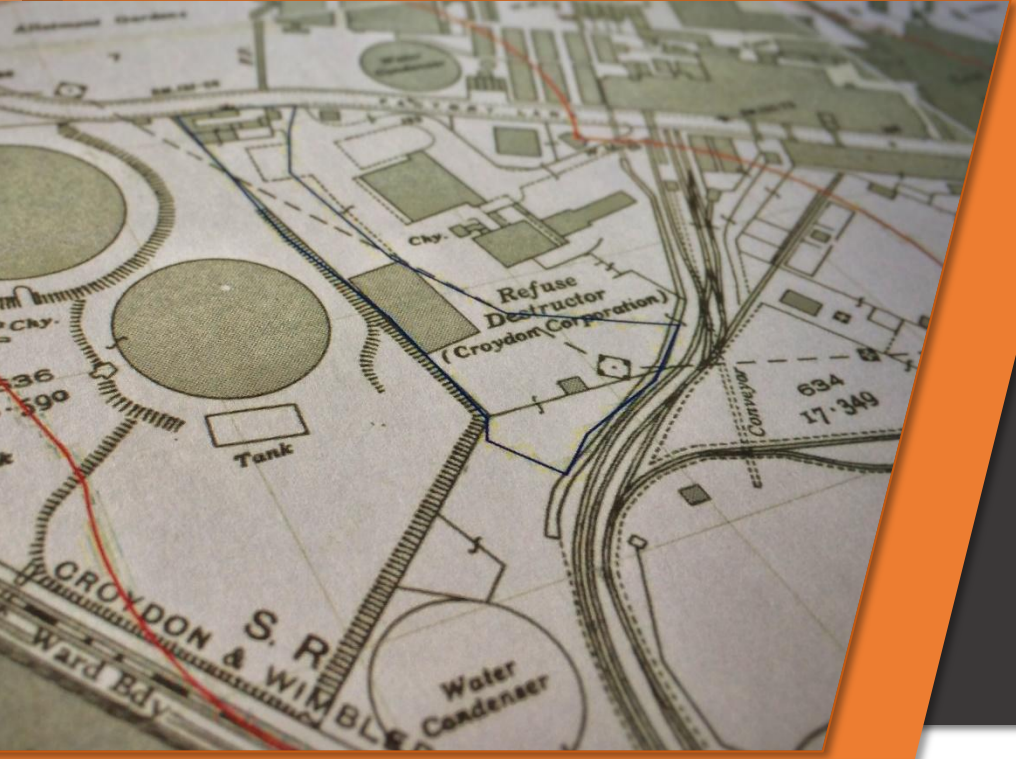

Interim Baseline Report

Project Reference: P25.114.BLR

KAO Data Centre

Prepared For

JCA

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Revision – Requested by	**Nature of Revision**	**Date**

Table of Contents

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Professional Interpretation
The recommendations made and opinions expressed in the report are based on the conditions revealed by the site works together with an assessment of the data from the insitu and laboratory testing or in respect of the desktop reports. No responsibility can be accepted for conditions that have not been revealed by the research, site works and testing.

The Client is advised that the conditions observed on site by Impact Geotechnical Ltd at the time of any site survey may be subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance and they may subsequently have become evident. It is not possible to assess areas which are inaccessible or where access is not granted and IGL accept no liability for risks subsequently identified therein.

The Conceptual Site Model, Risk Assessment and sampling regime has been formulated in accordance with current UK guidance at time of production based upon the relevant information gained from Stage1, Stage 2 and Stage 3 Risk Assessments. While the model and assessment offer opinions and interpretations of these guidelines, the comments made are for guidance only and no liability can be accepted for their accuracy. It is possible that aspects of Geo-environmental reports may need to be altered following consultation with the statutory regulatory bodies to suit planning requirements.

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The data collected through direct operations in the production of this report has been so obtained, unless directly otherwise stated, in accordance with current UK guidance, law or accepted industry practice, including but not limited to: BS.5930: 1990 Code of Practice for Site Investigations (Amendment 3: 2015+A1:2020), & BS.10175: 2011 + A2: 2017 Investigations into Potentially Contaminated Sites. Exact exploratory locations will depend upon access conditions, site use and plant capability, IGL do not accept liability for issues arising from material identified between or outside of the area of exploratory locations.

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The Environment Agency has undertaken revision of the Soil Guideline Values (SGVs) which are partially complete. Where standards are available using the "new" approach, these have been utilised for correlative purposes. Where standards have not yet been revised, guidance following the "old" approach has been utilised. Please note that upon release of the remaining guidelines, the standards contained within this report may be subject to change. In addition, the second edition of the LQM CIEH guidance has now been released and will be utilised in favour of previously published guideline values.

Third Parties
The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from previous Site investigations and chemical testing laboratories. IGL has assumed that such information is correct. IGL cannot and does not guarantee the authenticity or reliability of the information it has relied upon and can accept no responsibility for inaccuracies with the data supplied by other parties.

The accuracy of the historical map extracts supplied cannot be guaranteed and it should be noted that different conditions may have existed between mapping sheet editions. Therefore, there can be no certainty that all areas of contamination have been identified during the Stage 1: Tier 1 Preliminary Risk Assessment.

Definitions
Reference to the word "contamination" in this report does not relate to the statutory definition of contaminated land under 1990 Environmental Protection Act unless otherwise stated. The definition used in this report is: "Land that contains substances that, when present in sufficient quantities or concentrations, are likely to cause harm, directly or indirectly, to man, to the environment, or on occasion to other targets" (NATO CCMS, 1985).

1. INTRODUCTION

1.1 Brief

Impact Geotechnical Ltd (IGL) were instructed by JCA Engineering Ltd (the Client) (Q24.453.1) to carry out a Baseline Report (BLR) specific to the entire development area relating to KAO Data Centre, London Road, Harlow, CM17 9NA (hereafter referred to as the "site"). In summary, the site comprises a business park and data centre, with on-going construction works, along with associated constructions works compound and temporary offices.

The BLR aims to compile and summarise previous investigations at the site, in order to provide an Environmental Baseline Risk Assessment, pertaining to contaminated land, for the entire KAO Data Centre development. This is to be achieved, in order to determine potential source – pathway – receptor linkages associated with the site and the surrounding environs, by providing information on the following:

- The expected geology and hydrogeology.
- The development history and most recent uses of the site.
- Potential sources of contamination.
- To enable the development of a Conceptual Site Model (CSM) and risk assessment.

The report has been formulated in general accordance with BS10175:2011+A2:2017 Investigations into Potentially Contaminated Sites – Code of Practice and Land Contamination: Risk Management (LCRM): 2020, published by the Environment Agency.

For the purpose of this risk assessment a 'Commercial' land-use setting will be used based on the design proposals.

This report should be treated as an interim document until such time that the groundwater monitoring regime has been completed at the site.

1.2 Previous Reports

The following reports have been completed within the site boundary. IGL takes no responsibility to the accuracy of third party documents. The reader is referred to the relevant reports for further information regarding their contents.

- Constructive Evaluation Limited – Stage 1: Desktop Study & Walkover Survey – April 2014.
- Constructive Evaluation Limited – Stage 2: Site Investigation – May 2014.
- Constructive Evaluation Limited – Additional Ground Investigation – April 2016.
- Impact Geotechnical Limited – Stage 1: Tier 1 Preliminary Risk Assessment – March 2025
- Impact Geotechnical Limited – Stage 1: Tier 2 Site Investigation GQRA – March 2025

These documents should be read in conjunction with this report for completeness. A summary of these documents is included within later report sections.

1.3 Proposals

The proposals relate to the KAO Data Centre, a data centre campus to accommodate four separate commercial data centres, titled KLON-01, KLON-012, KLON-03 and KLON-04. As the time of this report production, KLON-01 and KLON-02 were operational, and KLON-03 being under construction. The proposals include limited amenity soft-landscaping. A proposed site plan is included within Appendix A.

2. PHYSICAL SETTING

The following observations are taken from the previous reports (Section 6) and the British Geological Survey (BGS).

2.1 Geology and Hydrogeology

The GeoIndex (BGS, 2025) indicates that the site is underlain by Superficial Deposits of the Lowestoft Formation, over Bedrock Geology of the London Clay Formation. The table below identified the expected composition of the published strata and the associated aquifer classification.

Superficial / Drift Geology	
Unit Name	Lowestoft Formation
Geology Description	Till with chalk and flint, that is typically grey and greyish brown Clay, and variably sandy and gravelly
Aquifer Class	Unproductive Strata
Aquifer Description	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
Bedrock / Solid Geology	
Unit Name	London Clay Formation
Geology Description	Bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty Clay
Aquifer Class	Unproductive Strata
Aquifer Description	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

Table 2.1: Geology and Hydrogeology

2.2 Geological Hazards

The British Geological Survey (BGS, 2025) has provided the available published Geological Hazard directory information for the study site. The information returned is displayed in the table below. Where multiple records are present, the worst case classification is presented below.

Hazard	Risk Level
Shrink Swell Clays	Low
Landslides	Very Low
Collapsible Ground	Very Low
Running Sands	Very Low
Ground Dissolution	Negligible
Compressible Ground	Negligible

Table 2.2: Geological Hazards

2.3 Radon

The site is located within an Lower probability radon area, as less than 1% of homes are estimated to be at or above the radon Action Level. In order to meet requirements from building regulations it is recommended that a detailed

radon search is commissioned by BGS, subject to a search fee, to ensure the correct level of radon protection is required. IGL have not commissioned this search.

2.4 Hydrology

2.4.1. Surface Water Features

The nearest surface water feature is listed as being approximately 230m south, considered to be a pond.

2.4.2. Flooding

The site is located within an EA Flood Zone 1 (i.e. low probability of flooding).

2.5 Controlled Waters

2.5.1. Abstraction Licences

There are no licenced water abstractions (including potable, groundwater and surface water) in or within a 1000m radius of the study area.

2.5.2. Source Protection Zones

The site is not located within a Source Protection Zone (SPZ). However, it should be noted that Source Protection Zone III (Total Catchment) is located approximately 100m north-west.

