Erlas Park, Wrexham

Prior Extraction Assessment

Harworth Estates Investments Ltd

January 2025

Prepared on Behalf of Tetra Tech Environment Planning Transport Limited.

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1.0 INTRODUCTION

1.0.1 Tetra Tech Limited has been instructed by Harworth Estates Investments Ltd (Harworth) to prepare a Prior Extraction Assessment in relation to a planning application at a circa 40-hectare (ha) site known on land at Cefn Road, Erlas Park, Wrexham, LL13 9TT. The planning application is for: -

'The proposed phased residential development is for the construction of up to 900 residential properties with associated infrastructure (, playing fields, open space and SUDs attenuation) with all matters reserved except for detailed means of primary highway access.'

1.0.2 Prior Extraction Assessments are required by Policy MW1: 'Minerals Safeguarding' of the Wrexham Local Development Plan (LDP) 2013-2028, which was adopted in December 2023.

1.0.3 The British Geological Survey (BGS) show on their Geology of Britain Viewer website that the site is mainly overlain Devensian Glaciofluvial Sheet Deposits, which comprise sands and gravels.

1.0.4 The purpose of the report is to provide an assessment of the most suitable and sustainable management of any identified resource at the site considering the economic viability of the resource, environmental constraints, and other relevant information, such as that provided by Wrexham County Borough Council (WCBC), the Minerals Planning Authority (MPA).

1.0.5 The scope of this document has been informed by discussions with WCBC.

1.1 THE SITE

1.1.1 The site is the southern part of a Key Strategic Housing Site (KSS2), which is allocated under Policy SP4 of the Wrexham LDP. LDP Policy H1 states KSS2, and another key strategic site (KSS1) are allocated *'to help deliver the identified housing requirement over the plan period'.* LDP Policy SP4 shows that KSS2 is allocated to deliver a residential mixed-use scheme with a minimum of 1,680 new homes, 1,580 of which will be delivered within the plan period (to 2028).

1.1.2 The allocation also includes a primary school, community and leisure facilities and the retention of sports pitches from Ysgol Morgan Llwyd School and Wrexham Rugby Club. The sports pitches from Ysgol Morgan Llwyd School are within the site boundary for this application.

1.1.3 The appended Strategic Masterplan (Appendix A) and Phasing Plan (Appendix B) show the site location.

2.0 SITE LOCATION AND SETTING

2.1 LOCATION & DESCRIPTION

2.1.1 The site is in the east of Wrexham, immediately east of Cefn Road and to the south of Bryn Estyn Road. The site is approximately centred at National Grid Reference (NGR) SJ 35575 50847. The site mainly comprises numerous fields, which are predominantly arable agricultural land as well as several sports pitches belonging to Ysgol Morgan Llwyd School. The school itself is to the west of the site. The fields and sports pitches are generally bounded by hedgerows and scattered with trees. A small area of woodland is in the west of the site and surrounds the sports pitches of the school.

2.2 TOPOGRAPHY

2.2.1 The two images below indicate the topographical conditions of the site. The site slopes from around 80m AOD at its highest point in the northwest to around 60m AOD in the east of the site. The sports pitches, which are to the west of the site and are proposed to be retained are on higher ground. The narrower contour lines, which indicate a steeper gradient are in the southeast/ east of the site.

Figure 1 – Bing Map Annotated Extract Showing Contours

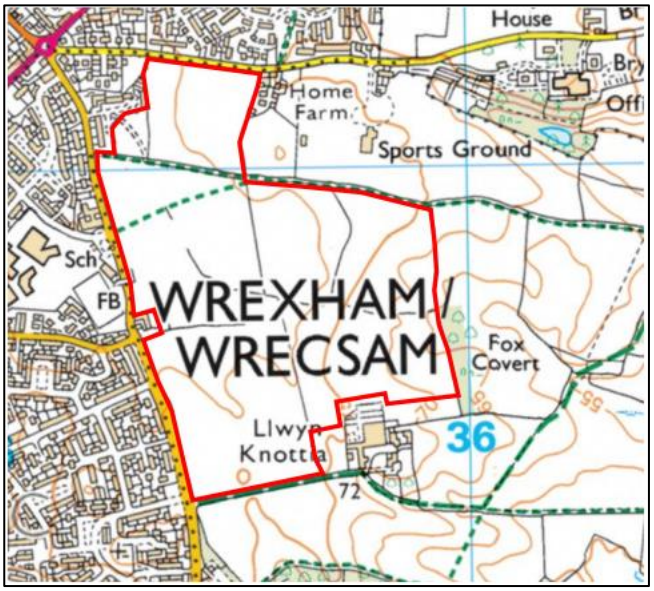
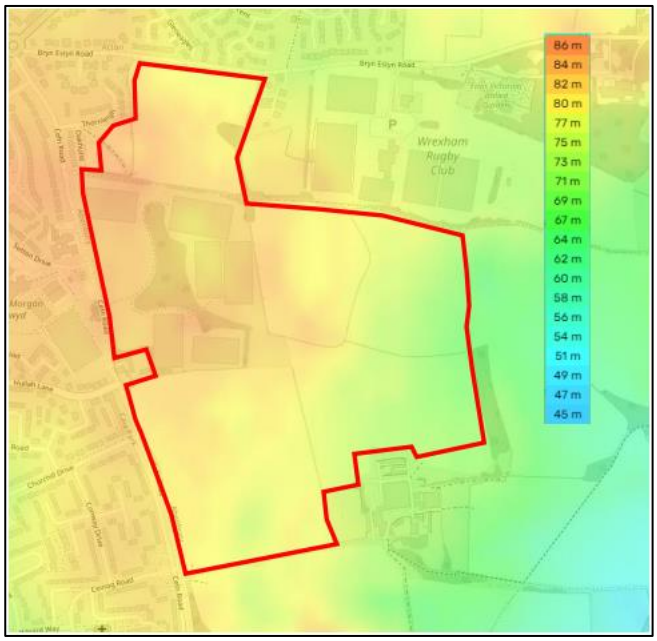


Figure 2 – Annotated Extract from https://en-gb.topographic-map.com/



2.3 SITE SETTING

2.3.1 The site adjoins urban and primarily residential areas of Wrexham to the west and north. Cefn Road largely defines the western boundary of the site. Houses align the opposite side of Cefn Road as well as Ysgol Morgan School. Hullah Farm Residential Care Home is located to the west of the site on the same side of Cefn Road as the site, and cuts into the site boundary. Bryn Estyn Road defines the western part of the northern boundary of the site. The north-western corner of the site is bounded by houses on Thornleigh and Oakhurst.

2.3.2 Likewise, to the north of the site, terraced properties (Brentwood), Home Farm and several industrial style units are located to the south of Cefn Road.

2.3.3 Bryn Estyn Business Centre and Wrexham Rugby Club are located further east along the northern boundary of the site. Several properties and an area of woodland are located further north beyond sports pitches associated with the rugby club. The properties include residential dwellings that share the same access as Wrexham Rugby Club, as well as some commercial and industrial properties, including the Erlas Centre. The Erlas Victorian Walled Gardens are also located in this area.

2.3.4 A roughly square shaped parcel of land is located further north, north of Bryn Estyn Road, directly north of the wooded area that includes the Erlas Centre and the Erlas Victorian Walled Gardens. This parcel of land currently

comprises arable land and, along with the sports pitches associated with Wrexham Rugby Club, form the main remaining areas of the allocated KSS2 site.

2.3.5 The land to the east and south is more rural in nature and mainly comprises arable agricultural land and golf courses. Commercial/ industrial units at Llwyn Knottia are the general exception to this and are located south of the site.

Ecology

2.3.6 There are no ecologically statutory designated sites within the site boundary or within its surroundings.

2.3.7 The Natural Resources Wales (NRW) Interactive Map shows that there are three areas of National Forestry Inventory Woodland within 500m of the site. The website shows the woodland to the northeast of the site, beyond land associated with Wrexham Rugby Club, by the Erlas Centre and the Erlas Victorian Walled Gardens, is a 2.27ha area of broadleaved woodland. A 2.28ha area of broadleaved woodland is located approximately 450m to the south of the site. A 1.13ha area of conifer woodland is located approximately 425m east of the site. A 0.65ha of broadleaved woodland is immediately south of the conifer woodland.

2.3.8 Ecological surveys have taken place at the site and details of this is provided in Section 6: Constraints to Minerals Working.

Landscape

2.3.9 WCBC show on their Public Rights of Way (PRoW) definitive map that the network passes through the site from east to west, towards the north of the site. The PRoW network is also to the south of the site, to the south of the commercial/ industrial units at Llwyn Knottia.

Planning

2.3.10 Map 1, Wrexham Town Proposal, of the LDP shows the site is a Key Strategic Site allocated for residential-led development (site KSS2). An extract showing this information is shown on Figure 4 below.

Water Environment

2.3.11 Ordnance Survey Mapping shows there is a small pond within the west of the site.

2.3.12 The NRW Interactive Map classifies the Glaciofluvial Deposits as a Secondary A Aquifer. The Environment Agency (EA) state that these aquifers are *'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.'*

2.3.13 The NRW Flood Risk Map Viewer shows that the site is located within Zone A, which is land considered to be at little or no risk of fluvial or coastal/ tidal flooding.

2.3.14 The NRW Interactive Map shows the site is not within a Groundwater Source Protection Zone (SPZ). A large area approximately 425m to the east at its closest point, is located within a SPZ.

2.3.15 The Interactive Map does show the site is within a medium to high groundwater vulnerability zone.

Heritage

2.3.16 There are no designated heritage assets displayed on the proposal maps within proximity of the site. The Cefn Parc Lodge and Estate to the south of the site is considered a historic asset.

Utilities

2.3.17 A water main, which requires a 12m easement, traverses through the site from north to south in an 'L' shape. A combined sewer, which also requires a 12m easement, forms a 'V' shape in the northern part of the site. A section of foul sewer extends across a small section of the northwest of the site. These underground utilities are shown in Figure 8 on page 23.

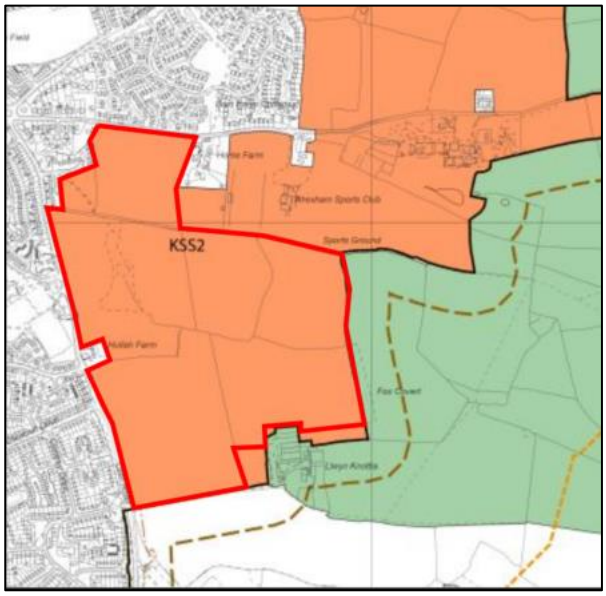
3.0 MINERALS PLANNING AND GEOLOGICAL SITE SETTING

3.0.1 Proposals Map 1 of the adopted Wrexham LDP shows that an area titled Non-Energy Mineral Extraction Exclusion Area (marked by a brown dashed line) buffers the KSS2 site and the existing built development areas of Wrexham.

3.0.2 A fainter orange line denoting a Sand and Gravel Safeguarding Area, is shown to the south of the site and stops at the site boundary.

3.0.3 As described previously the site is located within the allocated KSS2 site, and the allocated site is shown in orange in Figure 3 below. The application boundary is annotated over the top.

Figure 3 – Extract from Map 1 of LDP, Wrexham Town Proposal



3.1.1 The LDP states in paragraph 3.31:-

'The SA/ SEA identifies that these KSS will impact on Best and Most Versatile agricultural land and minerals of national importance, however the need to provide housing, infrastructure and other community facilities in sustainable locations outweighs the need to protect these resources in this instance.'

3.2 BRITISH GEOLOGICAL SURVEY GEOLOGY RECORDS

3.2.1 The BGS shows on their GeoIndex website that the site is mainly underlain by Devensian Glaciofluvial Sheet Deposits, which comprise sands and gravels.

3.2.2 A small part of the site to the west is shown to be underlain by Devensian Till or Diamicton, which comprises mixed sands, silts, clays and gravels.

3.2.3 The BGS show these superficial deposits are underlain by the Salop Formation, which comprises mudstone, sandstone, and conglomerate.

3.2.4 There are no historical BGS borehole records within the site boundary. One record (SJ35SE22) is around 100m southeast of the site. The borehole was 25m deep and shows an overall grading (through particle size density testing) of 92% sand and gravel (83% sand). The testing does however show a higher fines content in the higher lying deposits.

3.3 SITE INVESTIGATION WORKS

3.3.1 Eighteen trial pits were excavated at the site and surrounding area in November 2021. The location of the trial pits and the trial pit logs are shown in Appendix C and the results are summarised in Table 1 below.

Table 1 - Site Investigation Log Summary

Trial pit	Topsoil Depth (mbgl)	Strata 1 Depth (mbgl)	Strata 1 Description	Strata 2 Depth (mbgl)	Strata 2 Description
TP101	0.4	1.5	Fine to medium SAND		
TP102	0.3	0.2	Silty SAND	1	Silty CLAY
TP103	0.4	1.1	Slightly silty SAND		
TP104	0.3	1.1	Silty SAND	0.2	Silty sandy CLAY
TP105	0.4	1.3	Slightly silty SAND		
TP106	0.3	1.9	Silty/ very silty SAND		
TP107	0.3	1.7	Slightly silty SAND		
TP108	0.3	2.2	Silty SAND		
TP109	0.25	1.25	Silty/ silty gravelly SAND		
TP110	0.3	0.2	Slightly clayey gravelly SAND	0.9	Coarse SAND and GRAVEL
TP111	0.35	1.55	Slightly clayey gravelly SAND		
TP112	0.35	0.5	Coarse SAND and GRAVEL	1.15	Gravelly SAND
TP113	0.35	0.4	Gravelly SAND	1.25	SAND
TP114	0.3	1.2	Coarse SAND		
TP115	0.3	1.5	Slightly gravelly SAND		
TP116	0.35	1.75	SAND/ gravelly SAND		
TP117	0.4	0.7	Clayey gravelly SAND	0.1	SAND
TP118	0.3	1.1	Gravelly SAND		

3.3.2 The trial pits were excavated to depths ranging between 1.2m and 2.5 metres below ground level (mbgl), with an average depth of 1.76mbgl. The logs indicate that sand with varying quantities of fines were encountered immediately beneath the topsoil. With the exception of TP102, at least 1m was of sand/ sand and gravel was recorded in each of the trial pits. Sand/ sand and gravel was also recorded to the base of each trial pit with the exception of TP102 and TP104.

