PADDOCK GEO ENGINEERING

Preliminary Contamination Risk Assessment Salamander Quay, Uxbridge, UB9 6NZ

Preliminary Contamination Risk Assessment

Greenhare Ltd

August 2025

P25-268pra

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CONTENTS

TABLES

APPENDICES

ISSUE	DATE	Written By	Comments
1	22/08/2025	Ben Durant BSc MSc **Checked by** Matthew Paddock BSc MSc FGS	-
For and on behalf of Paddock Geo Engineering Limited			

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) were instructed by Greenhare Ltd; the Client, to undertake a Preliminary Contamination Risk Assessment (Stage 1 Tier 1 of a Site Contamination Assessment) of the subject site, referred to as Salamander Quay, Uxbridge, UB9 6NZ.

The overall objective of the Preliminary Contamination Risk Assessment (PRA) was to assess any potential risks to the proposed development of the site from contamination or any other potential geo-environmental or geotechnical hazards. The Risk Assessment undertaken relates to the proposed residential re-development of the site.

1.1 Terms of Reference

- British Standard BS10175:2011+A2:2017 Investigation of Potentially Contaminated Sites - Code of Practice;
- CLR7 Assessment of Risks to Human Health from Land Contamination 2002, DEFRA / Environment Agency (withdrawn);
- CLR8 Potential Contaminants for the assessment of Land 2002, DEFRA / Environment Agency (withdrawn);
- PPG23 (PPS23) Planning and pollution control (contaminated land aspects) 2002;
- GPLC1 Guiding Principles for Land Contamination 2010, Environment Agency;
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA;
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, CIRIA 2007; and
- BS 8576:2013 Guidance on investigations for ground gas - Permanent Gases and Volatile Organic Compounds (VOCs).
- Land Contamination Risk Management (LCRM), 2023, Environment Agency

2.0 THE SITE AND SURROUNDING AREA

2.1 Site Description

The site is broadly rectangular in shape, occupies an area of approximately 0.34 hectares and is centred around National Grid Reference (NGR) 449660, 185770.

Site Location Plans and an Aerial Photograph are presented in Appendix A.

2.2 Proposed Development

The proposed development is understood to comprise the change of use of the site from offices to residential inclusive of the conversion of an existing office block into 34 residential apartments.

The soil contamination exposure characteristics for the proposed development will be residential.

A proposed site layout plan is included within Appendix A.

2.3 Walkover Survey

2.3.1 Site Area

A site walkover survey was conducted on 18th August 2025 by a representative of Paddock Geo Engineering Limited. A series of photographs taken during the walkover survey are presented in Appendix B along with a Site Walkover Survey Plan.

Access to the site is through a gated entrance from the northeast off Park Lane which leads onto a block paved car park. The site comprised a large two storey office building of brick construction which extended along the sites northern and western boundary. The area across the eastern and southern part of the site comprised of car park areas with sporadic decorative planning. A narrow gravel covered walkway wrapped around the western and northern boundary of the site to the west and north of the office building separating the site area from the adjacent Grand Union canal.

The main site area was generally level while the area to the southeast of the site was raised by approximately 2 to 3 m and the western edge of the site was terraced down to the Grand Union Canal, with the area to the west of the site noted to lie at approximately 1m below the general elevation of the site.

A small brick storage building was noted to be present on the northeast boundary of the site, adjacent to the site entrance. A sign was noted to indicate the storage of 'Dangerous Chemicals'.

Sporadic mature deciduous trees were also noted to be present along the sites western and eastern boundary.

The site appears to be at moderate risk for potential sources of onsite contamination associated with likely presence of Made Ground and dangerous chemicals.

2.3.2 Surrounding Area

The area surrounding the site comprises a mixture of woodland, open water, and semi-rural landscapes. To the west of the site lies the Grand Union Canal, The River Colne and Troy Lake, which are bordered by patches of unmanaged grassland and scattered trees. Park Wood Nature Reserve lies adjacent to the east. Harefield village, consisting predominantly of residential properties and local amenities, extends from approximately 600 metres to the southeast.

2.4 Previous Investigations

PGE are not aware of any previous intrusive investigations or environmental walkovers for the subject site or the immediate area.

3.0 GEO-ENVIRONMENTAL SETTING

3.1 Geology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) online Geoindex Map Viewer and Geological Mapping information provided by Landmark within the Envirocheck Report (a copy of which is provided in Appendix C).

The geological maps indicate that the western half of the site is underlain by superficial Alluvium (clay, silt, sand and gravel). No superficial deposits are shown across the eastern half of the site.

The underlying bedrock is shown to comprise the Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated).

No artificial ground/Made Ground are indicated to be present on the site.

3.1.1 Borehole Records

A search of the online BGS database for published borehole records within the area identified the nearest available borehole record is located at 40m to the north (TQ09SW24). The borehole record is shown to fall within an area containing comparable geological strata.

Borehole reference TQ09SW24, was drilled to 9.14m bgl. The encountered geology comprised Made Ground comprising red ash and brick rubble over sandy Clay with chalk fragments from ground surface to 4.10m bgl over sandy organic Clay to 4.90m bgl over sandy gravel to 9.14m bgl. The encountered strata are interpreted to represent superficial Alluvium to the base of the borehole.

3.2 Radon

The subject site is indicated within the Envirocheck Report and the BGS Radon Indicative Atlas (2022) to be in a low probability radon area, where less than 1% of dwellings are estimated to be above the radon action level. As such, no radon protective measures are considered necessary in the construction of buildings.

3.3 Hydrogeology, Hydrology and Site Sensitivity

Site specific sensitivity maps provided by Landmark Information Group are included within Appendix D and were referenced for the following sub-sections.

3.3.1 Hydrogeology

The superficial alluvium is classified as a Secondary A aquifer.

The bedrock strata across the site are classified as a Principal Aquifer.

The site is within a Zone 1 Groundwater Source Protection Zone (SPZ). A zone 1 SPZ is defined as the area immediately around an abstraction point for domestic supply or for food production purposes.

The nearest groundwater abstract to the site is listed as licence number 28/39/28/0584 which is located at 181m south and is used for pollution remediation.

Based on the foregoing, the groundwater vulnerability across the site is considered by Envirocheck to be 'High' on the basis of the underlying Principal Aquifer and source protection zone.

3.3.2 Hydrology

The Envirocheck Report indicates that there are 98no. permanent surface water features within 1km of the site boundary. The nearest recorded surface water feature is the Grand Union Canal which lies adjacent to the west.

The Envirocheck report records no active surface water abstractions within 1km of the site.

3.3.3 Ecological Receptors

No major ecological receptors are indicated to be present within 1km of the site.

3.4 Flood Risk

The flood map included in Appendix D indicates the site is located within flood zone 1 (< 1 in 1000 (0.1%) annual probability of flooding in any given year). Flood Zone 1 is the lowest risk classification with regards to flooding from rivers or the sea. Further to the above, the site is also shown to be at Low risk of flooding from surface water.

It is noted that the area adjacent to the west of the site lies within a Flood Zone 3 and is at high risk of flooding from surface water. The elevated flood risk is shown not to encroach onto the site.

The BGS groundwater flood susceptibility mapping indicates the site is situated within an area with potential for groundwater flooding to occur at the surface.

The above information does not constitute a flood risk assessment to be undertaken for the site.

4.0 UNEXPLODED ORDNANCE

Available online information and historic records indicate that the site is at a very low risk of unexploded ordinance.

5.0 ENVIRONMENTAL DATABASE INFORMATION

A detailed database of environmental information is included within the Envirocheck report as included within Appendix D. The database includes Agency & Environmental, Waste management, Landfills, Hazardous Substances and industrial land uses. The main points of note within this database are presented in Table 1 below. All distances stated are approximate and positional accuracy may be to within 100m in some cases.

