A MINERAL RESOURCES ASSESSMENT OF LAND OFF THAXTED ROAD, SAFFRON WALDEN, ESSEX.

Planning reference UTT/22/3258/PINS

23rd December 2022

21 High Street, Ashwell, Baldock, Hertfordshire SG7 5NL
Email: wmml@btconnect.com Telephone: 01462 743005 Mobile: 07739 485160

Registered Office: Wardrop Minerals Management Limited, 21 High Street, Ashwell, Baldock, Hertfordshire SG7 5NL
Registered in England and Wales number 8640978
Directors: D. R. Wardrop, S. M. Wardrop

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1. Introduction

1.1. Kier Ventures Limited are seeking outline planning permission for housing development on land west of Thaxted Road, Saffron Walden. Parts of the land fall within a Mineral Safeguarding Area as defined by Essex County Council as the mineral planning authority. Planning applications for permanent surface development require to be supported by a Mineral Resources Assessment in order to avoid unnecessary sterilisation of mineral resources within a County. This statement has been prepared in response to the Essex County Council letter of 13th December 2022 which is reproduced as Appendix I.

1.2. The policy background is summarised in Policy S8 of the Essex Minerals Local Plan 2014 as reproduced in part below:

Policy S8 – 'Safeguarding mineral resources and mineral reserves' states:-

"By applying Mineral Safeguarding Areas (MSAs) and/ or Mineral Consultation Areas (MCAs), the Mineral Planning Authority will safeguard mineral resources of national and local importance from surface development that would sterilise a significant economic resource or prejudice the effective working of a permitted mineral reserve, Preferred or Reserve Site allocation within the Minerals Local Plan. The Minerals Planning Authority shall be consulted, and it's views taken into account, on proposed developments within MSAs and MCAs except for the excluded development identified in Appendix 5.

Mineral Safeguarding Areas are designated for mineral deposits of sand and gravel, silica sand, chalk, brickearth and brick clay considered to be of national and local importance, as defined on the Policies Map.

The Minerals Planning Authority shall be consulted on:

a) all planning applications for development on a site located within an MSA that is 5ha or more for sand and gravel, 3ha or more for chalk and greater than 1 dwelling for brickearth or brick clay; and

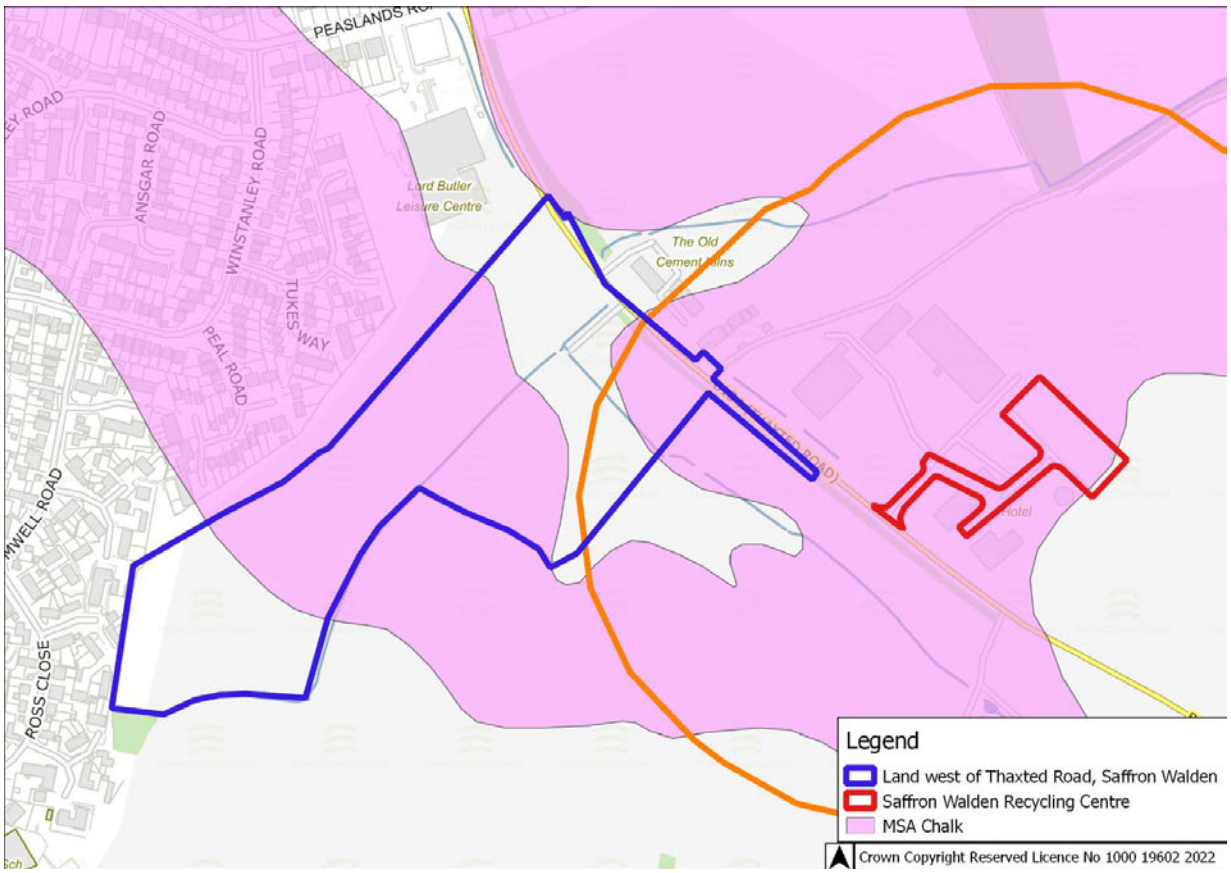
b) any land-use policy, proposal or allocation relating to land within an MSA being considered by the Local Planning Authority for possible development as part of preparing a Local Plan (with regard to the above thresholds).

Non-mineral proposals that exceed these thresholds shall be supported by a minerals resource assessment to establish the existence or otherwise of a mineral resource of economic importance. If, in the opinion of the Local Planning Authority, surface development should be permitted, consideration shall be given to the prior extraction of existing minerals."

1.3. In the UK generally the minerals typically included in such considerations are sand and gravel, coal, industrial minerals, clays, brickearths, silica sands, and hard rock resources. In this case the relevant mineral is Chalk, a specific form of limestone, since this material is quarried in Essex and in surrounding Counties.

1.4. The relationship of the Mineral Safeguarding Area and the site is shown on Figure 1 below as provided by Essex County Council. Mineral Safeguarding Areas tend to be largely based on the geologically mapped occurrence or outcrop of the material concerned. The pink coloured areas on the plan reflect the outcrop of the Chalk locally, modified by the uncoloured areas where the Chalk is obscured by younger geological deposits.

Figure 1. Mineral Safeguarding Area local to the site.



Source: ECC etter 13 December 2022

1.5. In preparing this Mineral Resources Assessment the author has paid attention in detail to a letter dated 13th December 2022 from the Minerals and Waste section of the planning department, containing guidance on the matters to be addressed. Some of the guidance in detail is directed at sand and gravel resources used for construction aggregates, which comprise by far the major volume of minerals worked in the County, but the principles are sound and can be applied to the potential Chalk resource at the proposal site.

1.6. The author draws on considerable experience in completing this assessment and in expressing the professional opinions included. For 34 years the author headed up the geology and mineral exploration functions originally in Redland Aggregates and subsequently in Lafarge Aggregates, with a brief covering all of the UK and a number of locations overseas. Responsibilities included landsearch for greenfield mineral prospects and strategic extensions to the portfolio of operating quarries; the geological assessment of those prospects; the management of the company reserves schedules; making

recommendations to the Board on which prospects to pursue; and subsequent quarry design, contribution to planning applications and site development. For a number of years the author was one of three managers conducting the negotiation and acquisition of mineral land.

1.7. In private consultancy since 2013 this practice has been involved in the mineral considerations on a number of housing, factory and solar farm developments.

2. Executive Summary

2.1. The land subject of an outline planning application for housing development lies within a Mineral Safeguarding Area and is required to be supported by a Mineral Resource Assessment.

2.2. Underlying geology of the site is Chalk and this has been identified on site by a trial pit investigation.

2.3. The site is long and narrow such that the application of 100 metre buffers to a conceptual quarry together with physical constraints comprising surface water drains and gas pipeline means that there is in realistic terms no workable mineral land.