3.3.3 Particle Size Distribution (PSD) testing was completed on four of the recovered samples. This information is summarised in Table 2 below.

Table 2 – Particle Size Distribution Tests

Trial pit	Top Depth (mbgl)	Base Depth (mbgl)	Strata Recorded in Logs	Sand	Gravel	Fines
TP102	1.2	1.4	Silty Clay	0%	0%	91%
TP105	1.4	1.6	Slightly silty SAND	92%	1%	8%
TP107	1.4	1.6	Slightly silty SAND	90%	5%	5%
TP117	1.2	1.2	Sand	88%	5%	7%

3.3.4 The PSD tests indicate that the tested samples include around 90% sand except for a targeted area of clay.

3.3.5 Groundwater was encountered during the trial pitting works. The log for TP106 denotes the ground was saturated from 1.6mbgl and the log for TP108 denotes the ground was saturated from 1.8mbgl.

3.3.6 The trial pit logs are also included in Appendix C.

3.4 SITE INVESTIGATION INFORMATION FOR PLANNING APPLICATION P/2021/0436 (BARRATT/ BLOOR HOMES APPLICATION ON LAND TO THE NORTH)

3.4.1 The Minerals Environmental Statement (ES) Chapter for application P/2021/0436 shows that site investigation works in October 2018 recorded average values from 11 samples across 7 trial pits of 95% sand and gravel (84% sand). The ES Chapter proceeded to state on the assumption of a 3m thickness of resource (as it would not be practicable to excavate sand to its 25m depth) there would be a 480,000m^3 volume or 770,000 tonnes of sand and gravel.

3.4.2 The Minerals ES Chapter shows that groundwater was encountered between depths of 1mbgl and 2mbgl at three locations in the southwest of the site in windowless samples borehole drilled in March 2017.

4.0 MINERAL SAFEGUARDING POLICY

4.0.1 The safeguarding of non-renewable resources, such as minerals, is a key aspect of sustainable development. Paragraph 5.14.7 of Planning Policy Wales (Edition 12), which was adopted in February 2024, emphasises the importance of safeguarding mineral resources to deliver need and prevent sterilisation.

4.0.2 MSAs are produced to define known locations of specific mineral resources of local or national importance and to ensure these resources are not needlessly sterilised by non-mineral development, though MSAs carry no presumption that the resource will be worked.

4.1 WREXHAM COUNTY BOROUGH COUNCIL DEVELOPMENT PLAN

4.1.1 The development site is located within the borough of Wrexham and WCBC act as the mineral planning authority.

4.1.2 The Wrexham Local Development Plan 2013-2028 (LDP) was adopted in December 2023 and replaced the Wrexham Unitary Development Plan 1996-2011. There are two policies relating to mineral safeguarding in the LDP. These are LDP policies MW1 and SP16.

Policy MW1: 'Minerals Safeguarding'

4.1.3 The policy states: *'Non-mineral development within Mineral Safeguarding Areas as defined on the proposals map will only be permitted where it can be demonstrated that:-*

i. The mineral underlying the site does not merit extraction, or

ii. The need for the non-mineral development outweighs the need to protect the resource, or

iii. The mineral can be satisfactorily extracted prior to the non-mineral development, or

iv. The development is of a temporary nature or can be removed within the timescales within which the mineral is likely to be needed, and

v. Essential infrastructure that supports the supply of minerals would not be compromised or would be provided elsewhere.

All applications for development in these areas shall be supported by a Mineral Safeguarding Assessment.

Proposals for non-mineral development on allocated sites of 4ha or more and which are underlain by surface coal or Category 1 sand and gravel shall be supported by a Prior Extraction Assessment.'

4.1.4 Topic Paper: '5 Minerals' was produced by WCBC in 2014 as an evidence document for Wrexham's LDP. The document makes references to the British Geological Survey's (BGS) Aggregates Safeguarding Maps of Wales which indicate the relative importance of minerals within the county. Minerals are split into 3 tiers: Category 1, Category 2, and Category 3.

4.1.5 Category 1 resources are nationally important, Category 2 are of local importance and Category 3 resources *'may be of importance to supply locally but not in other areas'.*

4.1.6 The BGS Aggregates Safeguarding Maps of Wales was published in 2012 and provides advice on what defines the minerals for each category. Category 1 resource include sand and gravel resources from glaciofluvial and river terrace deposits.

4.1.7 As described in section 3, the site is mainly underlain by glaciofluvial sheet deposits of sand and gravel, which indicate the deposits could be considered nationally important (Category 1) by the BGS. Paragraph 3.31 of the LDP states *'The SA/ SEA identifies that these KSS* (Key Strategic Sites) *will impact on… minerals of national importance…'* It is therefore indicated that WCBC considers the underling minerals to be Category 1 Sand and Gravel.

4.1.8 This forms the policy requirement for a Prior Extraction Assessment. The scope of which has been informed by discussions with WCBC as well as criteria of Policy MW1.

4.1.9 As described earlier in this report a planning application has been submitted at another site (P/2021/0436) within the KSS2 allocated site boundary. WCBC include analysis of the applications compatibility with policy MW1. In a letter dated July 2023, WCBC state:-

'The need for the mineral underneath KSS2 has already been considered through the development of the LDP and it has been concluded that the need for the non-mineral development is considered to outweigh the need to protect the resource in its entirety. It is considered therefore that the inclusion of KSS2 within the LDP has already accepted that this sand would be sterilised by any development that comes forward to be proposed on KKS2, and that the need for the development would outweigh the permanent sterilisation of the sand resources beneath the site. As such, it is considered that the application complies with Policy MW1 ii) as it cannot be disputed that there is an overriding need for the proposed development.'

4.1.10 These comments by WCBC relate to all the KSS2 site, and on this basis, this application is also therefore compliant with Policy MW1.

Policy SP16: 'Minerals Supply and Safeguarding'

4.1.11 Strategic minerals policy SP16: 'Minerals Supply and Safeguarding' is also relevant and is set out below:-

'Minerals will be sustainably managed through:-

a. The protection of minerals from unnecessary sterilisation by directing new development away from areas underlain by mineral of importance or where this is not possible, through the requirement to extract mineral prior to the non-mineral development; and

b. Avoiding conflict between mineral working and sensitive development through the use of buffer zones; and

c. Contributing towards meeting the regional need for aggregate minerals in collaboration with Flintshire County Council; and

d. Supporting proposals for mineral extraction within the County Borough which contribute towards maintaining an adequate supply of minerals in sustainable locations including the delivery of high quality restoration and aftercare programmes which enhance and provide linkages with the natural environment.'

4.2 OTHER POLICY CONSIDERATIONS

4.2.1 Planning Policy Wales states in paragraph 5.14.3:-

'In certain areas, mineral extraction may not be acceptable. For example, where a proposal for mineral extraction would cause demonstrable harm to the environment, including designated sites, or amenity, which cannot be overcome by planning conditions or agreements, planning permission should not be granted.'

4.2.2 Paragraph 71 of the Minerals Planning Policy Wales, Minerals Technical Advice Note 1: Aggregates (MTAN:1) is set out below:-

'*The objective of the buffer zone is to protect land uses that are most sensitive to the impact of mineral operations by establishing a separation distance between potentially conflicting land uses. Research has indicated that people living close to mineral workings consider dust to be the main impact of mineral extraction and any processing operations, followed by traffic, and noise and vibration from blasting. After careful consideration, including consultation with a number of interested and informed parties, 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. An example may be that, because of other means of control, there is very limited impact from the mineral extraction site.

Mineral Extraction Type	Minimum Distance
Sand and gravel (and others where no blasting is permitted)	100 metres
Hardrock quarries	200 metres

The buffer zone should be defined from the outer edge of the area where extraction and processing operations will take place, including site haul roads, rather than the site boundary, as there may be land within site boundaries where mineral activities are limited or no operations are proposed so that the impact of the proximity of such land is negligible. Where mobile plant is likely to be used it will usually be necessary to control by planning conditions the location of the operational area where plant may operate in order to maintain the buffer zone and thus protect amenity.'

4.2.3 Further text and policy in respect of minerals from the LDP document is discussed in the following section.

5.0 NEED

5.1 MINERALS

LDP

5.1.1 As described in the previous section, part ii of Policy MW1 states *'Non-mineral development within Mineral Safeguarding Areas as defined on the proposals map will only be permitted where it can be demonstrated that… The need for the non-mineral development outweighs the need to protect the resource.'* Whilst the previous section described WCBCs position in terms of compatibility with the 'need' policy criteria, this sections provided a more robust review of need based on available information.

5.1.2 The LDP states that the material underlying the proposed allocated site is of national importance.

5.1.3 Objective SO11 of the LDP is to: *'Ensure development meets the needs of society and industry, now and in the future, through ensuring adequate protection and supply of high quality minerals. This objective will be achieved by:-*

- *Safeguarding surface mineral resources of economic importance;*
- *Maintaining a 7 year landbank of sand and gravel throughout the Plan period.'*

5.1.4 The aforementioned Minerals Topic Paper, which was prepared as an evidence document for the LDP, states in paragraph 2.2 that sand and gravel is of particular importance within the County Borough and also that the distribution of sand and gravel is extensive in County Borough.

5.1.5 The Regional Technical Statement 1st Review (RTS), was published by the North Wales Regional Aggregates Working Party (NWRAWP) in 2014 and is discussed in the LDP. The LDP states the RTS sets out the level of need with respect to aggregates across North Wales, in line with the requirements of Minerals Technical Advice Note 1: 'Aggregates'. The LDP states the RTS recognises the dominance of Wrexham in terms of sand and gravel supply within the region and seeks to redress the imbalance through allocations in other authority areas.

5.1.6 The LDP proceeds to state the RTS identifies a need for crushed rock across Flintshire and Wrexham but does not identify any further need for sand and gravel in Wrexham. Paragraph 5.201 of the LDP states: *'There are existing sand and gravel sites within the County Borough which provide an important contribution towards the regional supply of sand and gravel and no allocation is therefore currently required.'*

Regional Technical Statement 2nd Review

5.1.7 A 2nd review report RTS was published in September 2020, although this document is not considered in the LDP. The 2nd review document states:-

'The RTS provides a mechanism for encouraging national sustainability objectives to be met by individual planning authorities within each region for a period of 25 years (crushed rock) and 22 years (sand and gravel).' Paragraph 5.25 of the 2nd review document further explains: *'The requirements, as set out in paragraph 49 of MTAN1, are that a minimum 10- year landbank of crushed rock and a minimum 7-year landbank for sand and gravel should be maintained throughout the entire plan period of each LDP. In effect, this means having a minimum landbank for sand & gravel of 22 years, at the start of a 15-year Plan period…'*

5.1.8 Paragraph 4.31 of the 2nd Review RTS states:-

'In North Wales, the highest population density occurs within Flintshire and Wrexham, coinciding with the highest levels of crushed rock and sand & gravel output, respectively, within that region…. The road network in these areas also provides ease of access for exports into the conurbations of North West England, including the Wirral, Liverpool and Warrington.'

5.1.9 Figure 4 below shows how the apportionments for each LPA have been calculated.

Figure 4– 2nd Review RTS Table 5.2 Assessed Sub-Regional and LPA Apportionments, North Wales

	OPTION A			OPTION B			Preferred Annualised Apportionments (mtpa) [By default = Option A, but modified in some cases (red figures) to allow for Option B or qualitative observations as noted in column to right]	Qualitative Observations
Local Planning Authority	highest of 10-yr and 3yr Ave. Aggregate Sales (total) (mtpa)	% share of Regional total	Resulting Annualised Apportionments for all Land-Won Primary Aggregates[1] (mtpa)	Annualised House Completions over the baseline period (2007 – 2016)	% share of Sub-Regional total	Resulting Annualised Apportionments for all Land-Won Primary Aggregates[2] (mtpa)		
N. WALES TOTAL (from Stage 2)				7.738				
NE Wales Sub-Region	**4.047**	**65.75%**	5.088	**749.0**	**100.00%**	5.088	**5.088**	**The existing supply pattern here (Option A) provides an appropriate balance between market forces (including substantial exports) and the availability of unconstrained resources.** Flintshire has much higher aggregate sales than Denbighshire, despite similar housing requirements. This reflects local market distortion by exports to NW England. The slight modification shown within the preferred apportionment figures is to make the best use of existing landbanks and thereby reduce future allocation requirements overall. Wrexham supplies only sand & gravel as its limestone resources are largely constrained by the AONB.
Denbighshire	0.329	5.35%	0.414	156.2	20.85%	1.061	0.860	
Flintshire	3.204	52.06%	4.028	288.6	38.53%	1.960	3.582	
Wrexham	0.514	8.35%	0.646	304.2	40.61%	2.066	0.646	
NW Wales Sub-Region	**2.108**	**34.25%**	2.650	**969**	**100.00%**	2.650	**2.650**	**The existing supply pattern in NW Wales is well balanced with the distribution of planned housing provision and is unaffected by exports.** Option A should therefore be used. Supplies are sourced primarily from outside the National Park and AONBs and are well distributed between the main producing areas of Conwy and Gwynedd, with more limited supplies from Anglesey to local markets.
Conwy + Snowdonia NP	0.955	15.52%	1.201	178.6	39.26%	1.041	1.201	
Gwynedd	0.898	14.59%	1.129	170.4	36.60%	0.970	1.129	
Isle of Anglesey	0.255	4.14%	0.321	109.6	24.14%	0.640	0.321	

5.1.10 Paragraph 5.28 of the RTS 2nd Review states:-

'For land-won sand & gravel, Tables 5.4 and 5.5 reveal that new allocations to meet RTS requirements over the next 22 years will be required within Flintshire, Wrexham, Gwynedd and Ceredigion. Current landbanks, expressed in terms of the new annualised apportionments, are already less than the minimum level of 7 years in three of these areas, demonstrating the urgency for granting new permissions, as well as longer-term allocations for future working. In the fourth area (Wrexham), the landbank is currently adequate, at just under 20 years, but a further allocation is needed to meet the RTS requirement over the full plan period.'

