

MINERAL RESOURCE ASSESSMENT

Land West of Ashington School, Ashington, West Sussex



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MRA Ashington

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EXECUTIVE SUMMARY

A mineral resource assessment has been undertaken for the proposed residential development on land west of Ashington School in Ashington, West Sussex. The Assessment Site comprises 180 dwellings over c. 18-hectares of greenfield land. The Assessment Site is allocated for development in the Ashington Neighbourhood Plan and plays a significant role in the district's housing trajectory, to meet much of the assessed housing need for Ashington of 200 dwellings over the plan period.

The Assessment Site is situated above a Mineral Safeguarding Area defined for Brick Clay (of the Weald Clay Formation) defined by West Sussex County Council Mineral Planning Authority in the adopted Joint Mineral Local Plan (2018). Safeguarded Brick Clay is used for brick manufacture at several brickworks within the county. It has been shown that Brick Clay is not a scarce resource within the county, nor is it scarce in terms of the landbank of resource required for projected demand at the local brickworks.

To meet a minimum required 'batch volume' of Brick Clay required for brick manufacture (60,000m³ as identified by Wienerberger Ltd), excavation depths of between 2.6m and 10.3m are predicted across the Assessment Site. Although this suggests the presence of a viable brick clay resource across on the Assessment Site, the mineral resource assessment has shown:

- The overriding need for the development outweighs the safeguarding of the minerals.
- A standalone mineral extraction at this location is unlikely to be economical viable as a result of constraints posed by the local road network, the limitation that this places on extraction rates and the cost of transport.
- That the prior extraction of minerals will not be economical viable and is unlikely to be practicable.

Given these results it has been concluded that the construction of the proposed development will not result in the unacceptable sterilisation of safeguarded mineral resources on the Assessment Site and would therefore meet the requirements of Policy 9 regarding mineral safeguarding without the need for any prior extraction.

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1 INTRODUCTION

1.1 Background

- 1.1.1 RPS Planning & Development (RPS) has been commissioned by Bellway Homes Ltd (BHL) to produce a Mineral Resource Assessment (MRA) in support of their proposed development on land west of Ashington School in Ashington, West Sussex. The redline boundary for the proposed development is shown in *Figure 1* and is referred to as the Assessment Site hereinafter.



Figure 1. Redline boundary and Master Plan for the Assessment Site

- 1.1.2 The Assessment Site covers approximately 18 hectares of greenfield land situated immediately west of Ashington.
- 1.1.3 The northern, east-west orientated, area of the Assessment Site is currently open agricultural grassland divided into fields by mature hedgerow. A strip of woodland defines the southern-central site boundary. Ecological surveys undertaken in support of the planning application have confirmed that this strip is Ancient Woodland (Arden Ecology). The northern boundary of the Assessment Site is defined by a 50-60m wide area of mixed woodland that separates the

Assessment Site from development along Rectory Road. In addition to open fields, development in the general area surrounding the northern, east-west orientated, area of the Assessment Site includes:

- residential housing, located 50m from the retained woodland at the northern site boundary and 90m from potential developable land at their closest points, although gardens extend up to the woodland; and
- a glasshouse / nursery located 10m from the woodland at the northern site boundary and 60m from potential developable land at their closest point.

1.1.4 The southwestern arm of the Assessment Site is approximately 150m wide and comprises c. 2.6 hectares of mixed woodland. The strip Ancient Woodland on the southern-central boundary extends along the northern edge of that remaining woodland.

1.1.5 The eastern (north-south orientated) arm of the Assessment Site is approximately 110m wide and comprises open fields. Development to the east and northeast of that site boundary comprises:

- Ashington C.E. Primary school within 50m of the boundary;
- existing residential development 65 m to the northeast at its closest point; and
- Ashington parish church.

1.1.6 Open agricultural fields bound the Assessment Site to the south and west.

1.2 Development details

1.2.1 The illustrative master plan for the proposed development is shown in *Figure 1*. The development comprises 180 new homes, open space, grass sports pitches, allotments and associated infrastructure works and a forest school. As shown in *Figure 1*, new residential homes are proposed in the northern and eastern parts of the Assessment Site.

1.2.2 The Assessment Site is situated on land allocated within the Ashington Neighbourhood Plan (ANP) (2021), as shown in *Figure 2*.

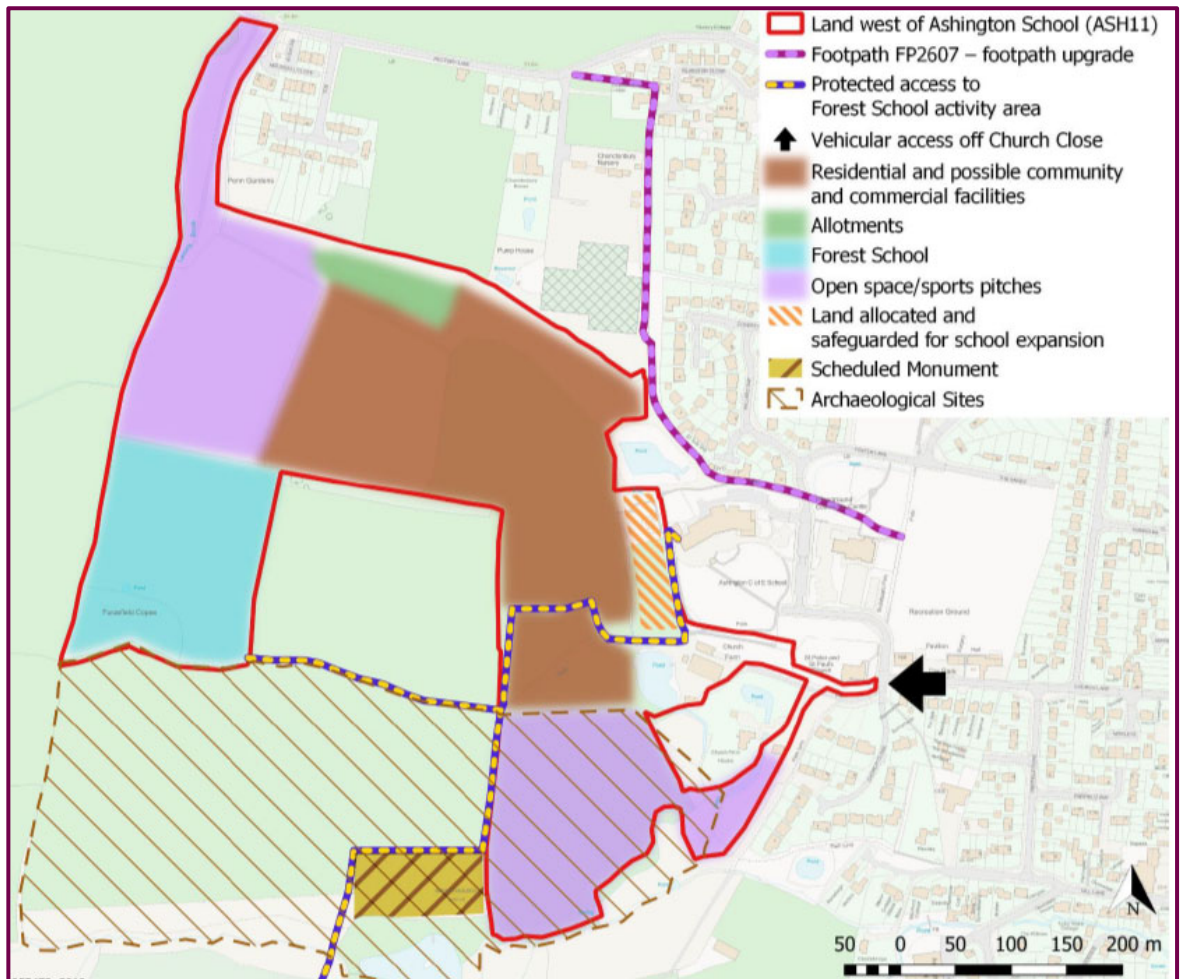


Figure 2. Key principles for development of land west of Ashington School (taken from ANP (2021))

1.3 Report structure

1.3.1 The subsequent report structure is as follows:

- **Section 2: General Approach** – Provides a summary of the general approach adopted to deliver the agreed scope of works including a summary of all key data sources used in the MRA.
- **Section 3: Review of Mineral Planning Policy** – Provides a summary of the National, Regional and Local planning policy context in relation to minerals. It also provides commentary on any supplementary planning documents relating to minerals.
- **Section 4: Site Setting** – Provides a summary of key aspects of the site setting, including a description of the geological and hydrogeological context for the assessment. This section describes the mineral designations relevant to the Assessment Site.
- **Section 5: Mineral Resource Assessment** – Provides the mineral resource assessment for the Assessment Site in terms of likely quantity and quality of mineral reserves and likely constraints on mineral extraction and an evaluation against mineral planning policies.
- **Section 6: Summary and Conclusions** – Summary of mineral resource assessment and evaluation of potential constraints for development resulting from criteria outlined in planning context applicable for the Assessment Site.

2 GENERAL APPROACH

2.1 Overview

- 2.1.1 This MRA utilises available geological and site setting information to evaluate the constraint that mineral resources present on the Assessment Site are likely to place on the proposed development considering local mineral planning policy. The MRA provides a resource assessment that defines the extent and value of mineral resources present on the Assessment Site, principally in relation to designated Mineral Safeguarding Areas (MSAs) defined by the local mineral planning authority. The mineral resource is then evaluated against the mineral planning policy for the Assessment Site, with the viability and practicability for mineral extraction prior to permanent development considered.
- 2.1.2 The mineral resources present on the Assessment Site have been evaluated based on the geological data available at the time of writing and compared with the “safeguarded mineral resource” defined through local mineral planning policy. The planning context for the Assessment Site has been reviewed by an RPS mineral planning specialist.

2.2 Data sources

- 2.2.1 The geological setting for the Assessment Site has been determined from a review of publicly available data sources that include:
- British Geological Survey (BGS), [Geology of Britain Viewer](#).
 - BGS Solid and Drift Geology Map. 1:50,000 Series. [Sheet 313/333 Brighton and Worthing](#). 1996.
 - British Geological Survey. [A Summary of Mineral Resource Information for Development Plans. Mineral Resources. West Sussex](#). 1:100,000 scale map.
 - Hopson, P.M. et al. 1997. [Mineral Resource Information for Development Plans: Phase One West Sussex resources and Constraints](#). British Geological Technical Report WF/98/5.
 - BGS [Geoindex Onshore](#).
- 2.2.2 In addition to material published by the BGS, the following Mineral Planning Documentation produced by the Mineral Planning Authority (MPA) of West Sussex County Council (WSCC) has been reviewed. This includes:
- [West Sussex Joint Minerals Local Plan](#) (JMLP) adopted on 20 July 2018 that covers the period to 2033 and was subject to partial review in March 2021.
 - [Minerals and Waste Safeguarding Guidance](#), March 2020 (MWSG, 2020).
- 2.2.3 The Ashington Neighbourhood Plan 2019-2031, Referendum Version, March 2021 (ANP, 2021) has also been reviewed.
- 2.2.4 BHL commissioned a preliminary intrusive investigation of the site in November and December 2021. That investigation was undertaken by RSK Geosciences and provided site specific geological information through the delivery of the following:
- 5 No. boreholes (WS1 to WS5).
 - 15 No. Trial Pits (TP1 to TP15).
- 2.2.5 The associated interpretative report for that investigation, including geological logs, is provided in *Appendix A*.

2.2.6 General information regarding the environmental setting of the Assessment Site has been obtained from publicly available data sources that include:

- [Defra Magic Maps](#) (Geology, hydrogeology and environmental sensitivity).
- Ordnance survey mapping.
- Aerial photography.
- EA dataset of historical landfill sites in England.

2.3 Consultation

2.3.1 Informal consultation has been undertaken with the Mineral Planning Authority (MPA) at West Sussex County Council and Wienerberger Ltd.

3 REVIEW OF MINERAL PLANNING POLICY

3.1 Mineral planning context

- 3.1.1 For England, the key national planning policies for minerals are set out in the National Planning Policy Framework (NPPF), updated in July 2021. The focus of the NPPF is a presumption in favour of sustainable development. The NPPF recognises that minerals are essential to support sustainable economic growth and our quality of life. It is therefore important that there is a sufficient supply of material to provide the infrastructure, buildings, energy and goods that the country needs whilst ensuring that permitted mineral operations do not have unacceptable adverse impacts on the natural and historic environment or human health. The NPPF also recognises that, since minerals are a finite natural resource, and can only be worked where they are found, it is important to make best use of them and to secure their long-term conservation through the mechanism of mineral safeguarding.
- 3.1.2 In the context of local planning the Assessment Site is situated within the Horsham District Council (HDC) Local Authority area. HDC lies within administrative area of West Sussex County Council which oversees all mineral and waste matters within the county. The principal documents and policies relating to strategic mineral planning within HDC are as follows:
- Horsham District Planning Framework (excluding South Downs National Park) (Adopted November 2015);
 - The West Sussex Joint Minerals Local Plan, July 2018 (Partial Review March 2021); and
 - The West Sussex Minerals and Waste Safeguarding Guidance (Adopted March 2020).