2.4. Chalk supplies are abundant in the County and surrounds, and are worked at a very low rate per annum.

2.5. There is therefore almost no resource potential at all in this site and certainly not a mineral resource of economic importance.

3. Site description

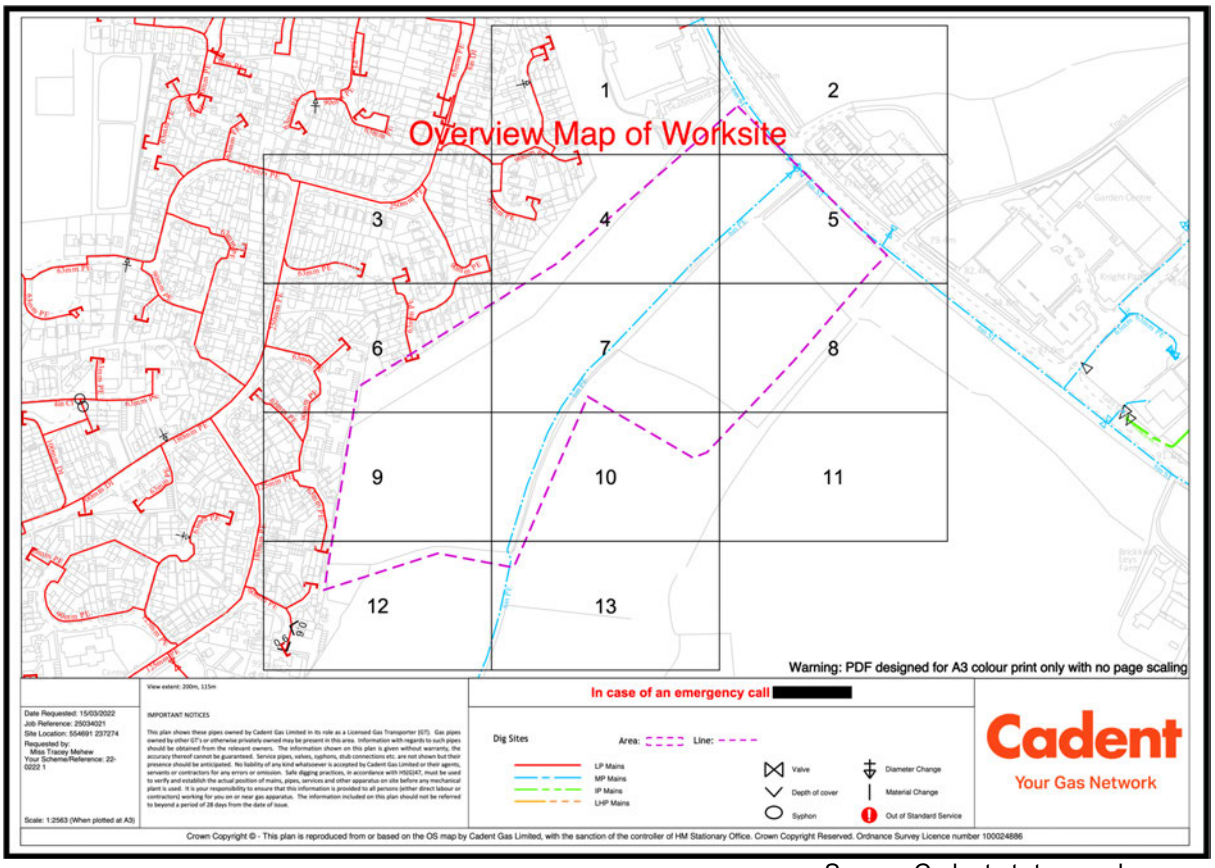
3.1. The site on the Southeastern fringe of Saffron Walden is an elongated parcel of arable land oriented Southwest to Northeast with a wider part in the Northeastern end, and lies on the southern flank of a shallow valley. Measuring approximately 540 metres long and mostly 120 to 210 metres wide there is a notable pinch point in the site shape in the middle where the width is only 80 metres.

3.2. In area the land amounts to some 7.8 Hectares and slopes from an elevation of just over 100 metres AOD at the Southwest end to 72 metres AOD at the B 184 road forming the Northeastern boundary. Two significant surface water drains run across the site, the first along the long axis from the housing to the west and meeting the public highway, and the second nearer the floor of the valley coming from the Southeast parallel to the public highway and taking drainage from the head of the valley landform. This drain meets a stream 1 kilometre to the north which itself drains into the River Cam.

3.3. There is a disused former cement works site on the other side of the B184 immediately opposite the Northeastern boundary of the land.

3.4. There are public utilities on the site. Around the periphery are above ground 11,000 volt electricity supply lines that do not significantly constrain the site. There is a medium pressure gas pipeline running down the centre line of the site closely parallel to the longitudinal surface water drain, shown in light blue on the plan Figure 2 below. Gas pipelines are generally not capable of diversion at sensible economic cost.

Figure 2. Gas pipelines



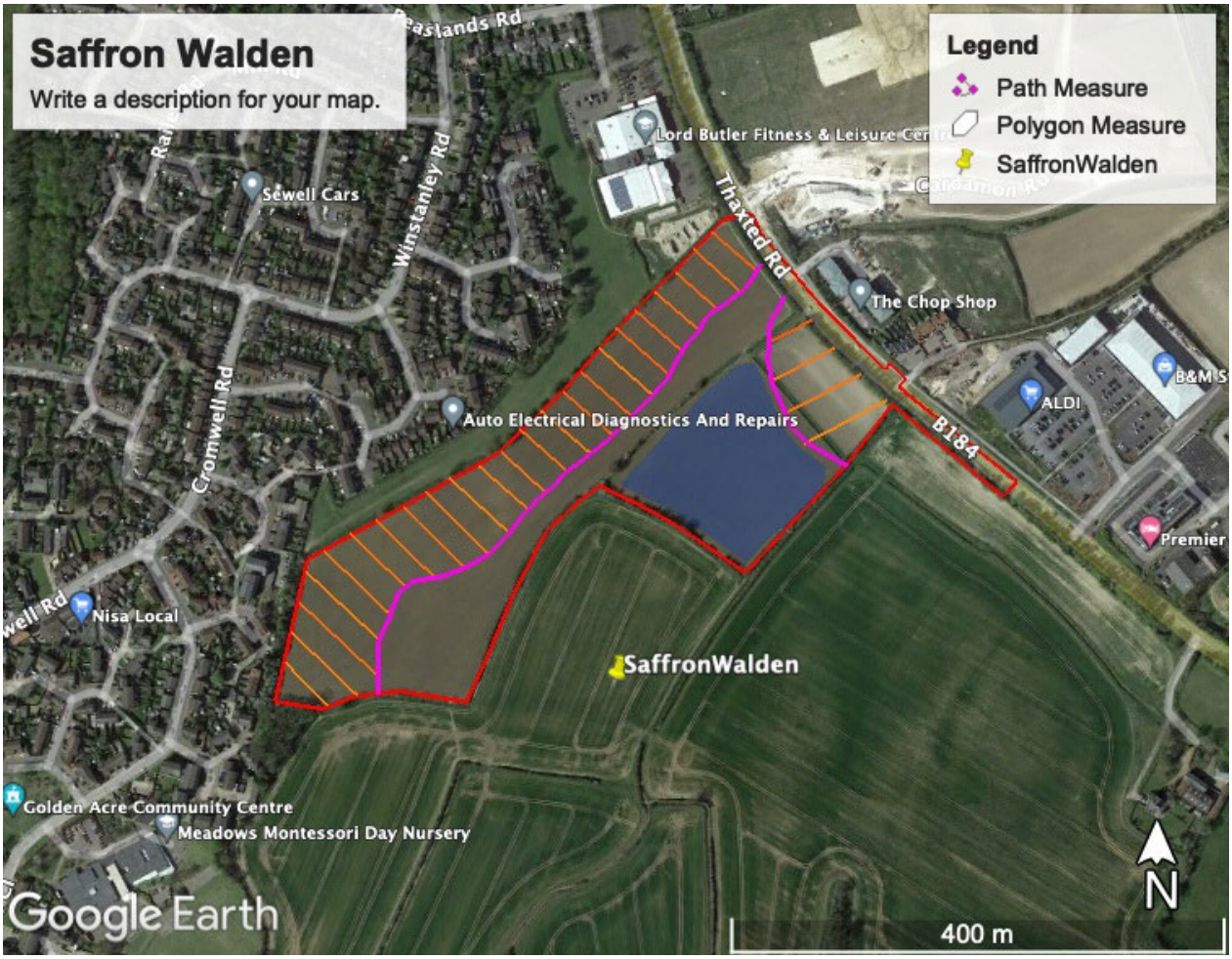
Source: Cadent ut ty search

3.5. Established housing exists immediately adjacent to the short western boundary of the land and within a short distance of the longer northwestern boundary. It is a well established convention to leave a 100 metre buffer of unworked land between housing and a quarry.