5.1.11 Table 5.4 from the RTS 2nd Review is displayed in Figure 5 below.

Figure 5- 2nd Review RTS Table 5.4 Calculation of Allocation Required for Land-won Sand and Gravel Aggregates - North Wales

Local Planning Authority	Overall 'Preferred' Apportionment (S&G & CR)[1] (mt)	Historic proportion supplied from sand & gravel sources[2]	New Annualised Apportionment for sand & gravel[3] (mt)	Total Apportionment Required over 22 years	Existing permitted reserves at end of 2016 in mt[4, 5]	Existing landbank[6] (years)	Surplus or Shortfall (-) of Existing Permitted Reserves (mt)	Minimum Allocation needed to meet Required Provision[7] (mt)	Additional reserves at Dormant sites, 2016[4] (mt)
Denbighshire	0.860	0.00%	0.000	0.000	0.000	n/a	0.000	0.000	0
Flintshire	3.582	6.23%	0.223	4.912	1.369	6.1	-3.543	3.543	0.5
Wrexham	0.646	100.00%	0.646	14.217	12.652	19.6	-1.565	1.565	0
Conwy + Snowdonia NP	1.201	0.00%	0.000	0.000	0.000	n/a	0.000	0.000	0
Gwynedd	1.129	15.44%	0.174	3.834	1.175	6.7	-2.659	2.659	0
Isle of Anglesey	0.321	0.00%	0.000	0.000	0.000	n/a	0.000	0.000	0
Sub-totals, North Wales	**7.738**	**13.40%**	**1.044**	**22.963**	**15.196**		**-7.767**	**7.767**	**0.5**

5.1.12 Paragraph 5.28 of the RTS states the *'landbank* (in Wrexham) *is currently adequate, at just under 20 years, but a further allocation is needed to meet the RTS requirement over the full plan period'.* This differs from the LDP, which states there is no need for new sand and gravel in Wrexham, although this was based off the RTS 1st Review.

5.1.13 The projections of aggregate needs are based on an agreed methodology as set out in the RTS 2nd Review from paragraph 3.43. The future aggregate provision is based on historical sales information and the planned requirement for housing construction in LDPs. This is because the amount of construction and need for aggregate are intrinsically linked.

Ballswood Quarry, Wrexham

5.1.14 A planning permission (P/2022/0448) was granted in November 2022 at Ballswood for the extraction of an additional 500,000 tonnes of sand and gravel. This reduces the shortfall identified in Table 5.4 of the RTS 2nd review. Extension sites are generally encouraged by Mineral Planning Authorities over new sites.

Local Available Information

5.1.15 The shallow trial pits within the site provide an indication of the composition of the resource (Table 2, page 9). As described in the geological review section a 25m deep historical borehole record shows an overall grading (through particle size density testing) of 92% sand and gravel (83% sand). The testing shows a higher fines content in the higher lying deposits.

5.1.16 Similarly, the Minerals ES Chapter for application P/2021/0436 shows that the site investigation works recorded average values across the 11 tested samples of 95% sand and gravel (84% sand). It is noted minerals was scoped into the ES for application P/2021/0436, by the Planning Inspectorate following appeal, as it was considered that the sterilisation of the mineral could have significant effects.

5.1.17 In the Prior Extraction Addendum submitted as part of planning application P/2021/0436 (KSS2 site to the north) it is confirmed that a nearby operator, named within that document as Breedon, would accept the material and would blend it with courser material for use as a construction aggregate. It should however be acknowledged that the access from the nearby quarry (named within that document as Borras Quarry) to the land subject of planning application P/2021/0436 could be more convenient than the land subject to assessment in this Minerals Safeguarding Assessment.

Use of Mineral

5.1.18 The applicant has undertaken some discussions with the minerals team at WCBC regarding this project. A letter response from WCBC is appended. One of the requests of the Council was to assess the suitability of material to be used for pipe bedding in the construction of the site services.

5.1.19 Pipe bedding materials must be capable of supporting loads and be free-draining, but, in our experience, it is usually industry best-practice for these materials to contain a higher gravel content than the material that appears to underly this development site. It is therefore considered unlikely that the material could be used for pipe bedding. Only four particle size distribution tests were completed on samples recovered within and close to the development site and one of these appears to be taken from a clay resource that was encountered. 17 of the 18 trial pits encountered sand. A historical record from the BGS is however very similar to the three tests completed of sand samples. There are also more tests available completed on samples for adjacent land to the north (P/2021/0436).

5.1.20 The strata generally comprises sand, with some fines and gravel content. A guidance document that a Mineral Planning Authority in England has recently referred us to is the ‘material class types of the Manual of Contract

Documents for Highway Works: vol. 1: Specification for Highway Works Series 600'. Table's 6/2 and 6/5 of the document shows that classes 6E and 6R, 6I and 6J and class 6S require a low fines content and a high sand content.

5.1.21 The document shows that 6E and 6R can be used as capping materials, for example in a landfill. Landfill capping requires fine grained sand materials to be placed in between the waste and the plastic cap. The document also shows that 6E class materials can be used to make cement for stabilisation in capping and 6R class materials can be stabilised with lime and cement also be placed underneath landfill capping. The document also suggests the 6S class material could be used in sub-formation and capping.

5.1.22 The document shows that material classes 6I and 6J can be used for 'earthworks for reinforced soil and anchored earth structures'. The document states this is excluding their drainage layers.

5.1.23 The ES Chapter for application P/2021/0436 sets out the following three paragraph's:-

'Glacial deposits of sand and gravel can vary significantly, both laterally and vertically. It can be of commercial interest in some circumstances, providing that it has an acceptably high proportion of gravel, with a low proportion of silt. This is because the mineral is used to manufacture concrete, and the manufacturing process requires approximately twice as much gravel as sand. The gravel content is therefore of critical importance in determining whether a deposit is commercially viable. The deposit on the Site has a low proportion of gravel so it would not be considered commercially viable as a standalone mineral resource and it would have to be mixed with a high proportion of gravel to be of use in manufacturing concrete.

The requirement for a ratio of 2 gravel to 1 sand for manufacturing concrete means that many sand and gravel pits have a surplus of sand, as the demand for gravel is greater than the demand for sand. The consequence of this is that sand and gravel pits do not usually import sand from other sites.

Sand and gravel is worked locally at Borras quarry which is located approximately 1km to the north of the Site. The BGS has published the logs of several boreholes that have been drilled in Borras quarry which show the sand and gravel deposit there contains an average gravel content in excess of 40%. A gravel content at that level is fairly typical to meet the industry's requirements.'

5.1.24 The underlying sand could however be blended with gravels for use as an aggregate. As well as potential uses as capping material and blending for use as an aggregate, other potential uses have been considered.

5.1.25 It is understood that some sands found to the north of Wrexham are used as animal bedding and the laying of fibreoptic cables. It is understood that these are uses at Ballswood Quarry some 5km north of the application site.

The operator of Ballswood Quarry has however indicated that based on the available information, the material looks '*uneconomic as its v* (very) *fine, silty sands and clays.'*

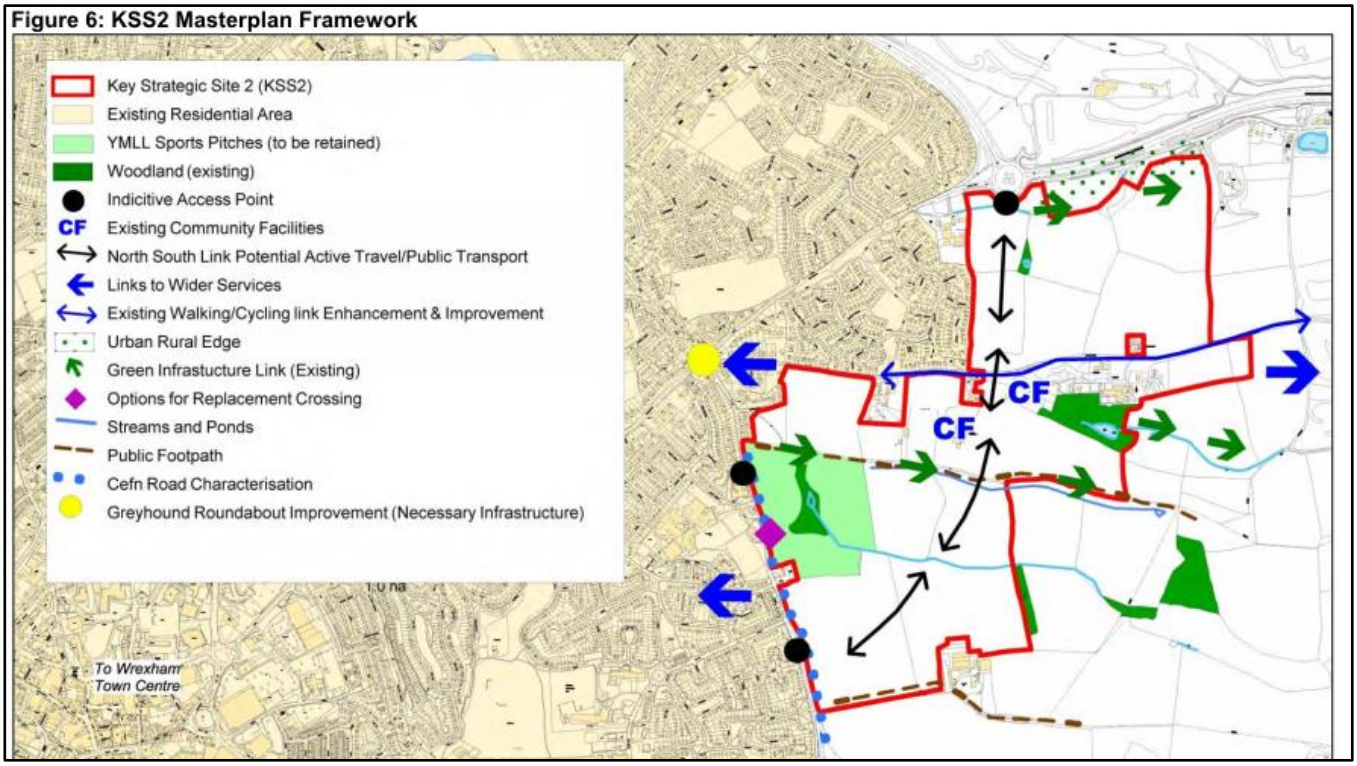
5.2 HOUSING

5.2.1 The site is part of a Key Strategic Housing Site (KSS2) under Policy SP4 in the Wrexham Local Development Plan 2013 – 2028 (LDP). LDP Policy H1 states KSS2, and another key strategic site (KSS1) are allocated *'to help deliver the identified housing requirement over the plan period'.* LDP Policy SP4 shows that KSS2 is allocated to deliver a residential mixed-use scheme with a minimum of 1,680 new homes, 1,580 of which will be delivered within the plan period (to 2028).

5.2.2 A live planning application (P/2021/0436) is currently being determined within allocated site KSS2 for 600 homes. The live planning application relates to the roughly square parcel of land to the north of the blue line shown in the below extract from the LDP. This planning application forms part of the allocated site, to the south of the blue line. The 900 homes from this application are therefore required to be delivered by 2028.

5.2.3 As previously described in this report WCBC have stated *'the need for the non-mineral development is considered to outweigh the need to protect the resource in its entirety.'*

Figure 6 - Local Development Plan Extract



5.2.4 The LDP states in paragraph 3.31:-

'The SA/ SEA identifies that these KSS will impact on Best and Most Versatile agricultural land and minerals of national importance, however the need to provide housing, infrastructure and other community facilities in sustainable locations outweighs the need to protect these resources in this instance.'

5.2.5 Paragraph 4.192 of the LDP states:-

'Due to the extent and distribution of mineral within the County Borough and the need for non-mineral development such as housing, it is inevitable that some sterilisation will occur and this is accepted and established through the allocation of sites underlain by mineral in the LDP.'

5.2.6 Paragraph 4.194 states:-

'The need for mineral underneath sites which are allocated for non-mineral development has already been considered through the development of the LDP and the need for the non-mineral development is considered to outweigh the need to protect the resource in its entirety.'

6.0 CONSTRAINTS TO MINERAL WORKINGS AND OTHER CONSIDERATIONS

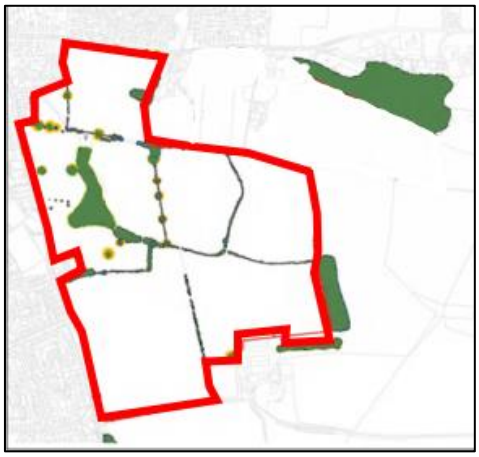
6.0.1 PPW is clear that sand and gravel extraction sites require a 100m buffer zone from housing. As described in section 2 housing borders much of the west and north of the site.

6.0.2 A physical constraint to minerals working is the underlying utilities, which are displayed in Figure 8.

6.0.3 The retention of sports pitches in the west of the site from Ysgol Morgan Llwyd School, would also likely rule out mineral extraction in this area of the site.

6.0.4 There are also other factors to consider when identifying constraints to minerals working. As part of the site appraisal process the site has been subject to analysis by several technical experts. This has informed the initial design of the site. The below plan shows existing vegetation that will be incorporated into the design of the site. The retention of this habitat could complicate any future mineral extraction and would likely cause an operational constraint to working, as the site would effectively be divided into smaller parcels.