3.2 Horsham District Planning Framework (adopted November 2015)

Overview

- 3.2.1 The Horsham District Planning Framework (HDPF) was adopted in November 2015 and acknowledges that minerals are to be dealt with through close working with West Sussex County Council and any proposals should have regard to the defined county Minerals Safeguarding Area and Minerals Consultation Area guidance and policy produced by West Sussex County Council (WSCC). Within the HDPF the policy of relevance to the Assessment Site and in relation to minerals is Policy 26 which states:

“Strategic Policy: Countryside Protection Outside built-up area boundaries, the rural character and undeveloped nature of the countryside will be protected against inappropriate development. Any proposal must be essential to its countryside location, and in addition meet one of the following criteria:

- 1. Support the needs of agriculture or forestry;*
- 2. Enable the extraction of minerals or the disposal of waste;*
- 3. Provide for quiet informal recreational use; or*
- 4. Enable the sustainable development of rural areas.*

In addition, proposals must be of a scale appropriate to its countryside character and location. Development will be considered acceptable where it does not lead, either individually or cumulatively, to a significant increase in the overall level of activity in the countryside, and protects, and/or conserves, and/or enhances, the key features and characteristics of the landscape character area in which it is located, including;

1. The development pattern of the area, its historical and ecological qualities, tranquillity and sensitivity to change;

2. The pattern of woodlands, fields, hedgerows, trees, waterbodies and other features; and

3. The landform of the area.”

3.2.2 Policy 15 of the HDPF is the strategic policy regarding housing provision, states:

“Provision is made for the development of at least 16,000 homes and associated infrastructure within the period 2011-2031, at an average of 800 homes per annum. This figure will be achieved by:

1. Housing completions for the period 2011 – 2015;

2. Homes that are already permitted or agreed for release;

3. Strategic Sites:

a. At least 2,500 homes at Land North of Horsham

b. Around 600 homes at Land West of Southwater

c. Around 150 homes at Land South of Billingshurst

4. The provision of at least 1500 homes throughout the district in accordance with the settlement hierarchy, allocated through Neighbourhood Planning.

5. 750 windfall units.”

3.2.3 Policy 15 of the HDPF is expected to provide for at least 800 new dwellings per year over the plan period to 2031 and that includes at least 1,500 new dwellings on non-strategic sites across the sites that are allocated through the Neighbourhood Plan (June 2021). The delivery of the development falls in-line with the HDC Housing Trajectory (2011-2031) and can therefore be considered locally important, subject to the resolution of water neutrality issues.

Ashington Neighbourhood Plan 2019-2031

3.2.4 The [Ashington Neighbourhood Plan](#) (ANP), 2021 represents one part of the development plan for the parish over the period 2019 to 2031, the other part being the HDPF. The ANP is required to be in general conformity with the strategic policies in the HDPF. The ANP seeks to allocate sites to deliver the appropriate housing in line with the needs of the district in a manner that considers the setting of the Parish.

3.2.5 The overall assessed housing need for Ashington over the plan period is approximately 200 dwellings. Two sites are allocated with the ANP and are expected to deliver a minimum of 225 dwellings. The higher figure allows a buffer to reflect changing needs and also enables the delivery of a number of wider community benefits that will help address the objectives of the Plan. Policy ASH11 of the ANP refers allocated development on the Assessment Site. This demonstrates that the allocated site plays a significant role in the district's housing trajectory and meets much of the assessed housing need for Ashington over the plan period of 200 dwellings. This, therefore suggests there is an “overriding need for the development” given the importance of the development in achieving the districts and villages housing need.

- 3.2.6 The ANP (2021) states that a mineral resource assessment will be required, at planning application stage, on each of these sites to ensure that viable mineral resources are not permanently sterilised by development.

3.3 West Sussex Joint Minerals Local Plan

Overview

- 3.3.1 The West Sussex County Council and South Downs National Park Authority adopted [The Joint Minerals Local Plan \(JMLP\)](#) in July 2018 and covers the period up to 2033. The authorities undertook a Soft Sand Review that resulted in formal changes to the Plan which were adopted by the Authorities in March 2021.
- 3.3.2 Four mineral resources were considered of economic importance in West Sussex (namely sand and gravel, chalk, clay and sandstone) and warranted safeguarding for future generations. Mineral Safeguarding Areas (MSAs) were therefore defined for each of the mineral reserves, as shown in *Appendix E* of the West Sussex JMLP (2018). The MSA for Brick Clay (**of the Weald Clay Formation**) and the MSA for Soft Sand (**of the Folkstone Formation**) are shown in *Figure 3* and *Figure 4* respectively and reflect the extent of the mineral resource areas defined by the BGS (as shown in *Figure 5*) with an additional 250m buffer zone applied.

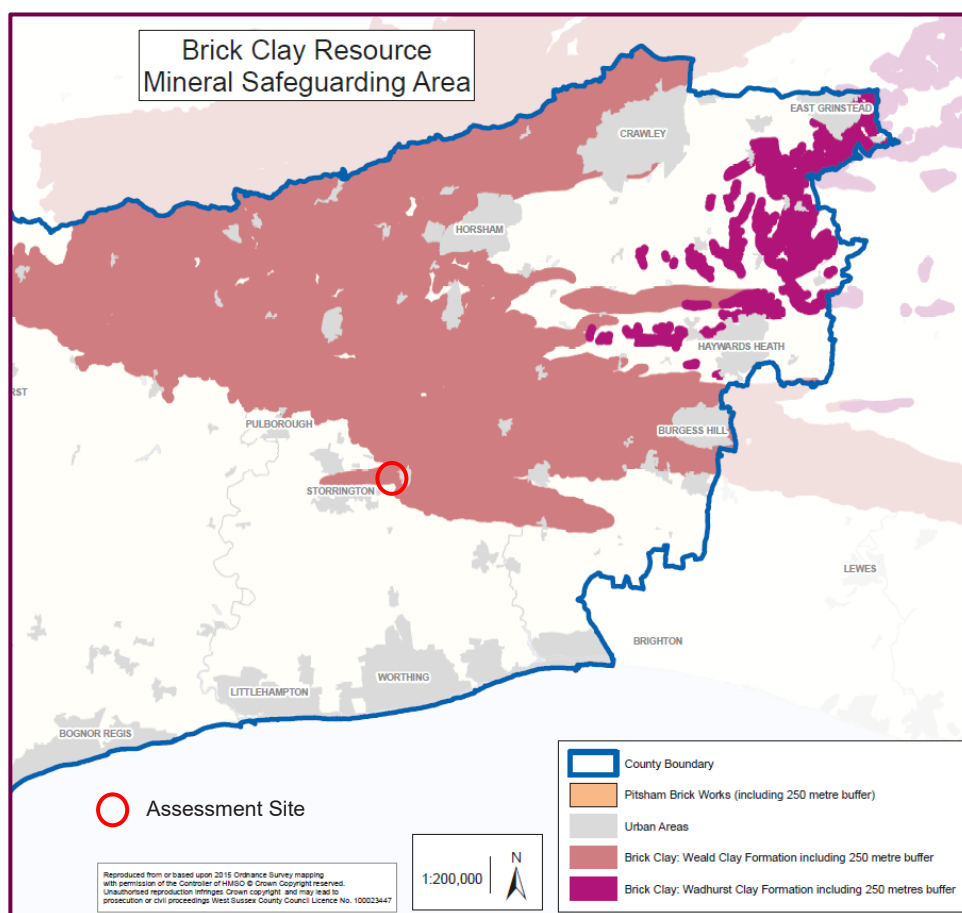


Figure 3. Brick Clay Resource Mineral Safeguarding Area (JMLP, 2018)

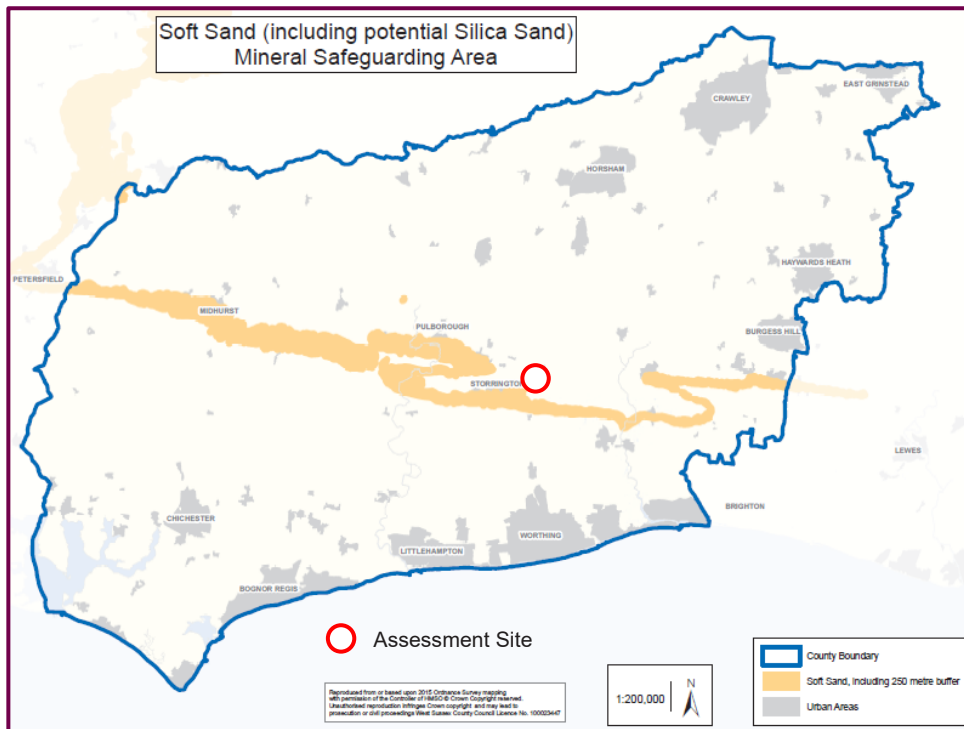


Figure 4. Soft Sand Mineral Safeguarding Area (JMLP, 2018)

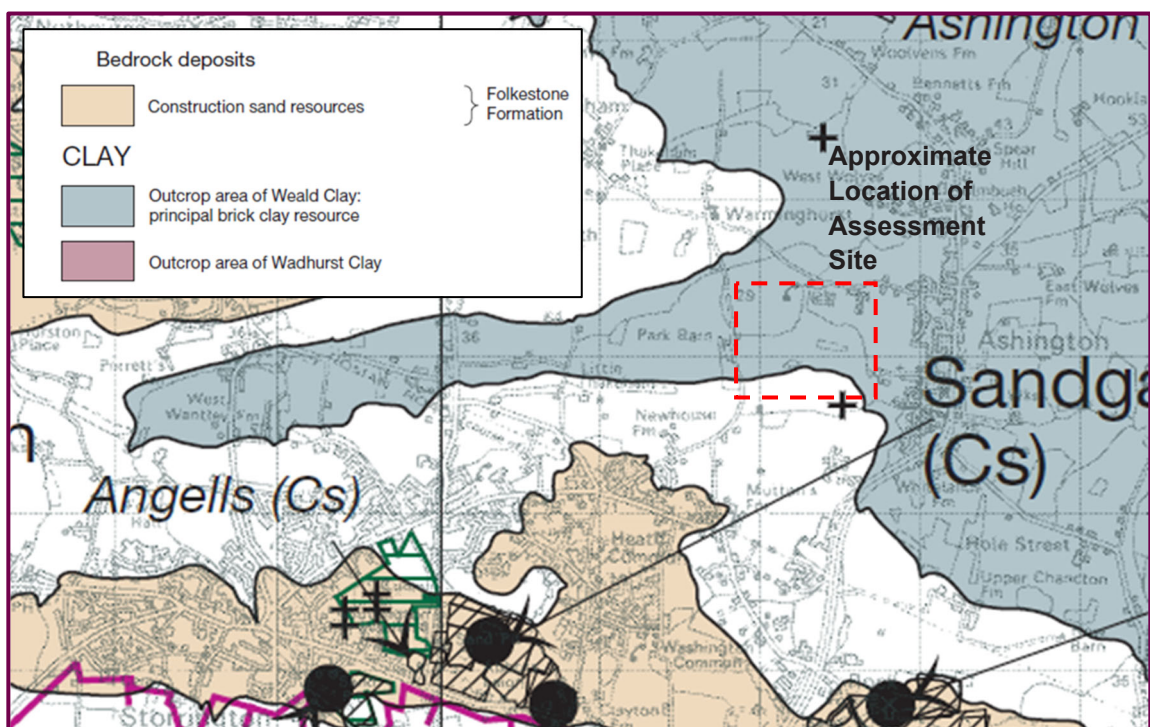


Figure 5. Mineral resources near Ashington (BGS, 1998)

- 3.3.3 Although situated close to the MSA for Soft Sand, *Figure 5* demonstrates that the Assessment Site is located above the Brick Clay of the Weald Clay Formation only. In West Sussex, the MSA defined for Brick Clay reflects the entire outcrop of the Weald Clay Formation. This large MSA

covers more than one third of the total county area of 1,991km². As such, the Weald Clay does not represent a scarce safeguarded mineral resource within the county.

