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MINERALS SAFEGUARDING ASSESSMENT AND MANAGEMENT PLAN

AT

STAR LANE, GREAT WAKERING, ESSEX

Prepared For

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AMENDMENT RECORD

Revision	Date	Amendments
V2	01/07/2015	Minor changes to material quantities

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APPENDICES

1. INTRODUCTION

This report has been prepared for Taylor Wimpey East London, for the purpose of satisfying Condition 49 of Rochford District Council planning permission 12/00252/FUL - Star Lane Brickworks, Star Lane Great Wakering. The condition requires confirmation of any Brick Earth deposits beneath the site as a valuable mineral, and an assessment of whether it is economically viable for extraction prior to commencement of the proposed development.

The primary objectives of this report are to:

- Identify the potential for Brick Earth beneath the site;
- Assess the economic viability and practicability of excavating the Brick Earth prior to the commencement of any proposed development;
- If applicable, provide details regarding the method of extraction and its potential use in the proposed development.

These are to be achieved by:

- Reviewing mineral safeguarding policy;
- Reviewing available information, including previous ground investigation information, so that the site can be defined in terms of its geological and environmental setting;
- Assessing the potential for extraction at each stage of the development;
- Where applicable, provide values of excavated and usable Brick Earth quantities at each stage of the development.

It was understood that the proposed development will comprise of low rise residential structures, (approximately 106 dwellings in total), together with associated gardens and parking. A Proposed Development Plan, drawing ref. 1087,EC,GI 004 / Rev 0 is provided within Appendix 3.

A Site Investigation Report has previously been undertaken by Ground Engineering Limited, reference C12519 dated December 2011, detailing the environmental and geotechnical aspects of the site and the relevant aspects of the proposed development. Relevant information from the aforementioned report has been used in the preparation of this report and is detailed within the appropriate sections.

2. REGULATORY REGIME

In 2006, the Department for Communities and Local Government published the Minerals Policy Statement (MPS1), **(ref. R.1)**, the purpose of which was to provide a policy for safeguarding minerals to reduce their sterilisation by development and ensure their future use. The above guidance has since been withdrawn and replaced by the National Planning Policy Framework, March 2009, **(ref. R.2),** and the Planning Practice Guidance, March 2014, **(ref. R.3)**, which details further the necessary criteria in assessing a site for its mineral potential for use in planning application decisions.

Whilst the purpose of a Minerals Safeguarding Assessment is to protect the future use of minerals, it does not preclude any proposed development, but highlights the extraction potential of a site so that the necessary decisions can be made during the planning process.

In addition to the above, the British Geological Survey publication 'A Guide to Minerals Safeguarding in England '2011,**(ref. R.4),** provides advice for the preparation of a Minerals Safeguarding Assessment and has been used in preparation of this report.

Whilst Condition 46 of the planning permission document, mentioned previously, only indicates the need to identify Brick Earth to enable an economic viability assessment, a Minerals Safeguarding Assessment approach has been taken so that a full account of the potential for onsite reuse of minerals can be identified and the necessary planning decisions made at an early stage.

3. SITE SETTINGS

3.1 Site Description

The subject site was situated at the former Star Lane Brickworks, Star Lane, Great Wakering Essex, and may be located by National Grid Reference (NGR) TQ 93449 87233.

A Site Location Plan, drawing ref. 1087,EC,GI 003 / Rev 0, is included in Appendix 3 at the back of the report and in Figure 1 below:

Figure 1 – Site Location Plan

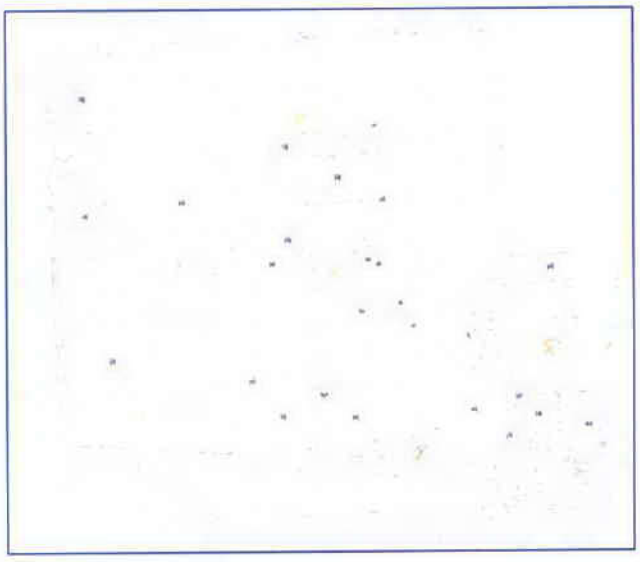

Figure 2 – Site Plan

The site covered an area of approximately 3.31 ha and was roughly rectangular in shape. At the time of this report, the site comprised of an open derelict parcel of land with former evidence of its former use, including extensive areas of concrete hardstanding, roadways, fuel infrastructure and foundations left in-situ. A number of level changes associated with its former use were recorded however the site was largely level.