Figure 7 – Vegetation Retention

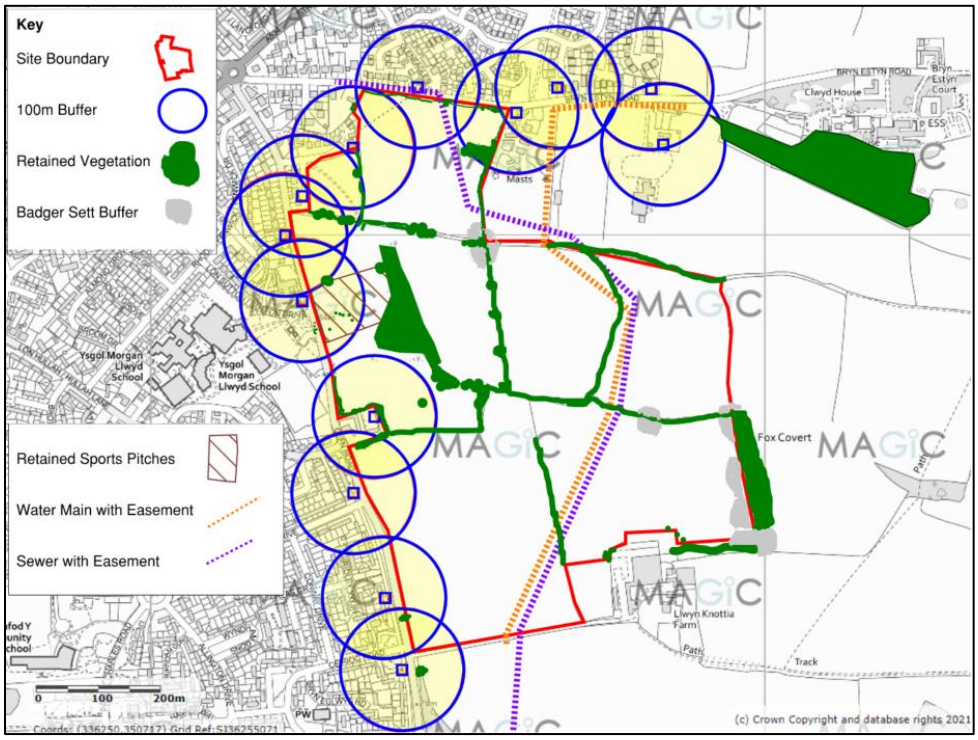


6.0.5 Ecological survey works have also identified the presence of badger setts. It is understood the setts are located in some of the field margins. Offset areas could be required from the setts. It is likely the badger setts are within the sand and gravel.

6.0.6 It is considered unlikely WCBC would expect the hedgerows to be removed, the badgers to be translocated and for the hedgerows to be reinstated to facilitate an extensive prior extraction.

6.0.7 An indicative plan showing the constraints to minerals workings, considering all of the above is shown on the following below.

Figure 8 – Indicative Minerals Extraction Constraints Plan (Annotated Extract from Magic.gov.uk)



6.0.8 Due to the retention of utilities, hedgerows, and sports pitches, the extraction of sand within the subdivided parcels of land would likely require infilling before the construction of the housing development. It is not considered likely that the development could be suitably achieved on lower ground following minerals excavation as the retained features would remain in situ on higher ground. Any infilling would cause delays and the delivery of the housing by 2028 would be more difficult to achieve.

6.0.9 The importation of inert material would have further impacts to consider in terms of Heavy Goods Vehicle Movements and associated impacts such as noise and dust. The importation of material would either require a permit or material to be brought into site under CL:AIRE.

6.0.10 Groundwater has also been encountered within the site during site investigation works. The extraction of surface mineral deposits, such as sand and gravel, requires the removal of overlying surface soils and vegetation and the

winning of mineral deposits can impact on hydrogeological and hydrological water flows. Working within the water table would require dewatering activities and a system of managing groundwater, likely through lagoon construction. The costs of this as well as associated timescales would also need to be considered. A discharge permit and an abstraction permit would be required.

7.0 CORRESPONDENCE WITH WREXHAM COUNCIL AND QUARRY OPERATORS

7.0.1 Correspondence with WCBC (appended) has indicated they would not expect the whole 25m (assumed) depth of the resource to be extracted prior to the development, but stated *'Prior extraction could amount to a minimum depth of sand being removed from the site prior to the commencement of construction for example the first 3-4 metres of sand…'*

7.0.2 It is considered possible that a 100m buffer zone may not be required for a smaller level of extraction, but a buffer zone of some size would be required for land stability purposes from the existing adjacent built development.

7.0.3 There are still numerous considerations to be made based on this suggested level of extraction.

7.0.4 The excavation of c. 3m of sand and gravel would render it impracticable or perhaps even not feasible to retain the habitats and field margins/ hedgerows where protected species have been identified. You would in effect be left with imposing hedgerows c. 3m above the development platforms. It is considered unlikely this would provide suitable ecological mitigation or provide an acceptable appearance.

7.0.5 It should also be considered that the land associated with Ysgol Morgan Lwyd School within the site, is proposed to be retained. The landscape/ visual implications and overall practicality of the land around it being lowered by 3-4m raises questions.

7.0.6 It is not known exactly how deep the utilities are buried underneath the site, but it's considered likely they would be within the upper 3 – 4m of strata. If this was the case, the utilities would need to be disconnected from the wider network, lowered, and reconnected. If this is viable, the costs of this are likely to be high and may render any mineral extraction activities commercially unviable. Alternatively, the utilities could be left in-situ forming another partition within the site.

7.0.7 Due to the constraints of the site, it is considered likely that inert restoration material would need to be brought into the site following the recovery of 3-4m of sand. As described in the previous section the importation of material would either require a permit or material to be brought into site under CL:AIRE. WCBC stated the minerals assessment should be informed by a Landscape and Visual Impact Assessment to assess the impact of prior extraction on landform. This suggests the Council envisaged the site could be developed on lower ground following mineral extraction rather than restoring the site through material import.

7.0.8 Shallow groundwater has been encountered both at the application site and on the application site to the north between 1m and 2m below ground level. Civil engineers from the project team have advised *'there are areas where I would suggest levels do not change and are in fact lifted slightly to facilitate the drainage design.'*

7.0.9 Due to the circa 20m slope across the site it is however possible that some levelling works would be required, and it would be possible to recover some sand through cut and fill works. As this is an outline application cut and fill information is not available at this stage but would be available at Reserved Matters stage. Furthermore, there would be opportunities to recover additional minerals through the creation of the SuDs ponds.

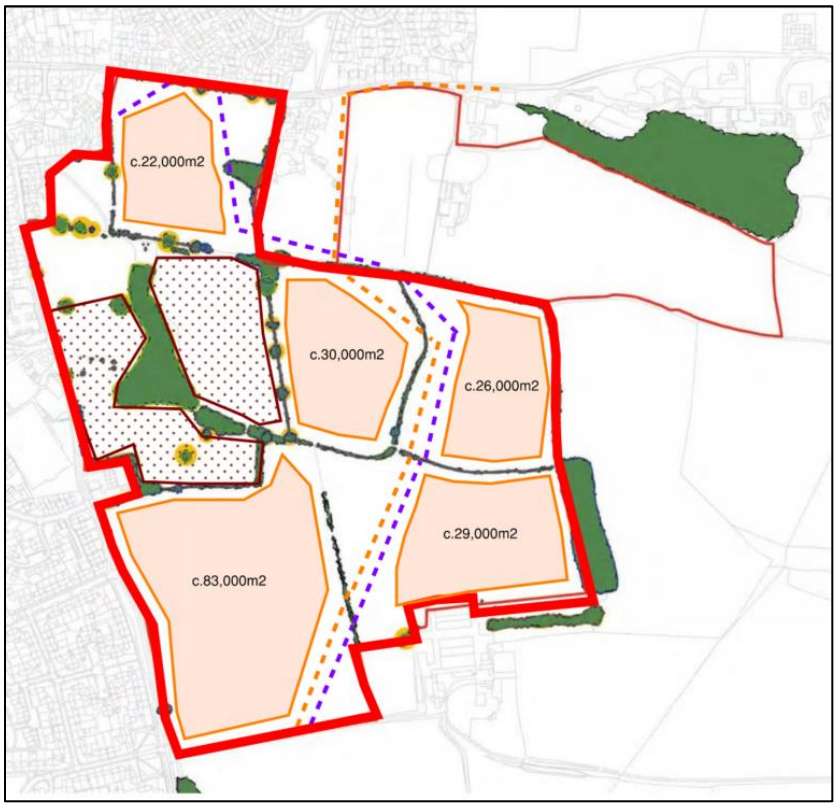
7.0.10 The extraction of surface mineral deposits, such as sand and gravel, can also impact on hydrogeological water flows as well as potentially any hydrological flows in the wider area. There would also be landscape and amenity impact considerations. For example, views into the gardens and properties of the proposed dwellings may be possible from higher adjoining land.

7.0.11 The practicalities of accommodating roads into the site from the existing network and dropping to a much lower level, would need to be considered.

7.0.12 As shown in the appended letter from WCBC, considerations of topography, landscape impact and flooding and drainage are required and these are made above. The information request also included an estimation of quantity of reserves.

7.0.13 Given the constraints it is difficult to provide an estimation of reserves at this site. It is considered unlikely that WCBC would expect the habitat to be removed to facilitate sand and gravel extraction. Badger setts have been identified in the field margins of the strategic site and the retention of the trees and hedgerow forms a key part of the proposals, including for ecological mitigation. The workable areas of the site would be subdivided into several parcels. This is indicatively illustrated on the plan below.

Figure 9 – Indicative Workable Parcels



7.0.14 Based on the above information a high-level estimated quantity of reserves in provided in the table below. This is based on the information included in the headings of the table.

Table 3 – Estimated Quantity of Reserves

Area (m^2)	Sand and gravel (m)	Total volume of Sand and Gravels (m^3)	7% losses to silts and clays	Side slope losses (m^3) assuming 1 in 2 slope	Residual Volume (m^3)	Conversion Factor (t/m^3)	Tonnes of Mineral
190,000	3	570,000	39,900	34,740	495,360	1.75	866,880

7.0.15 Based on the above, it is estimated that the combined working of the development parcels to a depth of 3m could generate approximately 867,000 tonnes of mineral. It should be noted that this yield would likely involve working within the groundwater table.

7.0.16 Working within subdivided areas such as this would cause operational constraints to a mineral's operator and in Tetra Tech's experience, an operator is far more likely to be interested in a resource which is not segregated such as this.

7.0.17 WCBC also recommended that investigations should include details of liaison with 'Breedon who operate Borras Quarry', the nearest quarry to the site.

7.0.18 A video call was held with the national quarry operator in June 2023 before a written emailed response was received in July 2023. The written response is shown in full below: -

- *'A national quarry operator does not consider that the Cefn Road site would be commercially viable to be worked as a standalone quarry resource based on the limited information provided. The site investigation works, which were completed by Hydrock in November 2021, included eighteen trial pits and four Particle Size Distribution Tests.*
- *The operator considers there could be a substantial capital cost to set up a new site in this location. Costs would include planning and licensing costs, the purchase of plant and equipment and a system of managing groundwater through lagoon construction. There would be additional costs at this site for re-routing services, hedgerow removal/ planting and badger mitigation.*
- *The operator considers it could take around 2-3 years to achieve planning followed by at least 6-years to extract the resource resulting in a programme of around 10+ years to have worked the resource; restoring the site would then take additional time before it was ready for development of an alternative (housing) use.*
- *The operator may consider the recovery of minerals that are incidentally encountered though the course of the built development. This would involve minerals encountered through all preparatory earthworks such as cut & fill/ balancing, foundations, trenching, roads, drainage infrastructure, etc, which would include the 6 large surface water drainage ponds. This would be subject to testing of the minerals to ensure suitability for saleable products.* (There are now four ponds, this correspondence related to an earlier draft plan version)
- *The operator advises there is currently no restriction on planning permission at their nearby quarry-preventing the importation and processing of minerals. They may be open to discussing the opportunity of a partnership with the developer to delivery [Sic] suitable concrete products produced using the minerals from the development site (subject to testing of mineral proving suitability). This approach may reduce the carbon footprint of the development and go some way to delivering a level of sustainability.*

Therefore, in summary and based only on the high-level information made available, it is unlikely that the site could be worked for a targeted minerals extraction (to any particular defined depth) on the grounds of viability, but that incidental extraction could be achieved to support sustainable re-use.'

7.0.19 In addition, contact has been made with the operators of Ballswood Quarry, who provided the below emailed response: -

'Site investigation only to 1.5 m though which doesn't tell us a lot and what is found there looks uneconomic as it's v fine, silty sands and clays. There could be better mineral at depth but you would need to trisk (sic) *dig with bigger machines or better still auger drill rigs'*

7.0.20 Based on the available information, both operators have indicated that it is not likely to be economically viable to recover the full mineral resource from the site.

8.0 ANALYSIS AND APPROACH

8.1 FEASIBILITY OF FULL MINERAL EXTRACTION

8.1.1 If a minerals planning application was submitted at the site, or if the site was promoted for minerals extraction through a local plan, Tetra Tech would not be confident of the success of the submission. For instance, as part of a local plan process, a stage 1 sieving assessment will often see sites excluded if they border or are close to built up residential areas. This is certainly the case for this site.

8.1.2 For comparison, the local quarry circa 1.5km to the north of the site, and Ballswood Quarry, circa 4.5km, to the north, both benefit from a more rural location and is a more typical location for a sand and gravel quarry. WCBC appear to agree with this in the appended letter and suggest a lower level of extraction.

8.1.3 The site overall is clearly quite constrained, and it is considered any extraction would need to be carefully considered. A full-scale extraction would require hedgerows to be removed, badger mitigation, underground utilities to be disconnected and re-routed, amongst other considerations. We suspect WCBC would not expect the site to be cleared to this scale.

8.1.4 The extraction of surface mineral deposits, such as sand and gravel, requires the removal of overlying surface soils and vegetation and the winning of mineral deposits can impact on hydrogeological and hydrological water flows. High groundwater levels have been encountered within the site.

8.1.5 The operators of the nearby quarries to the site have been contacted for their thoughts on minerals extraction. Based on available information, the nearest operator stated they consider it would not be commercially viable to work the site as a standalone quarry resource, but that incidental extraction could be achieved to support sustainable re-use. The second operator also considered that they did not think the material would be suitable.

8.1.6 Both operators stated they would benefit from more comprehensive site investigation information, but this is regarding working the site to a much deeper level. The available site investigation information includes trial pits up to 2.5mbgl. WCBC have requested the assessment of mineral working to around 3mbgl. It is therefore considered that the available information provides a reasonable indication on the viability of working to 3mbgl.

8.2 PLANNING POLICY CONSIDERATIONS AND POTENTIAL APPROACH TO MINERALS EXTRACTION

8.2.1 The LDP has recently been adopted and has replaced the UDP. A robust mineral versus housing assessment has evidently been completed by WCBC as part of the local plan process. WCBC state in their LDP: -

''The SA/ SEA identifies that these KSS will impact on… minerals of national importance, however the need to provide housing, infrastructure and other community facilities in sustainable locations outweighs the need to protect these resources in this instance.'