Policy M9: Safeguarding Minerals

- 3.3.4 The safeguarding of mineral resources within MSAs defined in West Sussex is delivered through Policy M9: Safeguarding Mineral, that states:

“(a) Existing minerals extraction sites will be safeguarded against non-mineral development that prejudices their ability to supply minerals in the manner associated with the permitted activities.

(b) Soft sand (including potential silica sand), sharp sand and gravel, brick-making clay, building stone resources and chalk reserves are safeguarded against sterilisation. Proposals for non-mineral development within the Minerals Safeguarded Areas (as shown on maps in Appendix E) will not be permitted unless:

(i) Mineral sterilisation will not occur; or

(ii) it is appropriate and practicable to extract the mineral prior to the development taking place, having regards to the other policies in this Plan; or

(iii) the overriding need for the development outweighs the safeguarding of the mineral and it has been demonstrated that prior extraction is not practicable or environmentally feasible.”

- 3.3.5 The accompanying text for Policy M9 states that:

“where non-mineral development is proposed, developers may be required to carry out investigation work to ascertain whether economically viable mineral resources are present and whether prior extraction is practicable. The results of this work should be reported in a ‘Minerals Resource Assessment’ that is submitted with any application (for more detail see separate guidance on safeguarding).”

- 3.3.6 It also states that for the MPA not to raise an objection to a non-mineral development, it must be satisfied that:

“mineral sterilisation will not occur (either because the mineral resources are not economically viable or that an appropriate and practicable level of prior extraction can take place)” or “because there is an overriding need for the development.”

Policy M5: Clay

- 3.3.7 Policy M5: Clay relates to the supply of brick clay in West Sussex and states:

“(a) Proposals will be permitted for the extraction of brick clay provided that:

(i) they would help maintain a stock of permitted reserves of at least 25 years of permitted clay reserves for individual brickworks; and

(ii) the clay required for appropriate blending for manufacture of bricks is no longer available adjacent to the brick making factory.

(b) Proposals for the extraction of clay, for uses other than brick making, will be permitted provided that:

-
- (i) there is a need for the clay for engineering purposes; and*
 - (ii) the clay cannot be used for brick-making; or*
 - (iii) the resource is within an existing sand and gravel quarry and the extraction of clay would be ancillary to the extraction of sand and gravel.*
- (c) Proposals that accord with Part (a) or (b) will be permitted provided that:*
- (i) they are located outside the High Weald AONB/South Downs National Park unless there are exceptional circumstances and that it is in the public interest, in accordance with Policy M13, to locate within those areas;*
 - (ii) they are extensions of time and and/or physical extensions to existing clay pits or, where this is not possible, they should be sited as close as possible to the site where the clay will be used;*
 - (iii) where transportation by rail or water is not practicable or viable, the proposal is well-related to the Lorry Route Network."*

- 3.3.8 The supportive text mentions that National policy requires MPAs to provide for a 25-year stock of permitted reserves for the maintenance, and improvement of existing plant, as well as for new plant, in the case of bricks, new kilns. The Authorities are also required to take account of the need for provision of brick clay from a number of different sources, to enable appropriate blends to be made. Three named, active brickworks within the county have in excess of 25 years of clay reserves, one has 24 years and the brickworks at West Hoathly have less than 10 years' reserves (2016 data). This confirms that the Brick Clay is not a scarce resources at a county scale or in terms of the landbank of resource for projected demand.

3.4 Minerals and Waste Safeguarding Guidance, 2020

- 3.4.1 The WSCC [Minerals and Waste Safeguarding Guidance](#) (MWSG), 2020 provides guidance on how the safeguarding of minerals resources and infrastructure associated with minerals supply will take place in West Sussex. It explains how the safeguarding policies in the West Sussex JMLP (2018) will be implemented.
- 3.4.2 The MWSG sets out consultation thresholds that dictate when the MPA in WSCC should be consulted about non-mineral development within the county. The MPA must be consulted for all applications for non-mineral development on 3ha or more within the Weald Clay Mineral Consultation Area (MCA), unless one of ten consultation exemptions apply. *None of these exemptions are considered to apply to this development so we would expect WSCC MPA to be consulted.*
- 3.4.3 The MWSG highlights that the onus is on the applicant to undertake a MRA to determine whether the proposal will lead to mineral sterilisation. Unless the MRA can prove that there is no economically viable resource present, sterilisation will occur. The MRA will then need to address points (ii) and (iii) of Policy M9 to determine whether it is appropriate or practicable to extract the mineral prior to the development taking place or whether the overriding need for the development outweighs the safeguarding of the minerals and it has been demonstrated that prior extraction is not practicable or feasible.
- 3.4.4 The guidance states that an MRA should be proportional to the size of the site and the scarcity of the mineral and may include the following:

-
- *an assessment of the geological information about the site including quarrying history, Geological memoirs, mineral assessments, and market appraisals;*
 - *site investigations/borehole data (applicants may be required to carry out borehole testing if this information is not already available);*
 - *consideration of other locations for the development that are outside the MSA;*
 - *assessment of whether the proposal can be modified to avoid sterilisation;*
 - *assessment of the potential for the use of the mineral in the proposed development and whether it is feasible and viable to extract the mineral resource ahead of the development;*
 - *an explanation of the viability of prior extraction and how it will be carried out (e.g. environmental impacts, timescales, availability of the market to deal with the increase in the mineral);*
 - *discussions with potential 'users' of the mineral;*
 - *an explanation of how any voids will be 'backfilled' in preparation for development and/or incorporated into the design and layout of the development; and*
 - *building stone – an assessment of quarries (including active, inactive, and dormant), historic buildings using the stone, and alternative supplies of the stone.*

3.4.5 The guidance also points to further information about the content of MRA within the Mineral Products Association (MPA) and Planning Officer's Society (POS) Minerals Safeguarding Practice Guidance (April 2019).

4 SITE SETTING

4.1 General site setting

- 4.1.1 The Assessment Site is shown in *Figure 1* and covers an area of c. 18 hectares. The Assessment Site is situated on undeveloped land that comprises, agricultural fields and mixed woodland situated west of Ashington in West Sussex.

4.2 Topography and hydrology

- 4.2.1 The majority of the Assessment Site is located at low elevation of below 30 metres above Ordnance Datum (maOD). Ground levels on the Assessment Site decline to the northeast, away from an east-west orientated ridge of higher ground situated to the southwest.
- 4.2.2 Ground levels fall towards the Lancing Brook, situated in the valley floor below. A tributary of Lancing Brook rises at spring copse and follows the eastern and northern site boundary.
- 4.2.3 Lancing Brook flows to the northeast and is a headwater stream of the River Adur.

4.3 Geological setting

Regional geology

- 4.3.1 The regional geological setting for the Assessment Site determined from publicly available data sources is summarised in **Error! Reference source not found.** and shown in *Figure 6* and *Figure 7*.

Table 1. Regional Geological Succession

Era	Group	Formation	Lithological Description	Thickness (m)	EA Aquifer Designation
Quaternary (Superficial Deposits)	Alluvium		Unconsolidated deposit composed of clay, silt and sand. Deposited by running water within a riverine environment.	Variable	Secondary A
	Head		Poorly sorted, poorly stratified, angular rock debris and/or clayey hillwash and soil creep, mantling a hillslope.	Variable	Secondary (undifferentiated)
Cretaceous (Bedrock)	Lower Greensand Group	Folkestone Formation	Medium to coarse grained, well sorted sandstones with cross bedding.	0.5-80m	Principal
		Sandgate formation	Fine sandstone, siltstone and silty clay with frequent glauconitic horizons.	50-100m	Secondary A
		Hythe Formation	Glauconitic fine to coarse grained sandstones.	18-100m	Principal
		Atherfield Clay Formation	Interbedded brown and dark grey silty clays and clayey silts. Becoming sandier in the upper parts beneath the Hythe Formation	18m	Unproductive Strata
	Wealdon Group	Weald Clay Formation	Interbedded thin shales and mudstones with subordinate siltstones, sandstones, shelly limestones and clay ironstones.	<460m	<i>Mudstones:</i> Unproductive Strata <i>Sandstones:</i> Secondary A

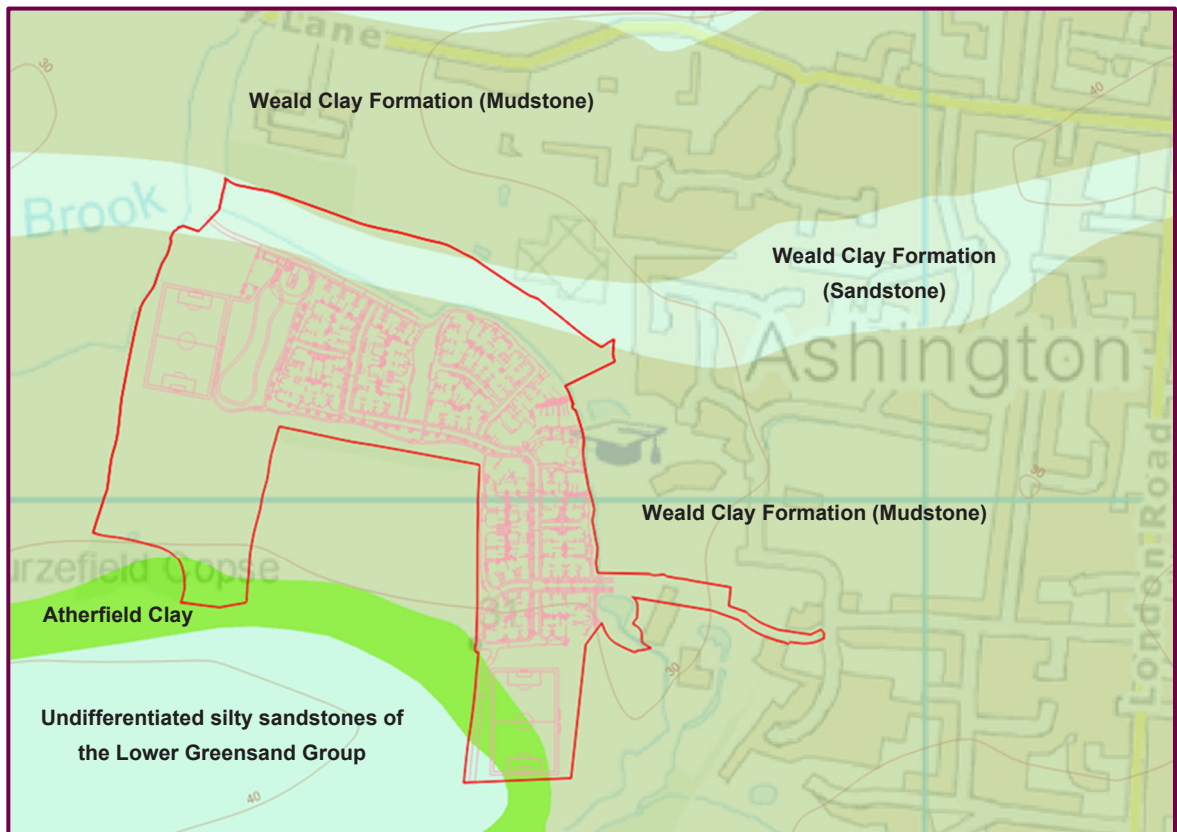


Figure 6. Bedrock geology

- 4.3.2 Regional geological mapping indicates that the Assessment Site is almost entirely underlain mudstones of the upper units of the Weald Clay Formation. As topography rises in the south, the southern end of the eastern and western arm of the development pass onto mudstones of the Atherfield Clay Formation. In the southeast corner of the Assessment Site the eastern arm of the Assessment Site intercepts the lowest deposits of the Lower Greensands Group.
- 4.3.3 The bedrock is locally overlain by unconsolidated 'head' deposits, associated with the valleys of the local watercourses. As shown in *Figure 7*, head deposits are restricted to the eastern half of the site, in the vicinity of the headwater stream of Lancing Brook.