3.6. Applying a 100 metre standoff to the housing removes from consideration most of the site as illustrated on Figure 3 below. Taken in conjunction with the standoff required around site margins, the combined standoff required from the gas pipeline and the central surface water drain results in the only unconstrained part of the site being the small square field at the wider eastern part of the landholding. This itself has an 11,000 volt electricity transmission line running parallel to the southeastern boundary a few metres into the field.

3.7. The remaining area of Chalk bearing land shaded in blue on Figure 3 is less than 1.4 Hectares in extent.

Figure 3. Constraints and remaining resource area

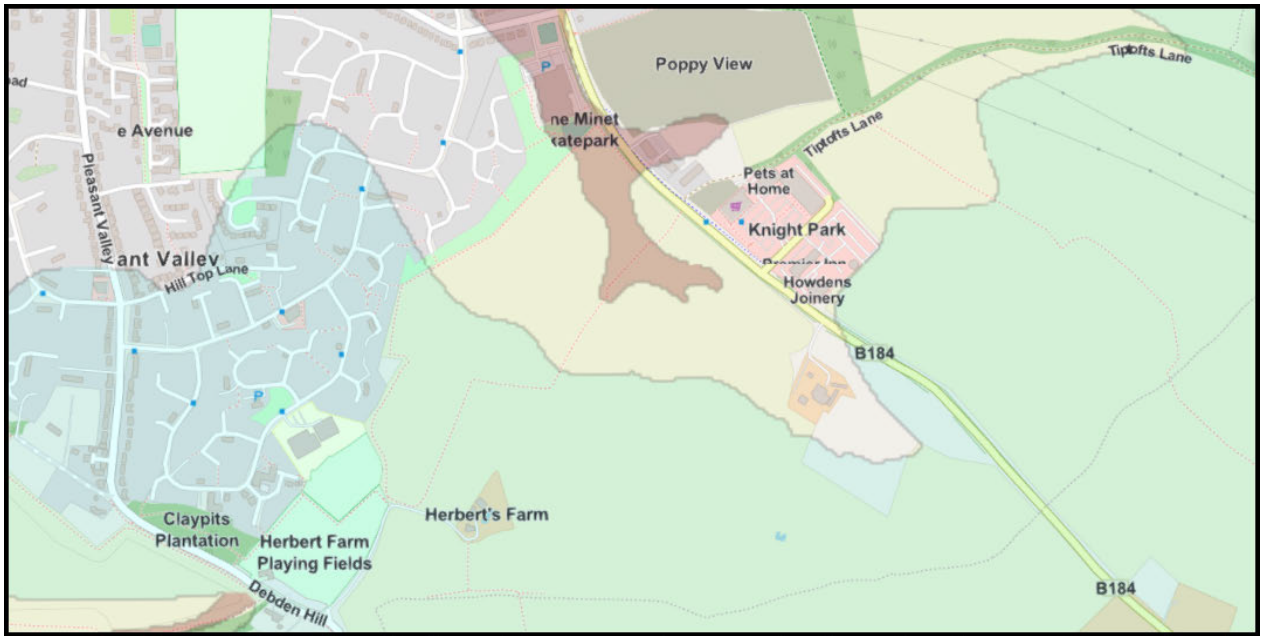


Source: Goog eEarth mage

4. Geological setting and site investigation

4.1. The site geology is shown on the British Geological Survey (BGS) paper 1:50,000 geological map 222 and on the online geology map viewer through the BGS website. These show the land to be underlain by the Chalk that crosses southern England in a wide outcrop stretching from Dorset to the Kent and north Norfolk coasts. Approximately the northern half of the site is shown as occupied by superficial deposits comprised mainly of glacial clays, coloured yellow and brown on the map Figure 4 below.

Figure 4. Site geology



Source: Br t sh Geo og ca Survey map v ewer

4.2. There are no archived borehole logs on the land in the BGS borehole database but there are a number in the locality as shown on Figure 5 below. The boreholes in red closest to the site were drilled a long time ago and record no useful geological logs, however those in blue at the school site to the north do record the presence of Chalk. Many of the logs record the top of the Chalk as being "structureless with some brown staining". Although these site investigation boreholes are all comparatively shallow it is known that the Chalk will be several hundred metres thick.

Figure 5. BGS archive borehole locations

Source: Br t sh Geo og ca Survey onshore database

4.3. Archived boreholes along the Thaxted Road record groundwater levels in the Chalk at around 40 to 50 metres AOD or some 20 to 50 metres below ground level.

4.4. An intrusive site investigation was carried out on the proposal site in October 2022 comprising 9 trial pits excavated to about 3 metres below ground level. The pits were used for drainage infiltration purposes and proved the superficial deposits lying above the Chalk together with the top metre or more of the Chalk. Appendix II presents a location plan of the pits and the logs recorded.

4.5. The results show a primarily clay cover to exist throughout the site varying in thickness from 0.8 metres to over 2.85 metres with an average of over 1.64 metres. In the body of the site the upper metre or so of the Chalk is described as structureless Chalk or as chalk silt. This is a common feature of Chalk when under a superficial layer whereby weathering causes the soft rock to break down into a sticky material commonly known as putty Chalk.

4.6. Only in 3 trial pits close to the road was the top part of the Chalk reasonably competent.

5. Chalk resources

5.1. Chalk is a specific variety of limestone and has a range of uses as a mineral although always in comparatively small quantities. Large volumes of Chalk were quarried historically in England for making cement but this has not widely been the case for some decades since the cessation of the energy intensive “wet process” for preparing cement kiln feedstock. The rock had to be dried and broken into a rubble before being burned in kilns and this process was extremely energy intensive and uneconomic. In recent decades almost all cement is made from crushed limestones that are prepared in a “dry process”.

5.2. Minority uses, in terms of volumes, and subject to high purity with minimal trace elements include agricultural soil conditioners (agricultural lime), pharmaceutical uses, industrial carbonates, and industrial whitening including food additives.

5.3. Chalk is rarely used for construction aggregate purposes owing to its’ low mechanical strength with the exceptions of 2 relatively thin horizons that can yield building stone.

5.4. Nationally the production of Chalk is very modest. The British Geological Survey Directory of Mines and Quarries in 2020 recorded 50 Chalk quarries in the UK but a total production of only a few million Tonnes. Production in 2000 was recorded as 9.21 million Tonnes declining steadily through 7.00 million Tonnes in 2006 to 3.31 million Tonnes in 2014. The majority of this production will be for cement at the few remaining Chalk based cement works. Since 2014 the BGS has not reported Chalk production separately and the numbers are now combined with other specialist limestones. Some tables from this publication are reproduced in Appendix III.

5.5. In Essex there is a single Chalk quarry producing agricultural lime and specifically referred to in paragraphs 3.117 and 3.118 and in Policy S7 of the Essex Minerals Plan. Newport Quarry, some 5.5 kilometres southwest of the proposal site, has been operating since the 1980s and the author understands that planning permission was granted in 2017 to extend the life of the site to 2042. The quarry is in open countryside and on a simple geological view there should be ample opportunities to extend the quarry should it be necessary and environmentally acceptable.

Policy S7 – Provision for industrial minerals states in part:

"The small-scale extraction of chalk will only be supported for agricultural and pharmaceutical uses at Newport Quarry as identified within the Policies Map. Extraction of chalk for other uses, such as aggregate, fill material or for engineering will not be supported".

5.6. Clause 3.117 recognises that:

"There is only limited interest in chalk extraction in the County and there is no national policy requirement to maintain a landbank for this type of material. The Plan does not make any site-specific proposals for this mineral to be extracted".

