

CLIENT:	Barratt Homes, Bloor Homes, John Jones and Wrexham Parochial Education Foundation
PROJECT:	Land south of Holt Road, Wrexham LL13 9SA
SUBJECT:	Issues surrounding mineral safeguarding
JOB NO.:	ST16134: Note 8
DATE:	18 th May 2022
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Introduction

The purpose of this Technical Note is to provide objective advice to the planning decision maker in relation to mineral safeguarding issues which have been raised in connection with the pending appeal and outline planning application relating to Land South of Holt Road, Wrexham. The Technical Note is intended to facilitate the production of a statement of common ground between the appellant and the planning authority on this matter.

The point at issue

The Mineral Planning Authority remains concerned that the necessary justification has not been provided as to why prior extraction of sand cannot take place at the site prior to, or in parallel to, the delivery of housing development. The point at issue, from the developers' perspective, is that the design of the development platform actually requires material to be brought onto the site rather than exporting surplus material from the site. Any proposal to undertake prior extraction and export sand would result in a need to import an equivalent quantity of material, which ideally should have geotechnical characteristics which are similar to the exported material. This Note is intended to explain the basis of this issue and is accompanied by a separate note *Implications of Mineral Prior Extraction for the Development of Housing*, prepared by Barton Willmore, now Stantec (BWnS), which explains the implications that prior extraction would cause for the delivery of housing at this important emerging key strategic housing allocation.

Development platform constraints

The development platform is the foundation of the entire project. The site in its current form is undeveloped and has its own natural topography, shaped predominantly by the Ice Age glaciers. Its elevation is approximately 81m AOD at its highest in the southern part and

approximately 67m AOD at its lowest in the north-western part. The platform has to be designed in such a way as to create inclined roads to link higher areas to lower areas, whilst also creating level areas for house plots, and allowing for water supply, sewage pipes and drainage networks to flow freely under gravity. The development platform is akin to a three-dimensional jigsaw and if mineral is removed from one area, it has a progressive elevation knock-on effect on adjoining land. This is clearly a complex design process which has been undertaken by the developers' team of technical experts to minimise costs, to respect the landform and natural topography of the site, to retain the site's landscape features, such as trees and hedgerows, to ensure that the required KSS2 spine road can be delivered through the site to the southern boundary without having to significantly re-engineer the landscape, and, from a sustainability perspective, to reduce vehicle movements, and to re-use existing materials where possible.

The creation of the right platform still requires the excavation, movement and placement of large quantities of materials. It is apparent from the considerations listed above that excavation of part of the platform can have significant effects on other parts of the platform due to the changes in relative elevations. If prior extraction were to be undertaken without any importation of a corresponding quantity of replacement materials, the development platform would have to be redesigned to take into account the consequences of the changes in site elevations that prior extraction would cause, and the primary objectives of the above considerations are unlikely to be achieved without impacting on the viability and acceptability of the development.

Quantity of materials

The developers have prepared a plan showing the proposed site layout and the results of a "Cut and Fill" materials balance calculation. The plan shows the development platform with contours where existing material has to be excavated ("cut") and contours where material has to be added ("fill") to achieve the design development platform. This is done on a digital model of the site's existing topography and a digital model of the proposed development platform. The computer model compares the existing elevations and the finished elevations so that it can calculate the amount of cut and fill that is required to create the development platform from the existing topography.

The program calculated that 22,731 m³ of material has to be excavated ("cut") and 44,198 m³ of material has to be placed ("fill") in order to create the development platform. The quantity

of cut is lower than the total quantity of fill required, so there is a deficit of 21,467 m³ which will have to be imported.

It is preferable for the imported material to have physical and geotechnical characteristics which are similar to those of the existing materials on the site, so that the performance of the in-situ materials and imports are similar. The logical source of that imported material would be sand from Borrás quarry which is approximately 1 km to the north of the proposed development site, but if that is not possible the material would need to be imported from further afield.