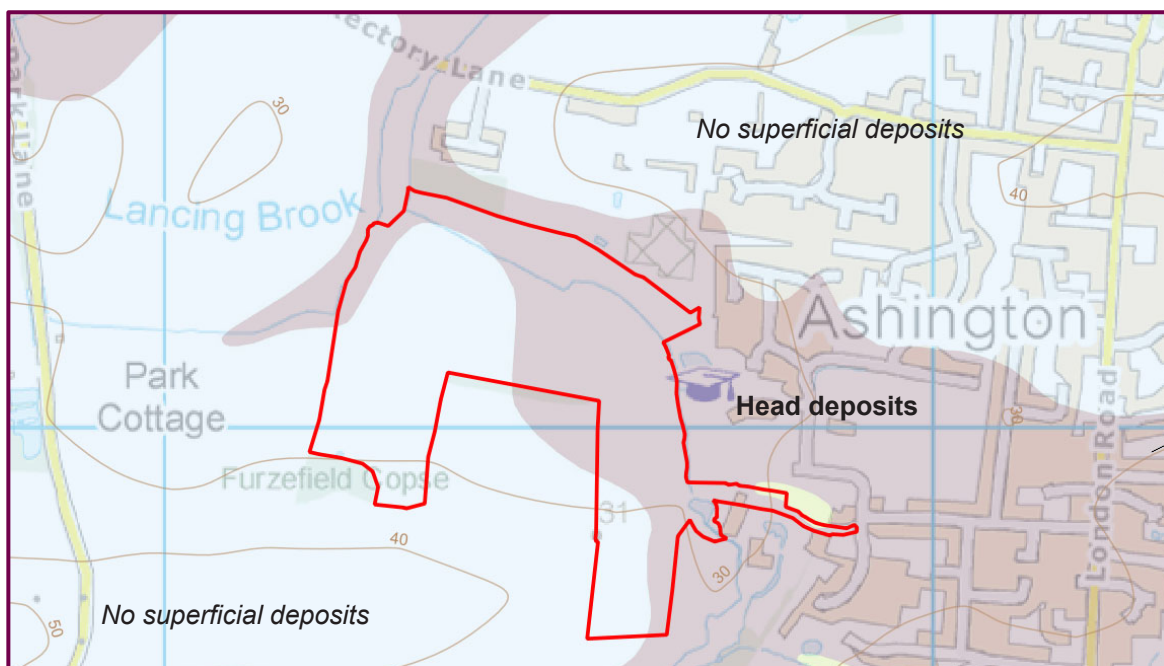


Figure 7. Superficial Geology

Safeguarded mineral resources

- 4.3.4 As shown in *Figure 3*, the Assessment Site is almost entirely underlain by the MSA for Brick Clay of the Weald Clay Formation. The basal deposits of the undifferentiated Lower Greensand Group are not classified an MSA. The upper Folkestone Formation which outcrops at higher elevation further to the south is classified an MSA but does not underlie the Assessment Site (*Figure 5*).

Site-specific geology

- 4.3.5 RSK Geosciences undertook a preliminary ground investigation on the Assessment Site in November and December 2021. The position of intrusive investigation locations across the Assessment Site and geological logs are provided in *Appendix A* and the site-specific geology is summarised in *Table 2*.

Table 2. Results of intrusive investigation (RSK, 2021)

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Made ground	TP1, TP2, TP4, WS1 and TPS1	Ground level to 0.50m	0.3m to >3.0m (depth not proven in TP2)
Cultivated Topsoil	All except TP1, TP2, WS1, TPS1	Ground Level	0.2m to 0.4m
Weald Clay Formation	All	0.2m to 2.1m	2.8m (proven to maximum depth of investigation.

-
- 4.3.6 Despite the shallow nature of the intrusive investigation, all window samples (5 No.) and all trial pits (15 No.) confirmed the presence of Weald Clay Formation at shallow depth. The Weald Clay Formation was encountered at a depth of between 0.2m and 2.1m below ground level and have been proven to extend beyond the maximum investigation depth of 3m. These units were described as cohesive strata, with granular siltstone and mudstone bands observed at depth. Given the proximity of the Assessment Site to the contact between the Weald Clay Formation and overlying Lower Greensand Group, almost the full depth of the Weald Clay Formation can be expected on the Assessment Site.
- 4.3.7 Superficial head deposits were not recorded on the Assessment Site.

4.4 Hydrogeology

- 4.4.1 As shown in *Table 1* The Weald Clay is designated unproductive strata.
- 4.4.2 Minor water seepages were noted in TP02, TP06, TP11 and TPS01 at depths between 1.5m and 2.4m bgl. Water was also identified in the shallow Window Sample holes following their completion as monitoring installations. Given the absence of significant water ingress in the trial pits this occurrence of water in window samples is considered to represent the local ingress of rainwater and/or shallow saturated sand horizons in the Weald Clay Formation.

4.5 Environmental Sensitivity

- 4.5.1 Ancient Woodland has been identified along the southern-central site boundary which extends up to the western site boundary. Mixed woodland along the northern site boundary and in the southwestern arm of the Assessment Site is also present. The proposed development design will retain these areas of woodland.
- 4.5.2 No nationally or locally designated protected sites were identified in the vicinity of the Assessment Site.

5 MINERAL RESOURCE ASSESSMENT

5.1 Extent of potentially viable mineral resources

Buffer zones and constraints on mineral extraction

5.1.1 As described in *Mineral safeguarding in England: good practice advice* (BGS, 2011) buffer zones are commonly applied around safeguarded mineral areas and used in the consideration of the extent of viable resources. Buffer zones limit the area of potentially extractable mineral resources by defining those areas where the extraction of safeguarded minerals would not be expected due to:

- Proximity to existing sensitive development, most notably:
 - Schools, hospitals and nursery's.
 - Existing residential development and supporting infrastructure (e.g. parks and amenity areas).
 - Community centres.
- Proximity to sensitive environmental receptors protected under paragraph 180 and 181 of the NPPF (2021) that include:
 - Designated sites (e.g. SSSI).
 - Ancient Woodland.
- Strategic infrastructure including:
 - Roads & highways.
 - Above and below ground utilities and services.
- Geotechnical and operational considerations associated with mineral excavation, most notably securing a geotechnically sound site boundary,

5.1.2 The extent of buffer zones defined around a proposed extraction site would typically be determined as part of the planning process for a proposed mineral extraction site. The buffer zones would ensure that sensitive receptors are protected from any adverse impacts associated with extraction most notably by noise, dust, visual impact, transport and/or vibration that may affect their structural integrity.

5.1.3 The width of protective buffer zones that may potentially be applied are not prescribed in the planning policies reviewed. Furthermore, detailed quantitative assessment to determine impacts and define buffer zones are beyond the scope of a MRA and are not required through the MWSG. However, it is noted that:

- Industry guidance does provide some indication of possible standoffs that may be required, for example the *Environmental Effects of Dust from Surface Mineral Workings* (Department of the Environment Minerals Division, 1995) states that in the absence of a quantitative dust assessment a minimum standoff of 100-200m is recommended from significant dust sources.
- The Welsh Assembly Government takes the view that the following minimum distances should be adopted unless there are clear and justifiable reasons for reducing the distance (Mineral Planning Policy (Wales): Mineral Technical Advice Note (Wales) – 1. Aggregates):
 - Sand and gravel (and others where no blasting is permitted): **100 metres**
 - Hard rock quarries: **200 meters**

- The MPA of WSCC apply a 250 m buffer zone to the MSAs they have defined in West Sussex, with respect to consultation in relation to safeguarded minerals and mineral infrastructure.

5.1.4 For this MRA the following buffer zones have been applied:

- 25 m standoff to protect the structural integrity of the mineral excavation boundary given potential depth of excavation within typical Weald Clay Quarries.
- Primary school: 150 m buffer zone for this receptor of high sensitivity
- Existing residential development: 100 m buffer zone
- Other existing buildings: 50 m buffer zone
- Ancient woodland: 50 m standoff
- Watercourses: 25 m standoff
- Retention of the mixed woodland along the northern site boundary and southeast arm

Current extraction of the Weald Clay Formation in West Sussex

5.1.5 As shown in *Figure 3*, the MSA defined for Brick Clay of the Weald Clay Formation covers more than one third of the entire county area of 1,991 km². As such Brick Clay of the Weald Clay Formation cannot be considered a scarce mineral resource within the county of West Sussex.

5.1.6 The most recent [Monitoring Report \(April 2020-March 2021\)](#) produced for the West Sussex JMLP confirmed that:

- *There are four active brick clay extraction sites in West Sussex of which two are for Brick Clay of the Weald Clay Formation, namely:*
 - *Warnham Site, near Horsham (Wienerberger Ltd).*
 - *Laybrook Brickworks Site, Thakeham (Ibstock plc).*
- *Overall, there is a total permitted reserve of 14.2mt across all sites and sales of 0.31 mt for the monitoring period.*

5.1.7 Notwithstanding the size of the MSA defined for Brick Clay, these figures confirm that there is a significant landbank of Brick Clay reserves (Weald Clay Formation) currently available for the active brickwork sites with at least two sites having sufficient reserves for 25 years.

5.1.8 A review of aerial photography for the two named sites confirms that:

- The operational extraction areas are large (c. 450m x 450m at the Warnham and c. 740m x 250m at the Laybrook).
- The absence of the most sensitive receptors in close proximity (i.e. schools, nurseries or hospitals near either site).
- The nearest sensitive neighbours (residential properties) to the extraction area at both sites is c. 90m but typically significantly greater than 100m.
- Receptors are separated from the extraction sites by natural screens formed by woodland.
- The excavations appear typically deep, with standing water collected at the base.

5.1.9 Conversations with representatives of Wienerberger Ltd has confirmed that:

- To ensure consistent quality of brick (including colour), enough Brick Clay must be sourced to ensure sufficient bricks can be produced in a single batch to maintain quality throughout firing. Typically, Wienerberger Ltd would seek circa 60,000m³ of Brick Clay (Weald Clay Formation).

- To ensure volumes and quality, the depth of excavation for Weald Clay Formation is relatively deep, typically 5 to 50 meters.
- Significant prior testing is required to determine suitability of Weald Clay Formation for brick manufacture. This includes carbon and sulphur content, XRF & XRD, firing properties (colour, shrinkages, water absorption etc.) and particle size distribution (PSD).

Potentially viable Brick Clay on the Assessment Site

5.1.10 The area of potentially viable safeguarded mineral resource, after the application of the previously described buffer zones, is summarised in 8. By the application of the buffer zones, it is evident that:

- The Assessment Site is split into two discrete areas:
 - Northern area with surface area of c. 29,250 m² (c. 325m x 90m).
 - Southeastern arm with a surface area of c. 7,250 m² (c. 145m x 50m).
- The total area of Brick Clay outside of the buffers is c. 36,500 m².
- Minerals in the eastern of the area of the Assessment Site are not viable given the proximity to the primary school which represents the most sensitive local receptor.



Figure 8. Potential area of viable Brick Clay (shaded orange)

5.1.11 *Table 3* summarises the depth of excavation required in each area of the Assessment site to meet the minimum batch volume identified by Wienerberger Ltd of 60,000m³. This calculation assumes 20 % of excavated volume is waste.

Table 3. Excavation depths to achieve minimum volume of viable resources

Assessment Site Area	Buffer Zone Width Applied	Surface Area (m ²)	Depth of excavation required to produce 60,000m ³ of minerals
Northern Area	As shown in Figure 8	29,250	c. 2.6 m
South-eastern Arm	As shown in Figure 8	7,250	c. 10.3 m

- 5.1.12 A strong argument can be made that more conservative buffer zones would be applied for mineral extraction on this site given that: Brick Clay extraction is a dust generating process; typically involves deep excavations; and the proximity of sensitive receptors (most notably the primary school). This would also appear to be more consistent with the standoff distances associated with the two active sites of Weald Clay Formation extraction within the county. More stringent buffers significantly reduce the area of viable mineral resources and increase the depth excavation required to reach the batch volumes required by mineral operators.

5.2 Viability and practicability of mineral extraction on the Assessment Site

Volume of viable safeguarded mineral resources

- 5.2.1 Based on the calculations presented in *Table 3*, there would appear to be sufficient viable Brick Clay present on the Assessment Site to achieve the minimum required batch volumes for brick manufacture at local facilities. This assumes the Weald Clay Formation on the Assessment Site is of appropriate quality, which is dependant of the following costly testing regime that includes:

- Carbon and Sulphur
- XRF & XRD
- Fired properties (colour, shrinkages, water absorption)
- PSD/PSA
- Additional in-house testing (Wienerberger Ltd)
- Factory trials from trial pits (Circa 15 to 30 tonnes).

Sensitivity of receptors

- 5.2.2 The Assessment Site is surrounded by sensitive receptors, most notably the Primary School, Ashington church and the Ancient Woodland. These receptors require protection under the NPPF, 2021. Given the proximity of these receptors, it is questionable whether mineral extraction at the Assessment Site would be granted planning permission should a standalone application for mineral extraction licence be submitted.

Development platform for residential development

- 5.2.3 The Assessment Site is situated at low elevation within the valley of Lancing Brook. A minimum excavation depth of 2.6m or more is required achieve the batch volume for brick manufacture the resulting excavation area. This excavation would have to be restored back to approximate ground

level to provide the required platform for the residential development. That platform will approach current ground level to allow surface water runoff to be managed in an area where the potential for infiltration to ground is extremely limited given the presence mudstones of the Weald Clay Formation.