3. SITE LAYOUT AND ENVIRONS

An engineer from IGL visited the site on 10th February 2025 to conduct a walkover survey of the investigation area and surrounds for the purpose of identifying any potential contamination or evidence of previous contaminative processes. The descriptions below relate to site conditions at the time of the inspection only. A summary of the site is tabulated below. Photographs relating to the observations can be viewed within Appendix B.

Site Address	KAO Data Centre, London Road, Harlow, CM17 9NA
Site Area	~5.30Ha
Grid Reference	Centred on Easting 547101, Northing 210080
Site Access	Via security gate off from London Road to the south
Ground Cover	>90% building footprint, tarmac road, and unmade. 10% soft-standing
Site Topography and Elevation	Relatively flat, situated at approximately 70-75m AOD (Above Ordnance Datum), according to Ordnance Survey

Table 3.1: Site Summary

3.1 Location and Topography

The site is centred on National Grid Reference TL 471 101, at the eastern extents of the town of Harlow; situated at approximately 70-75m AOD (Above Ordnance Datum), according to Ordnance Survey. The wider surrounds very gradually slope down towards the south-west.

3.2 Site Description

The study area comprises a data centre campus, KAO Data Centre. At the time of the walkover this included two separate data centre buildings, KLON-01 and KLON-03, as well as a construction site and lay-down/compound areas. It is understood that KLON-01 is operational, with KLON-02 being near operational. The buildings are rectangular in shape with a footprint of circa 50m by 80m. Both structures are located at the western half of the site. Access to these buildings was not permitted during the walkover, although pertinent infrastructure with respect to contaminated land is summarised below.

The construction site relates to the development of KLON-03, a planned data centre building of near similar design to the aforementioned buildings. The majority of this part of the site relates to the proposed data centre building, with the footprint encompassing the majority area.

At the time of the walkover, the central portion of the site included a site compound and contractor car park for both JCA Engineering Ltd and Natta (the groundworks/construction contractor). The compound included temporary site offices and welfare housed within site cabins.

The north-eastern part of the site pertains to the Natta lay-down and storage area. Items being stored within the Natta lay-down included shipping containers, skip, ACO drains, concrete slabs and kerbing stones.

Access to site is afforded by the KAO Data Park security hut located 100m south off from London Road.

3.2.1. ASTs and USTs

The following has been provided by the Client contact regarding the presence of Aboveground and Underground Storage Tanks (A/UST) within KAO Data Centre:

- KL01 - 5 sets of generators currently with a provision for 7.
- KL02 - 3 sets of generators currently with a plan for 7 sets later this year (2025).
- Each generator set has a tank for 25000 Litre of HVO fuel (biofuel). Each generator set has the provision for 150l of lube oil.

3.3 Surroundings

The wider surrounds are predominantly a mixture of a residential and commercial setting.

4. HISTORICAL MAPPING RECORDS

4.1 Historical Maps

The following observations are made based on the available historical map extracts presented in the previous reports (Section 6), of which the most significant points have been discussed in relation to the site and surrounding environs. Potential contaminative sources over 150m have been discussed only where they are considered to be significant.

Mapping Date Range	Observations
1875 – 1947 (OS 1:2,500 and 1:10,560; and Historical Aerial Photography 1:10,560)	Onsite: The earliest reviewed maps show the site to comprise part of an agricultural field.
	Surroundings: The surrounds predominantly include an agricultural and rural setting. A gravel pit is labelled 200-250m north-east of the site boundary. Markhall Wood is located 100m west.
1965 – 1974 (OS 1:1,250 and 1:2,500)	Onsite: An irregular-shaped building is located on site. This building is labelled as an unspecified 'Works'. An access road at the eastern part the site joins the works to London Road, located at the south-east of the site.
	Surroundings: Tennis courts, sports ground and associated pavilion are located immediately east outside of the site boundary. The A414 road is now located approximately 100-200m west. Residential development 400-500m west.
1980 – 1983 (OS 1:1,250 and 1:10,000)	Onsite: The 'works' building on site has now been relabelled as laboratories. Continued development on site and immediate surrounds (particularly to the west and south) with additional buildings and ancillary structures associated with the laboratories. A car park, presumably servicing the aforementioned laboratories, is comprises the southern and south-western portions of the study area.
	Surroundings: Probable unspecified storage tanks that appear to be present 50-120m west and north-west of the site boundary.
1999 – 2006 (OS 1:10,000 and Historical Aerial Photography)	Onsite: The site appears to remain relatively unchanged.
	Surroundings: Further residential and commercial development within the wider surrounds (>300m), particularly with the addition of the present day Tesco supermarket located 200-400m south-east.
2024 (1:10,000)	Onsite: The laboratories are no longer present and the buildings have presumably been demolished and ground left clear. The construction of the present-day KAO Data Centre.
	Surroundings: The surrounds appear to be congruent with the existing setting.

Table 4.1: Historical Map Records

4.2 Satellite Imagery

A review of available satellite imagery was undertaken to gain an understanding of the recent developments on site and surrounding area. Images have been reviewed from Google Earth (Google, 2025):

- Circa 2013: the site appears to be the historical aforementioned laboratories with associated infrastructure, including the car park to the south.

- Circa 2017-2020: the site has been cleared of the aforementioned laboratories. It is evident that the plot is being redeveloped to KAO Data Centre. During this time, the proposed location of KLON-03 appears to have been used as a place to store materials, with miscellaneous stockpiles present.

- Circa 2024: the site and surroundings appear to be congruent with the existing setting. Additional development of KAO Data Centre. Site compound and visitor/subcontractor car park visible.

5. PUBLIC RECORD INFORMATION

The following information has been taken from the IGL Stage 1: Tier 1 PRA Report (Ref: P25.114.PRA, Dated: March 2025), obtained from public archive via a data supplier. The subsequent review focusses on records within 100m of the study site, or those which are considered relevant to the proposed development.

5.1 Data Supplier - Envirocheck Report

The following observations are taken from the Envirocheck Report, presented in the aforementioned IGL Stage 1: Tier 1 PRA.

5.1.1. Contaminated Land Register

There are no areas of contaminated land, under Part 2a of the EPA (1990), within a 1km radius of site.

5.1.2. Discharge Consents

There are no records within 500m of the study site.

5.1.3. Pollution Prevention and Controls

There are a nominal number of records relating to 'Nortel Networks Optical Components Ltd', pertaining to now revoked permits for the handling of glass fibres and mineral fibres (non-asbestos). These records are likely attributed to the historical laboratories on site.

Another record has been identified on site relating to a BP petrol station; however, upon further review this is considered to be a discrepancy with the data pack as a BP petrol station is located over 1000m away from site, and not on site.

There are no other pertinent features within a 200m radius of site.

5.1.4. Pollution Incidents

There are no records of pollution incidents within 300m of the site.

5.1.5. Landfills

There are no records of current and/or historical landfills in or within a 500m radius of the site.

5.1.6. Registered Waste Transfer Sites

There are no records within 250m of the site.

5.1.7. BGS Mineral Sites

'Gravelpit Spring' a now ceased opencast pit for sand and gravel is recorded 300m north-east. There are no other records within a 500m radius of the study area.

5.1.8. Fuel Station Entries

A petrol station is located approximately 420m south relating to the nearby Tesco supermarket. Upon further review this is located nearer to 300m from the southern boundary of the site (i.e. security hut/access point). There are no other records within the surrounds (<500m) for petrol stations.

5.1.9. Contemporary Trade Directory Entries

There are three records within a 100m radius of site:

- Arrow Electronics Uk Ltd – Inactive record for Electronic Component Manufacturers & Distributors – located on site.
- Radio Tech Ltd – Electronic Equipment – Manufacturers & Assemblers – located on site.
- Teva Pharmaceuticals (Uk) Ltd – Inactive Pharmaceutical Manufacturers & Distributors – located approximately 100m east.

There are no other relevant entries within a 200m radius of the study area.

5.2 Unexploded Ordnance (UXO)

A review of available UXO information has been made with respect to the site and immediate surrounds. With reference to ZeticaUXO Unexploded Bomb Risk Map (Zetica Ltd, 2025), the site is located within an area as having a bombing density of 15 to 49 bombs per 1000acres. The Unexploded Bomb Risk Map indicates the potential for unexploded bombs to be present as a result of WWII raids. Further information can be found in the IGL Stage 1: Tier 1 PRA Report (Ref: P25.114.PRA, Dated: March 2025).

6. PREVIOUS REPORTS

The following reports have been completed at the land that now encompasses KAO Business Park, with the pertinent findings summarised below. IGL takes no responsibility to the accuracy of third party documents. The reader is referred to the relevant reports for further information regarding their contents.

6.1 Constructive Evaluation Limited – Stage 1: Desktop Study & Walkover Survey – April 2014

A Desktop Study (Stage 1: Tier 1 PRA) Report was completed by Constructive Evaluation Ltd (CE) (Ref: 14.8039, Dated: April 2014) pertaining to the site, and the now wider KAO Business Park, in relation to the proposed demolition of commercial buildings and construction of a new business park (i.e. KAO). The purpose of the PRA was to provide information on the expected geology and hydrogeology, the development history and most recent uses of the site, potential sources of contamination, and, to enable the development of a preliminary Conceptual Site Model (CSM) and risk assessment.

6.1.1. Walkover

A walkover of the CE study area was undertaken on 31st March 2014. The findings have been copied below; the reader should refer to the aforementioned document for further information.

The [CE] *site is generally made up of three areas, an undeveloped bank of grass to the south, central car park facilities and, offices and laboratories in the north.*

It is accessible by vehicular and pedestrian means along the south eastern boundary off London Road via security gates, leading into the car park which occupies the centre of the site. There are three sections within the main car park, an area of open-jointed brick paving, a similar sized area of tarmac spaces and a multi-storey car park to the west.

The multi-storey car park is unused and at the time of the walkover was surrounded by cones and signs warning that it was used for police dog training.

The grassed area to the south of the car park appeared to have been landscaped and sloped down towards the south. The southern boundary was lined in trees with an electrical substation noted within brick housing amongst these trees in the southeast corner.