The developers have considered whether prior extraction is desirable or practicable. The creation of the development platform will require the importation of approximately 21,500 m³ (approximately 32,000 tonnes) of sand to make up the deficit or shortfall in material requirements. That importation will generate approximately 3,200 HGV movements (1,600 in and 1,600 out). If sand is removed from the site due to prior extraction, it will have to be replaced by similar imported material. However, every lorry load of sand exported from the site will generate 4 HGV movements rather than 2 movements described above. That is because the lorry exporting sand generates 2 movements (arrival and departure) and the lorry importing the replacement sand also generates 2 movements (arrival and departure). The appellant therefore considers that from a sustainability perspective, prior extraction would create a significant number of unnecessary HGV movements at a time when the pressure is on to reduce the use of hydrocarbon fuels.

Prior extraction would incur unnecessary costs associated with the haulage of exports and the purchase and haulage of the replacement imports. That expenditure would impact on the viability of the development as a whole, potentially leading to a reduction in the quantum of affordable housing and any contribution to education provision. The safeguarding designation protects “sand and gravel” but the mineral on the site is predominantly sand with a very low gravel content. Sand has a much lower value than gravel and the sand on this site is of particularly low value because it would have to be exported and blended with higher quality sand to be of commercial use. The extra-over cost of haulage for export and blending would wipe out the usual profit margin on the sand so the value of the sand is likely to be less than the cost of extraction, export and blending. It would also introduce delays to the project because mineral extraction would require a separate full planning application, not an outline application.

The market for fine sand

The mineral on the site is predominantly fine sand, with a small percentage of gravel. The construction industry is the main market for sand and gravel because it is an essential component in the manufacture of concrete, along with cement and water. Sand and gravel commonly occur together as they tend to be geologically recent river-borne deposits. It is therefore commercially attractive to operate sand and gravel pits because the sand and the gravel are excavated together.

The Mineral Products Association trade body recently published its “Profile of the UK Mineral Products Industry 2020 Edition” but it does not provide data relating to the market for fine sand. The consultation paper prepared for Wrexham Council dated 13th February 2019 by the North Wales Minerals and Waste Planning Service noted that samples of sand taken from the site are generally too fine for a British Standard concreting sand, although an appropriate aggregate could be achieved by blending with coarser material. The samples also failed to meet the specification for mortar sand, although it might be possible to meet it by blending. Deposits with a high proportion of fine sand are less commercially attractive because the fine sand is simply a component which needs to be blended with coarser sand as well as gravel to make a useful product. The cost of haulage and blending to make a sand and gravel aggregate product would typically make fine sand uncompetitive compared to the common river terrace deposits of sand and gravel which contain all the necessary materials in one place.

Prior extraction could also introduce significant delays to delivery of the development. The appellants are house builders, not mineral operators, so they would need to negotiate operational agreements with a mineral company, which could easily take a year. A separate planning application would need to be prepared and determined, which would take 1 to 2 years. Only then could prior extraction start, so it could mean that the delivery of the houses is delayed by a number of years. This process and the subsequent implications for the delivery of housing is explained in further detail in the accompanying BWnS note.

Use of imported replacement materials

If prior extraction was undertaken, the exported material would need to be replaced by imported material in order to create the development platform. Ideally this would be material with similar geotechnical characteristics to the exported material. If that were the

case, it would be more sustainable to avoid prior extraction and send the import material directly to the market that would be served by the prior extracted material.

Consideration has been given to using imported inert waste to replace exported materials but on detailed examination it is apparent that this is not a practicable solution. In recent years, significant technological advances have been made in recycling inert waste to make “secondary aggregates” and the residue is generally fines which are unsuitable to be used as a substitute for aggregate. The developer would need to obtain an Environmental Permit for landfill and the property would need to be operated as if it were a landfill site. This is in addition to the related planning processes described in the BWnS note. The imported material would need to be compacted and allowed to settle before it could be built upon. The duration of the settlement period would depend on the nature of imported material but it is typically in the order of 2 to 5 years. Finally, the duration of the process would not be under the developer’s control as it would depend on the rate of waste arisings which could be attracted to the site. As a consequence of these characteristics, the use of inert waste to replace exported material is not a practicable option.