- 5.2.4 The importation of an equivalent volume of material with the appropriate geotechnical properties will be required to backfill the excavation. Any infill material will also have to be uncontaminated to allow the construction of the residential development. Given the sensitivity of development deliverability to delays, that material would have to be delivered in line with the construction programme. This means secondary materials may not be available for infill and therefore primary minerals are likely to be required for backfill. Despite the apparent availability of sufficient resources for brick manufacture, the cost of infilling of the excavation area with primary material, in addition to the costly prior testing of the Brick Clay, will likely render mineral extraction as part of construction at this location uneconomically viable.

Mineral transportation considerations

- 5.2.5 The excavated mineral resources and imported infill material must be transported to and from the Assessment Site by lorry. To remove 60,000m³ of safeguarded mineral resources, would require 36 lorry movements per day, assuming the following:
- Extraction of the full volume over single year.
 - Excavated minerals (and imported fill) transported in standard 20 tonne / 8-wheel trucks with a 10m³ capacity.
 - 168-day annual extraction period (based on an 8-month excavation period targeting the summer months and 22-days activity per month).
- 5.2.6 These assumptions are considered reasonable given the need for a single batch run for brick manufacture. If the return journey for the required inert infill material is included, the total number of lorry movements increases to in excess of 70 journeys per day.
- 5.2.7 As shown in *Table 4*, this number of vehicle movements for mineral transportation far exceeds the number of vehicle movement forecast for the construction phase of circa 16 vehicles per day. Furthermore, the mineral extraction / infill movements would be additional to the construction phase movements and would involve larger vehicles.

Table 4. Construction Phase Vehicle Activity (Motion Transport, Infrastructure and Drainage Design Consultancy)

Vehicle Type	Frequency
3-axis tipper (8.0 metres long, 2.5 metres wide, and 3.5 metres high)	On average three per day
Concrete Lorries (8.3 metres long, 2.5 metres wide, and 4.0 metres high)	On average five per day
Skip Lorries (6.3 metres long, 2.5 metres wide, and 3.7 metres high)	On average three per day
Flat-bed Truck/Panel Van (7.0 metres long, 2.4 metres wide)	On average five per day

- 5.2.8 Therefore it is considered that the high number of journeys by 20 tonne haulage lorries required for the extraction of mineral resources and associated backfill would generate a significant impact on the road network which is unlikely to be acceptable to the LPA given the nature of the local

transport network providing access to the Assessment Site in this rural setting and given the sensitivity of local neighbours / receptors.

Need for the development and timescales

- 5.2.9 As outlined in Section 3.2.3 and Section 3.2.5 the allocated Assessment site plays a significant role in the district's housing trajectory and meets much of the assessed housing need for Ashington over the plan period. This therefore suggests that there is an overriding need for the development and through the Neighbourhood Plan allocation the principle of development and role it plays in achieving the districts and villages housing need.

5.3 Practicability of prior extraction

- 5.3.1 The practicability of the prior extraction of safeguarded mineral reserves, in advance of any proposed development, must be considered. Prior extraction could involve either:
- Full extraction of safeguarded reserves in advance of or in parallel with construction.
 - Incidental extraction – the extraction of safeguarded reserves by virtue of activities required as part of development construction activities (e.g. foundations, services, site reprofiling etc.).

Full prior extraction

- 5.3.2 The prior extraction of Brick Clay is not considered practicable on the Assessment Site considering: the questionable economic viability of mineral extraction, given the need for excavation backfill; the significant transport issues associated with export of minerals and import infill materials to and from the Assessment Site; the sensitivity of proximal receptors; and the cost and potential inappropriate nature of the Weld Clay on the site.

Incidental mineral extraction

- 5.3.3 Although incidental mineral extraction is likely to occur during the construction phase is not considered viable on the Assessment Site, given the limited scope for mineral extraction relative to the minimum batch volume of Brick Clay required (c. 60,000m³) and the high cost of analytical and trialling works required to demonstrate the suitability for brick manufacture.

5.4 Assessment against planning policies

- 5.4.1 The finding of the mineral resource assessment presented above has been evaluated against the mineral planning policies relevant to the Assessment Site and described in *Section 3*. This assessment is presented in *Table 5*.

Table 5. Assessment against mineral planning policies

Policy	Planning Condition	Assessment
West Sussex Joint Minerals Local Plan adopted on 20 July 2018		
Policy M9: Safeguarding Minerals	(a) Existing minerals extraction sites will be safeguarded against non-mineral development that prejudices their ability to supply minerals in the manner associated with the permitted activities.	Not applicable. There are no existing mineral extraction sites or Mineral Consultation Areas associated with such sites in the vicinity of the Assessment Site.
	(b) Soft sand (including potential silica sand), sharp sand and gravel, brick-making clay, building stone resources and chalk reserves are safeguarded against sterilisation. Proposals for non-mineral development within the Minerals Safeguarded Areas (as shown on maps in Appendix E) will not be permitted unless:	The Assessment Site is situated above MSA designated for brick-making clay of the Weald Clay Formation.
	(i) Mineral sterilisation will not occur*; or <i>(*Either because the mineral resources are not economically viable or that an appropriate and practicable level of prior extraction can take place)</i>	Applicable. Mineral sterilisation will not occur as the safeguarded mineral cannot be extracted and transport to local facilities in the timescales required without significant impact on road network and local receptors. When this is considered together with the transport costs, it is considered mineral extraction is unlikely to be economically viable on the Assessment Site.
	(ii) it is appropriate and practicable to extract the mineral prior to the development taking place, having regards to the other policies in this Plan; or	Prior extraction of safeguarded Brick Clay is not considered practicable at the Assessment Site considering: the questionable economic viability of mineral extraction; the need to backfill the excavation and restoration of current ground levels; the significant transport issues associated with the export of minerals and import infill material to and from the Assessment Site; and the sensitivity of proximal receptors.
	(iii) the overriding need for the development outweighs the safeguarding of the mineral and it has been demonstrated that prior extraction is not practicable or environmentally feasible.	Applicable. The housing need outweighs the safeguarding of the mineral given that: • The allocated Assessment Site plays a significant role in the district's housing trajectory and meets much of the assessed housing need for Ashington over the plan period. This therefore suggests that there is an overriding need for the development and through the Neighbourhood Plan allocation the principle of development and role it plays in achieving the districts and villages housing need. • Brick Clay of the Weald Clay Formation is not a scarce mineral resource with West

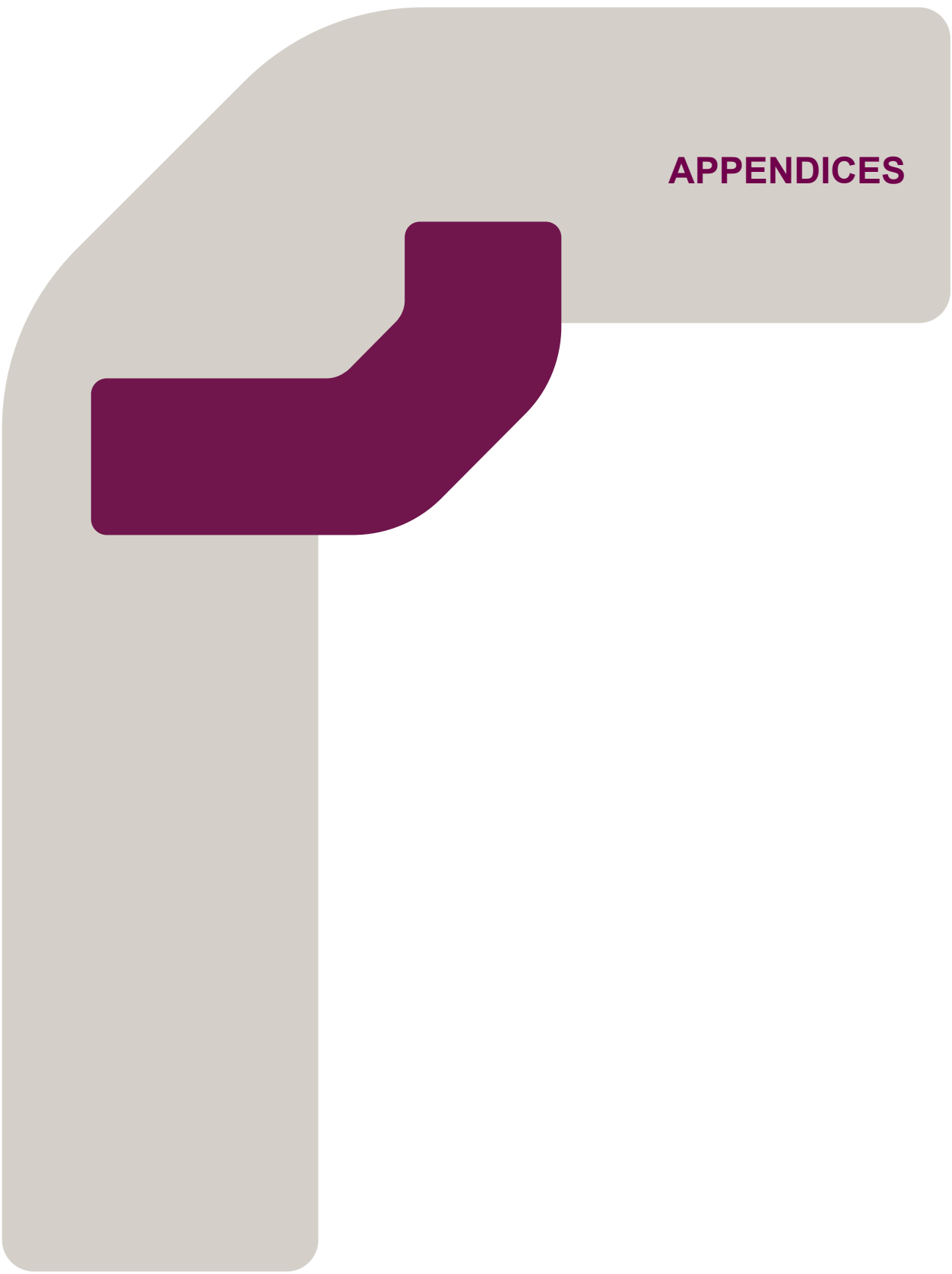
		Sussex considering it covers more than one third of the entire county of 1,991 km². • The active brickworks receiving Brick Clay of the Weald Clay Formation have sufficient mineral landbank for manufacture. • The mineral resources present on the site are unlikely to be economically viable given the cost of backfilling of the excavation area (and high sampling & testing costs)
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6 SUMMARY AND CONCLUSIONS

- 6.1.1 An MRA has been undertaken for the proposed development on land west of Ashington School in West Sussex. The MRA has utilised: publicly available geological information; data obtained from other planning applications in the local area; a site investigation undertaken in 2021 (RSK, 2021); and consultation with third parties including Wienerberger Ltd and West Sussex County Council.
- 6.1.2 The MRA was required in support of the planning application for that 18-hectare residential development that comprises 180 dwellings that is principally situated on greenfield land. The Assessment Site is allocated for development in the Ashington Neighbourhood Plan and plays a significant role in the district's housing trajectory, to meet much of the assessed housing need for Ashington of 200 dwellings over the plan period.
- 6.1.3 The mineral planning policy relevant to the Assessment Site is described in the West Sussex County Council and South Downs National Park Authority adopted plan, titled *The Joint Minerals Local Plan (July 2018) for the period up to 2033*, most notably Policy M9 regarding mineral safeguarding. The Assessment Site is situated above the MSA defined by WSCC MPA for Brick Clay of the Weald Clay Formation. Brick Clay of the Weald Clay Formation is not a scarce resource given it covers more than one third of the entire county area of 1,991 km². Furthermore, the most recent Monitoring Report (April 2020-March 2021) produced for the West Sussex confirms that there is a sufficient landbank of Brick Clay for the key brickworks within the county.
- 6.1.4 When the following buffers are considered only circa 20%v of the total safeguarded Brick Clay was identified as potentially extractable:
- 25m standoff to protect mineral excavation boundary structural integrity given likely deep nature of excavation required.
 - Primary School: 150m buffer zone for this receptor of high sensitivity.
 - Residential development: 100m buffer zone.
 - Other existing buildings: 50m buffer zone.
 - Ancient woodland: 50m standoff.
 - Watercourses: 25m standoff.
 - Retention of the mixed woodland along the northern site boundary and southeast arm.
- 6.1.5 To meet a minimum 'batch volume' of Brick Clay required for brick manufacture (60,000m³) excavation depths of between 2.6m and 10.3m are predicted across the Assessment Site. This suggests the presence of a viable Brick Clay resource on the Assessment Site.
- 6.1.6 Despite the presence of a potentially viable resource, and notwithstanding the fact more restrictive buffer zones could reasonably be expected to be applied to any mineral extraction on the Assessment Site given the sensitivity of local receptors, the following important conclusions have been made following completion of the detailed assessment (Section 5.2):
- The overriding ***need for the development outweighs the safeguarding of the minerals***:
 - The allocated Assessment site plays a significant role in the district's housing trajectory and meets much of the assessed housing need for Ashington over the plan period. This therefore suggests the development is of high importance with respect to achieving the districts and villages housing need.
 - The Brick Clay of the Weald Clay Formation is not a scarce mineral resource within West Sussex as it covers more than one third of the county of 1,991 km².
 - The active brickworks receiving Brick Clay have sufficient mineral landbank for manufacture over the period.