The northern portion of the site comprises of various aged office blocks and laboratories, which were largely vacant. There are areas of soft scaping in between the blocks which are interconnected with covered walkways and bridges. Vehicular access is made via secure gates in the west with concrete security blocks preventing access to the east. Several single lane roads allow vehicular movement around the site.

Pertinent features are numbered on the map and are described below [overleaf]*;*

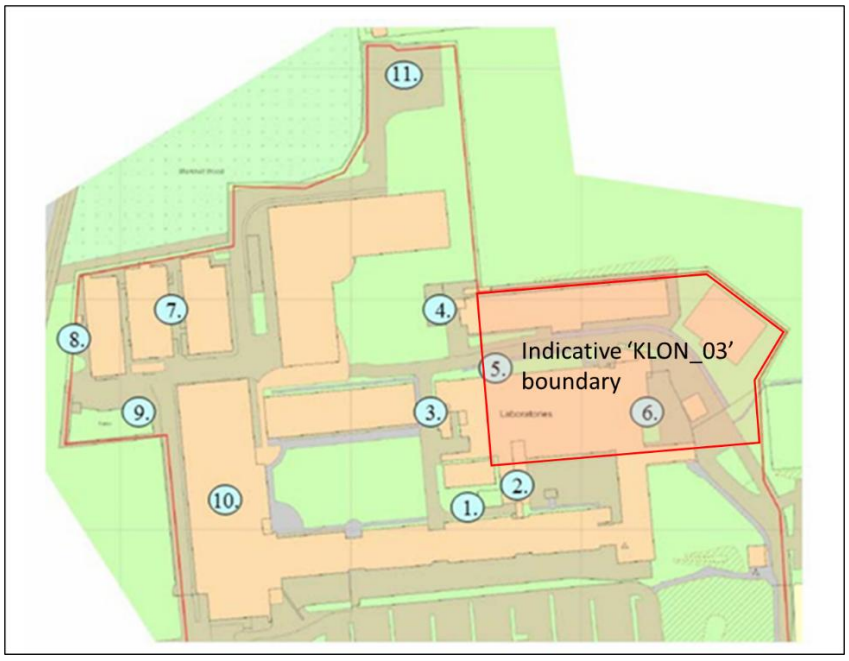


Image 6.1: CE Desktop Study Walkover Pertinent Features (with KLON_03 outlined)

1. *Located within this area are several electrical substation transformers which are currently supporting the site. These were generally in good condition within a fenced off area and surfaced in concrete. Within a concrete shed were two barrels of diesel partially submerged within a pool of trapped water. Also within this area were signs warning of caustic material, however the infrastructure associated with these had been removed.*

2. *Behind the aforementioned substation was the associated enclosed main switch room, however, access was not permitted during the walkover.*

3. *This area was considered to be used as a delivery site with larger shutter doors providing access into the ground floor of one of the laboratories. Within a number of out-houses and sheds around this entrance were a variety of plastic bottles, most of which were considered to contain oil, minor staining was noted on the tiled floor beneath.*

4. *Another electrical substation is located within this area in brick housing and an external fenced off area. This appears to be relatively modern with a clear service duct running out to the south.*

5. *Several 'gas huts' and an electrical substation are situated along the access road. The huts appear to have housed equipment and gauges for controlling and monitoring gas for the various facilities. These had been extensively decommissioned and many parts appeared to be missing.*

6. *Within a main building to the east a gas boiler room was present, again this appeared to be no longer active.*

7. *A large amount of services, generally electrical, were noted within the vicinity of the three single storey brick offices/workshops in this area of the site.*

8. *An above ground diesel tank and fuel stores were noted on the western edge of the site in a storage area. The diesel tank was sat on a 1300l catchment tank which was full of water with a slight sheen. This was*

positioned on both concrete and tarmac surfaces which was covered in leaves obscuring any potential staining from leaks and spills.

9. *Within this area a 194m3 water tank is located next to a waste storage area and an electrical facility. This all appeared to be in good condition on a concrete slabs.*

10. *This block is currently the only active office on site, it is a modern three storey building of glass and concrete construction.*

11. *To the north of the site is an area used for waste storage, this is largely in bins and crates and comprises electrical products/components.*

6.1.2. Historical Maps Summary

Observations of available historical map extracts pertaining to the CE site were made; a brief summary is included below.

Date Range	Relevant Observations
1874 – 1955	During this time the CE site and immediate surrounds remain relatively unchanged, comprising agricultural and rural land. Some minor residential developments beyond 150-300m radius.
1962 – 1966	Construction of unspecified works at northern end of CE study area. A414 road constructed. In addition, tennis courts and pavilion to the north-east.
1993 – 1995	The unspecified works are now labelled as laboratory. Furthermore, additional buildings are located on the study area, also labelled as laboratories; together with a car park.
2002	A multi-storey car park is located to the west.
2012	Several buildings within the north of the site have been replaced by a larger single 'L' shaped block considered to be offices.

Table 6.1.2: CE Historical Maps Summary

6.1.3. Information on Public Record

Public record information was acquired by CE and reviewed. Following a review, the following potentially contaminative features were identified.

Within CE Study Area:

- Fibre optic cable manufacturing.
- Processes involving mineral fibres and inorganic chemicals.
- Electrical substations and tanks

Outside CE Study Area:

- Petrol filling station located approximately 160m south-east.
- Electrical substation situated approximately 130m east.
- Car wash and petrol filling station located 140-150m south-east.

6.1.4. Preliminary Conceptual Site Model (CSM)

Following a site walkover, review of historical maps, and information on public record, the CE Desktop Study (Ref: 14.8039, Dated: April 2014) identified the following potential contaminant sources.

CE Desktop Study 'On-Site' Sources

- *The tank identified during the walkover to the west of the site.*
- *The past use of the majority of the site as a laboratory (and unspecified works c.1966) is considered to present a largely site with potential risk from the light industrial nature of the works supported by the findings of the walkover study. This includes the bottled fuels, plant and vehicle movement/spills, and the historic tanks. In addition the fibre optic cable manufacturing and IPC Authorisations records identified within the public record search are considered to be part of this source.*
- *Asbestos Containing Materials (ACM) were not noted during the walkover, however, it is considered that given the period of time that works have been located on site it is considered that there is the potential for ACMs to be present.*

CE Desktop Study 'Off-Site' Sources

No off-site sources of contamination were highlighted; those sources previously identified within the CE historic map and public information review were considered to be at a distance too great to present a significant risk to the CE study area.

Receptors

The following receptors were identified:

- End Users.
- Site Workers (during development of proposals).
- Proposed Development.
- Buried Services.
- Surface Water.
- Groundwater; Secondary Undifferentiated Aquifer associated with Head Deposits to the south.

Preliminary Risk Assessment

The CE Preliminary Risk Assessment has been copied below (Ref: 14.8039, Dated: April 2014). The reader should refer to the aforementioned report on definitions of risk.

Source	*Pathway*	*Receptor*	*Potential Risk*
On site hydrocarbons (PAH, TPH, BTEX and MTBE) and heavy metals from current fuel tank located in the west of the site.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Low** risk due to the limited size of the potential source and that the proposed end use of the development as a business park means that exposure to soils will be minimal. However, if proposals include areas of softscaping within this area the risk may be increased.
		Site workers.	**Moderate** risk given that the proposed development is to be completed within the vicinity of the tank and that site workers will be in direct contact with soils. The appropriate use of PPE will reduce this risk.
	Impacted Soils.	Services.	**Low** risk, given the limited potential sources identified, however depending on the location of installations pipework could be at risk from degradation.
	Volatilisation of hydrocarbons from the underlying soils to indoor and/or outdoor air.	End user and buildings.	**Low** risk given the limited size of the potential source, however, if impacted soils are identified then suitable measures may be required to reduce the risk as proposed developments are located within this area.
		Site workers.	**Low** risk given the limited time that that workers will be on site and the appropriate use of PPE during works.
	Infiltration and migration of contaminants through the underlying soils.	Secondary Undifferentiated Aquifer	**Negligible** risk given the distance from the tank to the aquifer located in the south of the site.
		Ancient Woodlands	**Low** risk given that the receptor is located off site, however, given that the tank is within close proximity to the woodlands it is considered that a pathway exists.
Source	*Pathway*	*Receptor*	*Potential Risk*
On site hydrocarbons (PAH, TPH, BTEX and MTBE) and heavy metals from historic laboratory/works with associated processes.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Low** risk given that limited specific sources identified and that the proposed use is for a business park, however, there are currently areas of softscaping and the proposed development is likely to include these which will increase the potential for exposure.
		Site workers.	**Moderate** risk given that site workers will be in direct contact with soils during ground works, however, the appropriate use of PPE will reduce this risk.
	Impacted Soils.	Services.	**Low** risk, given the limited potential sources identified, however depending on the location of installations pipework could be at risk from degradation.
	Volatilisation of hydrocarbons from the underlying soils to indoor and/or outdoor air.	End user and buildings.	**Low** risk given the limited specific sources and that the proposed end use is a business park which will limit the time end users are exposed to any contaminants.
		Site workers.	**Low** risk given the limited time that that workers will be on site and the appropriate use of PPE during works.
	Infiltration and migration of contaminants through the underlying soils.	Secondary Undifferentiated Aquifer	**Low** risk given that the Secondary Undifferentiated Aquifer is only present within the south of the site located away from the laboratory/works.
		Ancient Woodlands	**Low** risk given that the receptor is located off site and is confined to the northwest of the site.
Asbestos Containing Materials located within onsite laboratory/works.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Low** risk given that ACMs should be removed during the demolition process, however, there is still considered to be a risk from any mixing of soils or impacted Made Ground.
		Site workers.	**Moderate** risk given that site workers will be in direct contact with soils during ground works, however, the appropriate use of PPE will reduce this risk.

Table 6.1.4: CE Preliminary Risk Assessment (Ref: 14.8039, Dated: April 2014)

6.1.5. Conclusions

In summary, the CE Preliminary CSM and Risk Assessment identified generally **Low** risks to future end users, buried services and controlled waters from the highlighted sources. This was defined as, '*Defined as the site should be considered suitable for the present or future use and environmental setting* [Commercial setting]. *Contaminants may be present but unlikely to have unacceptable impact on key targets*'. A Moderate risk was identified to site workers (during development) from the sources. A worst-case **Moderate** risk was characterised from the possibility of Asbestos Containing Materials (ACMs) within the fabric of on-site buildings to human health receptors.