Table 1: Summary of Environmental Database Information

Hazard	No. of entries			Details of notable database entries	
	0-250m	251-500m	501-1,000m	Distance (m) & Direction from Site	Additional Information
Discharge Consents	27	10	32	<u>Within 100m</u> 18 NE (x2) 36 NW (x4) 60 NW	Pumping station on Sewage Network, Harefield Rubber, Harefield harefield Rubber- Sewage Discharges to canal Domestic Property, Fishery Cottages, Coppermill Lane, West Hyde – Sewage Discharge to River Colne. Domestic Property, Fishery Cottages, Coppermill Lane, West Hyde – Sewage Discharge to River Colne.
Local Authority Pollution Prevention Controls (LAPPC)	0	0	4	-	None identified within 250m of the site

Hazard	No. of entries			Details of notable database entries	
	0-250m	251-500m	501-1,000m	Distance (m) & Direction from Site	Additional Information
Pollution Incidents to controlled waters	8	4	22	18 NE	Category 3 - Minor Incident, 1993
				29 S	Category 3 - Minor Incident, 1996
				30 NW	Category 3 - Minor Incident, 1991
				34 NW	Category 3 - Minor Incident, 1993
				84 NW	Category 3 - Minor Incident, 1996
				153 NE	Category 3 - Minor Incident, 1992
				196 N	Category 2 - Significant Incident, 1992
				198 N	Category 3 - Minor Incident, 1993
BGS Recorded Landfill Sites	0	0	3	566 SW	Watercress Beds, Old Uxbridge Rd, West Hyde, Herts
				799 SW	Pynesfield Farm, Maple Cross, Rickmansworth, Herts
				947 SE	Pynesfield Farm, Maple Cross, Rickmansworth, Herts
Historical Landfill Sites	1	3	5	139 SE	Industrial Waste, Park Lane, Harefield, Hillingdon, London
				319 NE	Unknown Waste, Parkwood Farm, Hill End, Harefield, Hillingdon, London
				369 NW	Inert Waste, Pynesfield Lake, West Hyde, Hertfordshire
				429 NW	Inert Waste, Lynsters Lake, Rickmansworth, Hertfordshire
				539 SW	Inert Waste, Old Uxbridge Road, West Hyde, Chalfont St Peter
				644 N	Industrial Waste, Waybeards Farm, Hill End, Harefield, Hillingdon, London
				754 SW	Inert Waste, Pynesfield Inert Landfill, Tilehouse Lane,Maple Cross,Rickmansworth,Hertfordshire
				798 SW	Inert and Industrial Waste, Pynesfield Farm, Maple Cross, Hertfordshire
				954 SE	Commercial and Household Waste, Church Hill, Harefield, Hillingdon, London
Licensed Waste Management Facilities	0	0	2	753 NE	Household, Commercial And Industrial Transfer Stations, Waybeards Farm, Hill End Road, Harefield, Uxbridge, Middlesex, UB9 6LH
				781 W	Inert LF, Pynesfield Inert Landfill, Tilehouse Lane, Maple Cross, Rickmansworth, Hertfordshire, WD3 9YB
Potentially Infilled Land	1	1	9	140 SE	Potentially Infilled Land (Non-Water), 1989
				363 NW	Potentially Infilled Land (Non-Water), 1989

Hazard	No. of entries			Details of notable database entries	
	0-250m	251-500m	501-1,000m	Distance (m) & Direction from Site	Additional Information
				535 NW	Potentially Infilled Land (Non-Water), 1989
				672 SW	Potentially Infilled Land (Non-Water), 1989
				950 W	Potentially Infilled Land (Non-Water), 1989
				954 SE	Potentially Infilled Land (Non-Water), 1989
				988 SW	Potentially Infilled Land (Non-Water), 1989
				553 SW	Potentially Infilled Land (Water), 1934
				674 SW	Potentially Infilled Land (Water),1926
				710 E	Potentially Infilled Land (Water), 1934
				762 SE	Potentially Infilled Land (Water), 1960
Contemporary trade directories,	7	1	15	Onsite	Cash Registers & Check-Out Equipment – inactive
				Onsite	Tile Manufacturers – inactive
				19 to 901 in all directions	Various active and inactive including Radio Communication Equipment, Office Furniture & Equipment, Cable & Wire Equipment Manufacturers, Photographic Processors, Mailing Machines & Equipment, Carpet, Curtain & Upholstery Cleaners, Gas - Industrial & Medical Suppliers, Commercial Cleaning Services, Road Haulage Services, Garage Services, Tyre Dealers and Lawnmowers & Garden Machinery - Sales & Service. The nearest active trade directory to the site is listed as Mailing Machines & Equipment located at 219m north.
Fuel stations	0	0	0	-	None recorded within 1km

A review of the available information has identified limited potentially contaminative land uses within 1km of the site. Those identified are considered further in the initial Conceptual Site Model (CSM) presented in Section 9.0.

6.0 GEOTECHNICAL RISKS

The geotechnical risks that could impact the site and any shallow foundations present are listed below.

6.1 Ground Instability

A summary of potential ground stability risks associated with the underlying geology at the site, as detailed within the Envirocheck report is included within Table 2.

Table 2: Summary of Geotechnical Risk

Hazard	Assessed On-Site Risk (and area within 10m of the site)	
	Present	Level
Potential for Collapsible Ground Stability	✗	No Hazard
Potential for Compressible Ground Stability	✗	No Hazard
Potential for Ground Dissolution Stability	✓	Very Low
Potential for Landslide Ground Stability	✓	Very Low
Potential for Running Sand Ground Stability	✓	Low
Potential for Shrinking or Swelling Clay	✓	Very Low

Table 2 indicates that the site is generally at worst case low risk of being affected by ground instability arising from the geological conditions at the site. The information gained from the Landmark database, as detailed in Table 2, is information relating to natural bedrock strata, as such does not represent likely hazards from any potential Made Ground.

6.2 Mineral Extraction

The mining history of the site and surrounding area has been deduced primarily from information supplied within the Envirocheck Report along with a review of online Coal Authority mapping database.

The available information indicates that the site is not located within a Coal Mining Reporting Area. The consulted environmental database (Appendix D) lists 12no. BGS recorded mineral site within 1km of the site. These include

- Opencast chalk quarry at 164m southeast, status - ceased,
- Opencast sand and gravel quarry at 309m southwest, status - ceased,
- Opencast sand and gravel quarry at 479m west, status - ceased,
- No information 524m north status – ceased
- Opencast sand and gravel quarry at 555m south, status - ceased,
- Opencast sand and gravel quarry at 597m north, status - ceased,
- Opencast sand and gravel quarry at 665m northwest, status - ceased,
- Opencast chalk quarry at 718m north, status - ceased,
- Opencast sand and gravel quarry at 733m northeast, status - ceased,
- Opencast sand and gravel quarry at 857m northwest, status - ceased,
- Opencast sand and gravel quarry at 861m southwest, status - ceased,
- Opencast chalk quarry at 978m west, status - ceased,

Based on the foregoing, the site is at low risk from hazards associated with mineral extraction.

7.0 HISTORIC LAND USE MAPPING SUMMARY

A review of the available historical maps, as included in the Envirocheck Report, has been carried out and is summarised in Table 3. T

he reviewed maps comprise County Series, Ordnance Survey Plans and Other Survey Information (at various scales). Maps covering the site were published between 1868 and 2025. The mapping data set is presented in Appendix C.

The maps are reproduced in accordance with Landmark Information Group Limited's Ordnance Survey License.

Any identified uses of the site and the surrounding area that are considered potentially contaminative are shown in ***bold italics***. The distances and directions from the site stated in Table 3 below are approximate.

Table 3: Historical Map Review

Date of mapping	Site History	History of the area surrounding the site
1872 (1:2,500) 1868 (1:10,560)	The site is shown as an undeveloped parcel of land.	The area surrounding the site is largely rural and comprises undeveloped agricultural fields and woodland. A cluster of infrastructure shown as ***Mills*** is shown adjacent to the north of the site. A Rier Colne is shown to extend from north to south passing along the sites western boundary. ***Harefield Lime Works***, which comprises a large ***open pit*** is shown from 500m north of the site. Some infrastructure shown as West Hyde is shown at 750m west of the site. The small village of Harefield is shown from 1km to the southeast of the site.
1880-1881 (1:2,500) 1883 (1:10,560)	A structure is now shown to encroach onto the northern tip of the site with shrubs and trees shown across the southern portion of the site.	No significant change.
1896 (1:2,500) 1897-1899 (1:10,560)	No significant change.	The Mills adjacent to the north of the site are now shown to be associated with ***asbestos.***
1916-1927 (1:10,560) 1914 (1:2,500)	Two additional small structures are now shown along the sites western boundary.	The lime works is now shown as a Distemper Works. Two ***chalk pits*** is shown at 1km southwest.
1934 (1:2,500) 1934-1935 (1:10,560)	The site is shown to have been redeveloped inclusive of the demolition of all pre-existing infrastructure and the construction of a large bu8ilading across the western half of the site and a second large building across the eastern half of the site.	Harefield Mills is now shown as disused while the area surrounding the site to the northeast and south is now shown to have been significantly developed with large industrial type buildings. A pit is also shown from 150m southeast of the site. Harefield is shown to have expanded to include significant residential type buildings extending upto 750m southeast.

