



Land to the east of Posbrook Lane, Titchfield

Mineral Constraints Assessment relating to Development Land

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DocumentControl

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1 Overview

- 1.1 Land & Mineral Management has been instructed by Foreman Homes to provide a mineral constraints assessment for inclusion in an Environmental Statement in relation to the potential presence of mineral deposits underlying land at Posbrook Lane, Titchfield, Hampshire. (See plan 16_092_02_E accompanying application).
- 1.2 Foreman Homes propose to develop approximately 6.60 ha of land to the east of Posbrook Lane for Scout Hut, up to 150 dwellings, community garden, associated landscaping, amenity areas and means of access from Posbrook Lane, in addition to the provision of 58,000 square meters of community green space.
- 1.3 The principal aim of the assessment is to determine the significance of the sterilisation impact of the development of the proposed uses on any viable underlying mineral resource.
- 1.4 The land has been included on the fringe of the Hampshire Minerals and Waste consultation area¹ as set out in the 2013 Hampshire Minerals & Waste Plan. Policy 15 of the Minerals and Waste Plan seeks to safeguard mineral resources and this is supported by a Supplementary Planning Document (SPD) published in February 2016.
- 1.5 This assessment considers the likelihood of the site at Posbrook Lane being a commercially viable extraction and the potential for prior extraction before development. The planning application has been subject to Environmental Impact Assessment and the potential for any significant impact on a viable geological resource was identified at the Screening Stage by the LPA as one of the factors which informed their decision that there was potential for significant environmental impact from the proposed development.

1. Mineral and Waste Consultation Area (MWCA): An area identified to ensure consultation before certain non-mineral planning applications made within the area are determined which may impact safeguarded mineral resources. The MWCA incorporates the Minerals Consultation Area (which incorporates the Mineral Safeguarding Area). **Mineral Safeguarding Area (MSA)** includes viable resources of aggregates and is defined to prevent proven resources of aggregates from being sterilised by non-mineral development. The MSA does not provide a presumption for these resources to be worked.