It was recommended that an intrusive investigation be undertaken comprising undertaking exploratory holes and soil laboratory testing for the purposes of due diligence.

6.2 Constructive Evaluation Limited – Stage 2: Site Investigation – May 2014

A Site Investigation (Stage 1: Tier 2 GQRA) Report was completed by Constructive Evaluation Ltd (CE) (Ref: 14.8039, Dated: May 2014) at the now KAO Business Park. The purpose of this investigation was to provide information on the underlying ground conditions with regards to foundation design, as well as to refine the pollutant linkages identified within the CE Desktop Study for the purposes of due diligence (Ref: 14.8039, Dated: April 2014).

6.2.1. Fieldworks

The intrusive investigation was undertaken between 2nd and 10th April 2014, and are summarised below; the reader is referred to the aforementioned report for additional information on fieldworks.

the following:

- 7no. cable percussive boreholes (BH1-BH7) to a maximum depth of 20.00mbgl.
- 19no. lightweight window sample boreholes across the site (WS1-WS19).
- 22no. Clegg Impact tests were completed within twelve trial pits (CBR1-CBR12) to enable the calculation of CBR values.
- 2no. bespoke soakage tests.
- All locations were logged, groundwater conditions and visual or olfactory evidence of contamination noted and representative soil samples removed in accordance with current protocol for contamination and geotechnical parameters.

A hole location plan for the aforementioned investigation is presented below (overleaf).

Image 6.2: Hole Location Plan for CE 2014 Intrusive Investigation (Ref: 14.8039, Dated: May 2014) (with KLON_03 outlined)

6.2.2. Ground Conditions

The following strata conditions were encountered during the intrusive works (copied directly from the CE Report (Ref: 14.8039, Dated: May 2014)).

Hardstanding

Tarmac surfacing was described in the northern half of the open car park and around the units in the northwest corner of the site area to a maximum thickness of 0.20mbgl. The southern half of the open car park is laid to brick paving, this is in turn underlain by a fine gravel subbase and subsequently by a coarse gravel base to a maximum depth of 0.70mbgl.

Made Ground

Made Ground soils were encountered to a maximum depth of 2.50mbgl. However the thickest Made Ground deposits were consistently described in the bunded area which forms the southwest corner of the [CE] *site. Here, Made Ground soils, described as reworked slightly gravelly clay, locally with masonry rubble to depths of 1.00m to 2.50mbgl. Elsewhere onsite the Made Ground soils are described to a maximum depth of 1.70mbgl, but generally not deeper than 0.70mbgl and are described as either subbase to pavements or reworked silty sandy and gravelly Clay soils with masonry rubble.*

Alluvium

At the locations of WS4 and WS5 the upper most natural soils are described as soft consistency dark grey slightly gravelly silty Clay. The gravels are fine, subrounded and of flint or chalk. This material is encountered to the base of both of these boreholes, a maximum depth of 3.00mbgl.

Slightly Sandy Slightly Gravelly Clay

With the exception of BH2, across the remainder of the [CE] *site the upper most natural soils are described as stiff to very stiff consistency brown mottled grey and speckled white slightly sandy and slightly gravelly Clay. The gravels are subangular to rounded, fine to coarse sized chalk and occasional flint. This material is considered to be representative of the weathered Lowestoft Formation and is encountered to a maximum depth of 8.00mbgl.*

The latter stratum is observed to become very stiff and dark grey with depth at BH1, 3, 4, 5 and 6; considered representative of unweathered Lowestoft formation material. This soil is encountered to a maximum depth of 13.35mbgl.

Gravel

Within BH1 and BH6, the above soils were found to be underlain by dense brown sandy flint Gravel, the thickness of this deposit was proven in BH1 only at 1.70m thick. The maximum proven depth of this material is 8.40mbgl in BH1 and 13.40mbgl in BH6.

Gravelly Silt

At locations BH1 and BH7 the gravel / chalky clay soils are underlain by material described as stiff consistency gravelly Silt. The gravel is described as fine to coarse sized chalk. This material is considered to be representative of depositional variation in the Lowestoft Formation. This soil is encountered to a maximum depth of 12.00mbgl.

Fissured Clay

Below the base of the latter deposit in BH1, the solid geology of the London Clay Formation is encountered; this material is described as very stiff consistency fissured dark grey silty Clay. Fissures are closely spaced, sub-vertical and sub-horizontal. This material is encountered to the final drilled depth of 20.00mbgl.

Visual and Olfactory Observations

With the exception of the anthropogenic material encountered on site the only evidence of contamination was identified within WS13 at a depth of 0.80mbgl. This was in the form of a moderate chemical odour with no staining.

6.2.3. Groundwater

Groundwater was encountered within 4no. of the lightweight window sample boreholes at depth ranging from 0.80m to 1.70mbgl. Furthermore, a groundwater strike was recorded within BH6 at the top of the aforementioned Gravel stratum, at a depth of 13.35mbgl, rising to 12.20mbgl after a period of 20 minutes. No comment regarding the appearance of the encountered groundwater was made within the report.

6.2.4. Soil Laboratory Testing

22no. soil samples from varying exploratory hole locations, and depths ranging from 0.20m to 1.20mbgl, were submitted to a UKAS accredited laboratory for a screen of contamination testing from both the encountered Made Ground and natural soils. The contamination screen comprised heavy metals, an asbestos screen, and hydrocarbons (including speciated Total Petrol Hydrocarbons (TPH CWG aromatic/aliphatic split), BTEX, MTBE and speciated

Polycyclic Aromatic Hydrocarbons (PAH)), as well as a background suite of pH, SOM, total cyanide, and total phenols. In order to assess the soil analysis with regard to potential human health risks, CE compared the results against Generic Assessment Criteria (GAC), using a 'Commercial' land use setting based on the proposed end use.

Soil Results

All the results for both inorganic and organic determinands returned concentrations below the relevant and available GAC. Furthermore, all asbestos screens returned a negative result for the presence of fibres.

6.2.5. Groundwater Monitoring and Testing

Groundwater monitoring and laboratory testing was not undertaken as part of this CE investigation.

6.2.6. Updated Conceptual Site Model (CSM) and Risk Assessment

The CSM was revised to provide information regarding the possible sources of contamination, based on the aforementioned investigation and soil analysis (Ref: 14.8039, Dated: May 2014). The reader should refer to the aforementioned report on definitions of risk.

Source	*Pathway*	*Receptor*	*Potential Risk*
On site hydrocarbons (PAH, TPH, BTEX and MTBE) and heavy metals from current fuel tank located in the west of the site.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Negligible** risk given the results of the laboratory testing.
		Site workers.	**Low** risk given the results of the laboratory testing, however, given the variable composition of Made Ground appropriate PPE should be utilised to mitigate any residual risk.
	Impacted Soils.	Services.	**Moderate** risk, given the elevated PAH concentrations and depending on the location of installations pipework could be at risk from degradation. In order to mitigate this risk the Water Regulations Advisory Scheme (WRAS) should be followed in conjunction with the local water board.
	Volatilisation of hydrocarbons from the underlying soils to indoor and/or outdoor air.	End user and buildings.	**Negligible** risk given the results of the laboratory testing.
		Site workers.	**Negligible** risk given findings of the laboratory analysis and the limited time that that workers will be on site and the appropriate use of PPE during works.
		Ancient Woodlands	**Negligible** risk given the results of the laboratory testing.
Asbestos Containing Materials located within onsite laboratory/works.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Negligible** risk given the results of the laboratory testing.
		Site workers.	**Low** risk given the results of the laboratory testing, however, given the variable composition of Made Ground appropriate PPE should be utilised to mitigate any residual risk.

Source	*Pathway*	*Receptor*	*Potential Risk*
On site hydrocarbons (PAH, TPH, BTEX and MTBE) and heavy metals from historic laboratory/works with associated processes.	Inhalation, ingestion and dermal contact from exposure to contaminated soils.	End users.	**Negligible** risk given the results of the laboratory testing.
		Site workers.	**Low** risk given the results of the laboratory testing, however, given the variable composition of Made Ground appropriate PPE should be utilised to mitigate any residual risk.
	Impacted Soils.	Services.	**Moderate** risk, given the elevated PAH concentrations and depending on the location of installations pipework could be at risk from degradation. In order to mitigate this risk the Water Regulations Advisory Scheme (WRAS) should be followed in conjunction with the local water board.
	Volatilisation of hydrocarbons from the underlying soils to indoor and/or outdoor air.	End user and buildings.	**Negligible** risk given the results of the laboratory testing.
		Site workers.	**Negligible** risk given findings of the laboratory analysis and the limited time that that workers will be on site and the appropriate use of PPE during works.
	Infiltration and migration of contaminants through the underlying soils.	Secondary Undifferentiated Aquifer	**Negligible** risk given the results of the laboratory testing.
		Ancient Woodlands	**Negligible** risk given the results of the laboratory testing.

Table 6.2.6: CE Site Investigation (Ref: 14.8039, Dated: May 2014)

6.2.7. Conclusions

The following conclusions have been copied directly from the CE Site Investigation Report (Ref: 14.8039, Dated: May 2014).

The results of the contamination testing have returned minor elevations of PAH although the concentrations were below the relevant and available guideline values.

Negligible risks have been assessed to the future site users from the presence of heavy metals, hydrocarbons and asbestos this assessment reflects the results of the laboratory analysis, the limited pathways and potential exposure time.

A low risk has been assigned to site workers during ground works, this is largely a precautionary risk based on the presence of Made Ground which has the potential for compositional variability. In addition the minor elevation of PAH detected within WS14 next to the tank in the west warrants the use of appropriate PPE to prevent unnecessary contact with potentially impacted soils.

Services have given a moderate risk on the basis that the elevated PAH concentration within WS14, which is in an area for potential redevelopment, may cause damage due to the high organic content. As such prior to the installation of any new services the Local Water Board should be contacted and pipework materials should adhere to the guidelines within the Water Regulations Advisory Scheme (WRAS).