Date of mapping	Site History	History of the area surrounding the site
		A ***gravel pit*** is shown adjacent to the Distemper Works, 750m north of the site. A ***chalk pit*** is shown at 1km southeast of the site.
1960-1961 (1:2,500) 1960 (1:10,000)	The buildings are shown as '***works***'	Large lakes are shown from 500m south of the site, 500m north of the site and 500m northwest of the site. A sewage works which contains many ***above ground tanks/silos*** is shown at 1km north of the site.
1976 (1:10,000) 1974-1975 (1:2,500)	No significant change.	Multiple large lakes are shown to extend across the area west of the site resembling the extent of the waterbodies which are currently present. The sewage works 1km north of the site is shown to have expanded to include additional ***tanks/silos***
1990 (1:2,500)	The works are both shown to have been demolished and the site redeveloped to contain a single building with associated car park resembling its present-day layout.	No significant change.
1992 (1:2,500)	No significant change.	No significant change.
1999 (1:10,000)	No significant change.	No significant change.
2006 (1:10,000)	No significant change.	Further expansion of the sewage works 1km north of the site is shown to include additional ***tanks/silos***
2025 (1:10,000)	No significant change.	No significant change.

7.1 Historical Mapping Summary

The earliest available map shows that by 1868 the site comprised an undeveloped parcel of land. By 1880 the site contained some infrastructure associated with an adjacent mill which extended onto the northern tip of the site. By 1934, the mills infrastructure had been demolished, and the site was redeveloped to include works. Subsequent redevelopment of the site into its current form was completed by 1990 from which time the site has remained unchanged.

By 1868, the area surrounding the site was largely undeveloped as agricultural land and woodland. A mill associated with asbestos was located adjacent to the north of the site along with an open pit lime works which was present at 500m north of the site. Between 1916 and 1935 chalk pits were present at around 1km southwest and southeast and a gravel pit 750m north. Several large lakes were formed likely with area of historical quarrying in the area to the west of the site by 1976. The area surrounding the site largely reach its existing layout by around 1976.

7.2 Planning Search

A search of the Hillingdon Councils planning portal was undertaken for the site and the immediate surrounding area on the 22nd August 2025. The aim of the search was to gather details of relevant planning applications. The offsite search results were limited to the most relevant, recently dated and immediate adjoining property boundaries.

The planning search has identified two single planning application within the site boundary which are detailed in table 4. The planning portal provided no further information regarding applications upon or within the vicinity of the site.

Table 4: Planning Application Search

Application Number	Address	Application Proposal	Date
42228/APP/2022/1505	Salamander Quay Park Lane Harefield UB9 6NZ	Change of use from offices (Use Class E(g)(i)) to residential use (Use Class C3) to provide 22 residential units (Application for Prior Approval under Schedule 2, Part 3, Class MA of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended)).	18/05/2022
42228/APP/2021/2268	Salamander Quay Park Lane Harefield UB9 6NZ	Prior Notification under Class O of Part 3, Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015 - Change of Use from office to 45 residential units	04/06/2021

7.3 Summary of Environmental Search Data

The review of the available environmental data obtained from the Envirocheck Report, local planning authority and the site walkover survey, as detailed in the preceding sections of this report, have indicated the following potential risks from contamination within 500m of the site (or further if considered significant).

Current or Recent Land Uses

- Potential unknown Made Ground associated with existing structures and historical demolition on and in the vicinity of the site: **Low to Moderate Risk**
- Incidental leaks and spills from the use of unknown chemical upon the site as part of its existing use: **Low to Moderate Risk**

Historical Land Uses

- Infilled ground and landfilling associated with historical mining pits and landfills in the vicinity of the site: **Low to Moderate Risk**
- Contamination associated with the former use of the northern tip of the site and the land adjacent to the north of site as an asbestos mill: **Moderate Risk**
- Contamination associated with the former use of the site and the area surrounding the site as a mill and works: **Low to Moderate Risk**

Site Environmental Features

- The superficial Head deposits are classified as a Secondary A aquifer
- The underlying Bedrock strata is listed as a Principal Aquifer.
- The site is located within a Zone 1 groundwater source protection zone.
- The closest surface water feature is the Grand Union canal which encroaches onto the site.

8.0 Preliminary Conceptual Site Model and Risk Assessment

8.1 Risk Assessment Guidance

Guidance has been published by the Department of the Environment, Transport and the Regions (DEFRA) 'Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance' (DEFRA April 2012) which promotes the 'risk-based approach' for defining contaminated land. The statutory guidance states:

"Part 2A takes a risk-based approach to defining contaminated land. For the purposes of this Guidance, "risk" means the combination of: (a) the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and (b) the scale and seriousness of such harm or pollution if it did occur."

A means to assess the risk posed by potential contamination on or under a site is to carry out a preliminary contaminated land risk assessment. The risk assessment process if defined within the statutory guidance:

"For a relevant risk to exist there needs to be one or more contaminant- pathway-receptor linkages - "contaminant linkage" - by which a relevant receptor might be affected by the contaminants in question. In other words, *for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters. For the purposes of this Guidance:*

(a) A "contaminant" is a substance which is in, on or under the land and which has the potential to cause significant harm to a relevant receptor, or to cause significant pollution of controlled waters.

(b) A "receptor" is something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property, or controlled waters. The various types of receptors that are relevant under the Part 2A regime are explained in later sections.

(c) A "pathway" is a route by which a receptor is or might be affected by a contaminant."

The contaminant linkage is described within the statutory guidance as:

"The term "contaminant linkage" means the relationship between a contaminant, a pathway and a receptor. All three elements of a contaminant linkage must exist in relation to particular land before the land can be considered potentially to be contaminated land under Part2A, including evidence of the actual presence of contaminants.

The term "significant contaminant linkage", as used in this Guidance, means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land. The term "significant contaminant" means the contaminant which forms part of a significant contaminant linkage".

The following sections relate to a qualitative risk assessment of the site and surrounding environs.

The data within this assessment will be employed to produce a Conceptual Site Model which will be tested to assess if a 'significant possibility of significant harm' to human health, non-human health or significant pollution to controlled waters is likely to occur and the risk level posed by any such linkages. The risk level classification system employed in the risk assessment is generally based upon those described in CIRIA C552[1].

8.2 Potential Contaminant Sources

The potential contamination sources identified as part of this Preliminary Contamination Risk Assessment are summarised in table 5. The potential contaminants are based on the data within CL8, Department of the Environment (DoE) Industry Profiles, the current and historic site uses.

Table 5: Potential Contamination Sources

Current Potential On-Site Contaminant Sources	**Potential Contaminants**
Potential unknown Made Ground associated with existing structures and historical demolition on the site	Inorganics (heavy metals and metaloids), Organics, hydrocarbons (PAH and TPH), asbestos and ground gas and soil vapour.
Incidental leaks and spills from the use of unknown chemical upon the site as part of its existing use.	Inorganics (heavy metals and metaloids), Organics, volatile, hydrocarbons (PAH and TPH), asbestos and ground gas and soil vapour.
Historical Potential On-Site Contaminant Sources	**Potential Contaminants**
Contamination associated with the former use of the northern tip of the site as an asbestos mill	Asbestos
Contamination associated with the former use of the site as a mill and works.	Inorganics (heavy metals and metaloids), Organics, volatile, hydrocarbons (PAH and TPH), asbestos and ground gas and soil vapour.
Current Potential Off-Site Contaminant Sources	**Potential Contaminants**
Infilled ground and landfilling associated with historical mining pits and landfills in the vicinity of the site	Ground Gas

[1] Rudland, D., Lancefield, R.M., Mayal, P.N. (2001) Contaminated Land Risk Assessment: A Guide to Good Practice. CIRIA C552. UK.

Potential unknown Made Ground associated with existing structures and historical demolition in the vicinity of the site	Inorganics (heavy metals and metaloids), Organics, volatile, hydrocarbons (PAH and TPH), ground gas and soil vapour.
Contamination associated with the former use of the land adjacent to the north of site as an asbestos mill	Asbestos
Contamination associated with the former use of the site as a mill and works	Inorganics (heavy metals and metaloids), Organics, volatile, hydrocarbons (PAH and TPH), ground gas and soil vapour.
Historical Potential Off-Site Contaminant Sources	**Potential Contaminants**
Contamination associated with the former use of the land adjacent to the north of site as an asbestos mill	Asbestos
Contamination associated with the former use of the area surrounding the site as a mill and works	Inorganics (heavy metals and metaloids), Organics, volatile, hydrocarbons (PAH and TPH), ground gas and soil vapour.