-
- A standalone mineral extraction at this location is unlikely to be economical viable as a result of constraints posed by the road network, the limitation that this places on extraction rates and the cost of transport.
 - The **prior extraction of minerals is unlikely to be practicable** considering:
 - It is unlikely that mineral extraction on the Assessment Site would be acceptable to the LPA based of transport considerations, given the high number of journeys by 20 tonne haulage lorries required for the extraction of mineral resources and associated backfill and nature of local transport network.
 - The need to backfill the excavation to current ground level.
 - The sensitivity of local receptors, most notably the primary school, Ashington church and existing residential development.
 - The unlikely economic viability of mineral prior extraction (see below).
 - Extraction of mineral resource present on the Assessment Site is **unlikely to be economically viable** given:
 - The high cost of infilling the excavation area back to circa ground level with an equivalent volume primary material of appropriate quality and geotechnical properties, which would be required given the low elevation of the Assessment Site;
 - The need to address very serious transport issues associated with mineral extraction of mineral resources on the Assessment Site given the nature of the local transport network and sensitivity of local receptors.
 - The high cost associated with sampling and prior testing of the Weald Clay Formation to demonstrate its suitability for brick manufacture.

6.1.7 Given these results of the assessment, it is concluded the construction of the proposed development on the Assessment Site would not result in the unacceptable mineral sterilisation and would meet the requirements of Policy 9 regarding mineral safeguarding without the need for prior extraction.



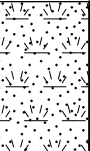
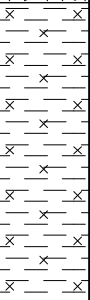
APPENDICES

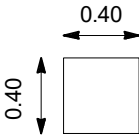
Appendix A

Site-specific Geological Information (RSK, 2021)

INSPECTION PIT LOG

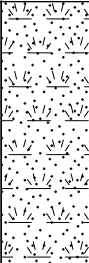
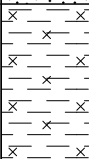
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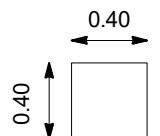
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Depth	No	Type	Results					
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						Firm to stiff light brown to orangish brown silty CLAY.	0.20	
							(0.40)	
							0.60	

Plan (Not to Scale)		General Remarks		
				
All dimensions in metres		Scale: 1:10		
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INSPECTION PIT LOG

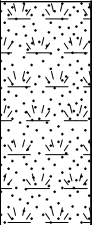
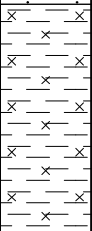
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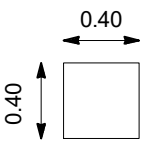
Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
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						Firm to stiff light brown to orangish brown silty CLAY.	0.35	
							(0.25)	
							0.60	

Plan (Not to Scale) 		General Remarks 	
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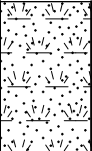
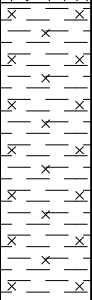
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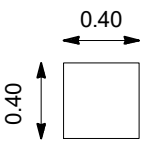
Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
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						Firm light brown to orangish brown silty CLAY.	(0.30)	
							0.60	

Plan (Not to Scale) 		General Remarks	
Method Used: Inspection pit		Plant Used: Hand tools	
Logged By: JCurnow		Checked By: AGS	
All dimensions in metres		Scale: 1:10	

INSPECTION PIT LOG

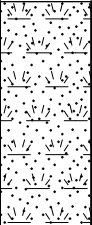
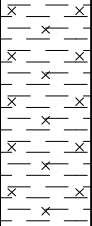
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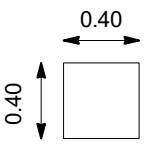
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Depth	No	Type	Results					
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							(0.40)	
							0.60	

Plan (Not to Scale)		General Remarks		
				
All dimensions in metres		Scale: 1:10		
Method Used: Inspection pit	Plant Used: Hand tools	Logged By: JCurnow	Checked By:	

INSPECTION PIT LOG

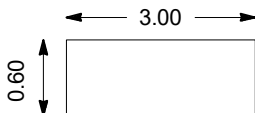
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: HP05
Contract Ref: 52368	Start: 01.12.21 End: 01.12.21	Ground Level (m AOD): ---	National Grid Co-ordinate: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.50-0.60	1	B				Soft dark brown sandy silty CLAY with occasional fine rootlets.	(0.30)	
						Firm light brown to orangish brown silty CLAY.	0.30	
							(0.30)	
							0.60	

Plan (Not to Scale) 		General Remarks 	
Method Used: Inspection pit		Plant Used: Hand tools	
Logged By: JCurnow		Checked By: AGS	
All dimensions in metres		Scale: 1:10	

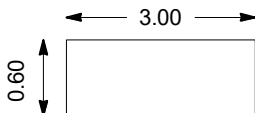
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP01
Contract Ref: 52368	Start: 22.11.21 End: 22.11.21	Ground Level (m AOD): 28.44	National Grid Co-ordinate: E:512691.7 N:115980.5	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30 0.00	1	ES PID	0.0ppm			Brown gravelly silty SAND with frequent glass, porcelain and brick fragments, occasional rootlets and plastic. Sand is fine to coarse. Gravel is subangular to subrounded fine flint and chalk. (MADE GROUND)	(0.30) 0.30	
						Dark brown silty firm to stiff slightly gravelly CLAY with occasional brick fragments. Gravel is fine to coarse subrounded to subangular flint and chalk. (MADE GROUND)	(0.40) 0.70	
0.90-1.10	1	D				Firm light brown mottled reddish brown silty slightly gravelly CLAY with occasional lignite. Gravel is fine to coarse subangular to subrounded flint and chalk. (WEALD CLAY FORMATION)	0.90	
						Soft to firm grey mottled orangish brown silty CLAY. (WEALD CLAY FORMATION)		
1.90-2.10	2	D				... From 2.00m depth: Becoming firm to stiff friable grey mottled orangish red silty CLAY.	(2.10)	
2.80-3.00	3	D				... From 2.80m depth: Becoming very friable (same description otherwise).	3.00	
						Trial pit terminated at 3.00m depth.		

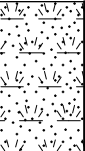
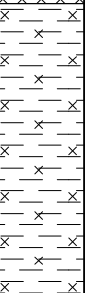
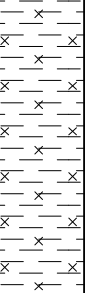
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

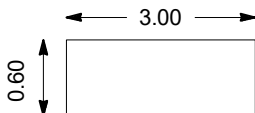
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP02
Contract Ref: 52368	Start: 22.11.21 End: 22.11.21	Ground Level (m AOD): 32.07	National Grid Co-ordinate: E:512629.6 N:115882.8	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30 0.00	1	ES PID	0.0ppm			Brown gravelly silty SAND with frequent glass and brick fragments, rootlets and rare plastic. Sand is fine to coarse. Gravel is fine to medium subrounded to subangular flint and chalk. (MADE GROUND)	(0.30) 0.30	
						Brown firm to stiff slightly gravelly silty CLAY with occasional brick fragments, whole bricks, plastic, rare wood and cable. Gravel is fine to cobble size subangular to subrounded flint and chalk. (MADE GROUND)	(0.40) 0.70	
0.90-1.10	1	D				Soft to firm light brown mottled grey silty CLAY. (MADE GROUND)	(1.10) 1.80	
1.90-2.10	2	D				Multicolour firm to stiff friable silty CLAY with occasional brick, glass and decayed organics. (MADE GROUND)	(1.20) 3.00	
2.50-3.00	3	D						
Trial pit terminated at 3.00m depth.								

Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Water seepage at 2.00m depth. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

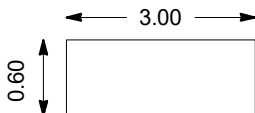
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP03
Contract Ref: 52368	Start: 22.11.21 End: 22.11.21	Ground Level (m AOD): 34.72	National Grid Co-ordinate: E:512607.5 N:115761.5	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Soft light brown mottled reddish brown slightly gravelly sandy silty CLAY with fine rootlets. Sand is fine. Gravel is fine to medium subangular to subrounded flint. (TOPSOIL)	(0.50) 0.50	
						Soft to firm mottled grey and orangish brown silty CLAY with rare brick fragments. (MADE GROUND)	(0.30) 0.80	
1.00-1.20	1	D				Firm to stiff grey mottled orangish brown silty CLAY. (WEALD CLAY FORMATION)		
1.80-2.00	2	D					(2.20)	
2.80-3.00	3	D					3.00	
Trial pit terminated at 3.00m depth.								

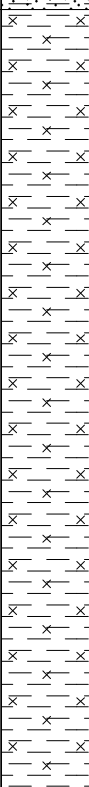
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

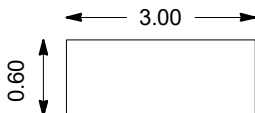
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP04
Contract Ref: 52368	Start: 22.11.21 End: 22.11.21	Ground Level (m AOD): 29.01	National Grid Co-ordinate: E:512589.5 N:115949.4	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30 0.00	1	ES PID	0.0ppm			Soft brown silty slightly sandy slightly gravelly CLAY with occasional fine rootlets. Gravel is subrounded to subangular chalk. Sand is fine. (TOPSOIL)	(0.30)	
0.40-0.60	1	D				Firm to stiff orangish brown mottled grey silty CLAY with rare brick fragments. (MADE GROUND)	0.30	
						Firm to stiff orangish brown mottled grey silty CLAY. (WEALD CLAY FORMATION)	0.50	
						... At 1.60m depth: Pocket of gravel - fine to coarse subangular black mudstone.	(2.50)	
2.20-2.40	2	D				... From 2.20m depth: Becoming stiff friable grey mottled orangish brown silty CLAY.		
						... From 2.60m depth: Becoming extremely friable grey mottled orangish brown silty CLAY.		
						Trial pit terminated at 3.00m depth.	3.00	

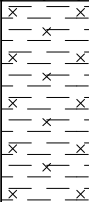
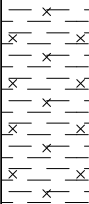
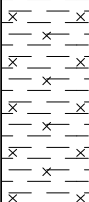
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

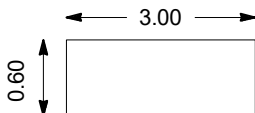
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP05
Contract Ref: 52368	Start: 22.11.21 End: 22.11.21	Ground Level (m AOD): 28.25	National Grid Co-ordinate: E:512634.6 N:116025.9	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30 0.00	1	ES PID	0.0ppm			Soft brown silty slightly sandy slightly gravelly CLAY with occasional fine rootlets. Sand is fine. Gravel is subrounded to subangular fine chalk. (TOPSOIL)	(0.30) 0.30	
0.90-1.10	1	D				Firm to stiff orangish brown mottled grey silty CLAY with occasional root to 0.90m. (from nearby tree) (WEALD CLAY FORMATION) ... From 1.10m depth: Becoming friable orangish brown to grey silty CLAY. ... From 1.30m depth: Becoming extremely friable orangish brown to grey silty CLAY.	(2.60)	
2.00-2.20	2	D						
2.20-2.90	3	D				... From 2.60m depth: Becoming weak mudstone in a matrix of hard friable orangish brown mottled grey silty CLAY.	2.90	
						Trial pit terminated at 2.9m depth on mudstone/very hard clay.		

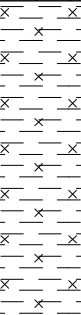
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

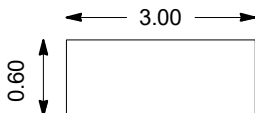
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP06
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 27.84	National Grid Co-ordinate: E:512629.4 N:116085.7	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Firm brown silty slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.20	
						Firm to stiff medium strength orangish brown mottled bluish grey silty CLAY. (WEALD CLAY FORMATION)		
0.90-1.10 0.90	1	D V	$c_u=53$			... From 1.40m depth: Becoming soft friable multicolour silty CLAY.	(2.20)	
2.00-2.20	2	D				... From 2.20m depth: Becoming extremely friable multicolour silty CLAY.	2.40	
2.40-2.60	3	D				... From 2.30m depth: Becoming weak multicolour mudstone on a matrix of extremely friable multicolour silty CLAY.	2.60	
						Medium light brown gravelly SAND. Gravel is fine to coarse subangular to weak siltstone/sandstone. (WEALD CLAY FORMATION)	2.70	
						Bluish grey extremely friable silty CLAY/GRAVEL of bluish grey weak siltstone. Gravel is fine to coarse subangular. (WEALD CLAY FORMATION)		
						Trial pit terminated at 2.70m depth.		