The risk levels regarding asbestos are in relation to the soils and on the basis that a pre-demolition survey within the existing buildings will be completed on site and any asbestos identified will be removed prior to works commencing.

6.3 Constructive Evaluation Limited – Additional Ground Investigation – April 2016

An 'Additional Ground Investigation Report' was completed by Constructive Evaluation Ltd (CE) (Ref: 16.8997, Dated: April 2016) at KAO Data Centre.

The purpose of the additional investigation was to supplement geotechnical information obtained during the CE 2014 investigation works (Ref: 14.8039). Moreover, WAC testing was undertaken from stockpiles of spoil and crushed concrete.

A risk assessment and Conceptual Site Model fall outside the scope of this additional report.

6.3.1. Fieldworks

This phase of investigation works was undertaken on 22nd and 23rd March 2016, and included:

- 1no. cable percussive borehole (16BH1) advanced to a depth of 10.00mbgl using a Shell and Auger drilling rig. This was supplemented by the completion of in-situ Standard Penetration Tests (SPTs) throughout drilling.
- 5no. dynamic cone penetrometer (DCP) tests (16CBR1-5) were targeted in positions along the route of the proposed spine road.
- Removal of representative samples for geotechnical analysis.

- Removal of thirty-two samples for Waste Acceptance Criteria (WAC).

A hole location plan is included within the appendices of the aforementioned report (Ref: 16.8997, Dated: April 2016).

6.3.2. Ground Conditions

The following ground conditions were encountered within the exploratory hole (16BH1).

Type 1

Compacted type 1 fill was identified from ground level to 0.08mbgl.

Made Ground

Three layers of Made Ground were identified below the ground surface of Type 1 fill, and comprised the following; gravelly sand of brick and flint (0.08-0.30mbgl), concrete (0.30-0.35mbgl), and Type 1 sand and gravel of limestone hardcore/sandstone (0.35-0.45mbgl).

Silty Clay

Stiff light brown and in parts grey speckled white slightly gravelly silty Clay was identified from 0.45 to 1.50mbgl. Gravel comprised sub angular to rounded fine and medium chalk. This strata became very stiff brown and in parts red/ brown and grey speckled white slightly gravelly from 1.50mbgl. Gravel comprised sub angular and sub rounded fine and medium and occasional chalk and flint. The silty Clay became very stiff dark grey and occasional speckled cream slightly gravelly from 2.90mbgl (to maximum drill depth of 10.00mbgl). Gravel comprised sub angular to rounded fine and medium chalk. This silty Clay strata is thought to represent the Lowestoft Formation.

6.3.3. Groundwater Conditions

Groundwater was not encountered during this phase of investigations.

6.4 Impact Geotechnical Limited – Stage 1: Tier 1 Preliminary Risk Assessment – March 2025

A Stage 1: Tier 1 PRA Report was completed by IGL (Ref: P25.114.PRA, Dated: March 2025) at KAO Data Centre. The purpose of the PRA was to provide information to enable the development of a preliminary CSM and risk assessment.

6.4.1. Preliminary Conceptual Site Model (CSM)

Following a site walkover, review of historical maps, and information on public record, the IGL Preliminary Risk Assessment (Ref: P25.114.PRA, Dated: March 2025) identified the following potential contaminant sources.

IGL On-Site Sources

- Made Ground as a result of the historical development of the site; likelihood of Asbestos Containing Soil (ACSs) from ACMs possibly present throughout the fabric of the former structures. Contaminants of Concern (CoC) are likely to include heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs) and Asbestos Containing Soils (ACSs).

- Occupation of the site as a laboratories and works from circa 1965 until recently. This includes the storage of fuels and oils. Contamination is likely to have occurred within areas associated with the transfer and storage of these materials, through leaks and spills etc, including any tanks (including Underground Storage

Tanks USTs). COCs include heavy metals, aromatic hydrocarbons, Total Petroleum Hydrocarbons (TPHs) and Semi/Volatile Organic Compounds (S/VOCs).

IGL Off-Site Sources

- Leaks and spillages of fuels and oil from the 25,000L HVO fuel tanks and associated infrastructure at the neighbouring KAO Data Centre buildings. COCs are specific to hydrocarbons.

Receptors

The following receptors were identified:

- Commercial end users.
- Future maintenance workers – gardeners.
- Construction and groundworkers during development on site.
- Proposed Development – Ground gas and soil vapour from impacted soils that may accumulate in confined, poorly ventilated areas of the proposed buildings.

Controlled waters were not considered further as receptors owing to the sensitivity of both groundwater and surface water; i.e. no SPZs, abstractions and/or principal aquifers were identified beneath the site or immediate surroundings. Furthermore, there no sensitive watercourses were noted on site or the surroundings.

Preliminary Risk Assessment

The IGL Preliminary Risk Assessment is presented below. This was based on the commercial end use, and without any further investigation or mitigation measures.

Source	Pathway	Receptor	Likelihood	Potential Risk
Made Ground as a result of the historical development of the site; likelihood of Asbestos Containing Soil (ACSs) from ACMs possibly present throughout the fabric of the former structures. Contaminants of Concern (CoC) are likely to include heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs) and Asbestos Containing Soils (ACSs).	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Negligible to Low
		Site workers (during development / construction)	Low likelihood	Negligible
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible
Discussion of Risks				
This historical development and possible presence of ACMs can lead to Made Ground, and those contaminants associated with this reworked material. The risk to commercial end users is considered to be Low; the degree of interaction with any potentially impact soils would be minimal.				

A greater risk is considered for site workers who will be in contact with potentially impacted soils, albeit that the period of potential exposure is limited to the development phase. Whilst Made Ground is expected, the potential risk from soil gases generated by any Made Ground is considered to be negligible until proven otherwise. This Made Ground is likely the result of reworking during construction rather than landfilling activities. The absence of any productive aquifers, Groundwater Source Protection Zones, water abstractions, and sensitive water bodies on site and immediate surroundings drastically reduces the sensitivity of controlled waters as a receptor; and thereby reducing overall risks.

Table 6.4.1: IGL Stage 1: Tier 1 PRA (Ref: P25.114.PRA, Dated: March 2025) – Source 1

Source	Pathway	Receptor	Likelihood	Potential Risk
Occupation of the site as a laboratories and works from circa 1965 until recently. This includes the storage of fuels and oils. Contamination is likely to have occurred within areas associated with the transfer and storage of these materials, through leaks and spills etc, including any tanks (including Underground Storage Tanks USTs). COCs include heavy metals, aromatic hydrocarbons, Total Petroleum Hydrocarbons (TPHs) and Semi/Volatile Organic Compounds (S/VOCs).	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Low
		Site workers (during development / construction)	Low likelihood	Low
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible to Low
Discussion of Risks				
Commercial end users unlikely to be exposed to source, as the site is to be almost entirely laid to hardstanding. Moreover, a large majority of the site is proposed to be building footprint, and thereby exposure duration of receptor is very short, further reducing overall risk. There is a degree of exposure from maintenance workers (e.g. future gardeners), although the short exposure time and low sensitivity of this receptor significantly reduces the risk. There is possibility that site workers (during development) will be exposed to impacted soils, as well as soil vapour generated from the source material, during groundworks to permit construction of the proposed development. However, the external work setting and relatively low sensitivity of the receptor significantly reduces the overall risk. Regardless, it is recommended that standard 'good working practices' (i.e. correct use of PPE, wash/mess facilities, watching brief) are adopted during groundworks, in order to reduce any salient risks. The risk from soil vapour and ground gas to human health receptors is generally thought to be Low, until proven otherwise. This is on the basis that a the source is historical and a significant degree of groundworks have been undertaken on site. Thereby, suggesting that if grossly contaminated (i.e. with hydrocarbons or landfill) soils/groundwater were encountered, these would have been highlighted by the Client or their contractors. Nevertheless, the sensitivity of the receptors is low. The absence of any productive aquifers, Groundwater Source Protection Zones, water abstractions, and sensitive water bodies on site and immediate surroundings drastically reduces the sensitivity of controlled waters as a receptor; and thereby reducing overall risks.			

Table 6.4.2: IGL Stage 1: Tier 1 PRA (Ref: P25.114.PRA, Dated: March 2025) – Source 2

Source	Pathway	Receptor	Likelihood	Potential Risk
Leaks and spillages of fuels and oil from the 25,000L HVO fuel tanks and associated infrastructure at the neighbouring KAO Data Centre buildings. COCs are specific to hydrocarbons.	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Negligible to Low
		Site workers (during development / construction)	Low likelihood	Negligible
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible
Discussion of Risks				
The current risks from this source are considered to be low, due to the fact that the fuel tanks have been recently installed and should be well maintained as part of due diligence. Nevertheless, the commercial setting does reduce any salient risks.				

Table 6.4.3: IGL Stage 1: Tier 1 PRA (Ref: P25.114.PRA, Dated: March 2025) – Source 3

In summary, the IGL preliminary CSM identified generally **Low** risks from the identified source – pathway – receptor pollutant linkages. A Low risk is defined as, 'The site should be considered suitable for the present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets'. Consequently, further assessment of the pollutant linkages was not deemed specifically necessary. Nevertheless, basic recommendations were made for the purposes of due diligence, principally relating to the .

6.4.2. Due Diligence

Whilst the identified pollutant linkages within the PRA were characterised as having generally Low risks, there remained some uncertainty to the ground/groundwater conditions in and around KLON-03, as previous investigations failed to specifically target this area. As such, it was recommended that a supplementary investigation be undertaken within this location as part of the 'baseline' environmental surveys being completed as part of the EA permitting process. As part of this investigation it was recommended that a soil screening exercise be completed to inform on salient contamination levels.

6.5 Impact Geotechnical Limited – Stage 1: Tier 2 Site Investigation GQRA – March 2025

A Stage 1: Tier 2 Site Investigation Generic Quantitative Risk Assessment (GQRA) (Ref: P25.114.GQRA, Dated: March 2025) was completed by IGL specifically within the location of KAO Data LON 03 (i.e. KLON-03), located within the wider KAO Data Centre. The brief was to undertake a ground investigation to identify any ground condition issues that may affect redevelopment of the site (specific to KLON-03) in terms of geo-environmental aspects. Specifically, the intrusive ground investigation was required in order to assess the pollutant linkages, and associated risks, mindful of the proposed development, as identified within the PRA.