8.3 Conceptual Source-Pathway-Receptor Model

The information gathered in this Preliminary Contamination Risk Assessment has been compiled to produce a Source-Pathway-Receptor (S-P-R) model for potential onsite and off-site contamination sources, these are summarised in the tables 6 and 7 below. A Contamination Conceptual Site Model Cross Section is presented in Appendix F.

The risk posed to site construction workers has not been assessed as any risks will be mitigated through good site practices such as dust suppression and the use of Personal Protective Equipment (PPE).

Table 6: Source-Pathway-Receptor Model for onsite sources

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
Current Potential unknown Made Ground associated with existing structures and historical demolition on the site Incidental leaks and spills from the use of unknown chemical	Dermal / direct contact	Current site users	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		No	
	Vapour migration		No	
	Ground gas migration		No	
	Dermal / direct contact	Future site users (residential)	Yes	Low to Moderate
	Direct ingestion		Yes	Low to Moderate
	Direct inhalation		Yes	Moderate
	Inhalation of Radon gas		Yes	Low

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
upon the site as part of its existing use. **Historical** Contamination associated with the former use of the northern tip of the site as an asbestos mill Contamination associated with the former use of the site as a mill and works.	Inhalation of wind-blown dust		Yes	Low to Moderate
	Vapour Migration onto the site		Yes	Low to Moderate
	Ground gas migration		Yes	Moderate
	Direct contact	Services (following redevelopment)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent Properties	Yes	Low
	Migration of contaminants off site: aqueous phase		Yes	Low
	Vapour migration		Yes	Low
	Inhalation of wind-blown dust	Ecological Impacts	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	Yes	Low
	Migration of contaminants from site: aqueous phase		Yes	Low
	Migration of Contaminants: non-aqueous phase	Surface Waters	Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low

Table 7: Source-Pathway-Receptor Model for off-site sources

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
Current Infilled ground and landfilling associated with historical mining pits and landfills in the vicinity of the site Potential unknown Made Ground associated with existing structures and historical demolition in the vicinity of the site Contamination associated with the	Dermal / direct contact	Current site users	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		No	
	Vapour migration		No	
	Ground gas migration		No	
	Dermal / direct contact	Future site users (residential)	Yes	Low to Moderate
	Direct ingestion		Yes	Low to Moderate
	Direct inhalation		Yes	Moderate
	Inhalation of Radon gas		Yes	Low
	Inhalation of wind-blown dust		Yes	Low to Moderate
	Vapour Migration onto the site		Yes	Low to Moderate
	Ground gas migration		Yes	Moderate

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
former use of the land adjacent to the north of site as an asbestos mill Contamination associated with the former use of the site as a mill and works **Historical** Contamination associated with the former use of the land adjacent to the north of site as an asbestos mill Contamination associated with the former use of the area surrounding the site as a mill and works	Direct contact	Services (following redevelopment)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Inhalation of wind-blown dust & Direct Contact	Ecological Impacts (Plants)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	Yes	Low
	Migration of contaminants from site: aqueous phase		Yes	Low
	Migration of Contaminants: non-aqueous phase	Surface Waters	Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low

9.0 POTENTIAL CONTAMINATION RISK SUMMARY

The preliminary contamination risk assessment has identified complete Source-Pathway-Receptor (SPR) linkages with a worst-case **Moderate** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

There is the potential for the presence of asbestos on and in the vicinity of the site associated with the site's northern area and adjacent site's historical use as an asbestos Mill. In addition, a risk from ground gas has been identified in relation to significant landfilling within the vicinity of the site along with the presence of Made Ground on and surrounding the site associated with historical demolition and redevelopment.

Further to the above there is a potential risk from inorganics, organics, hydrocarbons (PAH and TPH), because of both historical and ongoing presence of Made Ground of unknown composition given the historical phases of construction and demolition across and adjacent to the site along with adjacent infilled land.

Given these factors, there is considered to be a potentially complete S-P-R linkage between any priority contaminant impacted soils on the site through direct contact, ingestion and inhalation pathways with the proposed moderately sensitive construction workers, services and end site user. These potential contamination features are also deemed to pose a potential hazard to ecology and controlled waters, albeit with a very low risk level.

Given the discussion above, to assess if a 'Moderate Possibility of Significant Harm' is present from potential contamination sources to the proposed future site users, it is recommended that an intrusive soil investigation be undertaken focusing on the highlighted potential contaminative features.

Further to this, should any unexpected contamination be identified during the future development groundworks, then a suitably qualified and experienced Geo-Environmental Engineer should be consulted and if necessary further assessment should be undertaken.

9.1 Potential Geotechnical Risk Summary

A maximum "Low" geotechnical risk was identified on-site within the Envirocheck Report associated with the anticipated underlying natural geology in relation to the running sand stability of the bedrock strata.

While the identified geotechnical risk is low, a geotechnical appraisal of the geology and groundwater beneath the site is advised to derive foundation design criteria for any proposed structures on the site.

9.2 Recommended Intrusive Investigation

It is recommended that an intrusive soil investigation be undertaken at the site focusing on the highlighted potential contaminative features within the near surface soils and deeper soils should significant near surface contamination be identified.

It is recommended that sampling and chemical testing of shallow soils is undertaken to quantify the risk present beneath the subject site, especially in soft landscaped areas of the proposed development. Testing of soils should include hydrocarbons (TPH and PAH), heavy metals and asbestos as a minimum.

Further to the soil sampling and analysis, it is recommended that monitoring wells be installed, and initial ground gas monitoring be carried out to allow a ground gas risk assessment.

Should significant mobile contamination of the shallow soils be identified then it is recommended that ground investigation works are undertaken to identify the depth to groundwater (if present) and facilitate groundwater sampling and chemical testing to quantify the risks posed to the controlled waters environment.

CERTIFICATION

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any third party who may rely upon it.

The site walkover survey was carried out within reasonably accessible areas of the site. No responsibility of any kind can be accepted for any conditions or features not identified due to inaccessibility of areas such as locked, unstable or unsafe buildings and heavily overgrown areas.

The conclusions and recommendations given in this report are based on our understanding of the future plans for the site and based on a scope of works agreed by the Client and afforded by the agreed budget. No responsibility is accepted for conditions not encountered, which are outside of the agreed scope of work.

If the future plans for the site are changed, such as the site is developed for a more or less sensitive use, then a different interpretation might be appropriate.

The report has been prepared following the guidelines and principles established in the British Standards, BS 10175:2011, entitled 'Investigation of Potentially Contaminated Sites – Code of Practice' and the DEFRA / EA Contaminated Land Reports CLR7 and CLR8. It necessarily relies on the co-operation of other organisations and the free availability of information and total access. No responsibility can, therefore, be accepted for conditions arising from information that was not available to the investigating team as a result of information being withheld or access being denied.

This report may suggest an opinion on a possible configuration of strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy.