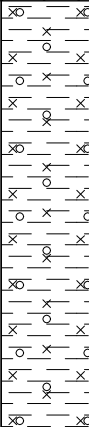
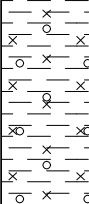
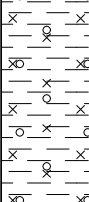
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Water seepage at 2.20m depth. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

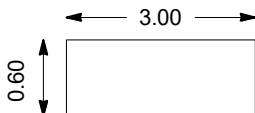
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP07
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 27.26	National Grid Co-ordinate: E:512554.8 N:116057.2	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Soft brown slightly sandy silty CLAY with frequent rootlets. Sand is fine. (TOPSOIL)	0.20	
0.60		V	$c_u=51$			Firm to stiff medium strength orangish brown mottled bluish grey silty CLAY. (WEALD CLAY FORMATION)		
0.90-1.10	1	D						
1.00-2.10	2	D						
1.10		V	$c_u=53$			... From 1.30m depth: Becoming black mudstone in a matrix of firm orangish brown to bluish grey friable silty CLAY.	(2.80)	
						... From 1.80m depth: Becoming extremely friable reddish brown silty CLAY.		
						... From 2.20m depth: Becoming firm friable multicolour silty CLAY.		
2.80-3.00	3	D					3.00	
Trial pit terminated at 3.00m depth.								

Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP08
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 26.54	National Grid Co-ordinate: E:512504.8 N:116168.7	Sheet: 1 of 1

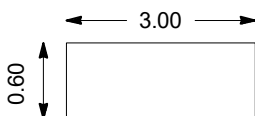
Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Firm dark brown silty CLAY with frequent rootlets. (TOPSOIL)	0.20	
0.80-1.00	1	D				Firm orangish brown slightly gravelly silty CLAY with occasional roots and rootlets. Gravel is subangular medium flints. (WEALD CLAY FORMATION) ... From 0.70m depth: Becoming firm to stiff orangish brown mottled bluish grey silty CLAY.	(2.80)	
1.80-2.00	2	D				... From 1.70m depth: Becoming friable orangish brown mottled bluish grey silty CLAY. ... From 1.80m depth: Becoming extremely friable orangish brown to bluish grey silty CLAY.		
2.80-3.00	3	D				... From 2.30m depth: Becoming weak mudstone in a matrix of extremely friable orangish brown to bluish grey silty CLAY. ... From 2.50m depth: Becoming multicolour.	3.00	
Trial pit terminated at 3.00m depth.								

Plan (Not to Scale) 		General Remarks 1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.	
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	
Logged By: JCurnow		Checked By: JCurnow	
All dimensions in metres		Scale: 1:25	
			

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP09
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 27.34	National Grid Co-ordinate: E:512466.8 N:116082.2	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Soft brown silty CLAY with frequent decayed wood and rootlets. (TOPSOIL)	0.10	
						Firm light brown slightly gravelly silty CLAY with occasional roots. Gravel is subangular to subrounded fine to medium chalk. (TOPSOIL)	0.30	
0.40-0.60 0.50	1	D V	$c_u=54$			Firm to stiff medium strength orangish brown mottled bluish grey silty CLAY with occasional roots. (WEALD CLAY FORMATION)		
0.90-1.10	2	D					(1.20)	
1.20		V	$c_u=52$			... From 1.20m depth: Becoming stiff reddish brown mottled bluish grey silty CLAY.		
1.40-1.50	3	D					1.50	
Trial pit terminated at 1.50m depth.								

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable during excavation.
2. Trial pit remained dry during excavation.
3. Trial pit backfilled with arisings.

All dimensions in metres

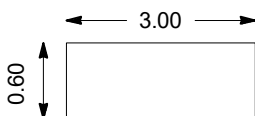
Scale: **1:25**

Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	
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Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP10
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 28.35	National Grid Co-ordinate: E:512366.5 N:116091.1	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.10 0.00	1	ES PID	0.0ppm			Soft brown silty CLAY with frequent decayed wood and rootlets. (TOPSOIL)	0.10	
0.20-0.30 0.20	1	D PID	0.0ppm			Firm to stiff light brown silty CLAY with frequent roots. (TOPSOIL)	(0.30) 0.40	
0.40-0.60 0.50	2	D V	$c_u=51$			Firm to stiff medium strength orangish brown mottled grey silty CLAY with occasional roots. (WEALD CLAY FORMATION)		
0.90-1.10	3	D				... From 0.90m depth: Becoming stiff friable bluish grey mottled reddish brown silty CLAY. ... From 1.30m depth: Becoming extremely friable reddish brown to grey silty CLAY.	(2.10)	
1.60-1.80	4	D				... From 1.60m depth: Becoming weak reddish brown to grey siltstone in a matrix of extremely friable reddish brown to grey silty CLAY. ... From 1.80m depth: Becoming GRAVEL of weak reddish brown to grey siltstone. Gravel is fine to coarse subangular.	2.50	
Trial pit terminated at 2.50m depth.								

Plan (Not to Scale)



General Remarks

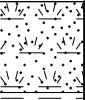
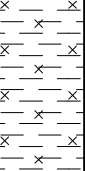
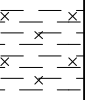
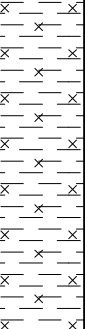
1. Trial pit remained stable during excavation.
2. Trial pit remained dry during excavation.
3. Trial pit backfilled with arisings.

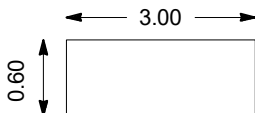
All dimensions in metres

Scale: **1:25**

Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	
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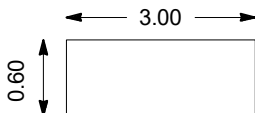
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP11
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 25.79	National Grid Co-ordinate: E:512273.0 N:116222.0	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.10 0.00	1	ES PID	0.0ppm			Soft brown silty sandy slightly gravelly CLAY with frequent root, rootlets and decayed wood. Sand is fine to medium. Gravel is subangular to subrounded fine chalk and flint. (TOPSOIL)	(0.30) 0.30	
0.40-0.60 0.50	1	D V	$c_u=42$			Firm to stiff medium strength orangish brown mottled bluish grey silty CLAY with occasional roots and rare lignite. (WEALD CLAY FORMATION)		
0.90-1.10	2	D				... From 0.90m depth: Becoming firm friable orangish brown mottled bluish grey silty CLAY.		
1.40-1.60	3	D				... From 1.40m depth: Becoming weak multicolour in a matrix of soft multicolour friable silty CLAY. ... From 1.70m depth: Becoming firm friable orangish brown to bluish grey silty CLAY.	(2.00) 2.30	
						Orangish brown to bluish grey gravelly SAND. Sand is coarse. Gravel is fine to coarse subangular weak siltstone. (WEALD CLAY FORMATION)	2.50	
						Trial pit terminated at 2.50m depth on hard layer of sand and siltstone.		

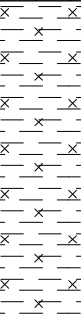
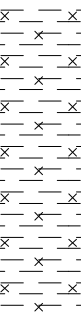
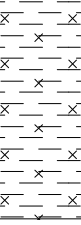
Plan (Not to Scale) 		General Remarks 1. Trial pit remained stable during excavation. 2. Water seepage at 2.40m depth. 3. Trial pit backfilled with arisings.	
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	
Logged By: JCurnow		Checked By: AGS	
All dimensions in metres		Scale: 1:25	

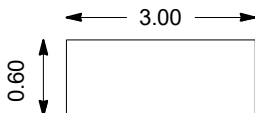
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP12
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 27.25	National Grid Co-ordinate: E:512258.8 N:116122.7	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Dark brown silty CLAY with abundant decayed wood, roots and rootlets. (TOPSOIL)	0.20	
0.40-0.60 0.50	1	D V	$c_u=63$			Firm light brown sandy silty CLAY with frequent roots and rootlets. Sand is fine to coarse. (WEALD CLAY FORMATION) Firm to stiff medium strength orangish brown to bluish grey silty CLAY with frequent roots. (WEALD CLAY FORMATION)	0.40	
0.90-1.10 1.00	2	D V	$c_u=65$			... From 0.70m depth: Becoming firm friable orangish brown mottled bluish grey silty CLAY with rare roots. ... From 0.90m depth: Becoming firm to stiff slightly friable reddish brown mottled bluish grey silty CLAY with rare roots.	(1.40)	
1.90-2.10	3	D				... From 1.30m depth: Becoming extremely friable stiff reddish brown mottled bluish grey silty CLAY. Weak multicolour mudstone in a matrix of extremely friable orangish brown to bluish grey silty CLAY. (WEALD CLAY FORMATION)	1.80 (0.70)	
						Trial pit terminated at 2.50m depth on very hard claystone/clay.	2.50	

Plan (Not to Scale) 		General Remarks 1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.	
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	
Logged By: JCurnow		Checked By: JCurnow	
All dimensions in metres		Scale: 1:25	
			

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP13
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 27.25	National Grid Co-ordinate: E:512457.5 N:116152.1	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.10 0.00	1	ES PID	0.0ppm			Soft dark brown sandy slightly gravelly CLAY with frequent roots and rootlets and decayed organics. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular flint. (TOPSOIL)	0.20	
0.40-0.60 0.50	1	D V	$c_u=28$			Soft low strength orangish brown mottled bluish grey silty CLAY with occasional roots and rootlets. (WEALD CLAY FORMATION)		
1.40-1.60	2	D				... From 1.20m depth: Becoming extremely friable orangish brown to bluish grey silty CLAY.	(2.80)	
2.40-2.60	3	D				... From 2.10m depth: Becoming extremely friable multicolour silty CLAY. ... From 2.40m depth: Becoming weak multicolour mudstone in a matrix of extremely friable multicolour silty CLAY.	3.00	
Trial pit terminated at 3.00m depth.								

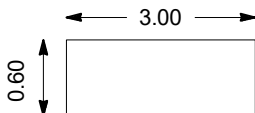
Plan (Not to Scale) 		General Remarks 1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.	
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	
Logged By: JCurnow		Checked By: JCurnow	
All dimensions in metres		Scale: 1:25	
			

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP14
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 26.83	National Grid Co-ordinate: E:512384.6 N:116214.6	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00 0.00	1	ES PID	0.0ppm			Soft brown silty CLAY with frequent decayed wood, roots and rootlets. (TOPSOIL)	0.20	
						Firm light brown silty CLAY with frequent roots and lignite. Rare flints. (WEALD CLAY FORMATION)	0.40	
0.50		V	$c_u=48$			Firm to stiff medium strength multicoloured silty CLAY with pockets of black mudstone gravel and rare roots. (WEALD CLAY FORMATION)		
0.90	1	D						
1.20		V	$c_u=68$					
						... From 1.50m depth: Reddish brown friable silty CLAY.		
						... From 1.70m depth: Becoming extremely friable reddish brown silty CLAY.		
						... From 1.80m depth: Becoming stiff bluish grey mottled orangish brown silty CLAY.		
1.90	2	D				... From 1.90m depth: Band of black mudstone gravel, fine to coarse subangular.		
						From 1.90m depth: Friable stiff bluish grey mottled orangish brown silty CLAY with frequent decayed rootlets.		
						... From 2.00m depth: Becoming extremely friable reddish brown to bluish grey silty CLAY.		
						... From 2.60m depth: Becoming weak multicolour mudstone in a matrix multicolour silty CLAY.		
							(2.60)	
								
								
								
								
								
								
								
								
								
								
								
								
								
								

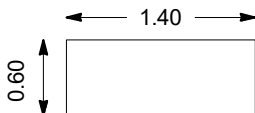
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TP15
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 27.98	National Grid Co-ordinate: E:512349.3 N:116149.1	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Soft dark brown silty CLAY with frequent decayed wood and rootlets. (TOPSOIL)	0.20	
0.40-0.60 0.50	1	D V	$c_u=51$			Firm light brown sandy silty CLAY with frequent roots and rootlets. Sand is fine to coarse. (WEALD CLAY FORMATION) Firm to stiff medium strength orangish brown mottled bluish grey silty CLAY with occasional roots. (WEALD CLAY FORMATION) ... From 0.70m depth: Becoming stiff reddish brown mottled bluish grey silty CLAY.	0.40	
0.90-1.10 1.00	2	D V	$c_u=63$			... From 1.40m depth: Stiff orangish brown mottled bluish grey silty CLAY with frequent pockets of reddish brown to black mudstone gravel. ... From 1.70m depth: weak orange grey siltstone in a matrix of extremely friable orangish brown to grey silty CLAY.	(2.60)	
2.90-3.00	3	D				... From 2.60m depth: Gravel of weak reddish brown to grey mudstone. Gravel is fine to coarse, subangular.	3.00	
Trial pit terminated at 3.00m depth.								

