.00	8.04
18/04/2016	96	8.21	15.50	2.32
19/04/2016	96	27.99	369.40	56.79
20/04/2016	96	22.64	49.20	6.49
21/04/2016	96	24.18	41.50	6.43
22/04/2016	96	16.75	122.90	11.91
23/04/2016	96	6.89	15.00	3.63
24/04/2016	96	4.44	9.30	1.47
25/04/2016	96	6.33	20.20	3.24
26/04/2016	92	23.18	472.60	56.07
27/04/2016	96	17.23	457.90	51.68
28/04/2016	94	22.60	424.70	59.93
29/04/2016	96	6.98	25.30	4.11
30/04/2016	96	4.70	9.50	1.92

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - PM 2.5 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	5.64	14.29	2.58
02/04/2016	96	4.35	9.31	1.90
03/04/2016	96	3.31	5.98	0.91
04/04/2016	96	4.67	6.63	0.84
05/04/2016	96	4.97	8.54	2.34
06/04/2016	96	4.72	8.34	1.72
07/04/2016	96	4.81	15.97	2.68
08/04/2016	96	5.57	29.60	4.38
09/04/2016	96	4.14	9.48	2.44
10/04/2016	96	5.00	10.31	1.95
11/04/2016	96	8.51	12.17	2.34
12/04/2016	96	4.29	15.95	1.91
13/04/2016	96	5.20	25.67	3.53
14/04/2016	96	4.04	10.17	1.44
15/04/2016	96	3.36	12.31	1.74
16/04/2016	96	1.37	3.90	0.81
17/04/2016	96	2.30	13.13	1.99
18/04/2016	96	4.16	7.55	1.13
19/04/2016	96	10.61	77.74	13.69
20/04/2016	96	12.22	18.32	2.37
21/04/2016	96	14.37	20.43	3.88
22/04/2016	96	8.87	12.66	1.71
23/04/2016	96	3.60	8.29	1.84
24/04/2016	96	2.51	4.53	0.69
25/04/2016	96	2.69	9.45	1.25
26/04/2016	92	7.30	92.15	12.59
27/04/2016	96	5.46	67.20	9.85
28/04/2016	94	6.42	78.34	13.32
29/04/2016	96	3.72	18.77	2.90
30/04/2016	96	2.42	4.90	0.94

