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TILSTOCK ROAD, TILSTOCK

Preliminary Review of Ground Conditions, Geotechnical & Geo-Environmental Conclusions

Site

The 4.1 hectare site has not been developed previously for the most part, with the exception of a number of backfilled ponds.

Ground Conditions

Intrusive works included seventeen trial pits excavated on 1 October 2024 and seven cable percussive boreholes carried out between 1 and 8 October 2024.

Between 250 and 500 mm of topsoil covers the site.

The only made ground encountered was in TP01 and SA02A in the south of the site, both of which recorded reworked organic clay with wood fragments to 1.8 or 2.1 m depth.

The shallow natural ground comprises interbedded sand and predominantly firm clay (locally soft) belonging to the superficial glaciofluvial deposits. The boreholes recorded these strata to extend to depths of between 5.5 and 10.2 m. Below, a stiff cohesive stratum was proven to at least 15 m depth, expected to be the Lias Group.

Most exploratory holes recorded water ingresses within the upper 2 m. Groundwater monitoring of the wells installed in the boreholes recorded water at depths of between 0.3 and 1.2 m in most wells.

A number of the trial pits experienced side instability. Where trial pits were left open, collapse occurred within 1 to 3 hours.

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Preliminary Geotechnical Recommendations

The ground conditions indicate a shallow water table is present. The strength testing undertaken in the CP boreholes shows the upper 3 m to be of variable strength, likely water softened due to the shallow water table.

At this stage, allowance for piled foundations should be made.

In the drier time of year when the water table lies deeper, the shallow superficial deposits may be a suitable bearing material. If this is proven to be the case, widened and reinforced spread footings may be considered for a proportion of plots.

Surrounding tree influence will need to be taken into consideration where foundations are to extend through cohesive strata. Geotechnical testing is currently being undertaken to determine the volume change potential of the clay.

Where a shallow water table is present, a thickened road construction may be necessary as water-softened strata may provide lower CBR values.

Four soakaway test pits were undertaken. None of the tests drained, and one of the test pits collapsed during monitoring. Soakaway drainage will not be viable.

Preliminary Geo-environmental Recommendations

No radon measures are required.

The Phase 1 identifies the backfilled ponds both on and near the site to be a potential source of ground gas. Gas monitoring so far has recorded elevated concentrations of methane in two wells in the south of the site (1.2% and 2.1%) and elevated carbon dioxide in one southern well (5.4%). A maximum steady flow reading of 1.3 l/hr was also noted. Based on these results, a Characteristic Situation 2 gassing regime is likely to be required comprising a fully sealed gas membrane and a ventilated void below the ground floor.

A number of soil samples have been dispatched for chemical testing. The results received to date indicate the topsoil and natural ground arisings are suitable for re-use. The samples of made ground also indicate no capping of gardens or landscaped areas is required. A minimum 100 mm growing medium of topsoil should therefore be suitable in all gardens and landscaped areas.

Concrete in contact with made ground will require DS-2 ACAC-3z sulphate measures. It is likely concrete in contact with the Lias Clay will also require a high level of sulphate measures. Test results to confirm this are still outstanding.

Appendix

Exploratory Hole Location Plan, drawing 48888-ECE-XX-XX-DR-C-0010 P01

Key:

- Approximate position of trial pit excavated by Eastwood Consulting Engineers on 01.10.2024.
- Approximate position of soakaway completed by Eastwood Consulting Engineers on 01.10.2024.
- Approximate position of CP boreholes drilled by Eastwood Consulting Engineers between 01.10.2024 - 08.10.2024.
- Approximate position of former pond taken from historical maps.

REV	DESCRIPTION	SIG	CHK	DATE
P01	First Issue.	JL	KE	17.10.2024

BONINGALE HOMES

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EXPLORATORY HOLE LOCATION PLAN

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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48888	1:500	S0	Initial

DRAWING NUMBER

Project	Originator	Zone	Level	Type	Role	Number	REV
48888	ECE	XX	XX	DR	C	0010	P01