2 Planning Policy

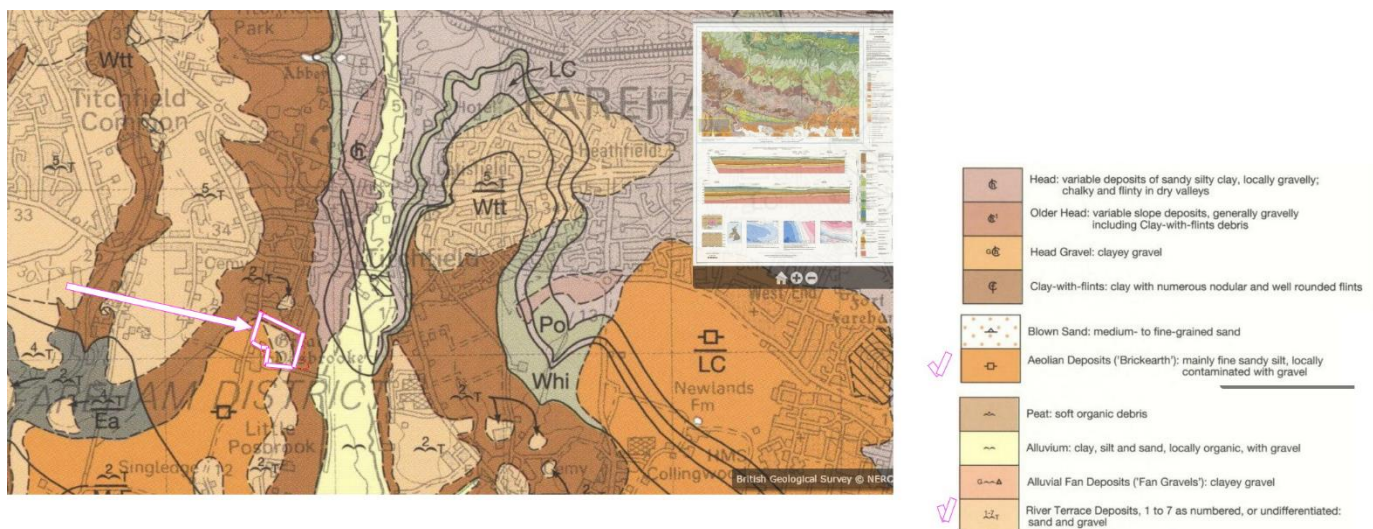
- 2.1 Paragraph 142 of the National Planning Policy Framework (NPPF) requires local authorities to define Mineral Safeguarding Areas and adopt policies to ensure that known mineral deposits are not sterilised by non-mineral development. This is balanced by the direction provided in Para 143 which requires policies to encourage prior extraction of minerals, where practicable and environmentally feasible.
- 2.2 Hampshire’s mineral planning policy is set out in the Minerals and Waste Plan, adopted October 2013. Policy 15 relates to safeguarding mineral resources and mineral sites. The policy states; *“Hampshire’s sand and gravel ... resources are safeguarded against needless sterilisation by non-mineral development, unless ‘prior extraction’ takes place”*.
- 2.3 It is Hampshire County Council’s policy to safeguard mineral bearing land against building or other development which could permanently sterilise mineral resources. The SPD confirms that land identified as being safeguarded for mineral is not an absolute bar on alternative development and that the circumstances of each site need to be considered on a site specific basis. There is an expectation that commercially viable mineral will be extracted prior to development, if that is feasible.
- 2.4 The policy also sets out that development without prior extraction can be permitted if;
- a) Sterilisation will not occur; or
 - b) Extraction is inappropriate; or
 - c) The development will not hinder mineral extraction; or
 - d) The merits of development outweigh the safeguarding.
- 2.5 Development of housing at the Posbrook Lane site has been considered against these criteria and also, the planning statement sets out the need for this housing to progress without the delay which mineral extraction (and possibly restoration) of the site would create.

3 The Viability of the Mineral Deposit

3.1 The British Geological Survey (BGS) provide the most accurate and available resources on the occurrence of mineral in the UK. Areas which they believe to have significant reserves have, been subject to detailed Mineral Assessment investigations. The area around Titchfield has not been subject to such an Assessment although there are a number of other Assessments for mineral rich areas in Hampshire.

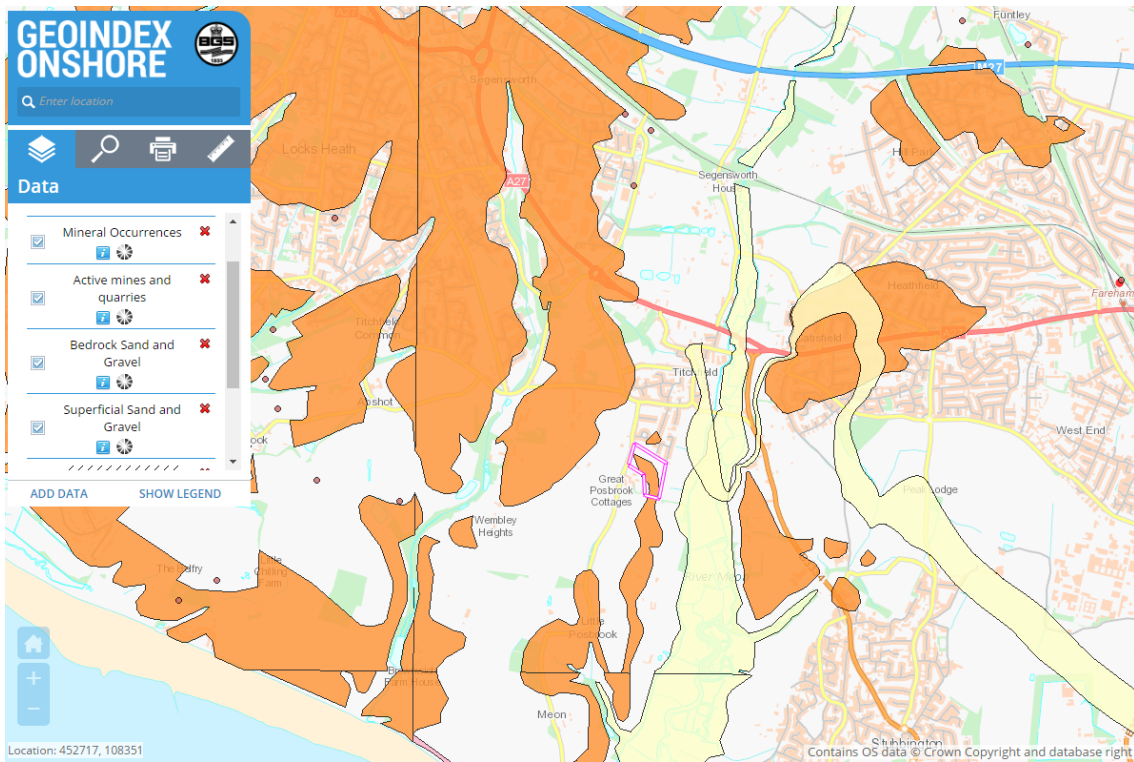
3.2 Although not subject to detailed investigation, the BGS is still able to provide geological maps for the area and also retains historic borehole records and assessments for all types of development, not just mineral exploration.