5.7. Clause 3.118 of the EMLP recognises that Newport Quarry is considered to be sufficient to meet current and future demand whilst acknowledging that new proposals for the small scale extraction of chalk may still be promoted during the plan period. In the author's opinion the potential resource area at the Thaxted Road site is far too small to be considered as a viable chalk extraction even at a very small scale.

5.8. There are a number of Chalk quarries, listed in Appendix III, in adjoining counties and some of these are substantial operations. On a sub-regional basis it is suggested that there is no shortage of supply now or in the foreseeable future.

6. Discussion & Site Constraints

6.1. In determining whether a mineral bearing site is an attractive or economic prospect to a quarry operator a number of factors are taken into account. These factors then determine a site as a "significant resource…." or not. The factors include the physical particulars such as the proven or anticipated geology; site location and access; environmental setting and physical constraints including natural or man-made features; and commercial matters such as market area, magnitude of the resource, life of site, the likelihood of a landowner agreeing to a land transaction, and operating economics.

6.2. This site at Saffron Walden has the benefit of geology proven to a reasonable degree by trial pits as described above and therefore the potential to estimate a mineral resource with some confidence. The determining factors then are very much centred on physical characteristics of the site and its' setting.

6.3. There are however indications of relatively poor quality with the "putty Chalk" at the top of the deposit being sticky and difficult to dry for processing into a powder suitable for use.

6.4. The application of a conventional 100 metre stand-off to properties together with the narrow pinch point in the middle of the site limits any possibility of mineral extraction to the eastern section of the land.

6.5. The surface water drains are important locally for draining the head and flanks of the valley together with their local catchment areas and should not be interrupted by an excavation. Taken together with the gas pipeline running down the centre of the site and the 11,000 volt electricity line inside the boundary of the square field the area theoretically available for excavation is very small indeed.

6.6. There is no realistic opportunity to use chalk in a housing development since the soft material has no proper application as a construction material.

7. Conclusions

7.1. A geological appraisal of this site is supported by an on-site investigation by means of trial pits, local archive borehole information and a reliably mapped Chalk outcrop. There is no doubt that Chalk underlies the site albeit covered by a layer of younger clay based superficial deposits.

7.2. The shape of the site itself, long and thin with a pinch point in the middle, together with constraints imposed by adjacent housing, peripheral 11,000 volt electricity transmission lines, surface water drains and a medium pressure gas main running along the axis of the land, combine to make the concept of an excavation for Chalk mineral wholly impractical.

7.3. Within the constraints any excavation would be very small and therefore yield a very small volume of mineral. In the author's opinion this could not be considered to be a mineral resource of economic importance.

7.4. There are abundant resources of Chalk, both consented and potential, available at the single chalk quarry in Essex together with those in adjoining counties.

D R Wardrop. B.Sc (Hons), C. Geol., C. Eng., MIMMM., FGS.
Principal

23rd December 2022

APPENDIX I

ESSEX COUNTY COUNCIL LETTER OF 13TH DECEMBER 2022

Essex County Council
Minerals & Waste Planning
County Hall
Chelmsford
Essex CM1 1QH

Essex County Council

Your ref UTT/22/3258/PINS
S62A/2022/0014
Our ref:
Date: 13 December 2022

Dear Sir/Madam,

Nature of Response: To address minerals and waste safeguarding implications arising through Application UTT/22/3258/PINS (S62A/2022/0014)

Proposal: Outline application with all matters reserved except for access for up to 170 dwellings, associated landscaping and open space with access from Thaxted Road

Location: Land To The West Of Thaxted Road Saffron Walden Essex

Thank you for your email received 8th December 2022 consulting the Mineral and Waste Planning Authority (MWPA) on the above proposals.

The 'application site' forms the basis for the minerals and waste safeguarding assessment set out below.

This response deals with mineral policy matters and waste policy matters in turn. A spatial representation of the application site and the matters discussed can be found in Appendix One. A list of relevant designations and specific facilities which would potentially be affected are listed, with their most recent planning application reference where relevant, in Appendix Two.

Mineral Matters

Safeguarding Mineral Resources

Part of the application site is located within land which is designated as a Mineral Safeguarding Area (MSA) and therefore the application is subject to Policy S8 of the Essex Minerals Local Plan 2014 (MLP). The MLP can be viewed on the County Council's website via the following link:

https://www.essex.gov.uk/minerals-waste-planning-policy/minerals-local-plan

Policy S8 of the MLP requires that a non-mineral proposal located within an MSA which exceeds defined thresholds must be supported by a Minerals Resource Assessment to establish the existence, or otherwise, of a mineral resource capable of having economic importance. This will ascertain whether

there is an opportunity for the prior extraction of that mineral to avoid the sterilisation of the resource, as required by the National Planning Policy Framework (Paragraph 210). The NPPF requires policies that encourage the prior extraction of mineral where it is practical and environmentally feasible.

At 3.7a, the area of land associated with the proposed development that lies within an MSA for chalk exceeds the 3ha threshold upon which local resource safeguarding provisions are applied for this mineral. Policy S8 of the MLP therefore applies, and this states *"… Proposals which would unnecessarily sterilise mineral resources or conflict with the effective workings of permitted minerals development or Preferred Mineral site allocation shall be opposed."*

Therefore, a Minerals Resource Assessment (MRA*)* is required as part of a planning application to establish the practicality and environmental feasibility of the prior extraction of mineral such that the resource is not sterilised where this can be avoided. If found to be practical and environmentally feasible, prior extraction is expected to take place ahead of sterilisation by non-mineral development.

The relationship between the chalk MSA and the application site is shown in Appendix One.

The scope and level of detail of a Minerals Resource Assessment will be influenced by the specific characteristics of the site's location, its geology, and the nature of the development being applied for. However, a number of key requirements can be identified which are likely to satisfy the MWPA that the practicality and environmental feasibility of prior extraction have been suitably assessed in the MRA. The detail to be provided should be in proportion to the nature of the proposed application. The MWPA welcomes early engagement to clarify the requirements of MRA.

MRA Section	Matters to Cover
Site location, relevant boundaries, timescale for development	Application area in relation to MSA/MCA Description of development including layout & phasing Timescale for development Whether there is any previous relevant site history – this could include previous consideration of site or adjacent land in preparation of Minerals Local Plan, any previous mineral assessments and market appraisals, boreholes, site investigations, technical reports and applications to the MWPA for extraction.
Nature of the existing mineral resource	Type of mineral Existing mineral exploration data (e.g. previous boreholes in area) Results of further intrusive investigation if undertaken

	Extent of mineral – depth & variability Overburden – depth & variability, overburden:mineral ratio. To be expressed as both actual depths and ratio of overburden to deposit, as well as variation across the site. Mineral quality – including silt %/content and how processing may impact on quality. Consideration should give given to the extent to which the material available on site would meet the specifications for construction. An assessment of the amount of material that would be sterilised (whole site area) and could be extracted (following application of any required buffer zones). Estimated economic/market value of resource affected across whole site and that which could be extracted.
Constraints impacting on the practicality of mineral extraction (distinct from those that would arise from the primary development)	Ecology designations, Landscape character, Heritage designations, Proximity to existing dwellings, Highways infrastructure, Proximal waterbodies, Hydrology, Land stability, Restoration requirements, Effect on viability of non-minerals development including through delays and changes to landform and character, Utilities present etc. Constraints should be assessed in light of the fact that construction of the non-minerals development would be taking place e.g. landscape issues are to be presented in light of the final landscape likely to be permanent built development. It is held that mitigation methods employed as part of the construction of the non-minerals development may also facilitate prior extraction at that locality.
Potential opportunities for mineral extraction at location	Ability of site to incorporate temporary mineral processing plant, Proximity to existing mineral sites or processing plant, Context of site and mineral within wider mineral resource area, Proximity to viable transport links for mineral haulage, The potential for indigenous material to be used in the construction of the proposed development, thereby

	reducing/removing the need for import, Potential benefits through mineral restoration e.g. land reclamation, landscape enhancement, Any opportunities for ancillary extraction as part of the primary development of the site such as foundations, footings, landscaping, sustainable drainage systems, Evidence or otherwise of interested operators/local market demand.
Conclusion (as relevant to the findings)	Whether mineral extraction at the site would be practical, based on conclusions of a competent person, Whether prior extraction is practical at the site in the context of the non-mineral development, taking into account the estimated value of the mineral, restoration and the viability of the proposed development, How the MRA has informed the proposed non-mineral development, If prior extraction is not practical, the justification for sterilising the mineral, If prior extraction is practical, how this will be phased as part of, or preceding, the non-mineral development, Whether prior extraction is environmentally feasible, Whether the site has the potential to be worked for mineral in the future.