6.5.1. Fieldworks

The intrusive investigation was undertaken between 10th and 13th February 2025 and have been summarised below. The reader is referred to the aforementioned report for additional information on fieldworks.

- 3no. cable percussive boreholes (BH1-BH7) to a maximum depth of 20.00mbgl. All three boreholes were installed with groundwater monitoring standpipes.
- 4no. windowless sample boreholes (WS1 – WS5) to depths of 3.00mbgl.
- Groundwater monitoring.
- Soil and groundwater analysis.

A hole location plan for the investigation is included within the aforementioned report.

6.5.2. Ground Conditions

The following ground conditions were encountered during the IGL intrusive works. It is recommended that the reader reviews the logs appended to the GQRA Report for further information (Ref: P25.114.GQRA, Dated: March 2025).

Surface Covering

The surface of one of the seven exploratory holes (IGL-BH1) comprised tarmac, recorded to be 200mm thick. The remaining exploratory holes were surfaced with Made Ground.

Made Ground

Made Ground was identified within all exploratory holes from ground level to the maximum depth of 1.60mbgl (metres below ground level), in the case of IGL-WS3.

The Made Ground soils across the site were found to be variable in terms of principal soil type, ranging from a Clay to a Sand, and locally recorded as a Gravel. In addition, the following items were encountered at varying degrees and locations within the Made Ground: brick, concrete, plastic, rusted metal and glass.

Lowestoft Formation

The initial natural soils were considered to be representative of the Lowestoft Formation, recorded from depths ranging 0.80m to 1.60mbgl, to the maximum intrusive depth of 20.00mbgl.

This stratum was firstly logged as a stiff light brown mottled grey and speckled white gravelly silty Clay, with the gravel recorded as flint. At depths circa 2.00-3.00mbgl, the cohesive soils transitioned to a stiff to very stiff dark grey and dark brown mottled silty Clay, with gravel of chalk, and occasionally with chert gravel. In addition, cobbles of chalk were occasionally encountered.

Within all three cable percussive boreholes (IGL-BH1, IGL-BH2 and IGL-BH3) a granular layer was encountered within the Lowestoft Formation. This layer was recorded from depths ranging from 10.50m to 14.70mbgl, described as a brown clayey sandy angular to rounded fine to coarse Gravel of chert within IGL-BH1 and IGL-BH2; and, a brown speckled orangish brown very clayey slightly gravelly fine to coarse Sand within IGL-BH3.

Visual and Olfactory Observations

There was no significant visual/olfactory evidence of contamination noted during the ground investigation, other than the anthropogenic materials (i.e. brick, concrete etc.) encountered within the Made Ground soils.

Furthermore, there was no evidence of any hydrocarbon-specific contamination within the soils (i.e. hydrocarbon stains, sheens and odours.

6.5.3. Groundwater

Groundwater monitoring of the installed standpipes within each cable percussive borehole is tabulated below.

Hole ID	Date and Time	Groundwater Level (mbgl)
BH1	3rd March 2025 – 12:25	11.86
BH2	3rd March 2025 – 12:35	11.50
BH3	3rd March 2025 – 12:15	11.33

Table 6.5.3: Groundwater Monitoring

6.5.4. Soil Laboratory Testing

Seven soil samples were chosen at various locations and depths (ranging from 0.20m to 1.50mbgl) across KLON-03, and submitted to a UKAS accredited laboratory for a generic contamination suite. This suite included heavy metals, speciated polyaromatic hydrocarbons (PAHs), Extractable petroleum hydrocarbons (EPHs), as well as an asbestos screen.

Samples were selected from the encountered Made Ground; and therefore, probable worst-case with respect to the site and development area. Furthermore, one sample was taken from natural soils to provide an indication as to Normal Background Concentrations (NBCs) of generic contaminants.

In order to assess the soil analysis with regard to potential human health risks, IGL compared the results against GAC, using a 'Commercial' land use setting based on the proposed end use. The list of chosen GAC include the following:

- Suitable 4 Use Levels (S4ULs) Generic Assessment Criteria (GAC) developed by the Chartered Institute of Environmental Health (CIEH) in partnership with Land Quality Management Ltd. (LQM).
- Category 4 Screening Levels (C4SL) for lead, produced by CL:AIRE (2014).
- The UK Soil Guideline Values (SGVs) for selected metals, BTEX and phenols, produced by the EA and Department of Environment, Food and Rural Affairs (2009).

Soil Results

Following laboratory analysis, there were no recorded exceedances of the 'Commercial' land use setting screening criteria for any of the determinands from the tested soil samples. Furthermore, asbestos was not detected within any of the samples following the asbestos screen. This is somewhat reflective of the largely absent visual and olfactory evidence of grossly contaminated soils encountered within the exploratory holes during this investigation.

6.5.5. Groundwater Laboratory Testing

Groundwater analysis was considered beneficial in order to refine background composition levels of the encountered groundwater.

A groundwater grab sample taken from IGL-BH2, at a depth of 13.90mbgl, was submitted for a generic contamination groundwater suites. This groundwater was taken from the granular layers of the Lowestoft

Formation (Unproductive Aquifer) and submitted for analysis against a generic contamination suite (including heavy metals, speciated PAHs and TPH) in order to provide an indication to groundwater conditions.

In the absence of dedicated UK groundwater standards, groundwater analytical results were screened against the conservative Water Framework Directive (WFD), Environmental Quality Standards (EQS), UK Drinking Water Standards (DWS) as taken from the Water Supply Regulations (WSR) (2000), the New Dutch List (Dutch Target and Intervention Values, 2000) and the US EPA Drinking Water Standards (and Health Advisories).

Groundwater Results

Exceedances of the Water Supply Regulations (2000) were recorded for benzo(b)fluoranthene, benzo(a)pyrene and TPH Aromatic >C21-C35 banding. There were no other notable exceedances of the groundwater assessment criteria for any of the tested contaminants from the tested sample. The marginally elevated hydrocarbon-specific determinands were considered to be as a result of the drilling lubricants used, considering the grab sample that was ran for analysis.

The UK Drinking Water Standards (DWS) Water Supply Regulations (WSR) (2000) is a particularly stringent assessment criteria for groundwater quality, as the maximum allowable values provided are specific to potable water directly taken from a household tap. In light of this, this assessment criteria is often used as a 'worst-case'.

6.5.6. Ground Gas and Soil Vapour Assessment

The IGL Stage 1: Tier 1 PRA Report (Ref: P25.114.PRA, Dated: March 2025) identified generally **Low** risks from ground gas and soil vapour associated with the sources identified. In general accordance with BS8576:2013 *Guidance on investigations for ground gas – permanent gases and volatile organic compounds*, and utilising a multiple-lines-of-evidence approach, the ground gas/soil vapour potential and associated risks can be defined.

The table below has been taken directly from IGL Stage 1: Tier 2 Site Investigation GQRA (Ref: P25.114.GQRA, Dated: March 2025), and provides evidence to the ground gas/soil vapour generation potential at the site.

Factor	Evidence for Ground Gas/Soil Vapour Potential on Site	Evidence against Ground Gas/Soil Vapour Potential on Site
Landfills	-	There are no recorded landfills within a 300m radius of site.
Made Ground organic content	Made Ground present on site	Made Ground thickness across site relatively shallow (i.e. <1.60m). No significant evidence of any ground gas generating material (peat, decomposing organic matter). TOC average from all tested sample has been reported as 0.9%. With reference to BS8576, Made Ground with low degradable organic content can be said to have a 'Very Low' ground gas generation potential.
Natural Soil organic content	-	No evidence of any ground gas generating material (peat, decomposing organic matter) within natural soils.
Site Investigation	-	Laboratory analysis reported no significantly elevated levels of hydrocarbon specific contaminants; reflective of the largely absent hydrocarbon-specific visual and/or

		olfactory evidence of contamination encountered across the site.
Volatiles	-	Soil laboratory results returned comparatively low concentrations of hydrocarbon-specific contaminants.

Table 6.5.6: Factors Influencing Ground Gas/Soil Vapour Potential (Ref: P25.114.GQRA, Dated: March 2025)

With respect to the table above, and with reference to BS8576, the site was classified as having a **Very Low** ground gas generation and soil vapour potential. Consequently, ground gas monitoring was not considered necessary, and the site can be classified as Characteristic Situation 1 (CIRIA C665) and no ground gas mitigation is deemed required within the proposed development.

6.5.7. Updated Conceptual Site Model (CSM) and Risk Assessment

The CSM was revised to provide information regarding the possible sources of contamination, based on the IGL GQRA investigation and laboratory analysis (Ref: P25.114.GQRA, Dated: March 2025).

Following the GQRA undertaken within KLON-03 development area, including laboratory testing, the risks from the identified pollutant linkages within the preliminary CSM (Ref: P25.114.PRA, Dated: March 2025) were considered to remain as **Negligible to Low**.

7. KAO DATA CENTRE RISK ASSESSMENT

The purpose of this report was to compile and summarise previous investigations at the site, in order to provide an Environmental Baseline Risk Assessment, pertaining to contaminated land, for the entire KAO Data Centre development. proposals relate to the KAO Data Centre, a data centre campus to accommodate four separate commercial data centres, titled KLON-01, KLON-012, KLON-03 and KLON-04.

The Environmental Baseline Risk Assessment aimed to determine potential source – pathway – receptor linkages associated with the site and the surrounding environs.

Five previous investigations have been previously conducted within the site boundary of KAO Data Centre:

- Constructive Evaluation Limited – Stage 1: Desktop Study & Walkover Survey – April 2014.
- Constructive Evaluation Limited – Stage 2: Site Investigation – May 2014.
- Constructive Evaluation Limited – Additional Ground Investigation – April 2016.
- Impact Geotechnical Limited – Stage 1: Tier 1 Preliminary Risk Assessment – March 2025.
- Impact Geotechnical Limited – Stage 1: Tier 2 Site Investigation GQRA – March 2025.

The findings of these reports have been compiled to form a site wide Risk Assessment.