3.3 The Posbrook Lane site is outlined in white on the extract of a BGS plan below. The key provided to this illustrates that there is a thin band of River Terrace deposits across the site (light brown), sandwiched to the north by clay with flints (dark brown) and to the south east by brickearth (orange).



Extract 1 – British Geological Society Geological Mapping

3.4 BGS also provide mapping of specific materials using their GeoIndex web service. The occurrence of superficial deposits of sand and gravel is shown on the extract below. The site has been highlighted on this plan and the superficial sand and gravel deposit, in orange, can be seen to follow the same shape on this plan and the one above. Both of these plans show that there is a possibility for mineral to be present under a part of the development land.



Extract 2 –

British Geological Society Geoindex Data

- 3.5 The commercial viability of a gravel deposit depends on a number of factors but significantly the size of the deposit determines the likelihood of it being extracted as cost has to be weighed against output. In determining quantity, depth of mineral is a key consideration, with any deposit less than 1.0 metre in depth unlikely to be viable, and the ratio between depth of the overlying material and the depth of gravel should be no greater than 3:1. Other factors apply such as the cleanliness of the deposit (ie it should be free of clays or similar non desirable, but naturally occurring materials) and the grading (sizes) of the particles which form the deposit.
- 3.6 Mineral deposits which contain clays or too much fine silty material, require much more processing, which is costly and produces less saleable material for the amount excavated. Processing the material on site reduces costs but it isn't viable to establish processing and washing plants for small extraction areas. Additionally, the plants need adequate supplies of water and sufficient space to be able to dispose of the silt created.
- 3.7 Alternatively, mineral can be transported, "as dug", to an established off site processing plant provided that an operator of such a plant would be willing to accept the material. Unless that plant is located close to the extraction site, the additional handling and transport costs and increased carbon footprint of this remote processing makes the mineral reserve less

economically viable. The Hampshire Minerals and Waste Plan identifies operational sand and gravel quarries throughout Hampshire but none are in a reasonable haulage distance of Titchfield. The closest processing plant to Titchfield which could adequately process the river terrace gravels and could accept mineral from another site into their facility are currently in in the Ringwood area of west Hampshire or the Marchwood area of south-west Hampshire both at least 25 miles away.

- 3.8 Information gained from the BGS indicates that the development land lies on the northern extremity of a sliver of River Terrace gravel, isolated to the north east and west from any other mineral reserve. The mineral at the edge of this deposit is likely to be of doubtful quality and shallow as it feathers out to join the materials around it.
- 3.9 BGS records do not provide any borehole results within the proposed residential development area but they do however provide one immediately to the south west and one to the north east which confirm that these locations do not have River Terrace gravel. The locations of the boreholes are shown on aerial 1 below and the borehole logs are appended. This evidence endorses the accuracy of the BGS's plotting of the full extent of the River Terrace gravel.