8.2.2 Given the feedback received to date from the minerals operators it is considered questionable as to whether the minerals can be considered nationally important.

8.2.3 LDP Policy SP16 and Policy MW1 states that minerals can be extracted prior to non-mineral development.

8.2.4 The policies do not include a requirement for the resource to be worked in full and there is a clear and obvious need for the housing development.

8.2.5 The nearest quarry operator to the site confirmed that it is considered *'unlikely that the site could be worked for a targeted minerals extraction (to any particular defined depth) on the grounds of viability, but that incidental extraction could be achieved to support sustainable re-use.'* The site investigation information summarised in section 3.3 of this report was provided to the operator and informed their viewpoint. The costs of setting up a new quarry site are considerable. During a video call with the operator, it was clear that they did not think the excavation of 3-4m of mineral across the site would be commercially viable. Furthermore, the operator of Ballswood Quarry has stated the upper lying minerals are likely uneconomic.

8.2.6 It is therefore considered that an incidental minerals extraction scheme could be appropriate for this site and is in accordance with the LDP. Incidental extraction would comprise the excavation of any sand and gravel resource through the preparatory earthworks required for the construction of the development. Incidental extraction at the promoted site would potentially be over a large area as excavation would be required for the construction of the 900 homes and primary school.

8.2.7 Excavation would also be required for all roads and drainage systems. An incidental extraction approach would not unduly delay the construction of the development as this material would have to be extracted in any event, whether it be clay (which would typically be exported as muck-away) or sand and gravel which could be put to a beneficial use both on and off-site.

8.2.8 WCBC confirmed in their response document (January 2023), which is appended, that *'the proposed incidental extraction is welcomed'*, whilst also requesting some additional information, which has been included in this report.

8.2.9 The design process for the site has also identified potential Sustainable Drainage Systems (SUDS) which are displayed in the appended Masterplan. The deeper extraction of sand and gravel would be possible in these areas. There would be 30,025m^3 of cut material from creating the four ponds.

8.2.10 Policy MW1 includes the below criteria: -

ii. The need for the non-mineral development outweighs the need to protect the resource, or

iii. The mineral can be satisfactorily extracted prior to the non-mineral development, or

8.2.11 This document has robustly explained the need of the non-mineral development and the planning authority (who are also the Minerals Planning Authority) have made it clear the importance of the housing outweighs the importance of the mineral. For example, WCBC acknowledge in respect of planning application P/2021/0436, in a letter dated July 2023: -

'The need for the mineral underneath KSS2 has already been considered through the development of the LDP and it has been concluded that the need for the non-mineral development is considered to outweigh the need to protect the resource in its entirety. It is considered therefore that the inclusion of KSS2 within the LDP has already accepted that this sand would be sterilised by any development that comes forward to be proposed on KKS2, and that the need for the development would outweigh the permanent sterilisation of the sand resources beneath the site. As such, it is considered that the application complies with Policy MW1 ii) as it cannot be disputed that there is an overriding need for the proposed development.'

8.2.12 It is also considered that part of the sand and gravel resource can be satisfactorily extracted prior to the non-mineral development through an incidental approach to minerals extraction. The incidental extraction would take place naturally in line with the phasing arrangements of the site. This is shown in the appended Phasing Plan.

8.2.13 Due to the slope across the site, it is considered there would be an opportunity to recover reasonable quantities of material from this site through cut and fill works, prior to additional quantities of material that could be recovered during construction works.

8.2.14 Section 5 of this report included information on potential uses of the mineral (5.1.18 – 5.1.25). Whilst it should generally be encouraged for any underlying resource, such as sand and gravel, to be used on site in the first instance, this information suggests that it would be more suitable to use off site.

8.2.15 The applicant has engaged with the operator of the nearest quarry to the site, who have confirmed that they would be interested in taking the resource (subject to testing) and their planning permission would allow material to be delivered into the site. The necessary processing equipment is already in place at this quarry.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.0.1 Tetra Tech Limited has been instructed by Harworth to prepare a Prior Extraction Assessment in relation to a circa 40-hectare (ha) site known as Cefn Park, to the east of Cefn Road, in Wrexham.

9.0.2 The British Geological Survey (BGS) show on their Geology of Britain Viewer website that the site is mainly overlain Devensian Glaciofluvial Sheet Deposits, which comprise sands and gravels.

9.0.3 The site is part of a Key Strategic Housing Site (KSS2) under Policy SP4 in the Wrexham LDP. LDP Policy H1 states KSS2, and another key strategic site (KSS1) are allocated *'to help deliver the identified housing requirement over the plan period'.* LDP Policy SP4 shows that KSS2 is allocated to deliver a residential mixed-use scheme with a minimum of 1,680 new homes, 1,580 of which will be delivered within the plan period (2013 to 2028).

9.0.4 The proposed phased residential development is for the construction of up to 900 residential dwellings with associated infrastructure including, playing fields, open space, and SUDs attenuation.

9.0.5 WCBC are clear in that the need of the site for housing outweighs the need of the mineral (paragraphs 3.31 and 4.194 of the LDP and as set out in this document). Tetra Tech agrees in so far as the need for the housing is more apparent, although the RTS 2nd Review does show that an additional sand and gravel extraction site is required over the WCBC's plan period. This is despite having an existing landbank of 19.6 years and is based off regionally apportioned landbank targets. A planning permission for an additional 500,000 tonnes of sand and gravel extraction has been granted at Ballswood Quarry in Wrexham, which reduces the shortfall identified in the RTS, but does not offset it.

9.0.6 There are numerous constraints to future mineral extraction works at the site. The site adjoins urban and primarily residential areas of Wrexham to the west and north. The other notable constraints include underlying utilities and the required easements, and the existing vegetation which is proposed to be retained. Badger setts have also been identified in the field margins and offsets would need to be included in the scheme of design for the non-mineral development.

9.0.7 WCBC have suggested the mineral extraction could be for the top 3-4m of resource. Due to the constraints of the site, it is considered that inert restoration material would need to be brought into the site following the recovery of 3-4m of sand. As described in the previous section the importation of material would either require a permit or material to be brought into site under CL:AIRE. WCBC stated the minerals assessment should be informed by a Landscape and Visual Impact Assessment to assess the impact of prior extraction on landform. This suggests the

Council envisaged the site could be developed on lower ground following mineral extraction rather than restoring the site through material import.

9.0.8 If a minerals planning application was submitted at the site, or if the site was promoted for minerals extraction through a local plan, Tetra Tech would not be confident of the success of the submission. For instance, as part of a local plan process, a stage 1 sieving assessment will often see sites excluded if they border or are close to built up residential areas. This is certainly the case for this site. For comparison, the local quarries, which are around 1.5km and 4.5km to the north of the site, benefit from more rural locations and are more typical of locations of a sand and gravel quarries.

9.0.9 Any full minerals extraction would not be economically viable and likely cause a significant delay to the proposed built development and would likely be subject to its own full Environmental Impact Assessment planning application, the minerals extraction itself and the subsequent restoration. This would likely be over a number of years and would almost certainly rule out any prospect of the houses being built by 2028. A consulted quarry operator stated: *'it could take around 2-3 years to achieve planning followed by at least 6-years to extract the resource resulting in a programme of around 10+ years to have worked the resource; restoring the site would then take additional time before it was ready for development of an alternative (housing) use.'*

9.0.10 As described above, correspondence with WCBC (appended) has indicated they would not expect the whole 25m (assumed) depth of the resource to be extracted prior to the development, but stated *'Prior extraction could amount to a minimum depth of sand being removed from the site prior to the commencement of construction for example the first 3-4 metres of sand…'* This would suggest WCBC would not be expecting a deep-level extraction that would require its own minerals planning application. WCBC also previously stated in January 2023 that an incidental extraction is welcomed, subject to further information, which is provided in this report.

9.0.11 The working of sand to 3 -4m has been analysed in this report. A consulted quarry operator does not consider that working to a defined depth at this site would be commercially viable. It is also considered that, without material import, the excavation of c. 3m of sand and gravel would render it impracticable or perhaps even not feasible to retain the habitats and field margins/ hedgerows where protected species have been identified. You would in effect be left with imposing hedgerows c. 3m above the development platforms. It is not considered likely this would provide suitable ecological mitigation.

9.0.12 It should also be considered that land associated with Ysgol Morgan Lwyd School, is proposed to be retained. This would not only reduce the amount of mineral that could be recovered, but the landscape implications and overall practicality of the land around it being lowered by 3-4m raises serious questions.

9.0.13 It is not known exactly how deep the utilities are buried underneath the site, but it is considered likely they would be within the upper 3 – 4m of strata. If this was the case, the utilities would either need to be worked around or they would need to be disconnected from the wider network, lowered, and reconnected. The costs of disconnecting the utilities are likely to be high and would also add to the costs of any mineral extraction activities.

9.0.14 This level of excavation would effectively create an embankment with the adjoining land. Civil engineers from the project team have advised *'there are areas where I would suggest levels do not change and are in fact lifted slightly to facilitate the drainage design.'*

9.0.15 The extraction of surface mineral deposits, such as sand and gravel, can also impact on hydrogeological water flows as well as potentially any hydrological flows in the wider area. High groundwater has been encountered at the site. Working 3-4m into ground would likely require dewatering activities dewatering activities and a system of managing groundwater, likely through lagoon construction. The costs of this as well as associated timescales would also need to be considered. A discharge permit and an abstraction permit would be required.

9.0.16 Working within subdivided areas would likely cause operational constraints to a mineral's operator and in Tetra Tech's experience, an operator is far more likely to be interested in a resource which is not segregated such as this.

9.0.17 A consulted quarry operator considers *'it is unlikely that the site could be worked for a targeted minerals extraction (to any particular defined depth) on the grounds of viability, but that incidental extraction could be achieved to support sustainable re-use.'*

9.0.18 It is considered that an incidental minerals extraction scheme is a balanced and appropriate solution for this site. Incidental extraction would comprise the excavation of any sand and gravel resource through the preparatory earthworks required for the construction of the development. Incidental extraction at the site would be over a large area.

9.0.19 WCBC have previously indicated in January 2023 that an *'incidental extraction is welcomed'*.

9.0.20 Excavation would also be required for all roads and drainage systems. The deeper extraction of sand and gravel would be possible in the SuDS ponds. An incidental extraction approach would not unduly delay the construction of the development. There would also be an opportunity to recover sand through cut and fill due to the slope across the site. For a previous project, a construction company confirmed muck away calculations from recent developments. They confirmed foundation excavations (frequently 30m^3) and the plot drainage (frequently 10m^3)

plus driveways, access roads, storm, foul drainage, and on-site balancing ponds (where required) are between 60m^3 and 120m^3 per plot. On the above basis the 900 homes would generate between 54,000m^3 and 108,000m^3 of excavation material. Some topsoil would however be included in this estimate, although significant quantities of material would also be generated from the groundworks for the primary school.

9.0.21 WCBC have already considered the KSS2 site against the policy criteria of MW1 and stated in July 2023: -

'The need for the mineral underneath KSS2 has already been considered through the development of the LDP and it has been concluded that the need for the non-mineral development is considered to outweigh the need to protect the resource in its entirety. It is considered therefore that the inclusion of KSS2 within the LDP has already accepted that this sand would be sterilised by any development that comes forward to be proposed on KKS2, and that the need for the development would outweigh the permanent sterilisation of the sand resources beneath the site. As such, it is considered that the application complies with Policy MW1 ii) as it cannot be disputed that there is an overriding need for the proposed development.'

9.0.22 It is considered that an incidental approach to minerals extraction accords with the mineral safeguarding policies of the adopted LDP and that this approach constitutes a sustainable approach to the management of the underlying minerals resource at this development site. The site is heavily constrained, and it is considered this approach is the most suitable for this site. The minerals extraction and recovery would take place as part of the phasing arrangements of the site. This would happen naturally as part of an incidental extraction scheme. The topography of the site would also likely lend to the additional recovery of resources through site levelling works.

APPENDICES

APPENDIX A – STRATEGIC MASTERPLAN

TTE_UD_v2



Aerial image: © Google Earth 2022

TETRA TECH

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KEY

- Site boundary
- KSS2 boundary
- Proposed residential parcel
- Proposed sports pitches
- Proposed public open space
- Retained tree / hedgerow
- Proposed planting
- Indicative proposed SuDS
- Wildlife corridor
- Proposed primary access
- Proposed secondary access
- Proposed spine road with green verge*
- Proposed road network
- Road feature / traffic calming
- Placemaking / gateway feature
- Existing / potential play space
- Pedestrian / cycle link
- Retained Public Right of Way (PRoW)
- Retained / proposed pedestrian / cycle route
- Existing cycle route

Position of link to remaining KSS2 to be determined

Document control

P06	Updated masterplan to reflect drainage strat and T.constraints	25.11.24	EI	AC	AC
P05	Updated masterplan to reflect new drainage strat	12.11.24	EI	AC	AC
P04	Red boundary update	12.03.24	LR	BR	AC
P03	Updated parcels	27.02.24	BR	BR	AC
P02	Updated masterplan based on technical updates	02.02.24	BR	AC	AC
Rev	Description	Date	Dwn	Chk	App

Erlas Park Wrexham
Harworth Group

STRATEGIC MASTERPLAN

TTE Proj No	Drwn | Date	Checked | Date	Appr'd | Date	Scale @ A3	Suitability
B024030	EI | Nov '24	AC | Nov '24	AC | Nov '24	1:5,000	S0

Client Proj No	Originator	Vol/System	Level/Location	Type/Code	Role	Number	Revision
-	TTE	00	XX	DR	UD	40	P06