An MRA is expected to be evidence based and informed by quantified information.

To ensure that a comprehensive assessment of the mineral resource at risk of sterilisation is undertaken, it is recommended that:

- Any questions regarding the scope of an MRA are discussed with the MWPA as early as possible;
- a draft borehole location plan is agreed prior to commencement, and preferably as part of pre-application;
- the borehole depths should be sufficient to prove the depth of the safeguarded deposit;
- borehole analysis must note the depth of the water table;
- a non-stratified sampling technique is applied. An initial spacing of approximately 100m-150m centre to centre should be considered, with additional locations if required to determine the extent of deposits on site; and
- The MRA provides documented evidence confirming any commercial interest in working the resource at risk of

sterilisation based on its quality, quantity, and viability of prior extraction.

The MRA should be prepared using the Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Reserves (PERC) Standard, which was revised and published on 23 May 2013.

Any application, through a MRA or otherwise, is required to be submitted with sufficient information such that the issues raised through Policy S8 of the MLP can be appropriately considered.

Mineral Infrastructure Matters

With regard to Mineral Consultation Areas, Policy S8 of the MLP seeks to ensure that existing and allocated mineral sites and infrastructure are protected from inappropriate neighbouring developments that may prejudice their continuing efficient operation or ability to carry out their allocated function in the future. Policy S8 of the MLP defines Mineral Consultation Areas as extending up to 250m from the boundary of an infrastructure site or allocation for the same.

The application site does **not** pass through a Mineral Consultation Area (MCA) and therefore, a Mineral Infrastructure Impact Assessment (MIIA) would **not** be required as part of a planning application on this site.

Mineral Supply Audit

The MWPA requests a Mineral Supply Audit to aid in demonstrating compliance with the notion of sustainable development, circular economy principles and the application of Policy S4 of the adopted Minerals Local Plan 2014 (MLP) which requires, inter-alia, *' The application of procurement policies which promote sustainable design and construction in proposed development'*.

The MLP further notes that '*All developers have the potential to reduce over-ordering of construction materials and encourage more sustainable construction practices through their own procurement practices.*' A Minerals Supply Audit would feed into, or be considered alongside, a Site Waste Management Plan which accords with the MLP principle of 'Encouraging the re-use and recycling of construction, demolition and excavation wastes on-site' (MLP, Para 3.41) to provide a materials balance for major developments.

There is currently no set scope for a Mineral Supply Audit, but the following framework has been submitted to the authority previously and could be modified to suit the project in question. Some approaches have included the commitment to sustainable procurement practices as well as demonstrating how recycling and re-use targets will contribute to a reduction in primary aggregate demand.

Project Stage		Total Aggregate Anticipated (tonnes (t))	Project aggregate demand					Notes
			Soft Sand Total (t)	Crushed Rock Total (t)	Sharp sand/ gravel total (t)	Secondary /recycled Aggregate total (t)	Other Aggregate not available locally (t)	
Enabling Works	Backfill/Sub base Utilities							
	Concrete Slabs, Foundations etc.							
Demolition	No aggregate demand expected							
Highways	Sub-base							
	Drainage							
	Concrete Slabs, Foundations, structures etc.							

Waste Matters

Safeguarding Waste Infrastructure (if there ARE Waste Infrastructure Matters include this)

The application site passes through a Waste Consultation Area associated with Saffron Walden Recycling Centre as shown in Appendix One. Its location within a Waste Consultation Area means that an application would be subject to Policy 2 of the Essex and Southend-on-Sea Waste Local Plan 2017 (WLP). The WLP can be viewed on the County Council's website via the following link:

https://www.essex.gov.uk/minerals-waste-planning-policy/waste-local-plan

Policy 2 of the WLP seeks to ensure that existing and allocated waste sites and infrastructure are protected from inappropriate neighbouring developments that may prejudice their continuing efficient operation or ability to carry out their allocated function in the future. Policy 2 defines Waste Consultation Areas as extending up to 250m from the boundary of existing or allocated waste infrastructure, unless they are Water Recycling Centres, where the distance increases to 400m.

Due to the proposed project passing through a Waste Consultation Area, a Waste Infrastructure Impact Assessment (WIIA) is required as part of the planning application. In order to satisfy the provisions of Policy 2, the MWPA has designed a generic schedule of information requirements that should be addressed as relevant within the supporting evidence of any application which falls within a Waste Consultation Area. The detail to be provided should be in proportion to the nature of the proposed application.

Waste Infrastructure Assessment Components

Waste Infrastructure Assessment Components	Information requirements & sources
Site location, boundaries and area	• Application site area in relation to safeguarded site(s) • Description of proposed development • Timescale for proposed development
Description of infrastructure potentially affected	• Nature of relevant safeguarded facility • Type of material handled/processed/supplied • Throughput/capacity
Potential sensitivity of proposed development as a result of the operation of existing or allocated safeguarded infrastructure	• Distance of the development from the safeguarded site at its closest point, to include the safeguarded facility and any access routes. • The presence of any existing buildings or other features which naturally screen

	the proposed development from the safeguarded facility • Evidence addressing the ability of vehicle traffic to access, operate within and vacate the safeguarded development in line with extant planning permission. • Impacts on the proposed development in relation to: o Noise o Dust o Odour o Traffic o Visual o Light
Potential impact of proposed development on safeguarded infrastructure/ allocation	• Loss of capacity – none, partial or total • Potential constraint on operation of facility – none, partial or full
Measures to mitigate potential impacts of operation of infrastructure on proposed development	• External and internal design & orientation eg landscaping; living & sleeping areas facing away from facility. • Fabric and features eg acoustic screening & insulation; non-opening windows; active ventilation
Conclusions	• Sensitivity of proposed development to effects of operation of safeguarded infrastructure/facility can be mitigated satisfactorily; or • If loss of site or capacity, or constraint on operation, evidence it is not required or can be re-located or provided elsewhere

A WIIA is expected to be evidence based and informed by quantified information. It is recognised that the requirements of a WIIA may be addressed through other evidence base documents, such as those addressing transport, odour and noise issues. In these instances, it would be acceptable for the WIIA to signpost to the relevant section of complementary evidence supporting the planning application. The MWPA welcomes early engagement to clarify the requirements of WIIA.

Site Waste Management Plan

Paragraph 8 of the NPPF recognises the importance of “using natural resources prudently and minimising waste” to ensure the protection and enhancement of the natural environment and to achieve sustainable development. It also reiterates the need to mitigate and adapt to climate change and move towards a low carbon economy. An efficient and effective circular economy is important to achieving these objectives.

Policy S4 of the Minerals Local Plan (2014) advocates reducing the use of mineral resources through reusing and recycling minerals generated as a result of development/ redevelopment. Not only does this reduce the need for mineral extraction, it also reduces the amount sent to landfill. Clause 4 specifically requires:

"The maximum possible recovery of minerals from construction, demolition and excavation wastes produced at development or redevelopment sites. This will be promoted by on-site re-use/ recycling, or if not environmentally acceptable to do so, through re-use/ recycling at other nearby aggregate recycling facilities in proximity to the site."

It is vitally important that the best use is made of available resources. This is clearly set out in the NPPF and relevant development plan documents. We would therefore recommend that, in lieu of these issues being addressed prior to a decision, conditions are attached to require the applicant to prepare an appropriately detailed waste management strategy through a Site Waste Management Plan.

A SWMP would be expected to:

- present a site wide approach to address the key issues associated with sustainable management of waste, throughout the stages of site clearance, design, construction and operation,
- establish strategic forecasts in relation to expected waste arisings for construction,
- include waste reduction/recycling/diversion targets, and monitor against these,
- advise on how materials are to be managed efficiently and disposed of legally during the construction phase of development, including their segregation and the identification of available capacity across an appropriate study area.

