

Our ref: JH 22-5583
Your ref:



Oslady Homes Ltd

9th November 2023

**Land to corner of Great Jones St & Milne St,
Manchester. M12 5PA
Site Investigation Summary**

Phase 1 and 2 Site investigations were carried by IGE Consulting in July and August 2023 for the above site.

Phase 1.

The Phase 1 report included a desk top study and walkover survey and recorded the following information:

- The site is a piece of waste ground where previous terraced housing has been demolished.
- The ground conditions are expected to be of a Glacial Till overlying bedrock however the walkover survey highlighted evidence of old basements that have been backfilled.
- No faults were recorded within the area of the site.
- No past or present mine working are located beneath the site.
- No Radon gas measures should be necessary.
- A pond to the south edge of the site is shown on the old Ordnance Survey maps.
- There is a medium risk of Unexploded Ordnance within the site.
- Potential Geotechnical Hazards were identified such as made ground and ground water, which could lead to potential contamination and ground borne gases.

The Phase 1 Survey concluded that further intrusive site investigations were required.

Phase 2.

The Phase 2 investigations consisted of 4No rotary boreholes and 2No trial pits.

These revealed that the previously demolished houses have only been taken down to ground level, leaving the basement walls in place and backfilling the voids with material arising from the demolition including finer soils of silts, sands and clay.

The depth of made ground varied in the boreholes, from 2.6m to 4.0m being underlain by a firm to stiff sandy gravelly clay to at least 5.45m. The laboratory testing confirms the clay to be of a low plasticity.

Within the made ground, high levels of Asbestos fibres, PAH's, TPH's and lead were recorded.

A perched water table was encountered at 1.9m although this is assumed to be due to the made ground and not the natural ground water table.

From the investigations, it was concluded that traditional shallow foundations are not suitable for the new development, instead the foundations will need to be extended down beneath the made ground and into the firm sandy clay some 3-4m below ground level, thus piled foundations are recommended.

Because of the potential for ground borne gases within the site and from the adjacent receptors, it is also recommended that gas protection measures are necessary to the ground floor of the new houses in accordance with Characteristic Situation 2 of BS8485 achieving a minimum value of 3.5.

This equates to the ground floor construction consisting of:

- Gas resistant membrane over,
- Reinforced concrete suspended slab with minimal penetrations.

The high levels of contamination within the made ground requires careful consideration as to the final landscaping. Where private gardens are to be laid, then the made ground will need to be reduced by a minimum of 600mm and removed from site to a suitably licensed tip. Clean top soil can be imported and laid over these areas in accordance with IGE Clean Cover System detail.

The made ground beneath the houses will be suitably capped off by the floor slabs and thus can be left insitu, however care must be taken by all operatives during excavations etc. Therefore, as the higher levels of the various contaminants were recorded within the upper levels of the site, and the foundations involve forming ground beams beneath the slabs it would be prudent to reduce the site levels by a min of 600mm to minimise the risk of operatives being affected by such contaminants.

Conclusions.

From the investigations and our site visit, the site was previously an extension of the terraced houses to the west. These were demolished some time ago and the ground simply covered over with waste arising from the demolition.

The houses included basements which have been infilled with material arising from the demolition but the walls and brick floor slabs remain.

Due to this and condition of the site, it has been recommended that traditional foundations are not suitable for the new development and as such suitable piled foundations will be required. However, consideration must be given to the adjacent houses to limit vibration and ensure no structural damage occurs to these adjacent structures.

The ground conditions also raise the risk of ground borne gases that require suitable gas protection detail across the ground floor and contamination within the subsoils that could affect human health, thus requiring further protection by stripping the upper 600mm of made ground from the site and covering with a 600mm minimum thick layer of clean topsoil to the exposed garden areas.

We recommend that the house foundations are formed with reinforced concrete ground beams spanning between steel tubed driven piles installed by a small rig to reduce the affects of vibration on the adjacent houses.

In accordance with the necessary gas protection measures, the ground floors to the new houses should be constructed of reinforced concrete slabs tied into the ground beams and supported on the piles. A suitable, fully taped and sealed gas membrane can be laid over the slab to provide additional protection from any gases entering the properties.

A suitable ventilation system will need to be incorporated around the perimeter of the house walls to enable any ground gases to dissipate naturally into the environment. This will take the form of soft landscaped areas around the walls.

We trust this clarifies matters, however should you have any queries then please do not hesitate to contact us.

Yours sincerely



Jonathan Hayes

BEng (Hons) CEng MIStructE