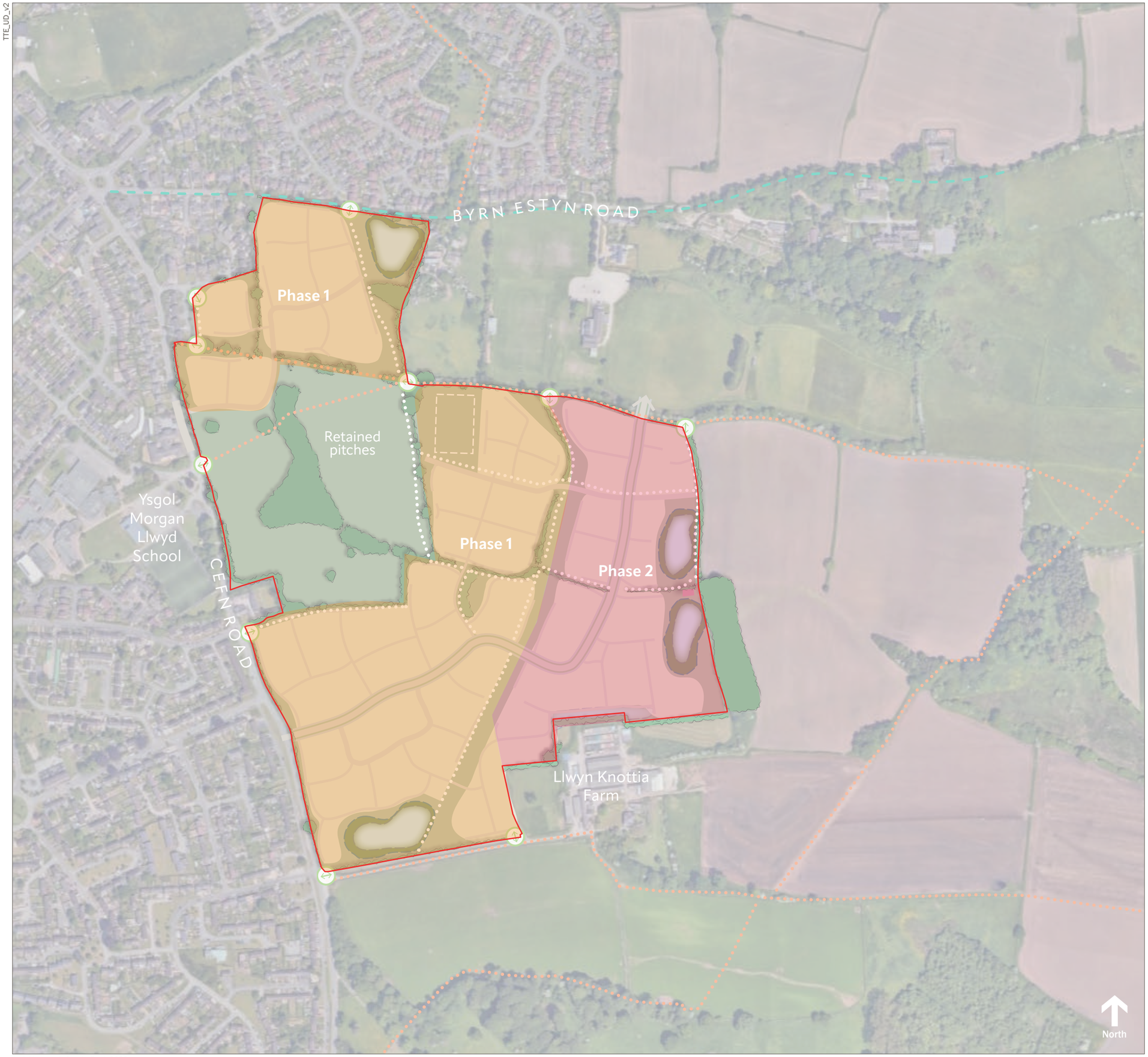
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APPENDIX B – PHASING PLAN

TTE_UD_v2



Aerial image: © Google Earth 2022

TETRA TECH

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KEY

Site boundary

Phase 1 area

Phase 1* net residential (approx. 14.87ha)

Phase 2 area

Phase 2 net residential (approx. 6.21 ha)

**Phase 1 excludes 0.96ha of new playing pitch on what was previously the school. The pitch to be commissioned before any existing sports pitch land in phase 1 area is developed for housing.*

Document control

Rev	Description	Date	Dwn	Chk	App
-	-	-	-	-	-
-	-	-	-	-	-
P02	Updated to reflect drainage strat and sports pitch layout	25.11.24	EI	AC	AC
P01	Updated in line with client comments and drainage strat	12.11.24	EI	AC	AC

Erlas Park Wrexham

Harworth Group

INDICATIVE PHASING PLAN

TTE Proj No	Drwn | Date	Checked | Date	Appr'd | Date	Scale @ A3	Suitability
B024030	EI | Nov '24	AC | Nov '24	AC | Nov '24	1:5000	S0

Client Proj No	Originator	Vol/System	Level/Location	Type/Code	Role	Number	Revision
-	TTE	00	XX	DR	UD	-	P02

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APPENDIX C – SITE INVESTIGATION INFORMATION



KEY

- WATER MAIN
- Un-mapped Water Main (Farm). Picked up on service clearance
- TRIAL PIT TPXXX
- APPROXIMATE ATTENUATION POND EXTENTS (WITH OUTFALL TO PUBLIC SEWER AND INFILTRATION)
- APPROXIMATE INFILTRATION BASIN EXTENTS
- Soakaway test incomplete

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

3. This drawing has been based on the following drawings and information:
- Water Main as per Utilities Connections Management Limited Drawing 210310 Cefn Park
- Infiltration Basins as per Hydrock Drawing C17232-HYD-XX-XX-DR-C-0001_Approximate Attenuation Extents

4. An un-mapped water main serving the adjacent farm was found following discussions with the landowner. The position as shown is inferred inbtween locations as confirmed during the service clearance.

REV.						
P2	AS-BUILT CO-ORDINATES					
	LW	12/11/21	AC	12/11/21	AC	12/11/21
P1	FIRST ISSUE					
	LW	03/11/21	AC	03/11/21	NAME	03/11/21
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT

HARWORTH GROUP

PROJECT

CEFN PARK

TITLE

SOAKAWAY LOCATION PLAN

HYDROCK PROJECT NO.	SCALE @ A1
17177	1:2000

PURPOSE OF ISSUE	STATUS
SUITABLE FOR INFORMATION	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
17177-HYD-XX-XX-DR-GE-0004	P2

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP101
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335714.10, 350505.34	Stability: Good	Dimensions: 1.90m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 76.20m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand with ocassional fine to medium subrounded to rounded mixed lithology gravel. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)		(0.40)		
					0.40		75.80	
				Dark orangish brown SAND. Sand is fine to medium. (GLACIOFLUVIAL DEPOSITS)				
				... From 1.20m verylight brown and light orangish brown.		(1.50)		
					1.90		74.30	
				Base of Excavation at 1.90m				

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General Remarks:

Logged in general accordance with BS5930:2015

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Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP102
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335920.17, 350556.28	Stability: Good	Dimensions: 1.70m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 70.32m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL Dark greyish brown silty Sand. Sand is fine to medium. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.30	(0.30)	70.02	
				Greyish brown and orangish brown very silty SAND. Sand is fine to medium. (GLACIOFLUVIAL DEPOSITS)	0.50	(0.20)	69.82	
				Firm to stiff light greyish brown and light orangish brown very silty CLAY with rare fine sunrounded to runded mixed lithology gravel. Locally sandy. Ocassional very silty sand lenses. (GLACIOFLUVIAL DEPOSITS)				
				... From 1.20m ocxassional lenses of silty sand.	1.50	(1.00)	68.82	
				Base of Excavation at 1.50m				

General Remarks:

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Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP103
Page No. 1 of 1

Method: Trial Pit	Date(s): 08/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335938.04, 350665.21	Stability: Major collapse from 0.30m	Dimensions: 1.50m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 65.61m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty to very silty Sand. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.40	(0.40)	65.21	
				Dark orangish slightly silty SAND with rare fine to coarse subrounded to rounded mixed lithology gravel. Becoming orangish brown from 0.80m. (GLACIOFLUVIAL DEPOSITS) *... From 0.80m becoming orangish brown.*	1.50	(1.10)	64.11	
				Base of Excavation at 1.50m				

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Draft

General Remarks:

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Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP104
Page No. 1 of 1

Method: Trial Pit	Date(s): 08/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335751.74, 350709.54	Stability: Good	Dimensions: 2.00m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 74.92m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.30	(0.30)	74.62	
				Dark orangish brown slightly silty SAND. Sand is very fine to fine. (GLACIOFLUVIAL DEPOSITS)	0.60	(0.30)	74.32	
				Light grey, light greyish brown and light orangish brown clayey very silty SAND. Sand is very fine to fine. Locally sandy very silty clay. (GLACIOFLUVIAL DEPOSITS)	1.40	(0.80)	73.52	
				Firm mottled reddish brown, light grey and light greyish brown silty sandy CLAY. (GLACIOFLUVIAL DEPOSITS)	1.60	(0.20)	73.32	
				Base of Excavation at 1.60m				

General Remarks:

Logged in general accordance with BS5930:2015

Draft

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP105
Page No. 1 of 1

Method: Trial Pit	Date(s): 08/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335923.79, 350762.09	Stability: Good	Dimensions: 1.40m x 0.60m
Hydrock Project No: 17177	Ground Level: 68.07m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark greyish brown silty to very silty Sand. Sand is fine to medium. Rootlets throughout. (TOPSOIL)	0.40	(0.40)	67.67	
				Light greyish brown to orangish brown slightly silty SAND. Sand is predominantly fine. (GLACIOFLUVIAL DEPOSITS)	1.70	(1.30)	66.37	
				Base of Excavation at 1.70m				

General Remarks:

Logged in general accordance with BS5930:2015

Draft

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP106
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335912.28, 350910.20	Stability: Good	Dimensions: 1.60m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 74.55m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.30	(0.30)	74.25	
				Light orangish brown silty SAND. Sand is fine to medium. (GLACIOFLUVIAL DEPOSITS)	1.00	(0.70)	73.55	
				Interbedded light grey and light orangish brown very silty SAND and silty SAND. (GLACIOFLUVIAL DEPOSITS) *... From 1.50m ocassional lenses of clayey silty sand.*	1.70	(0.70)	72.85	
				Mottled light grey and orangish brown very silty SAND with ocassional thin beds of silty sandy clay. Sand is fine. (GLACIOFLUVIAL DEPOSITS) *... From 1.90m Ocassional thin beds of silty sandy clay.*	2.20	(0.50)	72.35	
				Base of Excavation at 2.20m				

Draft

General Remarks:

Groundwater: Saturated from 1.60m.

Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP107
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335748.97, 350947.54	Stability: Major Collapse from 0.90m	Dimensions: 1.70m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 77.19m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand with rootlets throughout. Rare ceramic fragments. (TOPSOIL)	0.30	(0.30)	76.89	
				Dark orangish brown to orangish brown slightly silty SAND with rare fine to coarse subrounded to rounded mixed lithology gravel. Sand is fine to medium. (GLACIOFLUVIAL DEPOSITS)	2.00	(1.70)	75.19	
				Base of Excavation at 2.00m				

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General Remarks:

Draft

Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP108
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335720.24, 350807.64	Stability: Major collapse (both sides) from 1.10m	Dimensions: 1.80m / 0.60m
Hydrock Project No: 17177	Ground Level: 79.91m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand with ocassional fine to medium subrounded to rounded mixed lithology gravel. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.30	(0.30)	79.61	
				Dark orangish brown silty SAND. Sand is fine to medium. (GLACIOFLUVIAL DEPOSITS)	0.60	(0.30)	79.31	
				Light greyish brown to light grey silty SAND. Sand is very fine to fine. (GLACIOFLUVIAL DEPOSITS) *... From 0.80m Light brown to light orangish brown.*	1.50	(0.90)	78.41	
				Light orangish brown slightly silty SAND. Sand is predominantly fine. (GLACIOFLUVIAL DEPOSITS)	2.50	(1.00)	77.41	
				Base of Excavation at 2.50m				

General Remarks:

Groundwater: Saturated from 1.80m, seeps from 2.30m.

Logged in general accordance with BS5930:2015

Draft

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP109
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335572.33, 350936.06	Stability: Slight collapse from 1.20m	Dimensions: 1.70m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 80.53m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown slightly silty Sand with rare fine to coarse subrounded to rounded mixed lithology gravel. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.25	(0.25)	80.28	
				Dark orangish brown slightly gravelly silty SAND. Gravel is fine to coarse subroudned to rounded mixed lithology gravel. Sand is fine to coarse. (GLACIOFLUVIAL DEPOSITS) *... From 0.70m Becoming lighter.*	0.90	(0.65)	79.63	
				Light brown to light orangish brown slightly silty gravelly SAND. Gravel is fine to coarse subrounded to rounded mixed lithology gravel. Sand is fine to coarse. (GLACIOFLUVIAL DEPOSITS)	1.40	(0.50)	79.13	
				Light orangish brown slightly silty SAND with ocassional fine to medium subroudned to rounded mixed lithology gravel. (GLACIOFLUVIAL DEPOSITS) Base of Excavation at 1.50m	1.50	(0.10)	79.03	

General Remarks:

Draft

Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP110
Page No. 1 of 1

Method: Trial Pit	Date(s): 11/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335471.11, 351038.23	Stability: Stable	Dimensions: 1.45m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 80.13m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey slightly gravelly fine to medium SAND with occasional rootlets. Gravel is fine to coarse, angular to rounded of cermaics and sandstone. (TOPSOIL)	0.30	(0.30)	79.83	
				Orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subronded of quartzite, sandstone and mudstone. (GLACIOFLUVIAL DEPOSITS)	0.50	(0.20)	79.63	
				Orangish brown fine to coarse subangular to rounded SAND and GRAVEL of quartzite, sandstone and mudstone with a low cobble content of quartzite, sandstone and mudstone. (GLACIOFLUVIAL DEPOSITS)	1.40	(0.90)	78.73	
				Base of Excavation at 1.40m				

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General Remarks:

Logged in general accordance with BS5930:2015

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Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP111
Page No. 1 of 1

Method: Trial Pit	Date(s): 11/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335532.36, 351135.18	Stability: Stable	Dimensions: 1.35m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 77.68m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey slightly gravelly CLAY with rootlets. Gravel is fine to coarse of quartzite and mudstone. (TOPSOIL)	0.35	(0.35)	77.33	
				Orangish brown slightly clayey very gravelly fine to coarse SAND. Gravel is fine to coarse, subangular to subrounded of quartzite, sandstone and mudstone. (GLACIOFLUVIAL DEPOSITS)	1.90	(1.55)	75.78	
				... From 1.20m bgl: pockets of black to dark brown organic matter.				
				Base of Excavation at 1.90m				

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Draft

General Remarks:

Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP112
Page No. 1 of 1

Method: Trial Pit	Date(s): 11/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335361.20, 351153.42	Stability: Unstable	Dimensions: 1.60m x 0.80m
Hydrock Project No: 17177	Ground Level: 80.98m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown clayey very gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of quartzite, mudstone and sandstone. (TOPSOIL)	0.35	(0.35)	80.63	
				Orangish brown fine to coarse subangular to rounded SAND and GRAVEL of quartzite, sandstone and mudstone with a low cobble content of quartzite, sandstone and mudstone. (GLACIOFLUVIAL DEPOSITS)	0.85	(0.50)	80.13	
				Light brown gravelly fine to coarse SAND. Gravel is fine to coarse, angular to subrounded of quartzite, mudstone and sandstone. (GLACIOFLUVIAL DEPOSITS)	2.00	(1.15)	78.98	
				Base of Excavation at 2.00m				

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General Remarks:

Logged in general accordance with BS5930:2015

Hydrock	Project: Cefn Park, Wrexham	Trialpit No TP113 Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335573.33, 350674.26	Stability: Good	Dimensions: 1.80m x 0.60m / Scale: 1:25
Hydrock Project No: 17177	Ground Level: 80.87m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown silty Sand with ocassional fine to medium subrounded to rounded mixed lithology gravel. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.35	(0.35)	80.52	
				Dark orangish brown gravelly SAND. Gravel is fine to coarse subrounded to rounded mixed lithology and rare cobbles. (GLACIOFLUVIAL DEPOSITS)	0.75	(0.40)	80.12	
				Light orangish brown to light brown SAND with rare fine to medium subrounded to rounded mixed lithology gravel. (GLACIOFLUVIAL DEPOSITS)	1.50	(0.75)	79.37	
				Light greyish brown Sand. Sand is fine to coarse. (GLACIOFLUVIAL DEPOSITS)	2.00	(0.50)	78.87	
				Base of Excavation at 2.00m				

General Remarks:

Logged in general accordance with BS5930:2015

Draft

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP114
Page No. 1 of 1

Method: Trial Pit	Date(s): 10/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335393.42, 350662.61	Stability: Stable	Dimensions: 1.35m x 0.60m
Hydrock Project No: 17177	Ground Level: 80.83m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is fine to coarse, subangular to subrounded of quartzite, mudstone and wood. (TOPSOIL)	0.30	(0.30)	80.53	
				Orangish brown gravelly fine to coarse SAND with a low cobble content of mudstone. Gravel is fine to coarse, angular to subrounded of mudstone, quartzite, sandstone and limestone. (GLACIOFLUVIAL DEPOSITS)				
				... From 0.75m bgl: becoming light brown.		(1.20)		
					1.50		79.33	
				Base of Excavation at 1.50m				

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General Remarks:

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Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP115
Page No. 1 of 1

Method: Trial Pit	Date(s): 10/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335391.67, 350541.12	Stability: Unstable-partial collaspe of wall.	Dimensions: 1.60m x 0.60m
Hydrock Project No: 17177	Ground Level: 80.08m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey slightly gravelly fine to coarse SAND with rootlets. Gravel is fine to coarse, subangular to subrounded. (TOPSOIL)	0.30	(0.30)	79.78	
				Brown slightly gravelly fine to coarse SAND with occasional pockets of reddish brown sandy clay. Gravel is fine to coarse angular to subrounded of quartzite, mudstone and sandstone. (GLACIOFLUVIAL DEPOSITS)	0.60	(0.30)	79.48	
				Light brown slightly gravelly fine to medium SAND. Gravel is fine to coarse, subangular to rounded of mudstone, quartzite and mudstone. (GLACIOFLUVIAL DEPOSITS)				
				... From 1.30m bgl: becoming gravelly with a low cobble content of limestone, sandstone and quartzite.		(1.20)		
				Base of Excavation at 1.80m	1.80		78.28	

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General Remarks:

Logged in general accordance with BS5930:2015

Draft

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP116
Page No. 1 of 1

Method: Trial Pit	Date(s): 10/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335428.36, 350397.91	Stability: Unstable-collaspe due to pit wall.	Dimensions: 1.70m x 0.60m
Hydrock Project No: 17177	Ground Level: 79.25m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is fine to coarse, subangular to rounded of quartzite with occasional plastic sheeting. (TOPSOIL)	0.35	(0.35)	78.90	
				Light greyish brown gravelly fine to coarse SAND with occasional pcokets of stiff clay. Gravel is fine to coarse, subangular to rounded of mudstone, quartzite and limestone. (GLACIOFLUVIAL DEPOSITS)	0.65	(0.30)	78.60	
				Black fine to coarse SAND with relict rootlets. (GLACIOFLUVIAL DEPOSITS)	0.75	(0.10)	78.50	
				Light brown sightly gravelly fine to coarse SAND. Gravel is fine to coarse, subangular to subrounded of mudstone and quartzite. (GLACIOFLUVIAL DEPOSITS)				
				... From 1.30m bgl: becoming light greyish brown.		(1.35)		
				Base of Excavation at 2.10m	2.10		77.15	

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General Remarks:

Logged in general accordance with BS5930:2015

Draft

Hydrock	Project: Cefn Park, Wrexham	Trialpit No TP117 Page No. 1 of 1

Method: Trial Pit	Date(s): 10/11/2021	Logged By: WS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335527.02, 350368.63	Stability: Stable	Dimensions: 1.70m / 0.60m — Scale: 1:25
Hydrock Project No: 17177	Ground Level: 75.75m OD	Plant: 360	

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				Dark brown slightly clayey gravely fine to coarse SAND with rootlets. Gravel is fine to coarse, subangular to subrounded of quartzite. (TOPSOIL)	0.40	(0.40)	75.35	
				Greyish brown slightly clayey slightly gravelly SAND. Gravel is fine to coarse, subangular to subrounded of quartzite. (GLACIOFLUVIAL DEPOSITS)	1.10	(0.70)	74.65	
1.20	B			Light brown fine to medium SAND. (GLACIOFLUVIAL DEPOSITS)	1.20	(0.10)	74.55	
				Base of Excavation at 1.30m				

General Remarks:

Draft

Logged in general accordance with BS5930:2015

Hydrock

Project: Cefn Park, Wrexham

Trialpit No
TP118
Page No. 1 of 1

Method: Trial Pit	Date(s): 09/11/2021	Logged By: SS	Checked By:
Client: Harworth Estates Property Group Limited	Co-ords: 335591.68, 350541.35	Stability: Slight collapse from 0.80m	Dimensions: 1.18m x 0.60m
Hydrock Project No: 17177	Ground Level: 77.89m OD	Plant: 360	Scale: 1:25

Samples / Tests			Water-Strikes	Stratum Description	Depth mbgl	Thickness (m)	Level m OD	Legend
Depth (m)	Type	Results						
				TOPSOIL: Dark greyish brown slightly gravelly silty Sand. Gravel is fine to medium subrounded to rounded mixed lithology. Rare ceramic fragments. Rootlets throughout. (TOPSOIL)	0.30	(0.30)	77.59	
				Dark orangish brown gravelly SAND. Gravel is fine to coarse subrounded to rounded mixed lithology. Sand is fine to coarse. (GLACIOFLUVIAL DEPOSITS) *... From 0.70m Becoming lighter.*	1.40	(1.10)	76.49	
				Base of Excavation at 1.40m				

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General Remarks:

Logged in general accordance with BS5930:2015

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

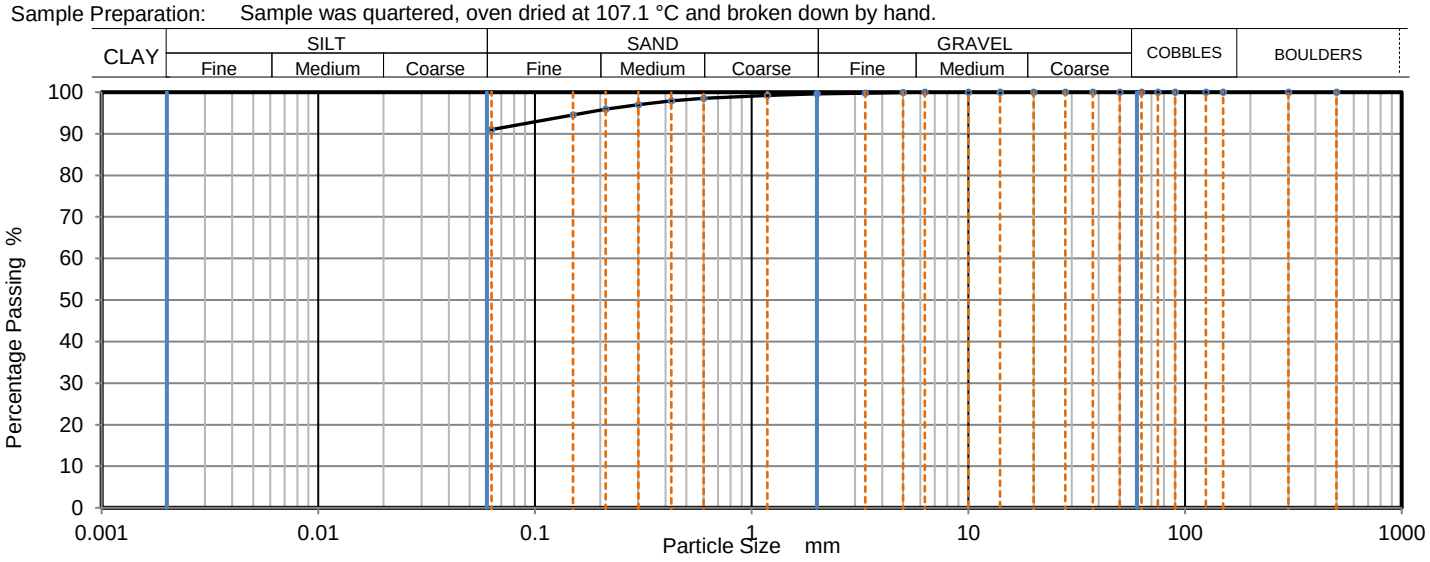
4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-17177
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-23862
		Date Sampled:	09/11/2021
		Date Received:	17/11/2021
Contact:	William Swinnerton	Date Tested:	24/11/2021
Site Address:	Cefn Park, Wrexham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2087520	Depth Top [m]:	1.20
Hole No.:	TP102	Depth Base [m]:	1.40
Sample Reference:	B01	Sample Type:	B
Sample Description:	Brown slightly sandy CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.1 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	99		
0.425	98		
0.3	97		
0.212	96		
0.15	95		
0.063	91		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	8
Fines <0.063mm	91

Grading Analysis		
D100	mm	10
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		N/A
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 02/12/2021

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

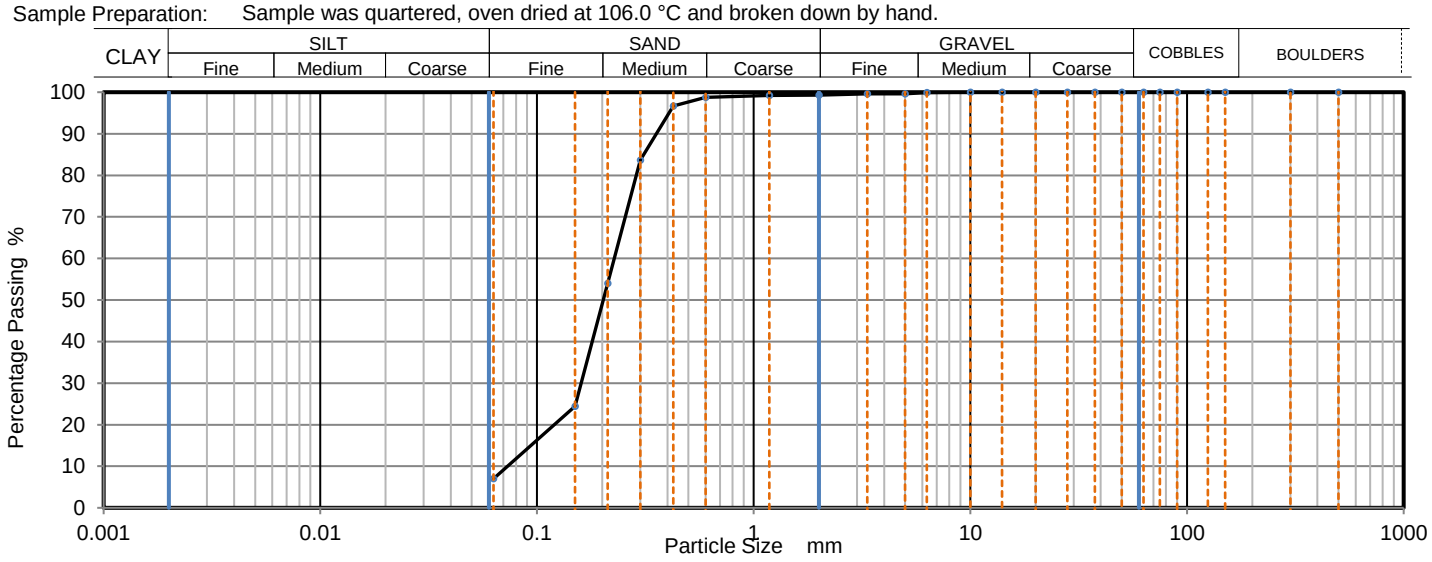
4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-17177
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-23862
		Date Sampled:	09/11/2021
		Date Received:	17/11/2021
Contact:	William Swinnerton	Date Tested:	24/11/2021
Site Address:	Cefn Park, Wrexham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2087521	Depth Top [m]:	1.40
Hole No.:	TP105	Depth Base [m]:	1.60
Sample Reference:	B01	Sample Type:	B
Sample Description:	Brown slightly clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	97		
0.3	84		
0.212	54		
0.15	24		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	10
D60	mm	0.227
D30	mm	0.16
D10	mm	0.0707
Uniformity Coefficient		3.2
Curvature Coefficient		1.6