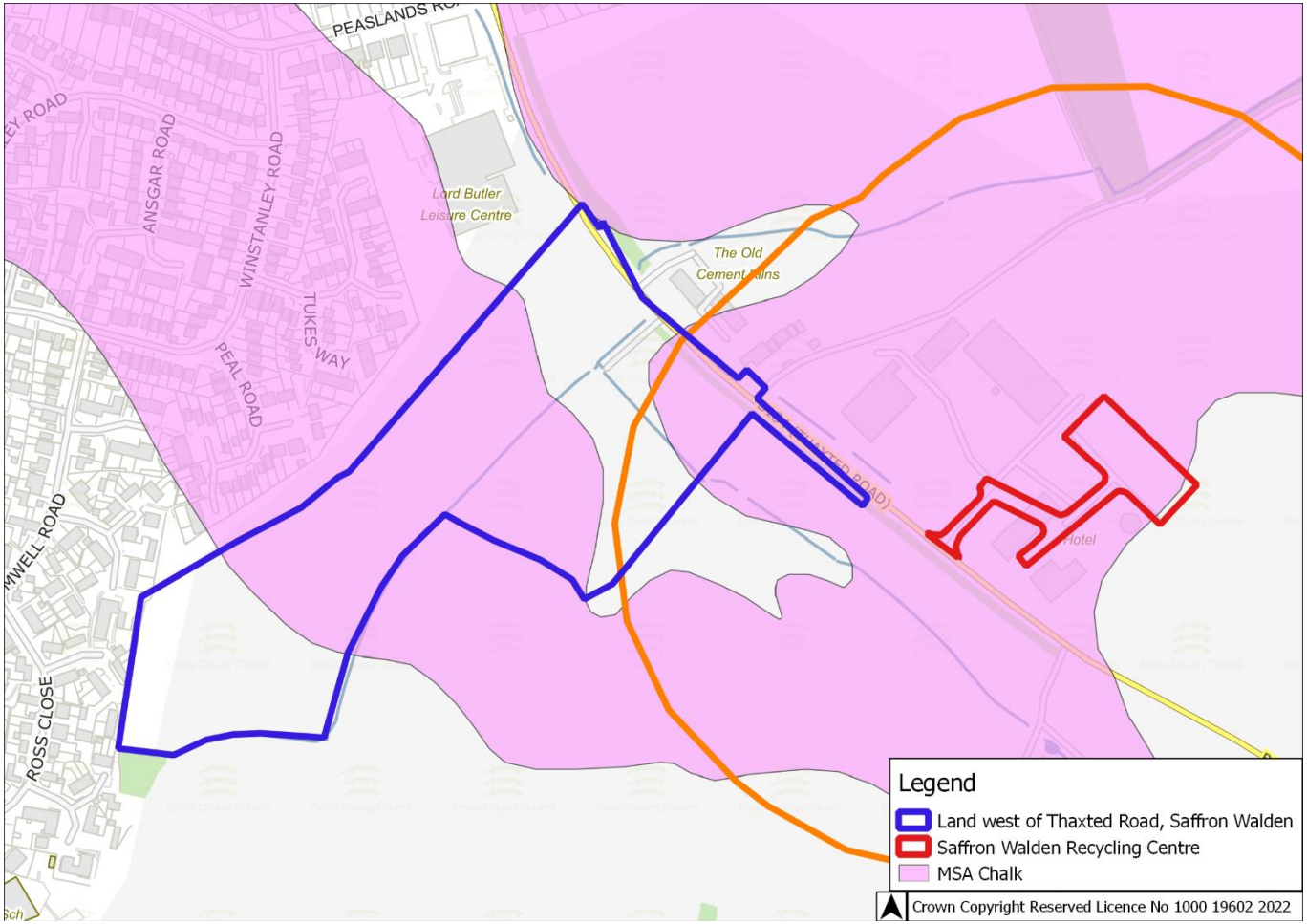
Yours sincerely,

[redacted]

Philip Dash
Principal Planner
Email: [redacted]

Appendix One

Map 1 – Minerals and Waste Safeguarding Screening – Full Extent of Application Site



Appendix Two – Schedule of Safeguarding Designations and Safeguarded Minerals and Waste Infrastructure Relevant to The Application Site

Schedule of mineral infrastructure and designations within the application site

Details of planning applications can be viewed on the ECC website, by accepting the disclaimer and then searching on the planning reference

Site type	Site name	Planning application number	Further Details
Mineral Safeguarding Areas Policy implications set out under 'Mineral Matters – Safeguarding Mineral Resources'. Subject to MSA designation – Policy 8 of the Essex Minerals Local Plan 2014 Spatial extent shown in Appendix One.	Chalk	N/A	

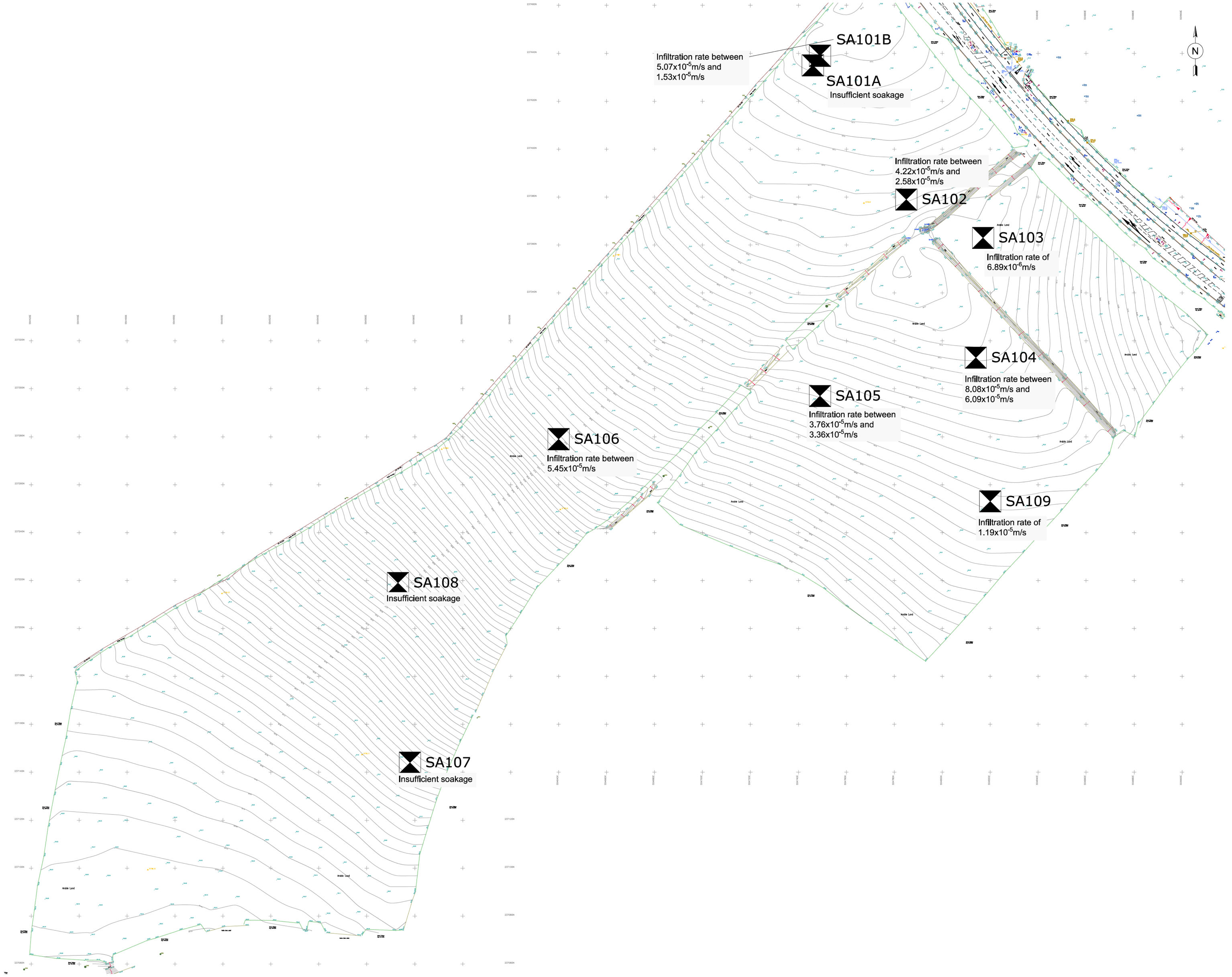
Schedule of waste infrastructure and designations within the application site

Site type	Site name	Planning application number	Further Details
Waste management infrastructure (subject to WCA designations –	Saffron Walden Civic Amenity and Recycling	CC/UTT/07/94	