A Site Plan is detailed in Figure 2 above.

3.2 Geological Setting

Details of the geology underlying the site have been obtained from the British Geological Survey (BGS) digital mapping at a scale of 1:50,000, the BGS 1:100,000 scale minerals resource map and accompanying report, (**refs. R.5** and **R.6**).

The site was shown to be underlain by River Terrace Deposits, described as clay and silt, which was underlain by the London Clay Formation.

The previous investigation encountered ground conditions to comprise of a 0.3m to 1.6m thickness of Made Ground, which was underlain by a 0.5m to 2.7m thickness of natural wind-blown Loam soils, (Brick Earth). Underlying the Loam, in turn, was a 3.3m to 4.0m thickness of River Terrace Deposits and London Clay, proven to 25.0m depth.

Groundwater was typically recorded within the River Terrace Deposits at depths ranging between 3.3m to 3.5m and was proven to be perched within the stratum. Further seepages were recorded within the London Clay, however these were confined to slightly granular pockets within the stratum.

Laboratory analysis on a number of samples did not indicate the presence of elevated commonly occurring contaminants compared to their appropriate screening values. Furthermore, no visual evidence of gross contamination was noted to be present within the soils.

3.3 Surrounding Land -Use

Information provided in the previous Site Investigation Report and the BGS resources map, **(ref. R.5),** indicates an historic sand and gravel pit located adjacent to the east of the site, which appeared from the early 1960's, whilst a number of clay pits existed in the surrounding area. However, they are either ceased or inactive operations.

An industrial estate was constructed adjacent to the north of the site in the late 1960's and remains as a working site.

Elsewhere, the surrounding area is largely open and undeveloped and are used for agricultural purposes.

3.4 Environmental Designations

No environmentally designated areas existed within 1000m of the site.

The River Terrace Deposits are considered to be a Secondary (A) aquifer, which are capable of supporting groundwater supplies at a local scale.

The site does not lie within a Source Protection Zone (SPZ) for groundwater supplies.

4. MINERALS ASSESSMENT

4.1 Potential Mineral Extraction and Use

The Brick Earth comprised of a slightly sandy silty clay, with occasional flint gravel and is considered as a material of potential economic importance and may present benefits to the proposed development.

The proposed development will generate a certain quantity of Brick Earth during the construction of the proposed development, either from excavation for foundations, services, drainage or site levelling. Opportunities to extract Brick Earth from the site prior to and during construction should therefore be considered for use in the construction of the proposed development.

The following sections provide an overview of development activities and detail opportunities to extract Brick Earth within those activities.

4.1.1 Site Preparation/Levelling

A significant amount of surface materials and Made Ground will be extracted during this stage given the current layout of the site and the shallow soils beneath the site.

Where site levels permit, the opportunity to reclaim Brick Earth during excavation should be seized and should be separated and stockpiled for utilisation within the proposed development. However, as mentioned above, it is likely that significant amounts of Made Ground will be extracted and therefore the potential for any Brick Earth to be reclaimed is very low. Furthermore, the contamination status of the Brick Earth should be considered and it is possible that any Brick Earth extracted at this stage will not be suitable for reuse and should be removed from site as waste soil.

The contamination status of the soils shall be subject to their Waste Acceptance Criteria, (WAC), and should be classified based on the appropriate laboratory analysis under current UK legislation and the guidance provided within the Environment Agency Technical Guidance WM2: 'Hazardous Waste; Interpretation of the Definition and Classification of Hazardous Waste' August 2013.

4.1.2 Excavations for Foundations, Services and Infrastructure

Given the recommendations outlined in the previous Site Investigation Report, foundations are likely to comprise of conventional spread foundations within the design of proposed structures, which may extend from 0.75m to 1.6m bgl given the thicknesses of Made Ground encountered beneath the site. At these depths it is likely that the foundations will terminate within the Brick Earth given the achievable bearing capacities of the soil.