EXECUTIVE SUMMARY

Ambient Air Quality Summary

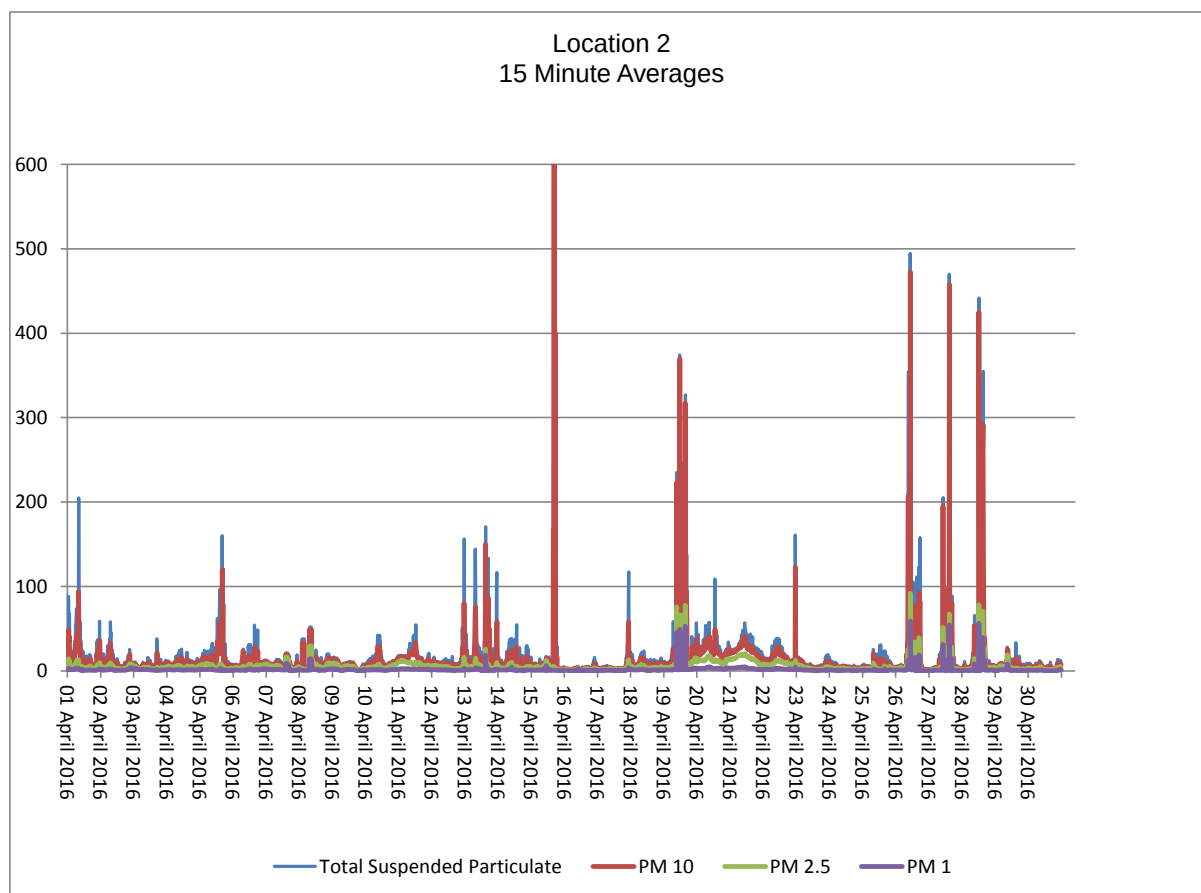
Location 2 - PM 1 - Daily Results Table

Date	Data Point(s)	Average Deposition $\mu\text{g}/\text{m}^3$	Maximum Deposition $\mu\text{g}/\text{m}^3$	Standard Deviation $\mu\text{g}/\text{m}^3$
01/04/2016	96	1.31	3.29	0.70
02/04/2016	96	1.32	3.76	0.82
03/04/2016	96	1.30	2.83	0.54
04/04/2016	96	1.12	1.55	0.19
05/04/2016	96	1.13	2.57	0.55
06/04/2016	96	1.24	2.37	0.53
07/04/2016	96	1.49	8.65	1.39
08/04/2016	96	1.57	14.18	2.00
09/04/2016	96	1.02	2.30	0.57
10/04/2016	96	1.19	2.07	0.35
11/04/2016	96	2.05	2.66	0.42
12/04/2016	96	0.91	2.99	0.39
13/04/2016	96	1.53	18.68	2.06
14/04/2016	96	0.98	4.33	0.48
15/04/2016	96	0.83	5.90	0.67
16/04/2016	96	0.41	2.68	0.33
17/04/2016	96	0.64	3.73	0.57
18/04/2016	96	1.04	1.92	0.32
19/04/2016	96	3.97	53.03	9.42
20/04/2016	96	3.00	4.75	0.63
21/04/2016	96	3.04	4.69	0.93
22/04/2016	96	2.03	4.26	0.42
23/04/2016	96	0.81	1.94	0.42
24/04/2016	96	0.63	1.33	0.20
25/04/2016	96	0.72	2.56	0.37
26/04/2016	92	3.12	58.81	7.25
27/04/2016	96	2.32	54.26	6.74
28/04/2016	94	2.76	56.24	8.28
29/04/2016	96	1.00	8.19	1.17
30/04/2016	96	0.61	1.56	0.30

EXECUTIVE SUMMARY

Ambient Air Quality Summary

Location 2 - Graph



END OF REPORT

Appendix H



Developer Services
Affinity Water
Tamblin Way
Hatfield
Hertfordshire
AL10 9EZ

Tel: 0345 357 2428
Fax: 01707 679 206

Scheme No: 47566

Volker Fitzpatrick,
Hertford Road,
Hoddesden,
EN11 9BX

FAO Richard White,

11th May 2016

Dear Richard,

Re: Phase 3, 5 Iron Bridge Road, West Drayton, UB11 1HB

Thank you for your application for new water mains/services at the above site.

For your information the following documents are enclosed:-

- Offer Letter
- Legal Agreement
- Estimated Service Connection Cost Template
- CAD plan

The next step is to send the payment in for the above water connections accompanied by:

- Offer Letter signed for either Relevant Deficit, Commuted Sum, or Self Lay. This offer letter is valid from 90 days from date of issue.
- Legal Agreement signed on the corresponding page to the offer that has been chosen.
- The Estimated Service Connection Cost Template returned indicating which plots are being paid for.
- Please advise site managers name and contact details and the expected main laying start date.

If there is any additional information you require please do not hesitate to contact me on the number stated above.

Yours sincerely

Robin Ramphul
Developer Services Project Manager