7.1 Risk Assessment Methodology

By considering the sources, pathways and receptors (pollutant linkages), an assessment of the human health/environmental risks is made with reference to the significance and degree of the risk. This assessment is based on consideration of whether the contamination source can reach a receptor and hence whether it is of major or minor significance. The risk assessment has been undertaken with reference to BS 10175:2011+A1:2013 and BE EN ISO 21365:2019 *Soil Quality – Conceptual Site Models For Potentially Contaminated Sites*. The risk assessment has been carried out by assessing the severity of the potential consequence, considering both the potential magnitude of the hazard and the sensitivity of the target.

Category	Examples
High	Residential with gardens/Groundwater Source Protection Zone
Medium	Residential without gardens/Principal (Major) Aquifer/sensitive watercourse
Low	Commercial and industrial use/Secondary (Minor) Aquifer
Very Low	Construction and maintenance workers/non-sensitive watercourse

Table 7.1.1: Sensitivity of Receptor

Category	Examples
Gross Impact	Heavily contaminated gasworks or industrial site, hazardous waste landfill
Moderate Impact	Major leaks and spills from fuel infrastructure (e.g. petrol stations), domestic waste landfills
Slight Impact	Minor leaks and spills from fuel infrastructure, 'inert' waste landfills

Table 7.1.2: Magnitude of Impact

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway.

Category	Examples
High likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor.
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
Low likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable.

Table 7.1.3: Likelihood of Pollutant Linkage

A description of these risk classifications and likely action required are given in the tables below and overleaf.

Negligible Risk	The site should be considered suitable for the present or future use and environmental setting. Contaminants unlikely to be present, which might have unacceptable impact on key targets.
Low Risk	The site should be considered suitable for the present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets.
Moderate Risk	The site may not be suitable for the present or future use and environmental setting. Contaminants are probably present and might have unacceptable impact on key targets.
High Risk	The site is probably or certainly not suitable for the present or future use and environmental setting. Contaminants are probably or certainly present and likely to have unacceptable impact on key targets.

Table 7.1.4: Risk Classification

7.2 Sources

The following sources have been assimilated from the previous reports; where possible these have been combined and/or refined to avoid repetition.

On-site Sources

- Made Ground as a result of the historical development of the site.
- Occupation of the site as a laboratories and works from circa 1965 until recently. Probability of Asbestos Containing Soil (ACSs) from Asbestos Containing Materials (ACMs) possibly present throughout the fabric of the former structures.
- Leaks and spillages of fuels and oil from the 25,000L HVO fuel tanks and associated infrastructure at the KAO Data Centre buildings.

Off-Site Sources

There are no viable off-site sources of contamination. Whilst tanks were identified within the CE Preliminaru Risk Assessment, these are located off-site (i.e. outside of the KAO Data Centre boundary), and moreover, were not considered further within the CE ground investigation.

7.3 Pathways and Receptors

The pathways and receptors contained within the baseline risk assessment pertain to those previously identified within the IGL reports (Ref: P25.114.PRA, Dated: March 2025; and Ref: P25.114.GQRA, Dated: March 2025).

Source	Pathway	Receptor	Likelihood	Potential Risk
Made Ground as a result of the historical development of the site	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Negligible to Low
		Site workers (during development / construction)	Low likelihood	Negligible
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible
Occupation of the site as a laboratories and works from circa 1965 until recently. Probability of Asbestos Containing Soil (ACSs) from Asbestos Containing Materials (ACMs) possibly present throughout the fabric of the former structures	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Low
		Site workers (during development / construction)	Low likelihood	Low
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible to Low
Leaks and spillages of fuels and oil from the 25,000L HVO fuel tanks and associated infrastructure at the KAO Data Centre buildings	Inhalation, ingestion and dermal contact from exposure to contaminated soils	Commercial end users	Unlikely	Low
		Maintenance workers	Low Likelihood	Low
		Site workers (during development / construction)	Likely	Low
	Migration of soil gases/ vapour through the soil pores of the underlying geology	End users and proposed development	Low Likelihood	Negligible to Low
		Site workers (during development / construction)	Low likelihood	Negligible
	Infiltration and migration of contaminants through the underlying geology and surface water flow	Controlled waters on site	Low likelihood	Negligible
Discussion of Risks				
The Commercial end use goes some way reducing the overall risks, particularly to human health receptors. The short exposure time of the receptors, in conjunction with the fact that the large majority of the site is to be building footprint or hardstanding, significantly reduces the likelihood of a successful pollutant linkage.				

There is a degree of exposure from maintenance workers (e.g. future gardeners), although the short exposure time and low sensitivity of this receptor significantly reduces the risk. There is possibility that site workers (during development) will be exposed to impacted soils, as well as soil vapour generated from the source material, during groundworks to permit construction of the proposed development. However, the external work setting and relatively low sensitivity of the receptor significantly reduces the overall risk. Regardless, it is recommended that standard 'good working practices' (i.e. correct use of PPE, wash/mess facilities, watching brief) are adopted during groundworks, in order to reduce any salient risks. The risk from soil vapour and ground gas to human health receptors is generally thought to be Low. This is on the basis that a generally low ground gas/soil vapour potential has been identified on site. Moreover, any grossly contaminated (i.e. with hydrocarbons or landfill) soils/groundwater encountered during the recent groundworks for the construction of KAO Data Centre would have quite reasonably been highlighted by the Client or their contractors. The absence of any productive aquifers, Groundwater Source Protection Zones, water abstractions, and sensitive water bodies on site and immediate surroundings drastically reduces the sensitivity of controlled waters as a receptor; and thereby reducing overall risks. The current risk from the 25,000L HVO fuel tanks are considered to be low, due to the fact that the fuel tanks have been recently installed and should be well maintained as part of due diligence. Nevertheless, the commercial setting does reduce any salient risks.

Table 7.2.1: KAO Data Centre Risk Assessment

8. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been made based on the evidence provided for this report mindful of the proposed development and may be subject to change. The outcomes of this assessment could change if the proposals are altered.

Proposals relate to KAO Data Centre, a data centre campus to accommodate four separate commercial data centres, titled KLON-01, KLON-012, KLON-03 and KLON-04. The proposals also include a ring road around the permitter of each data centre building, along with limited parking and amenity soft-landscaping.

The aims of this report were to compile and summarise previous investigations at the site, in order to provide an Environmental Baseline Risk Assessment, pertaining to contaminated land, for the entire KAO Data Centre development.

8.1 Contamination

The following pertinent sources of contamination have been compiled based on the previous investigation at the site.

- Made Ground as a result of the historical development of the site.
- Occupation of the site as a laboratories and works from circa 1965 until recently. Probability of Asbestos Containing Soil (ACSs) from Asbestos Containing Materials (ACMs) possibly present throughout the fabric of the former structures.
- Leaks and spillages of fuels and oil from the 25,000L HVO fuel tanks and associated infrastructure at the KAO Data Centre buildings.

As a worst case, generally **Low** risks have been identified from these sources to the receptors. This risk is defined as, 'The site should be considered suitable for the present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets'. Consequently, further assessment of the pollutant linkages is not deemed necessary.

8.2 Statutory Consultees

We would recommend that this report be forwarded to the relevant Statutory Consultees including the Local Council's Environmental Health and Planning Department to seek their comments and subsequent approval prior to works commencing on site.

8.3 Watching Brief

A watching brief should be maintained on site, particularly during ground works. This must be undertaken as part of good working practices and in case there are any areas of unidentified contamination.

During any ground works, an appraisal of the exposed soils should be made by the on-site manager or developer's nominated person. If any material is noted to show visual and/or olfactory sign of contamination this material should be stockpiled separately and tested prior to its appropriate removal off site or re-use where necessary. A suitably qualified environmental specialist should be contacted to advise what further investigation is required.

The on-site manager/developer's nominated person should be able to display the relevant level of qualification and/or experience in managing construction works on contaminated land.

8.3.1. Discovery Strategy

Although robust site investigations have been carried out, no investigation can inspect 100% of the ground and undiscovered contamination may be present (olfactory evidence of contamination, ACMs etc.). Should materials different to those revealed by the investigations carried out to date be encountered during site works, or should impacted soils be suspected, the following actions will be taken:

- Stop work in that part of the site immediately and inform the Site Manager who will document details of the discovery, including time, date and nature of materials encountered. An environmental consultant will then be contacted to discuss how this material will be dealt with and whether remediation recommendations should be amended;
- The Local Authority/Environment Agency will then be contacted to confirm agreement of any amendments to the remediation strategy;
- Should potentially impacted material be excavated during site works, this material will be segregated and stockpiled and an environmental consultant contacted immediately. Samples will then be taken from the stockpile and scheduled for chemical analysis to determine whether materials are suitable for re-use or if they should be removed from site;
- Suspected ACMs will be moistened and covered to reduce the chance of fibres becoming airborne; and,
- The discovery strategy methodology will be included within the site contractor's method statement.

8.4 Health and Safety

Contractors working on-site will be warned that there is a residual risk of contamination within soils. Therefore, appropriate protection measures should be adopted to guarantee their health and safety. Guidelines detailed in the HSE publication "Protection of workers and the general public during the development of contaminated land" should be followed, including:

- Avoid direct contact with the skin and personal clothing by use of protective gloves, eye protection, etc;
- Washing facilities should be provided and properly used, particularly before eating; and,
- Dust control measures may be required under some circumstances (e.g. ACMs), particularly to minimize risk of accidental ingestion and spread of contamination.