REFERENCES

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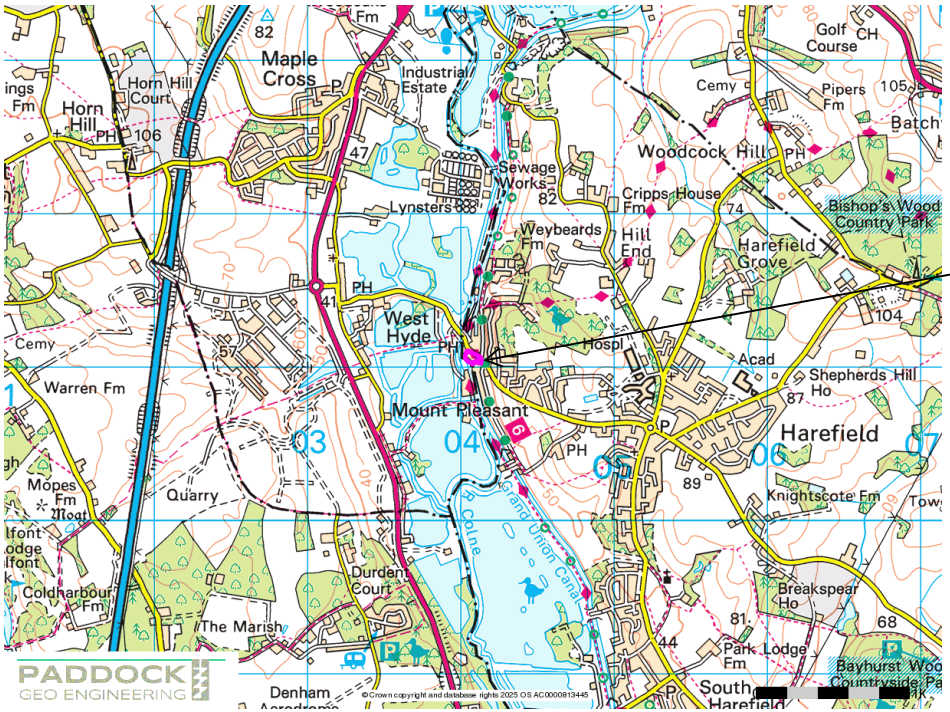
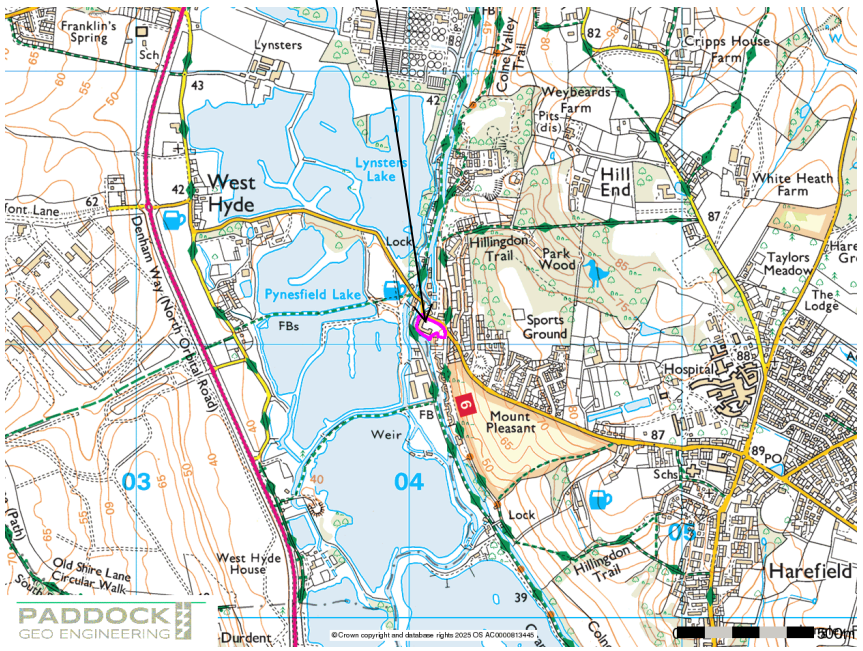
APPENDIX A

Site Location Plan
Site Plan
Aerial Photograph
Proposed Development Plan

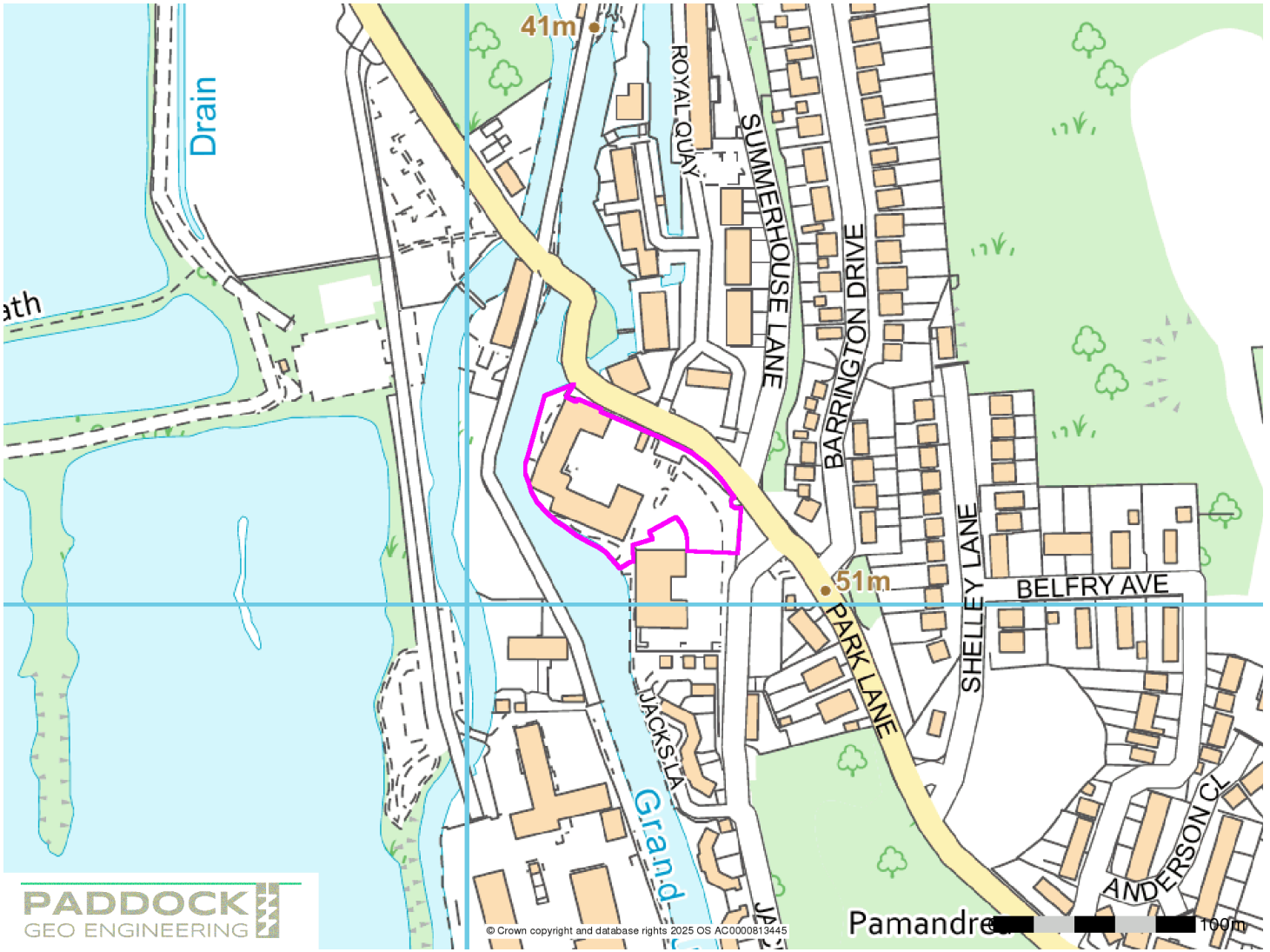
SITE LOCATION PLAN





CLIENT:	Greenhare Ltd
PROJECT No:	P25-268
PROJECT TITLE:	Salamander Quay, Uxbridge, UB9 6NZ

SITE PLAN



CLIENT:	Greenhare Ltd
PROJECT No:	P25-268
PROJECT TITLE:	Salamander Quay, Uxbridge, UB9 6NZ

AERIAL PHOTOGRAPH

PADDOCK GEO ENGINEERING	
CLIENT:	Greenhare Ltd
PROJECT No:	P25-268
PROJECT TITLE:	Salamander Quay, Uxbridge, UB9 6NZ

Existing Block Plan 1:500

Existing Site Location Plan 1:1250

1:500 0m 5m 10m 25m 50m

1:1250 10m 20m 50m 100m 125m

Notes:

do not scale:
detailed drawings and larger scale drawings take precedence. Figured dimensions only are to be taken from this drawing.

dimensions:
All building and site dimensions, levels and sewer invert levels at connection points are to be checked and verified on site by the contractor before the commencement of works. All dimensions are to be checked prior to the placement of orders for materials or the fabrication of work and any discrepancy, omission or error is to be reported to the Architect immediately for verification.