It would not be considered appropriate to extend foundations into the underlying River Terrace Deposits as the minimum depths of foundations required would exceed in the region of 2.0m bgl. Furthermore, where the River Terrace Deposits were proven to exceed a depth of 2.5m bgl, a piled foundation would be required. At the above depths, it would be considered uneconomical for foundations to be constructed and the potential benefits of reclaiming any Brick Earth would be outweighed by the cost.

Excavations for services and infrastructure, (roadways), will likely be limited to shallow depths, typically up to 1.0m bgl. At these depths it is likely that Made Ground will be encountered with limited opportunities to reclaim any Brick Earth soils.

Given the previous information, there may be opportunities to reclaim quantities of Brick Earth where the stratum is encountered within the minimum foundation depth. Where foundations extend beyond the minimum required foundation depth into the natural brick earth, the minimum allowable penetration depth of 150mm should be adopted. Considering the above for a 600mm foundation width for proposed developments across the site, the potential practicable amount of Brick Earth that may be reclaimed would be in the region of 238m^3

4.1.3 Drainage

The previous Site Investigation Report did not include any infiltration testing of the soils, however in the presence of significant thicknesses of Made Ground, conventional soakaway is not likely to be adopted for the site, and therefore excavations for standard combined sewer drainage are likely to be confined within the Made Ground.

Based on the above it is considered that opportunities to extract Brick Earth during this stage will be limited.

4.2 Geotechnical Considerations

As mentioned previously, foundations are likely to comprise of conventional spread foundations within the design of proposed structures. It is therefore considered that any Brick Earth extraction should not extend beyond the full depth of the foundation as this would affect the bearing capacity of the soils and an alternative foundation design or ground improvement technique would be required.

The above is also applicable to services and infrastructure, where development will require the Brick Earth in its in-situ state as a sub grade for construction.

5. MINERALS ASSESSMENT AND CONCLUSIONS

As mentioned previously, it was understood that the proposed development will comprise of low rise residential structures, (approximately 106 dwellings in total), together with associated gardens and parking.

The previous investigation encountered ground conditions to comprise of a 0.3m to 1.6m thickness of Made Ground, which was underlain by a 0.5m to 2.7m thickness of natural wind-blown Loam soils, (Brick Earth). Underlying the Loam, in turn, was a 3.3m to 4.0m thickness of River Terrace Deposits and London Clay, proven to 25.0m depth.

Groundwater was typically recorded within the River Terrace Deposits at depths ranging between 3.3m to 3.5m and was proven to be perched within the stratum. Further seepages were recorded within the London Clay, however these were confined to slightly granular pockets within the stratum.

A Minerals Assessment was undertaken and has concluded that there may be opportunities to extract Brick Earth during excavations for foundations. The total amount of Brick Earth which may become available would be in the region of 238m^3.

Based upon the above information, it is not considered appropriate to provide a minerals management plan, however any Brick Earth excavated should be considered as valuable to the proposed development, and may be used within areas of soft landscaping or as a fill material for backfilling. However, it is recommended that any backfilling with Brick Earth should conform to an engineered fill specification.

APPENDICES

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APPENDIX 1 – REPORT LIMITATIONS AND CONDITIONS

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

The comments given in this report, and the opinions expressed herein, are based upon the readily available information collated for the report and an assessment based upon the current UK guidance.

This report has been prepared for the sole use of the Client for the purposes described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

This report is prepared and written for the use stated herein; it should not be used for any other purposes without reference to Geosphere Environmental Limited. The report has been prepared in relation to the proposed end-use should another end-use been intended a further re-assessment may be required. It is likely that over time practises will improve and the relevant guidance and legislation be amended or superseded, which may necessitate a re-assessment of the site.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed on site, between and subsequent to the various map surveys appended.

Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes discussed or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

APPENDIX 2 – REFERENCES

R.1. Department for Communities and Local Government, 'Minerals Policy Statement 1: Planning and Minerals', 2006.

R.2. Department for Communities and Local Government, 'National Planning Policy Framework', March 2012.

R.3. Department for Communities and Local Government, 'Planning Practice Guidance', March 2014.

R.4. British Geological Survey, 'Minerals Safeguarding in England: Good Practice Advice', Oct 2011. NERC.