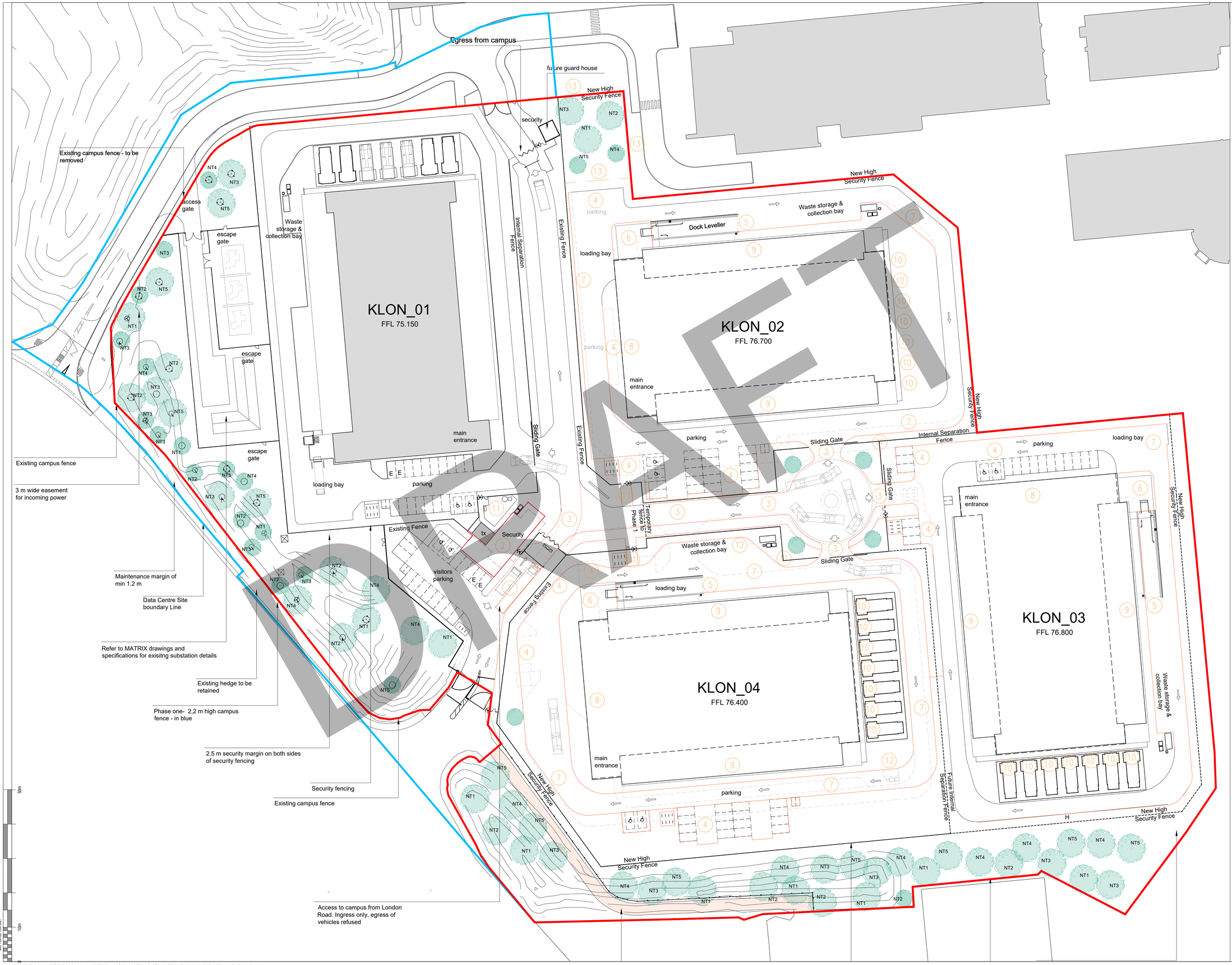
Further advice should be sought from HSE and the Local Authority.

As IGL has not been party to, or involved in, monitoring the groundworks already completed at the site, it is assumed that appropriate levels of proper diligence in working practices and adherence to the design specification have been applied. It is recommended that the reader refers to the H&S file for the completed portions of the development for more information relating to the construction phase.

8.5 Decommissioning of Monitoring Wells

The client or site owner should ensure that the installed monitoring wells and their protective covers are not damaged or covered until such time as data is no longer required from them. Additional costs may be incurred if it is necessary to reinstate damaged wells. Nevertheless, the monitoring wells installed on site will require eventual decommissioning. IGL should be consulted prior to decommissioning. This process should be completed in accordance with the EA's (2012) guidance document '*Good Practice for Decommissioning Redundant Boreholes and Wells*'.

APPENDIX A – SITE PLANS



DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS TO BE CHECKED ON SITE.
THIS DRAWING IS SUBJECT TO REVISION. PLEASE CHECK THE CURRENT VERSION OF THIS DRAWING PRIOR TO USE.
THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS AND CONTRACT DOCUMENTATION.

Drawing must be printed in colour.

No. NUMBER OF CHANGE IDENTIFIED ON SCHEDULE L02-XX-XX-PL-J-00014 LDO CHANGE TRACKER.

KAO DATA OWNERSHIP

PLANNING APPLICATION BOUNDARY

POSITION ON PREVIOUSLY APPROVED MASTERPLAN

LOCATION OF REVISED ELEMENTS SHOWN IN ORANGE

Rev	Drawn By	Date	Chkd By	Date	Apprvd By	Date
B	AB	12.07.21	AB	12.07.21	AB	12.07.21
	Initial Issue for comment / client review.					
A	AB	02.07.21	AB	02.07.21	AB	02.07.21
	Initial Issue for comment / client review.					

Revisions

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JCA ENGINEERING LIMITED

Client

KAO DATA

Project

KAO CAMPUS
KAO DATA LON_02
KLON_02

Drawing Title

PHASE 2 MASTERPLAN
PLANNING VARIATIONS

Status S0

Scale 1:500 @A1 Proj.No. 20017

Drawing No. KL02-MCA-00-00-DR-A-08001

Revision B

DATE PLOTTED: 13.07.2021

FILE NAME: P:\MCA Projects 2020\20017 KAO Park - London 2_3&4\20017 drawings\02 - AutoCAD\02 - Sheets\0- series\08 Series\KL02-MCA-00-00-DR-A-08001 MasterPlan Planning Changes.dwg

APPENDIX B – PHOTOGRAPHIC LOG

1.

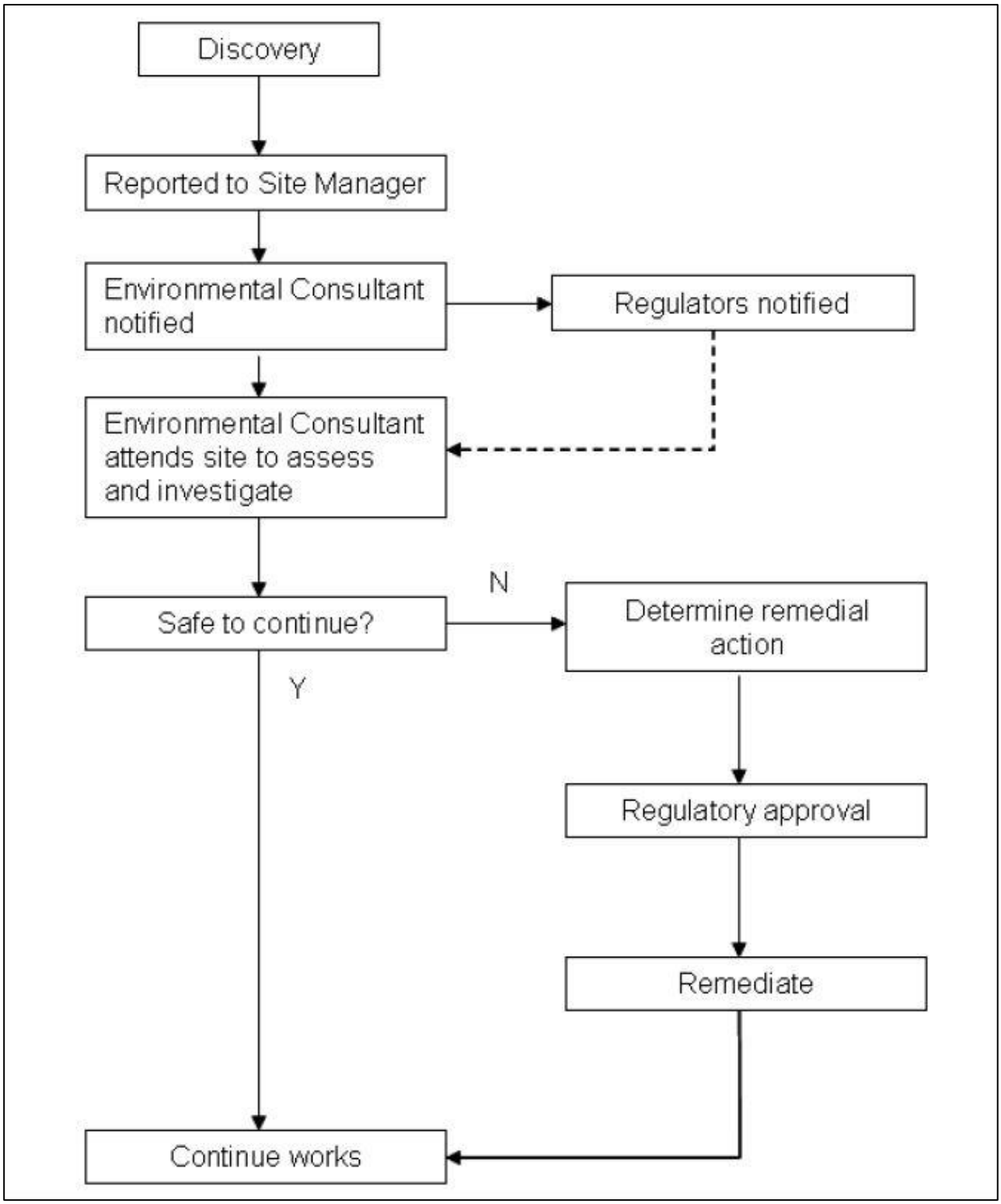
2.

3.

4.

Project:	KAO Data Centre	**Title:**	Site Photographs
Job Number:	P25.114	1. Existing site 2. Existing site 3. Existing site 4. Existing site	IMPACT GEOTECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk
Client:	JCA Engineering Ltd		
Produced by:	RG		
Checked by:	GC		

APPENDIX C – DISCOVERY STRATEGY METHODOLOGY


Discovery
Reported to Site Manager
Environmental Consultant notified
Regulators notified
Environmental Consultant attends site to assess and investigate
Safe to continue?
N
Determine remedial action
Y
Regulatory approval
Remediate
Continue works