specification:
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of:
job drwg. no: jw1216-100
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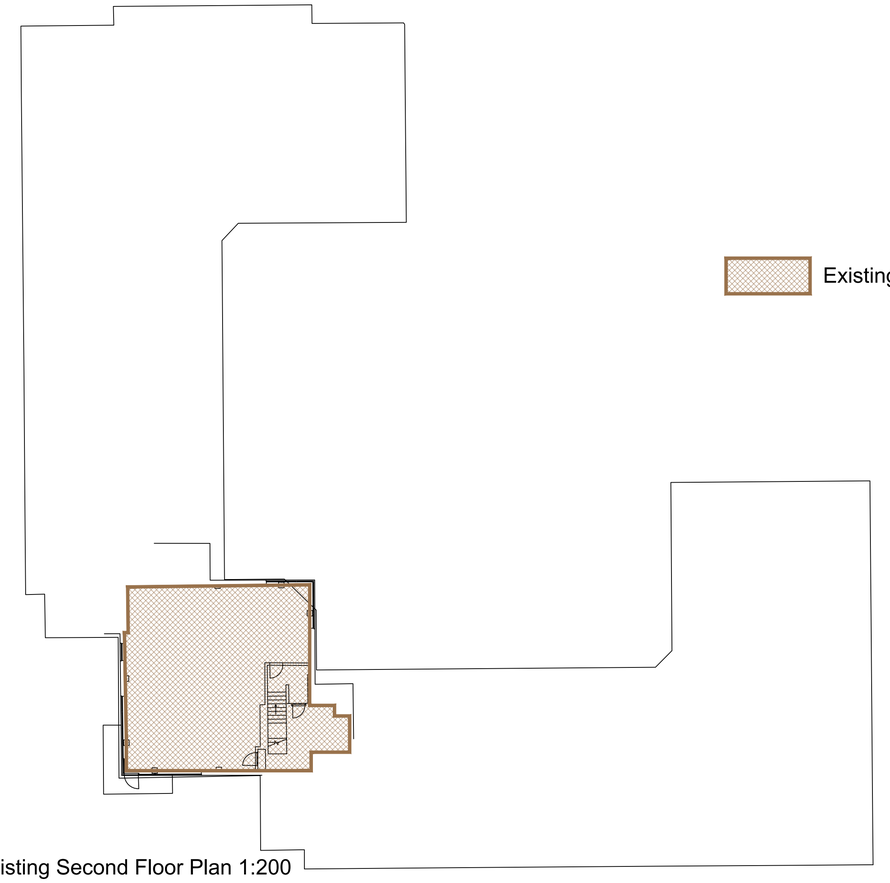
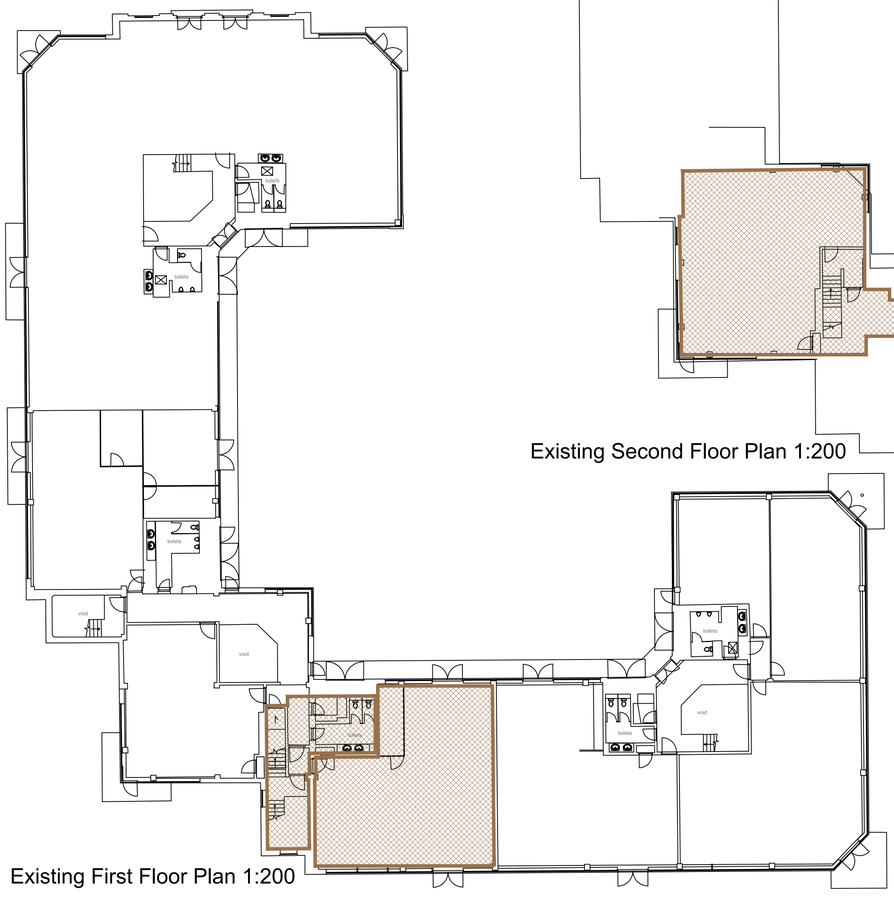


Existing Second Floor Plan 1:200



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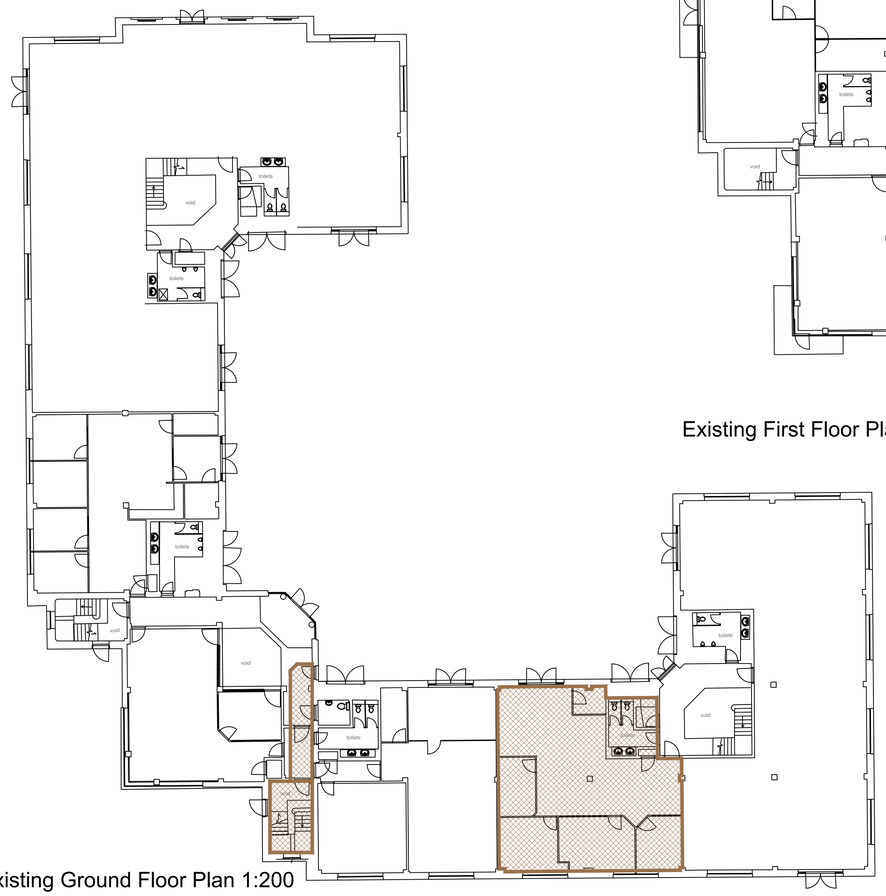

Existing Ground Floor Plan 1:200

1:200 0m 2m 4m 10m 20m

revisions:

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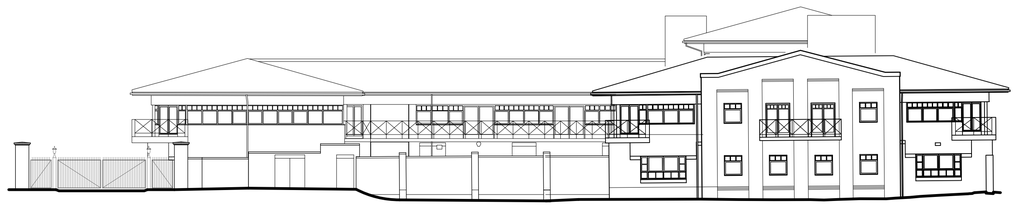