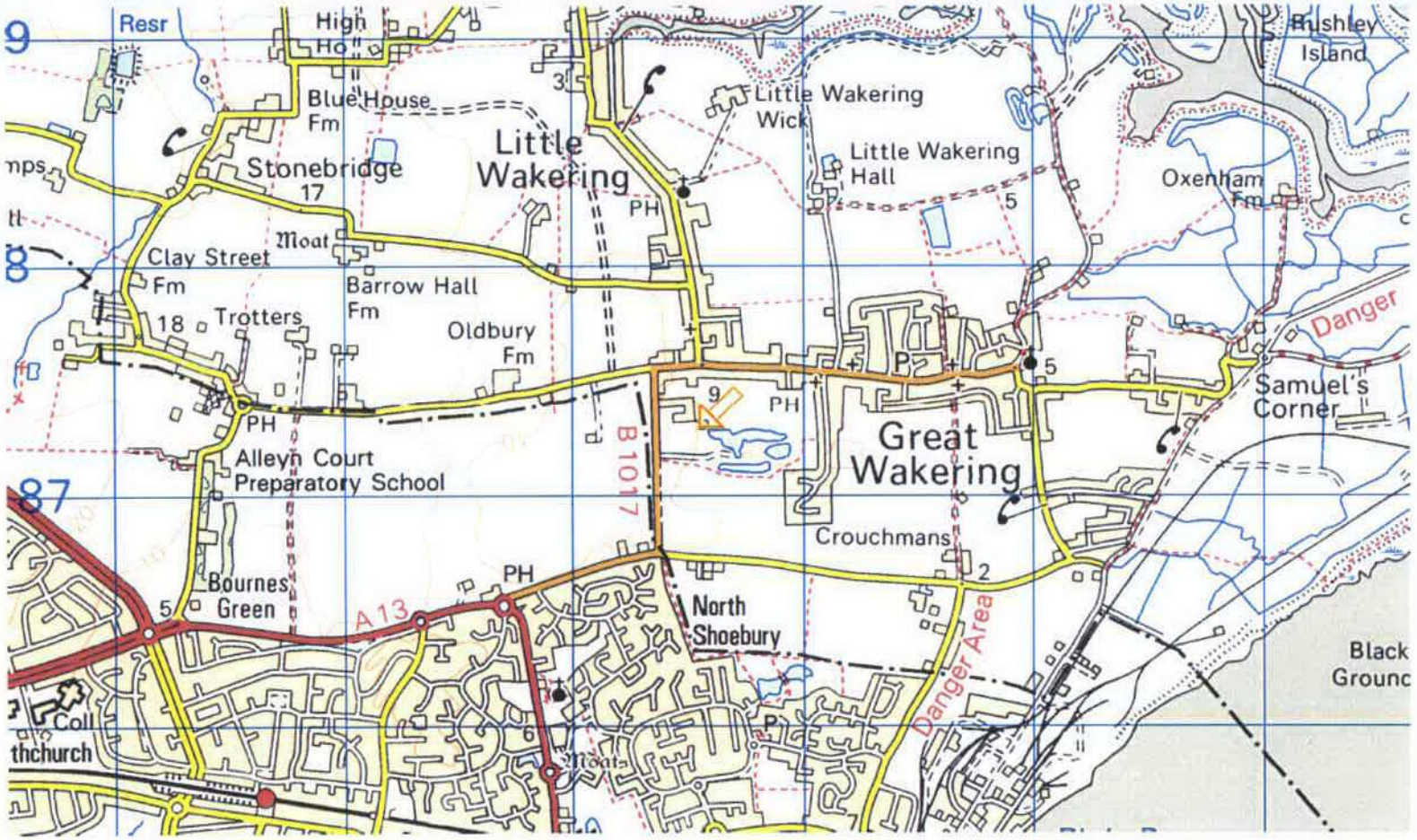
R.5. British Geological Survey, 1:100,000 Scale Minerals Resource Map: Norfolk, 2004.

R.6. British Geological Survey, 'Minerals Resource Information in Support of National, Regional and Local Planning: Norfolk; Ref CR/03/174N, 2004.

APPENDIX 3 – DRAWINGS

Site Location Plan – Drawing ref. 1087,EC,GI 003/Rev 0

Proposed Development Plan – Drawing Ref. 1087,EC,GI 004/Rev 0



LEGEND:

Site location

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SITE Star Lane, Great Wakering, Southend-on-Sea, Essex, SS3 0PJ	**TITLE** Site Location Plan **CLIENT** Taylor Wimpey East London	**PROJECT NO.** 1087,EC,GI **DRAWN BY** SG	**DRAWING NO.** 003 / Rev 0 **CHECKED** AD	**DATE** June 2015 **SCALE** Not to scale

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LEGEND:

NOTE: Drawing based upon Taylor Wimpey drawing number 1358:001 / RevA

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