4 Environment and Amenity Constraints

- 4.1 Although the extent and quality of the mineral in this location is likely to be too small and uncertain to be economically viable, it is also important to consider the additional constraints that could impact on its extraction. The prior extraction of minerals to prevent their sterilisation before development, must still be subject to an application for mineral development as would any other extraction proposal.
- 4.2 That application would be assessed against the relevant Hampshire Minerals and Waste Plan Policies and would include an assessment of the environmental impacts that could arise as a result of the extraction work. The impact on the amenity of local residents and businesses must also form part of that assessment.
- 4.3 Mineral extraction applications begin with determining the extent of the works and what buffer zones need to be incorporated to sensitive receptors. Those sensitive receptors could be residences, watercourses, trees, listed buildings, other businesses, rights of way or infrastructure services such as power lines.
- 4.4 Hampshire, unlike some mineral planning authorities, does not stipulate any specific minimum buffer zone, or standoff. Stand-offs vary greatly across sand and gravel extraction sites with many local communities considering 100m to be the acceptable minimum. However in this assessment of the very small potential reserve which could be beneath this development land, a hypothetical minimal stand off to the public highway on the western boundary and to the farm track on part of the southern boundary has been applied. The eastern boundary with the adjoining field would not need any significant standoff.
- 4.5 A small buffer zone of 25-30m has been applied to the edge of the properties to the north and the tree lined boundary to the south. The houses on the southern side of Bellfield in the north back onto the development land, with some directly adjoining it and others separated by garages and a children's play area. The residences at the western end of Bellfield are slightly more elevated than the development land and but all have clear views across it.
- 4.6 In the south west corner of the development land is Great Posbrook, a collection of buildings which includes two listed properties, Great Posbrook, a 16th century house (Grade II*) and a Medieval Barn (Grade II*). The tree screen to these and the other residential properties is substantial n.b. trees here are evergreen. Mineral working would be required to provide a

standoff to that tree screen to prevent damage to the trees or their root zones and these would be at least one and a half times the crown spread of the tree and, in some instances, up to one and a half times the height of the tree. The estimate of 25-30m may be conservative, due to the maturity of the trees and it could be considerable greater. The photograph below shows the scale of the trees on the right hand side that screen Great Posbrook.



Photo 1 – looking north east across the development land (Photo from Google street view)

- 4.7 This photograph also clearly shows an additional and substantial constraint for mineral working; a power line crossing the site. Mineral extraction beneath a power line is possible under certain circumstances, but a standoff of 5m to either side has been considered necessary for safety. It is proposed that the powerline will be put underground when the residential development is underway, but if this was done ahead of the mineral works the stand offs to the buried cable would be considerably greater.
- 4.8 There are additionally two public rights of way within the development site. Footpath 34 runs north south from the residences at Bellfield to the north eastern corner of the tree boundary to Great Posbrook, and then continues to the south. No standoff has been allowed for this as it could be retained as part of the eastern margin. The second path No 39, crosses the site diagonally from south west to north east where it merges with Footpath 34. Temporary closure and / or diversion of this path would be necessary to reduce any additional barrier to extraction.
- 4.9 These physical boundaries to the area which could be extracted have been added to an aerial image of the development site. Two areas are formed because of the need to stand off from the

power cable. The combined potential area for extraction is reduced from the total site area of approximately 6.60ha to 3.32ha. It should be emphasised that in practice if a mineral operator was to propose buffer zones of 25-30m this would normally be rejected in favour of much more substantial distances. They have been included to take a pragmatic approach because the subsequent residential development might not be so constrained.