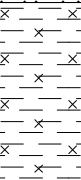
Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By:	

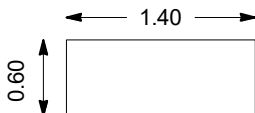
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TPS01
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 28.52	National Grid Co-ordinate: E:512699.5 N:115954.0	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30 0.00	1	ES PID	0.0ppm			Brown gravelly silty SAND with frequent glass, porcelain, brick fragments and occasional rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine flint and chalk. (MADE GROUND)	(0.30) 0.30	
0.50-0.60	1	D				Orangish brown mottled grey firm to stiff silty slightly gravelly CLAY with occasional brick fragments. Gravel is fine to coarse subangular to subrounded flint and chalk. (WEALD CLAY FORMATION)	(0.40) 0.70	
0.90-1.10	2	D				Firm orangish brown mottled grey silty CLAY. (WEALD CLAY FORMATION)	(0.80)	
1.40-1.50	3	D				Trial pit terminated at 1.50m depth.	1.50	

Plan (Not to Scale) 		General Remarks 1. Trial pit remained stable during excavation. 2. Water seepage at 1.50m depth. 3. Trial pit backfilled with arisings.		
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator		Logged By: JCurnow
All dimensions in metres		Scale: 1:25		
Checked By:				

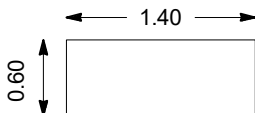
Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TPS02
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 26.66	National Grid Co-ordinate: E:512515.0 N:116093.5	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Soft light brown mottled reddish brown slightly gravelly sandy silty CLAY with fine rootlets. Sand is fine. Gravel is fine subangular flint. (TOPSOIL)	(0.30) 0.30	
0.40-0.60	1	D				Soft to firm grey mottled orangish brown silty CLAY with frequent lignite. (WEALD CLAY FORMATION)		
1.40-1.60	2	D				... From 0.90m depth: Stiff bluish grey mottled orangish brown silty CLAY.	(1.60)	
						... From 1.70m depth: Becoming slightly friable (same description otherwise).	1.90	
						Trial pit terminated at 1.90m depth.		

Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By: 
		All dimensions in metres		Scale: 1:25

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Trial Pit: TPS03
Contract Ref: 52368	Start: 23.11.21 End: 23.11.21	Ground Level (m AOD): 27.80	National Grid Co-ordinate: E:512385.2 N:116151.7	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20 0.00	1	ES PID	0.0ppm			Firm dark brown silty CLAY with frequent rootlets. (TOPSOIL)	(0.40)	
0.40-0.50	1	D				Firm orangish brown mottled grey silty CLAY with rootlets and roots and rare brick fragments. (MADE GROUND) Firm orangish brown mottled grey silty CLAY. (WEALD CLAY FORMATION)	0.40 0.50	
1.20-1.30	2	D				... From 1.30m depth: Becoming firm friable orangish brown mottled grey silty CLAY with rare roots. ... From 1.50m depth: Becoming extremely friable orangish brown mottled grey silty CLAY.	(1.50)	
1.80-2.00	3	D					2.00	
Trial pit terminated at 2.00m depth.								

Plan (Not to Scale)		General Remarks		
		1. Trial pit remained stable during excavation. 2. Trial pit remained dry during excavation. 3. Trial pit backfilled with arisings.		
Method Used: Machine dug		Plant Used: 8 Ton Tracked Excavator	Logged By: JCurnow	Checked By: AGS
All dimensions in metres			Scale: 1:25	

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington			Client: Bellway Homes Limited		Window Sample: WS01
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 33.07	National Grid Co-ordinate: E:512630.6 N:115882.8		Sheet: 1 of 2

Progress		Samples / Tests			Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20 0.20	1	ES PID	0.0ppm		MADE GROUND: Grass over soft brown silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium flint, brick, wood, glass and clinker. (MADE GROUND)	(0.50) 0.50	
	0.60-0.70 0.60	2	ES PID	0.0ppm		MADE GROUND: Soft brown silty sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint, brick, clinker, ceramic and chalk. (MADE GROUND)	(0.60) 1.10	
	1.00-1.45 1.10-1.20 1.20	1 3	SPT ES PID	N=4 0.4ppm		MADE GROUND: Soft to firm bluish grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint, brick, glass, clinker and wood. (MADE GROUND)	(1.00) 2.10	
	2.00-2.45 2.20-2.40 2.50	2 1 V	SPT D	N=7 $c_u=52/50/44$		Firm to stiff medium strength orangish brown grey mottled sandy CLAY. Sand is fine to coarse with frequent black organics (decayed roots). (WEALD CLAY FORMATION)	(0.90) 3.00	
	3.00-3.45 3.30-3.50 4.00-4.45	3 2 4	SPT D SPT	N=13 N=23		Very stiff orange grey mottled sandy dessicated CLAY. (WEALD CLAY FORMATION)	(1.60)	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Inspection pit hand dug to 1.00m depth. 2. No groundwater encountered. 3. Installed to 4.60m - 1.00m plain pipe, 4.00m slotted pipe (0.4m plain pipe above ground level).			
Method Used: Tracked window sampling						All dimensions in metres		Scale: 1:25	
Plant Used: Premier 110			Drilled By: GEH		Logged By: JCurnow		Checked By:		

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington		Client: Bellway Homes Limited		Window Sample: WS01
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 33.07	National Grid Co-ordinate: E:512630.6 N:115882.8	Sheet: 2 of 2

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Drilling Progress and Water Observations						General Remarks					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)						
		All dimensions in metres				Scale:	1:25				
Method Used:	Tracked window sampling		Plant Used:	Premier 110		Drilled By:	GEH	Logged By:	JCurnow	Checked By:	

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington			Client: Bellway Homes Limited		Window Sample: WS02
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 28.23	National Grid Co-ordinate: E:512609.0 N:116019.6		Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20 0.20	1	ES PID	0.0ppm			Grass over soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint and wood. Frequent rootlets. (TOPSOIL)	0.20	
							Soft orangish brown sandy CLAY. Sand is fine to coarse. Frequent rootlets. (WEALD CLAY FORMATION)	0.40 (0.40)	
	0.50-0.60	1	D				Firm orangish brown light grey mottled slightly gravelly angular to subangular fine to coarse flint sandy CLAY. Sand is fine to coarse. Occasional rootlets. (WEALD CLAY FORMATION)	0.80 (0.30)	
	1.00-1.45	1	SPT	N=10			Firm light grey orange mottled sandy CLAY. Sand is fine to coarse. Red weathering at 0.90m. (WEALD CLAY FORMATION)	1.10	
	1.50-1.70 1.50	2	D V	c _u =58/55/54			Firm to stiff medium strength light grey orange mottled sandy CLAY. Sand is fine to coarse. Brown stained. (WEALD CLAY FORMATION)	(1.00)	
	2.00-2.45	2	SPT	N=18				2.10	
	2.50-3.50 2.50	3	D V	c _u =68/67/65			Stiff medium strength dark grey brown mottled sandy CLAY. Sand is fine to coarse. Rare black organics (decayed roots). (WEALD CLAY FORMATION)	(1.35)	
	3.00-3.45	3	SPT	N=42				3.45	
							Window sample hole terminated at 3.45m depth.		

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Inspection pit hand dug to 1.00m depth. 2. No groundwater encountered. 3. Installed to 3.45m - 1.00m plain pipe, 3.00m slotted (0.45m plain pipe above ground level).			
						All dimensions in metres		Scale: 1:25	
Method Used: Tracked window sampling	Plant Used: Premier 110			Drilled By: GEH	Logged By: JCurnow	Checked By:			

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington			Client: Bellway Homes Limited		Window Sample: WS03
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 26.88	National Grid Co-ordinate: E:512582.1 N:116095.9		Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.20 0.20	1	ES PID	0.0ppm		0.20			
						0.40			
	0.50-0.70	1	D			(0.80)			
	1.00-1.45	1	SPT	N=20		1.20			
						1.30			
	1.50-1.70	2	D			1.50			
						(0.40)			
	1.80		V	c _u =76/73/72		1.90			
	2.00-2.45	2	SPT	N=34		2.00			
						(0.30)			
	2.50-2.70 2.50	3	D V	c _u =87/85/84		2.30			
	2.70-3.15	3	SPT	N=35		(0.85)			
						3.15			

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Inspection pit hand dug to 1.00m depth. 2. No groundwater encountered. 3. Installed to 2.70m - 1.00m plain pipe, 2.00m slotted (0.30m plain pipe above ground level).			
Method Used: Tracked window sampling						All dimensions in metres		Scale: 1:25	
Plant Used: Premier 110			Drilled By: GEH		Logged By: JCurnow		Checked By:		

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington			Client: Bellway Homes Limited		Window Sample: WS04
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 26.88	National Grid Co-ordinate: E:512416.1 N:116189.3		Sheet: 1 of 1

Progress	Samples / Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20 0.20	1	ES PID	0.0ppm		Soft brown silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular flint and wood. (TOPSOIL)	0.20	
	0.50-0.70	1	D			Soft orangish brown grey mottled sandy CLAY. Sand is fine to coarse. Occasional rootlets. (WEALD CLAY FORMATION)	(0.50) 0.70	
	1.00-1.45	1	SPT	N=18		Firm light grey orange mottled sandy slightly fissured CLAY. Sand is fine to coarse. Rare rootlets. (WEALD CLAY FORMATION)	(0.30) 1.00	
	1.50-1.70	2	D			Stiff light grey orange mottled sandy CLAY. Sand is fine to coarse. Occasional black organics (decayed roots). (WEALD CLAY FORMATION)	(1.00)	
	2.00-2.45	2	SPT	N=17		... Between 1.80m to 2.00m depth: Heavily weathered.	2.00	
	2.50-2.70	3	D			Very stiff bluish grey orange mottled sandy CLAY. Sand is fine to coarse. Frequent black organics (decayed roots) and occasional weathering. (WEALD CLAY FORMATION)	(1.45)	
	3.00-3.45	3	SPT	N=50		... Between 2.70m to 3.00m depth: Fractures infilled with fine to coarse orange sand.	3.45	
						Window sample hole terminated at 3.45m depth due to refusal.		

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Inspection pit hand dug to 1.00m depth. 2. No groundwater encountered. 3. Installed to 3.45m - 2.00m plain pipe, 2.00m slotted (0.45m plain pipe above ground level).			
All dimensions in metres						Scale:	1:25		
Method Used:	Tracked window sampling			Plant Used:	Premier 110		Drilled By:	GEH	Logged By: JCurnow Checked By: 

WINDOW SAMPLE LOG

Contract: Church Lane, Ashington			Client: Bellway Homes Limited		Window Sample: WS05
Contract Ref: 52368	Start: 24.11.21 End: 24.11.21	Ground Level (m AOD): 27.18	National Grid Co-ordinate: E:512294.4 N:116190.4		Sheet: 1 of 1

Progress	Samples / Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
	0.10-0.20 0.20	1	ES PID	0.0ppm		Soft brown silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse flint and wood. Frequent rootlets. (TOPSOIL)	0.20	
	0.50-0.60	1	D			Soft brown orange grey mottled sandy CLAY. Sand is fine to coarse. Occasional rootlets. (WEALD CLAY FORMATION)	(0.40) 0.60	
	1.00-1.45	1	SPT	N=10		Firm light grey orange mottled sandy CLAY. Sand is fine to coarse. Weathered red at 0.90m. (WEALD CLAY FORMATION)	(0.60) 1.20	
	1.50-1.75 1.50	2	D V	c _u =48/52/46		Stiff medium strength light grey orange mottled sandy CLAY. Sand is fine to coarse. (WEALD CLAY FORMATION)	(0.50) 1.70	
	2.00-2.45	2	SPT	N=19		Very stiff light grey orange mottled sandy fissured CLAY. Occasional black organics (decayed roots). (WEALD CLAY FORMATION)	(0.50) 2.20	
	2.50-2.75 2.50	3	D V	c _u =64/60/59		Very stiff medium strength bluish grey orange mottled slightly sandy CLAY. Frequent black organics (decayed roots). Frequently orange stained after 2.70m. (WEALD CLAY FORMATION)	(1.25) 3.45	
	3.00-3.45	3	SPT	N=36				
						Window sample hole terminated at 3.45m depth.		

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
						1. Inspection pit hand dug to 1.00m depth. 2. No groundwater encountered. 3. Installed to 3.45m - 1.00m plain pipe, 3.00m slotted (0.45m plain pipe above ground level).			
All dimensions in metres						Scale:	1:25		
Method Used:	Tracked window sampling			Plant Used:	Premier 110	Drilled By:	GEH	Logged By:	JCurnow
						Checked By:			