Policy 2 of Essex and Southend-on-Sea Waste Local Plan)			

APPENDIX II

TRIAL PIT LOGS AND LOCATION PLAN



DO NOT SCALE

Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below:

Status	Date	Description	Dwn	Eng	Chkd	Ver
S2-P01	19.10.22	Issued for Information	MG	MG	AC	AC

Key

Denotes location of Rolton Group Soakaway pits in October 2022

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Project:
Kier Ventures Ltd
Land off Thaxted Road,
Saffron Walden

Drawing Title:
Exploratory Hole
Location Layout

RGL Project Ref: 22-0222
Scale@A1: NTS
Scale@A3: NTS
Specification(s):

Drawing Number:
22-0222-RGL-ZZ-XX-DR-G-900-0001
Project-Originator-Zone-Level-Type-Role-Classification-Number

Issue Purpose: INFORMATION
Status: S2-P01
Suitability-Revision

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Trial Pit Log

Trialpit No
SA101A
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554746.00 - 237435.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): 2.9 × 0.8 Depth 3.02	Scale 1:30
Client:	Kier Ventures Ltd		Logged MG

Date 10/10/2022

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				2.30			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				3.02			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
							End of pit at 3 02 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA101B
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554749.00 - 237439.00 Level:	Date 10/10/2022
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire		Dimensions (m): 1.9 × 0.7 Depth 0.97	Scale 1:30
Client:	Kier Ventures Ltd			Logged MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.45			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				0.97			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
							End of pit at 0 97 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA102
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554785.00 - 237379.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 2.92	2.5 × 0.7
Client:	Kier Ventures Ltd		

Date: 10/10/2022
Scale: 1:30
Logged: MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
							Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				1.50			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				2.92			End of pit at 2 92 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA103
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554814.00 - 237313.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 3.02	2.5 × 0.7
Client:	Kier Ventures Ltd		

Date: 10/10/2022
Scale: 1:30
Logged: MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				0.45			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				1.15			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				2.60			Structureless CHALK composed of sandy slightly gravelly clayey SILT with occasional cobbles. Gravel and cobbles are very weak low density chalk and flint chalk gravel is white and clean when broken. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				3.02			End of pit at 3.02 m

1 2 3 4 5 6

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA104
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554817.00 - 237363.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 3.26	2.4 × 0.7
Client:	Kier Ventures Ltd		

Date: 11/10/2022
Scale: 1:30
Logged: MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				1.00			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				2.20			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				2.80			Structureless CHALK composed of sandy slightly gravelly clayey SILT with occasional cobbles. Gravel and cobbles are very weak low density chalk and flint chalk gravel is white and clean when broken. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				3.26			Structureless CHALK composed of slightly sandy silty subangular to rounded mainly medium and coarse GRAVEL with many rounded cobbles. Gravel is very weak low density white with frequent black specks. Cobbles are weak medium density white with occasional black specks. Matrix is uncompact white. (LEWES NODULAR CHALK FORMATION, GRADE Dc)
							End of pit at 3.26 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA105
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554749.00 - 237297.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 3.45	3.45 / 0.7
Client:	Kier Ventures Ltd		

Date: 11/10/2022
Scale: 1:30
Logged: MG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				1.10			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				2.45			Firm light brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				3.20			Structureless CHALK composed of sandy slightly gravelly clayey SILT with occasional cobbles. Gravel and cobbles are very weak low density chalk and flint chalk gravel is white and clean when broken. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				3.45			Structureless CHALK composed of slightly sandy silty subangular to rounded mainly medium and coarse GRAVEL with many rounded cobbles. Gravel is very weak low density white with frequent black specks. Cobbles are weak medium density white with occasional black specks. Matrix is uncompact white. (LEWES NODULAR CHALK FORMATION, GRADE Dc) End of pit at 3.45 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA106
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554640.00 - 237279.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): 2.7 × 0.7 Depth 3.21	Date 12/10/2022 Scale 1:30
Client:	Kier Ventures Ltd		Logged MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				0.80			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				1.90			Structureless CHALK composed of sandy slightly gravelly clayey SILT with occasional cobbles. Gravel and cobbles are very weak low density chalk and flint chalk gravel is white and clean when broken. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				3.21			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm) End of pit at 3 21 m

1 2 3 4 5 6

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA107
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554578.00 - 237144.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): 2.8 × 0.7 Depth 2.85	Scale 1:30
Client:	Kier Ventures Ltd		Logged MG

Date 12/10/2022

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				0.90			Stiff brown slightly sandy gravelly silty CLAY. Gravel of fine to medium well rounded flint, quartzite and chalk. Occasional 100mm lenses of orange brown sand throughout. (LOWESTOFT FORMATION)
				2.00			Stiff bluish grey mottled greyish brown slightly sandy gravelly silty CLAY. Gravel of fine to medium well rounded flint, quartzite and sandstone. (LOWESTOFT FORMATION)
				2.85			Very stiff bluish grey mottled greyish brown slightly sandy gravelly silty CLAY. Gravel of fine to medium well rounded flint, quartzite and sandstone. (LOWESTOFT FORMATION)
							End of pit at 2.85 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA108
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554573.00 - 237219.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 2.58	2.58 / 0.7
Client:	Kier Ventures Ltd		

Date: 12/10/2022
Scale: 1:30
Logged: MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				1.10			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				2.58			Structureless CHALK composed of sandy slightly gravelly clayey SILT with occasional cobbles. Gravel and cobbles are very weak low density chalk and flint chalk gravel is white and clean when broken. (LEWIS NODULAR CHALK FORMATION, GRADE Dm) End of pit at 2 58 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

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Trial Pit Log

Trialpit No
SA109
Sheet 1 of 1

Project Name:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Project No. 22-0222	Co-ords: 554820.00 - 237253.00 Level:
Location:	Land off Thaxted Road, Saffron Walden, Cambridgeshire	Dimensions (m): Depth 2.94	2.3 × 0.7
Client:	Kier Ventures Ltd		

Date: 12/10/2022
Scale: 1:30
Logged: MG

Water Str ke	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							[Loose] greyish brown slightly gravelly clayey organic SAND. Gravel of angular to rounded flint, quartzite, brick and chalk. (TOPSOIL)
				0.40			Firm brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				1.00			Firm light brown sandy slightly gravelly CLAY. Gravel of angular to rounded flint, quartzite and chalk. (HEAD)
				1.60			Structureless CHALK composed of gravelly slightly sandy SILT with occasional cobbles of angular flint. Gravel is very weak low density chalk with frequent brown staining and black speckling to faces, clean white when broken. Matrix is uncompact brown mottled white. (LEWIS NODULAR CHALK FORMATION, GRADE Dm)
				2.00			Structureless CHALK composed of slightly sandy silty subangular to rounded mainly medium and coarse GRAVEL with many rounded cobbles. Gravel is very weak low density white with frequent black specks. Cobbles are weak medium density white with occasional black specks. Matrix is uncompact white. (LEWES NODULAR CHALK FORMATION, GRADE Dc)
				2.94			End of pit at 2 94 m

Remarks: No groundwater encountered.

Stability: Sides were stable for short period the pit was open.