- 4.10 An extraction area of 3.32ha is too small to be of interest to quarry companies. However this area has to be further refined when the geological information discussed above is overlaid onto it. The aerial below shows the river terrace gravel as brown patches and the areas of the site that could be excavated as the redlines.



Aerial 1 – Overlaid with BGS mineral resource and constraint areas. (Photo from Google)

- 4.11 Although it could be argued that this is a crude representation, the borehole information appended (locations shown above) supports the geological interpretation of the British Geological Society. Boreholes 12 and 13 do not show a reserve of River Terrace gravel at either of these locations.
- 4.12 Furthermore, the small scale of the potential extraction area has been arrived at without consideration of any additional constraints that may exist, such as archaeology, groundwater,

visual and landscape impact, ecology or external concerns such as transport issues of HGVs removing minerals from the site on the local highway network. Without consideration of these elements and only looking at physical considerations, the area of mineral likely to be extractable at this location is extremely small.

- 4.13 Even if it is suggested that BGS are incorrect in their assessment of the mineral at this location and a greater part of the potential 3.32ha extraction area does contain a mineral resource it is still too small a reserve to be viable. This is exacerbated when the need to ensuring the land can still be developed for housing post mineral extraction is considered.

5 Additional consideration

- 5.1 If gravel were extracted across the development land on any scale, there would remain a void presenting issues for creation of desirable and safe residential development. The SPD on Safeguarding Mineral Resources sets out three scales of extraction at sites proposed for development, with the first being large scale extraction where the full mineral resource is removed. The implication in this scenario is that the void remaining would have to be infilled by importing waste to achieve a build surface close to original ground levels.
- 5.2 If the site were to be brought back to original levels with imported waste, the Permitting process regulated by the Environment Agency is complex, costly and leaves a lasting legacy associated with housing development built on waste which could seriously impact the sale of those houses. The costs of obtaining and administering a Permit is not proportionate to the scale of the restoration and is a disproportionately high cost for small sites such as this one.
- 5.3 Medium to smaller scale extraction is described in the SPD as prior extraction as an integral part of the development (such as during the preparation of the land for the development). The material could then either be processed and used on site or exported for processing off site. This approach may be viable for a much larger site with extensive high quality reserves, but, given the constraints of this site in terms of the area in which mineral is likely to occur and could be extracted, it is likely to give rise to significant issues. The mineral doesn't extend into the development site on any great scale and if extracted, it would also give rise to the need to restore that area to bring the surface back to original ground levels.
- 5.4 Thirdly the SPD describes incidental extraction which may occur as a result of the site preparation for the development proposed, housing in this instance. This is the level of extraction which could potentially be accomplished at this Posbrook Lane site. Any River Terrace gravel which is found when foundations or footings are being constructed could be removed and utilised in creating paths and landscaping.

6 Conclusions and Recommendations

- 6.1 The mineral deposit beneath the development land is likely to be very confined and only available in an insufficient quantity to be commercially viable. The geological information available supports this conclusion and no site intrusive work has been deemed necessary.
- 6.2 It is concluded that the prior extraction of gravel is unlikely to be viable because of;
- (i) the absence of gravel over the vast majority of the development land;
 - (ii) the small volume of available gravel;
 - (iii) disproportionate costs of restoring the land back to a suitable platform to build on if mineral were to be extracted from one edge of the development land;
 - (iv) the value of the gravel and restoration is likely to be outweighed by the additional construction and management costs of removing the gravel.
- 6.3 The National Planning Policy Framework and Hampshire County Council Policies point towards prior extraction of mineral before development. However, the SPD expands on this to recognise that the viability of extraction and avoiding impacts will make some potential locations unsuitable for all but the most limited extraction incidental to the development proposed.
- 6.4 It is considered that the possible sterilisation of a small amount of River Terrace gravel at this location would not be significant in the context of the overall mineral deposits available in Hampshire. Where possible any mineral that is encountered in the development of the land for residential purposes will be utilised in that development. This provides mitigation as far as reasonably possible and conserves other primary aggregates being imported from across the country, also reducing hgv mileage.