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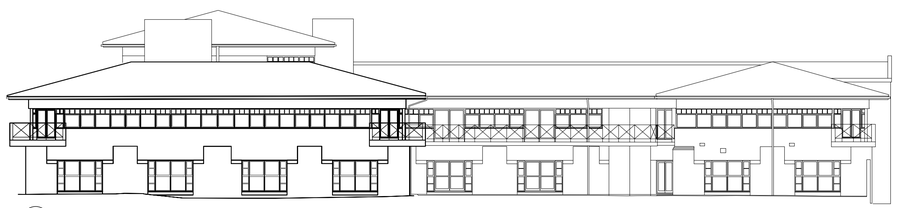

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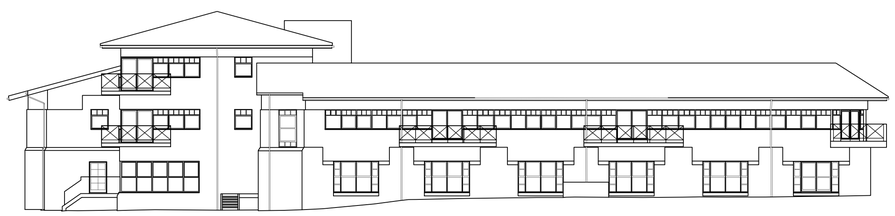

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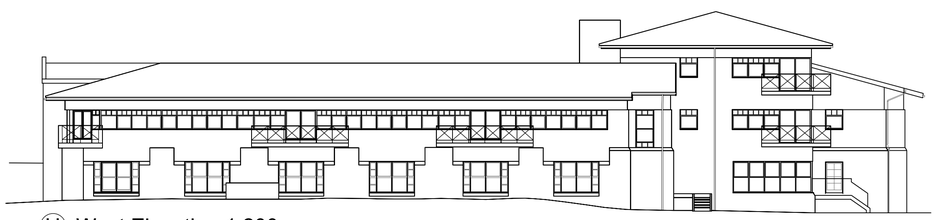

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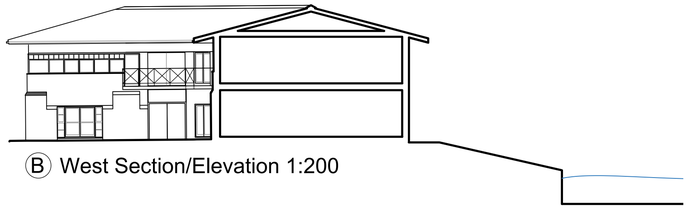
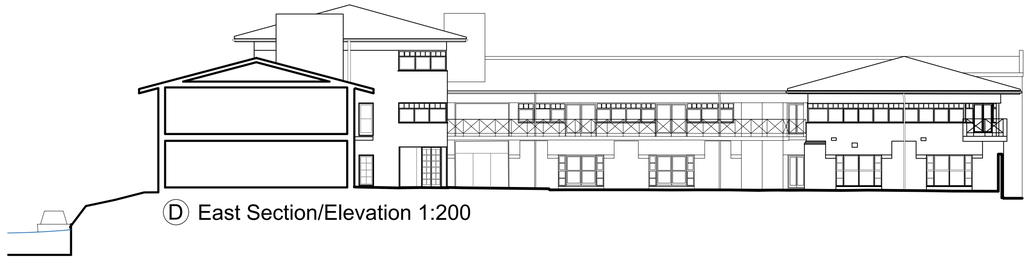
A South Section/Elevation 1:200



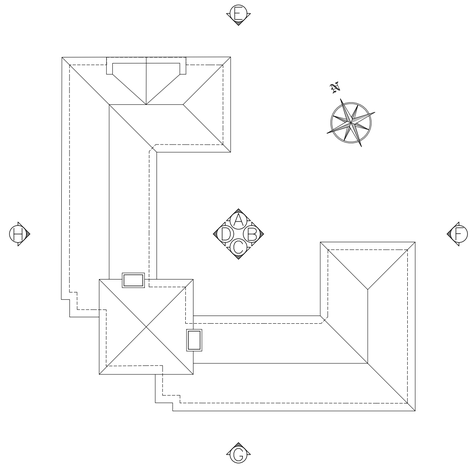
B West Section/Elevation 1:200

C North Section/Elevation 1:200



D East Section/Elevation 1:200

Existing Elevations 1:200



1:200 0m 2m 4m 10m 20m

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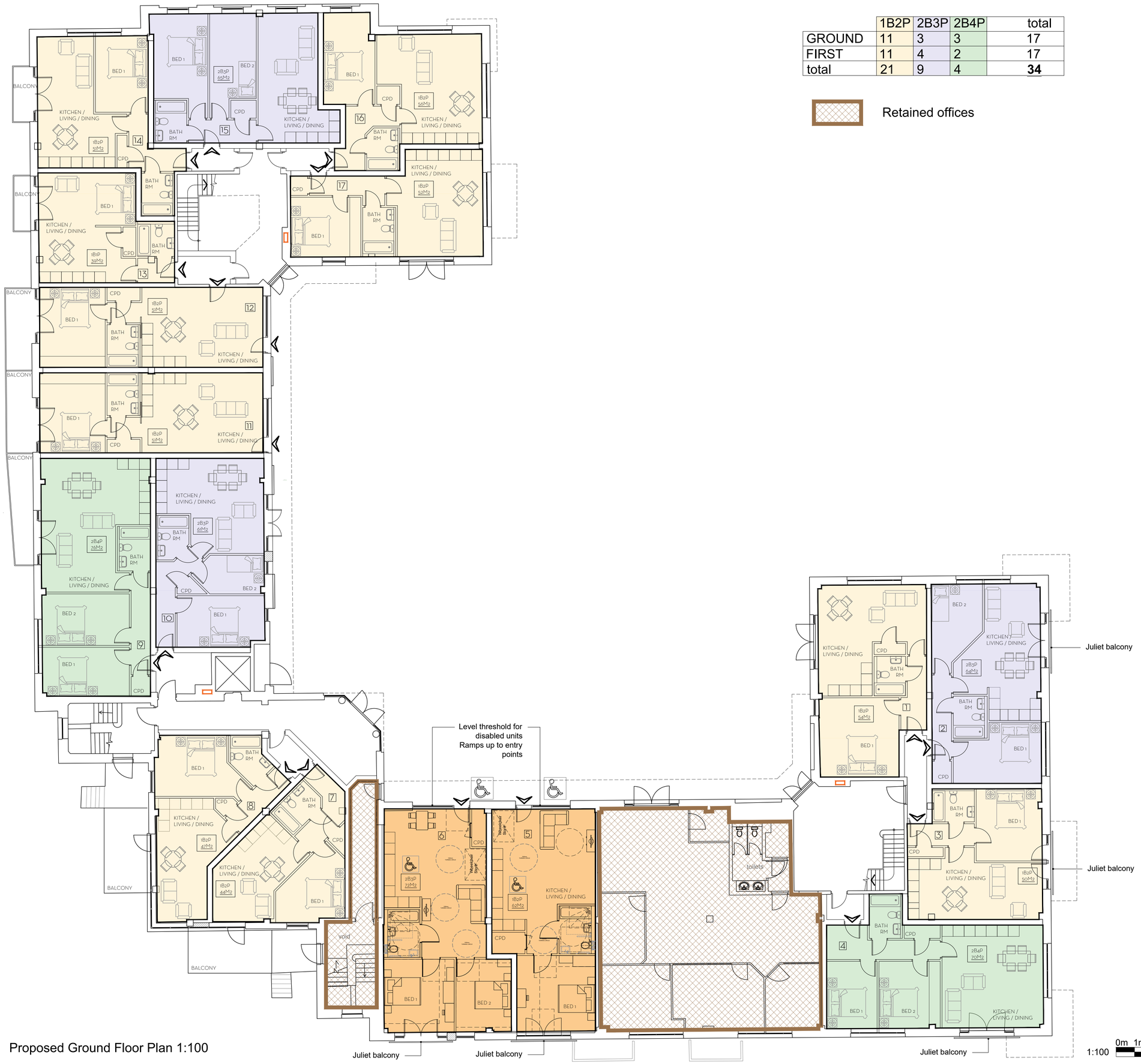

Proposed Ground Floor Plan 1:100

	1B2P	2B3P	2B4P	total
GROUND	11	3	3	17
FIRST	11	4	2	17
total	21	9	4	**34**

Retained offices

1:100 0m 1m 2m 5m 10m

Notes:

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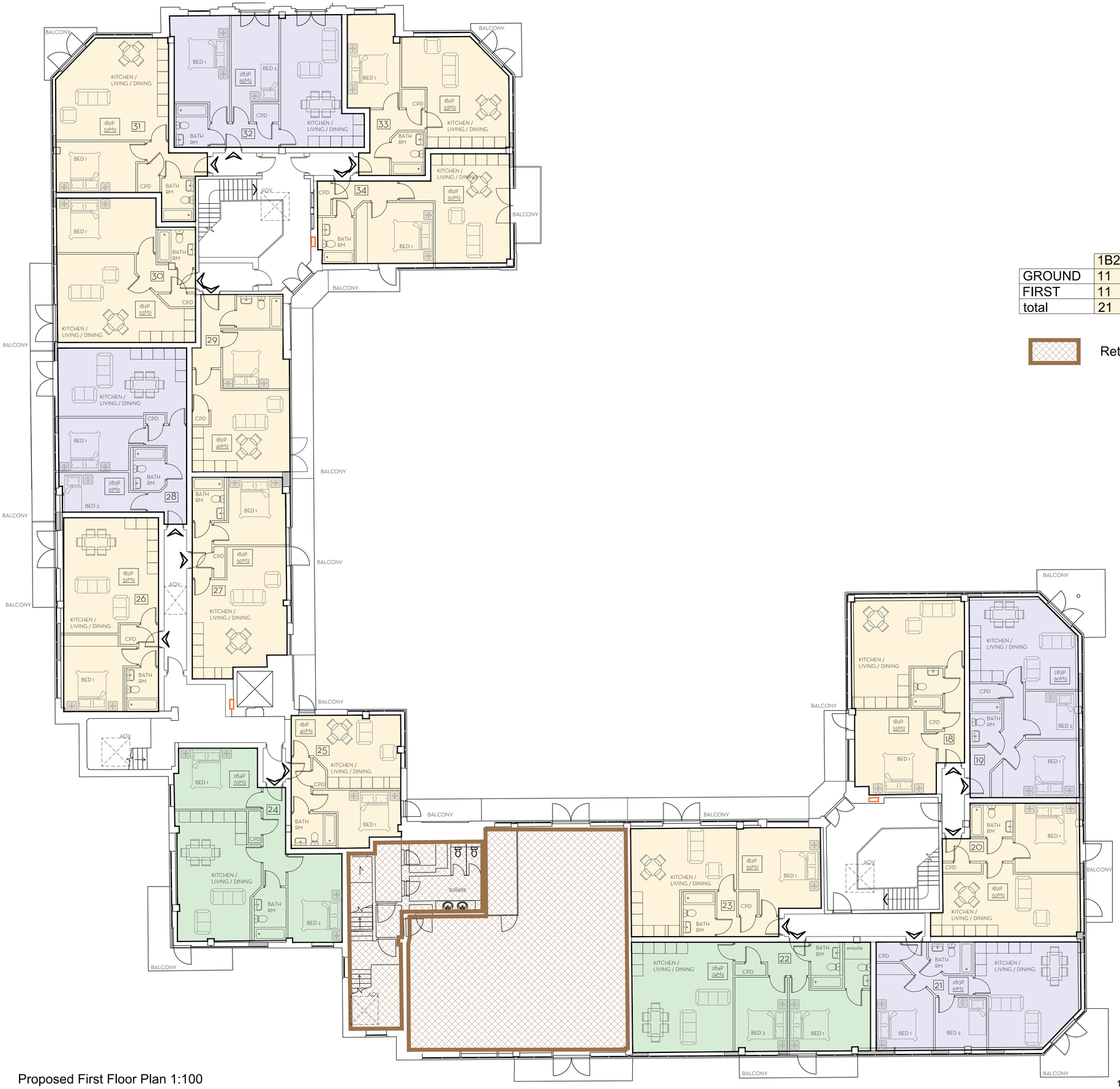

Proposed First Floor Plan 1:100

	1B2P	2B3P	2B4P	total
GROUND	11	3	3	17
FIRST	11	4	2	17
total	21	9	4	**34**

Retained offices

1:100 0m 1m 2m 5m 10m

Notes:

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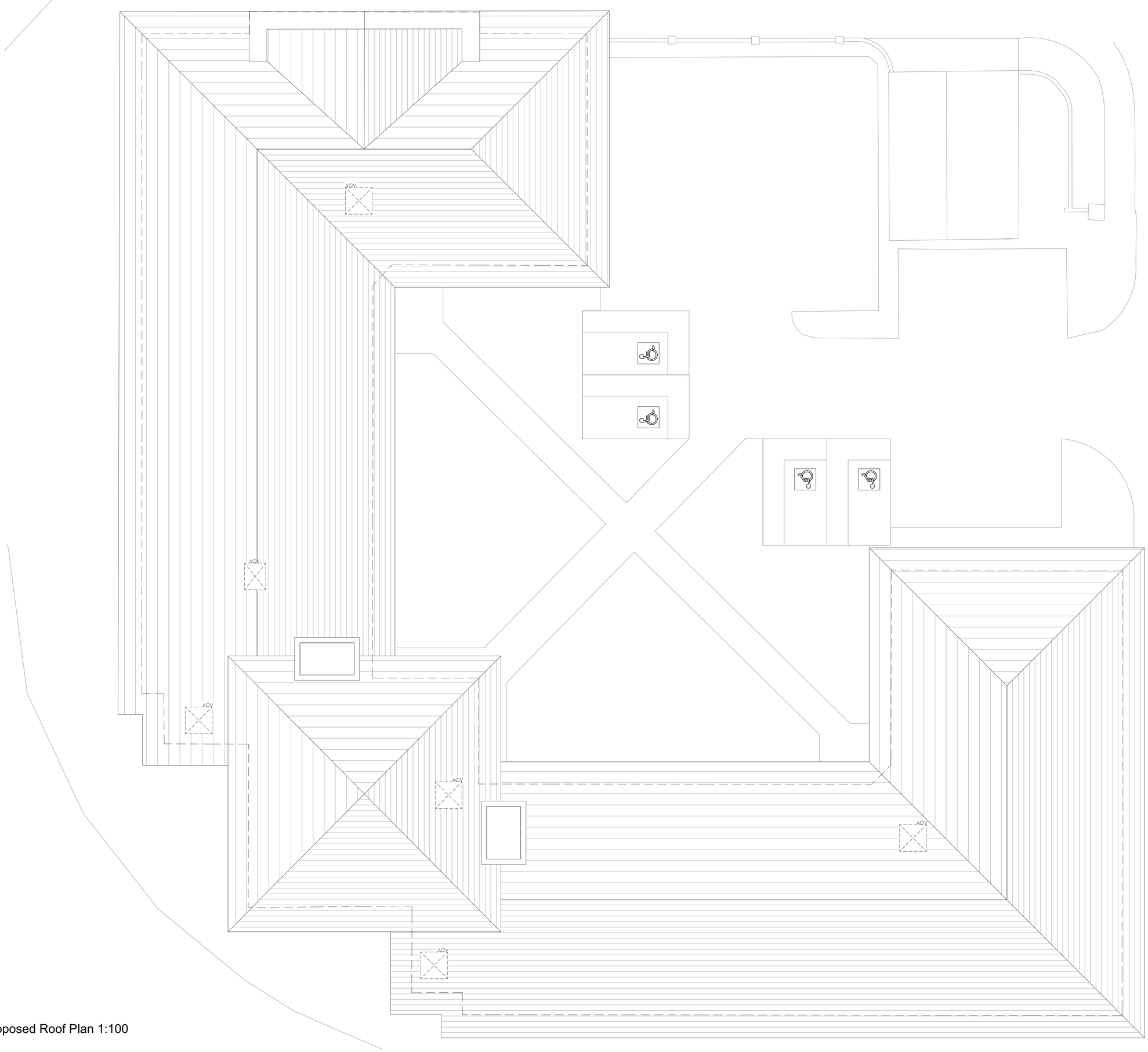

Proposed Roof Plan 1:100

N o t e s :

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detailed drawings and larger scale drawings take precedence. Figured dimensions only are to be taken from this drawing.

dimensions:
All building and site dimensions, levels and sewer invert levels at connection points are to be checked and verified on site by the contractor before the commencement of works. All dimensions are to be checked prior to the placement of orders for materials or the fabrication of work and any discrepancy, omission or error is to be reported to the Architect immediately for verification.

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1:100 0m 1m 2m 5m 10m

r e v i s i o n s :

c l i e n t :
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p r o j e c t :
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d e s c r i p t i o n :
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d a t e :	s h e e t	o f :
Dec '24		

job drwg. no: jw1216-112 rev: -