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 02/12/2021

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

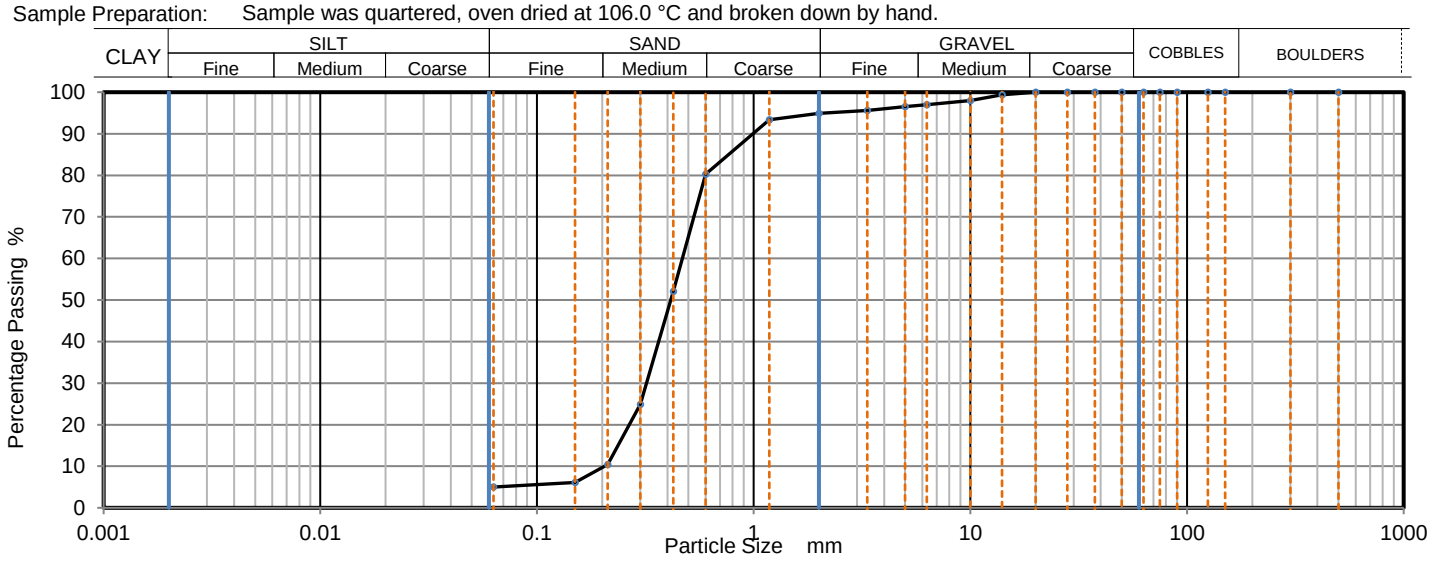
4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-17177
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-23862
		Date Sampled:	09/11/2021
		Date Received:	17/11/2021
Contact:	William Swinnerton	Date Tested:	24/11/2021
Site Address:	Cefn Park, Wrexham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2087522	Depth Top [m]:	1.40
Hole No.:	TP107	Depth Base [m]:	1.60
Sample Reference:	B01	Sample Type:	B
Sample Description:	Brown slightly gravelly slightly clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	97		
5	97		
3.35	96		
2	95		
1.18	93		
0.6	80		
0.425	52		
0.3	25		
0.212	10		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	5
Sand	90
Fines <0.063mm	5

Grading Analysis		
D100	mm	20
D60	mm	0.468
D30	mm	0.32
D10	mm	0.205
Uniformity Coefficient		2.3
Curvature Coefficient		1.1

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Deputy Head of Geo Office Section
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Date Reported: 02/12/2021

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

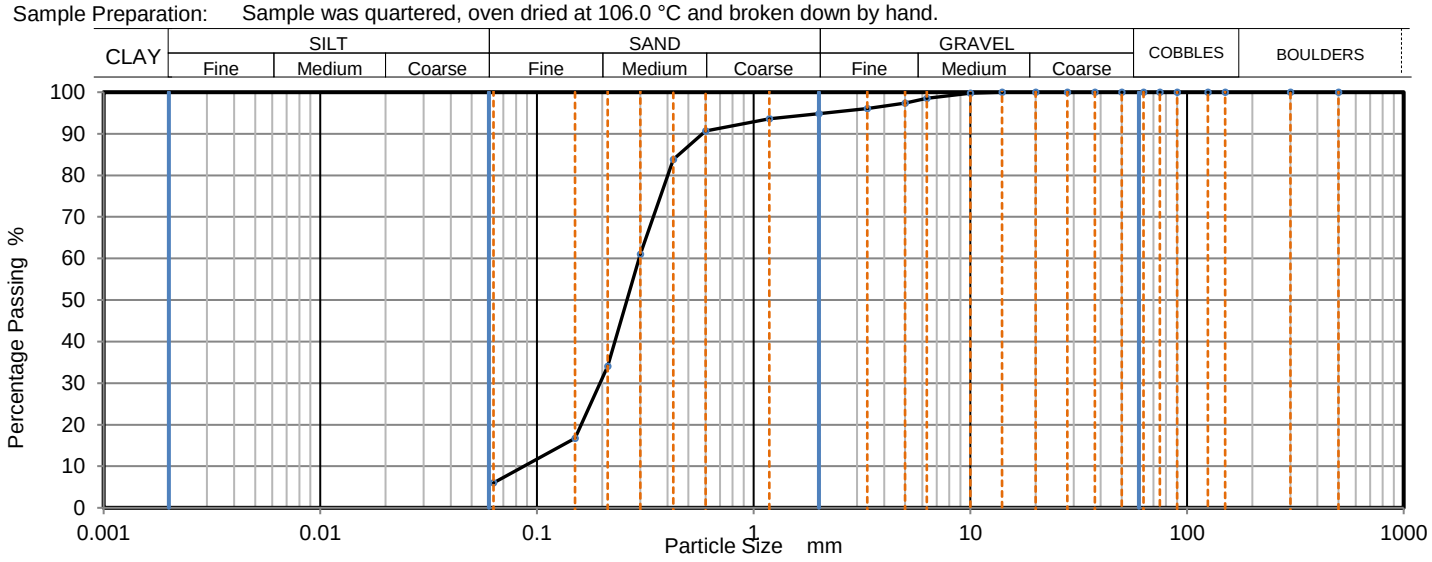
4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-17177
Client Address:	4 Lakeside, Festival Park, Stoke on Trent, ST1 5RY	Job Number:	21-23862
		Date Sampled:	10/11/2021
		Date Received:	17/11/2021
Contact:	William Swinnerton	Date Tested:	24/11/2021
Site Address:	Cefn Park, Wrexham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2087523	Depth Top [m]:	1.20
Hole No.:	TP117	Depth Base [m]:	Not Given
Sample Reference:	B01	Sample Type:	B
Sample Description:	Brown slightly gravelly slightly clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	97		
3.35	96		
2	95		
1.18	94		
0.6	91		
0.425	84		
0.3	61		
0.212	34		
0.15	17		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0
Gravel	5
Sand	88
Fines <0.063mm	7

Grading Analysis		
D100	mm	14
D60	mm	0.296
D30	mm	0.195
D10	mm	0.0827
Uniformity Coefficient		3.6
Curvature Coefficient		1.6

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

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Signed:

Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

Date Reported: 02/12/2021

GF 100.21

APPENDIX D – WREXHAM COUNCIL MINERALS TEAM LETTER

Comments on the Prior Extraction Assessment supporting the Proposed Development at Cefn Park, Wrexham

Introduction

Tetra Tech Environment Planning Transport Limited have prepared the Prior Extraction Assessment on behalf of Harworth Group to support their planning application for 425 dwellings. The site forms part of a proposed allocated Key Strategic Housing Site (KSS2) under Policy SP3 in the emerging Wrexham Local Development Plan 2013 – 2028 (LDP).

The site is located to the east of Wrexham, immediately east of Cefn Road and to the south of Bryn Estyn Road. The site mainly comprises numerous fields, which are predominantly arable agricultural land as well as several sports pitches belonging to both Ysgol Morgan Llwyd School (which is to the west of the site) and Wrexham Rugby Club (within the north of the site).

The majority of Wrexham is underlain by sand and gravel which has been sterilised by non-mineral development. The published geological plans in this area show the site to be underlain mainly by glacial sand and gravel deposits. A small part of the site to the west is shown to be underlain by mixed sands, silts, clays and gravels.

Borehole data in this area (SJ35 SE22) provided in the Minerals Safeguarding Assessment shows an overall grading (through particle size density testing) of 92% sand and gravel (83% sand). The testing shows a higher fines content in the higher lying deposits.

Policy Framework

Planning Policy Wales (Edition 11, February 2021) paragraph 5.14.7 states that "*it is important that access to mineral resources, including secondary, recycled and marine dredged materials, which society may need, as well as the minerals related infrastructure to deliver this need, is safeguarded in order to prevent sterilisation by other forms of permanent development. Planning authorities should consider the long term and the need for preventative action to avoid the creation of problems in the future. Safeguarding does not indicate an acceptance of mineral working, but that the location and quality of the mineral is known and that the environmental constraints associated with extraction, including the potential for extraction of mineral resources prior to undertaking other forms of development, have been considered.*"

Minerals Technical Advice Note 1: Aggregates, paragraph 32 states (in relation to sand and gravel) *"resources must be safeguarded for possible use by future generations."*

The Welsh Government has issued a letter to Chief Planning Officers, dated 14th November 2012, which highlights that a national aggregates safeguarding map has been published. The letter goes on to advise that *"the Aggregate Safeguarding Map of*

Wales provides a key evidence base for Local Development Plan preparation, enabling plan strategies to fully recognise the importance of mineral resources and to avoid their unnecessary sterilisation. The map is accompanied by a technical guide which explains how the maps have been derived and identifies the categorisation of different mineral resources. Sand and gravel resources, specifically glacio-fluvial, brown sand and river terrace sand and gravel deposits are identified as Category 1 resources which are *"those resources that have a national importance in Wales (and in some cases the UK)".*

Although policy and guidance regarding safeguarding is limited, this is interpreted to mean that the main aim of policy is to prevent sterilisation of resources, and where not possible, ensure that mineral is extracted in advance of non-mineral development where possible. There is no guidance on how much of that mineral should be extracted prior to the non-mineral development.

Policy MW9; Protection of Mineral Resources of the adopted Wrexham UDP provides the policy context for safeguarding minerals within Wrexham and it states… *"Resources of sand and gravel, and clay, will be safeguarded from non-mineral development in order to prevent the sterilisation of unworked mineral deposits. The identification of mineral resource areas gives no presumption in favour of the working of any deposits. Within such areas, non-mineral development will be strongly resisted unless a resource assessment (or other information) is provided to demonstrate that no exploitable reserves exist within the development site. Where non-mineral development which materially prejudices mineral resources is granted planning permission on land holding mineral deposits, provision should be made for the prior removal of mineral deposits."*

The Deposit Draft Local Development Plan for Wrexham also contains policies in relation to safeguarding and the proposed development site. The Plan's "Policy SP3 Key Strategic Housing Sites" relates to an allocated site identified as "Land East of Cefn Road", the northern part of which is the subject of the proposed development site. The text accompanying the policy states that *"In order to minimise the loss of mineral, a Prior Extraction Assessment will be sought in accordance with Policy MW1 as it is considered that any opportunities to recover mineral prior to housing development should be sought."*

Emerging Policy MW1 states that non-mineral development will only be permitted in a Mineral Safeguarding Area where it can be shown that:
i. the mineral does not merit extraction; or
ii. there is an overriding need for the incompatible development; or
iii. prior extraction can be undertaken satisfactorily; or
iv. the development is temporary; or
v. essential mineral industry infrastructure would not be compromised.

Consideration of the Submitted Prior Extraction Assessment

The applicant has prepared a Prior Extraction Assessment to accompany a Mineral Safeguarding Assessment in accordance with Wrexham's emerging safeguarding policy. The assessment has concluded that any full minerals extraction would likely be subject to its own full Environmental Impact Assessment. Furthermore, extraction would likely be over a number of years causing a significant delay to the proposed built development and could rule out any prospect of the houses being built by 2028.

The site is said to also be constrained in that it adjoins urban and primarily residential areas of Wrexham to the west and north, being contrary to paragraph 71 of the Minerals Planning Policy Wales, Minerals Technical Advice Note 1: Aggregates (MTAN:1) which requires a 100m minimum buffer distance from sand and gravel quarries.

The applicant has instead proposed an 'incidental extraction scheme' be considered. Incidental extraction is to comprise of the excavation of any sand and gravel resource through the preparatory earthworks required for the construction of the development. Incidental extraction at the application site would potentially be over a large area as excavation would be required for the construction of the 425 homes and for all roads and drainage systems. It is commented that deeper extraction of sand and gravel would be possible in the potential SuDS ponds.

The prior extraction assessment confirms that:

"Further site investigation (SI) works will be completed during the course of application process, and this in conjunction with a cut/ fill exercise will help provide an estimate quantity of reserves."

"Due to the proximity of the Breedon site, it is considered that it would be prudent to liaise with the operator to see if they have an interest in the resource as this would be a sustainable use of the material (if it can't be used on site as dug)."

The proposed incidental extraction is welcomed. It is considered that the submitted prior extraction assessment does not provide sufficient detail in terms of an incidental extraction scheme.

We advise that the following matters be included in a scheme relating to prior extraction in the submission of any planning application. This information should be informed by the site investigations and include:

- details of estimated quantity of reserves (including proportions and/or ratios of sand /gravel resource) expressed in tonnages for the full application area;
- a topographical survey to assess the impact of prior extraction on landform, and for that to inform any landscape and visual impact assessment;
- details including depth of the indicative placement of the SuDS ponds in the wider site and the three ponds where deeper extraction would be possible;

- assessment of suitability of material to be used for pipe bedding necessary in the construction of requisite site services of the proposed housing development;
- details of location of stockpiles and progressive movement during construction phasing;
- details of assessment the impact of prior extraction will have in terms of flooding or drainage impact; and
- details of liaison with the operators of local quarry sites

Recommendations

It is considered that the following opportunities are available to ensure that the minimum sterilisation of mineral reserve:

- A partnership arrangement should be explored between Harworth Group and Breedon who operate the Borras Quarry to the North of the site so that the nationally important resource is not unnecessarily sterilised.

- Prior extraction could amount to a minimum depth of sand being removed from the site prior to the commencement of construction for example the first 3-4 metres of sand could be removed, stockpiled on site for either re-use on site for pipe bedding, or for export, collected by a mineral operator.

- It may be appropriate to phase the prior extraction in the same phasing parameters as the housing. Mobile plant and machinery could be brought into the site to wash and screen and then, stockpiles of sand could be maintained on site for the use in the construction of the development. This would provide a sustainable supply of sand which the project would otherwise be required to be imported.

Conclusion

The Prior Extraction Assessment in its current form would not provide the Local Planning Authority with sufficient detail to fully consider compliance with policy MW1: Minerals Safeguarding policy and MW3: Sustainable Supply of Minerals.

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Charlie Pope

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