APPENDIX III

EXTRACTS FROM BGS DIRECTORIES OF MINES AND QUARRIES

Table 2 *United Kingdom production of minerals 2012–2018 (thousand tonnes).*

Thousand tonnes

Mineral	2012	2013	2014	2015	2016	2017	2018
Coal:							
Deep-mined	6,153	4,089	3,685	2,784	22	20	25
Opencast	10,134	8,584	7,962	5,814	4,156	3,021	2,556
Other (a)	680	95	—	—	—	—	—
Natural gas and oil:							
Methane (oil equivalent)							
Colliery	52	52	34	30	38	35	33
Onshore	15	10	38	183	179	184	217
Offshore	38,850	35,268	35,690	38,633	39,659	39,797	38,461
Crude oil							
Onshore	870	1,003	1,014	962	966	836	845
Offshore	41,182	37,453	36,461	41,864	43,339	41,344	46,299
Condensates and other (b)							
Onshore	13	20	19	18	17	14	14
Offshore	2,495	2,170	2,435	2,444	3,122	3,442	3,274
Non-ferrous ores (metal content):							
Tin	—	—	—	—	0.2	0.3	0.2
Tungsten	—	—	—	0.2	0.9	1.4	1.2
Lead (e)	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Gold (kg)	102	42	—	—	(d) 6	—	—
Silver (kg)	230	82	—	—	(d) 14	—	—
Clay and shale (c)	5,497	6,464	6,806	4,552	4,694	5,544	4,606
Chalk (c)	3,473	3,528	3,312				
Igneous rock (f) (g)	(l) 37,300	(l) 37,700	(l) 41,500				
Limestone (excluding dolomite)	(l) 52,300	(l) 54,400	(l) 64,200	(l) (m) 119,401	(m) 125,301	(l) (m) 125,739	(l) (m) 128,600
Dolomite (excluding limestone)	4,896	3,432	3,730				
Sandstone	(l) 10,700	11,217	13,614				
Slate (h)	701	885	868	(e) 760	(e) 780	(e) 820	(e) 820
Sand and gravel:							
Land	41,516	43,379	46,832	51,053	51,231	50,147	(l) 51,500
Marine (i)	14,840	14,577	14,327	15,390	16,844	17,402	17,817
Ball clay (sales) (e)	748	740	733	740	753	850	867
Barytes	30	30	44	50	56	55	(e) 55
China clay (sales) (j) (e)	1,150	1,110	1,090	1,014	940	970	996
Fireclay (c)	96	105	129	...	...	...	...
Fluorspar (e)	—	16	25	17	12	11	11
Gypsum (natural) (e)	800	700	1,100	1,800	1,600	1,300	1,400
Peat (000 m^3)	568	1,254	795	...	...	...	...
Potash (k)	(e) 900	(e) 540	576	594	432	216	210
Polyhalite	—	—	—	200	200	500	400
Salt	6,460	6,930	4,690	(e) 4,700	(e) 4,700	(e) 4,700	(e) 4,700
Silica sand	3,888	3,961	3,948	3,822	4,251	4,490	4,863
Talc	4	3	5	5	3	3	2

(a) Slurry etc. recovered from dumps, ponds, rivers etc.
(b) Including ethane, propane and butane, in addition to condensates.
(c) Excluding a small production in Northern Ireland.
(d) Production from metalurgical testwork.
(e) BGS estimate.
(f) Excluding a small production of granite in Northern Ireland.
(g) In addition, the following amounts of igneous rock were produced in Guernsey (thousand tonnes): 2012: 169; 2013: 149; 2014: 117; 2015: 116; 2016: 88; 2017: 105; 2018: 122 and Jersey: 2012: 239; 2013: 176; 2014: 243; 2015: 275; 2016: 258; 2017: 247; 2018: 265.
(h) Slate figures include waste used for constructional fill and powder and granules used in industry.
(i) Including marine-dredged landings at foreign ports (exports).
(j) Dry weight.
(k) Marketable product (KCl).
(l) Including an estimate for production in Northern Ireland.
(m) Excluding building stone.

Sources: Mineral Products Association; Office for National Statistics; Department of Business, Energy & Industrial Strategy; Department for Economy (Northern Ireland); Crown Estate Commissioners; and company data.

Symbols:

- Nil.
... Figures not available.

Table 2 United Kingdom Production of Minerals 2006–2013 (thousand tonnes).

Mineral	2006	2007	2008	2009	2010	2011	2012	2013 (Estimated)
Coal:								
Deep-mined	9,444	7,674	8,096	7,520	7,390	7,312	6,153	4,089
Opencast	8,635	8,866	9,509	9,854	10,426	10,580	10,134	8,584
Other (a)	438	467	449	500	600	735	760	167
Natural gas and oil:								
Methane (oil equivalent)								
Colliery	65	62	63	67	63	58	61	60
Onshore	91	105	92	89	88	27	15	
Offshore	79,856	71,957	69,525	59,581	57,036	45,204	38,858	36,500
Crude oil								
Onshore	1,379	1,271	1,248	1,181	941	678	870	38,456
Offshore	68,287	69,086	64,249	61,639	57,106	47,893	41,182	
Condensates and other (c)								
Onshore	41	38	33	32	17	0	13	2,190
Offshore	6,872	6,180	6,135	5,346	4,898	3,401	2,495	
Iron ore	0.4	0.3	0.1	—	—	—	—	—
Non-ferrous ores (metal content):								
Tin	—	—	—	—	—	—	—	—
Lead (h)	0.4	0.3	0.3	0.2	0.3	0.3	0.1	0.0
Gold (kg)	…	88	163	187	177	202	102	42
Silver (kg)	—	212	398	514	506	531	230	82
Chalk (e)	7,376	7,566	5,874	4,047	3,626	3,996	3,473	3,500
Clay and shale (e)	10,432	10,104	8,459	5,310	5,934	6,154	5,497	5,600
Igneous rock (j) (k)	53,954	58,909	53,490	44,618	44,876	(l) 44,400	(l) 40,200	40,400
Limestone (excluding dolomite)	80,228	83,491	74,145	60,111	56,985	(l) 58,100	(l) 54,800	60,300
Dolomite (excluding limestone)	12,101	7,622	5,509	3,164	4,540	4,490	4,896	
Sand and gravel:								
Land	71,418	72,810	66,640	50,973	47,167	(l) 45,800	(l) 41,800	58,100
Marine (i)	20,689	20,426	18,833	15,253	14,533	17,287	14,840	
Sandstone	18,038	16,806	12,255	12,335	11,556	(l) 12,300	(l) 11,500	11,800
Slate (g)	865	1,428	1,058	683	695	763	701	710
Ball clay (sales)	1,015	1,022	1,020	727	(h) 900	(h) 930	(h) 748	740
Barytes	48	53	43	36	34	31	30	30
Chert and flint	2	1	1	1	…	…	…	…
China clay (sales) (d)	1,671	1,355	1,060	(h) 1,140	(h) 1,290	(h) 1,150	1,110	
China stone	1	1	0.5	0.0	0.0	0.0	0.0	0.0
Fireclay (e)	228	338	180	129	110	162	96	100
Fluorspar (h)	50	45	37	19	26	—	—	30
Gypsum (natural) (h)	1,700	1,200	1,200	1,200	1,200	1,200	1,200	
Lignite	…	…	…	…	…	…	…	…
Peat (000 m^3)	1,593	885	760	887	1,004	825	568	600
Potash (b)	716	712	673	(h) 700	(h) 700	(h) 770	(h)900	1,000
Salt	5,499	5,600	5,565	6,166	6,666	6,060	6,152	6,000
Silica sand	5,174	4,909	4,777	3,755	4,070	3,969	3,888	4,000
Talc	4	3	2	3	3	4	4	4

(a) Slurry etc. recovered from dumps, ponds, rivers etc.
(b) Marketable product (KCl).
(c) Including ethane, propane and butane, in addition to condensates
(d) Dry weight.
(e) Excluding a small production in Northern Ireland.
(f) BGS estimates based on data from producing companies.
(g) Slate figures include waste used for constructional fill and powder and granules used in industry.
(h) BGS estimate.
(i) Including marine-dredged landings at foreign ports (exports).
(j) Excluding a small production of granite in Northern Ireland.
(k) In addition, the following amounts of igneous rock were produced in Guernsey (thousand tonnes): 2006: 136; 2007: 160; 2008: 139; 2009: 120; 2010: 116; 2011: 156; 2012: 169 and Jersey: 2007: 295; 2008: 325; 2009: 249; 2010: 238; 2011: 220; 2012: 239.
(l) Contains estimate related to Northern Ireland production

Sources: Office for National Statistics, Department of Business, Innovation and Skills, Dept. of Enterprise, Trade & Investment (Northern Ireland), Crown Estate Commissioners (marine sand and gravel produced for export), and company data.

Table 2 United Kingdom production of minerals 2000–2006 (thousand tonnes).

United Kingdom production of minerals 2000–2006

Mineral	2000	2001	2002	2003	2004	2005	2006 (Estimated)
Coal:							
Deep mined	17 187	17 347	16 391	15 633	12 542	9 563	**9 439**
Opencast	13 412	14 166	13 148	12 126	11 993	10 445	**8 635**
Other (a)	598	417	450	520	561	490	**514**
Natural gas and oil:							
Methane (oil equivalent)							
Colliery	42	63	60	79	70	65	
Onshore	205	193	163	164	116	111	
Offshore	108 150	105 614	103 423	102 684	95 821	87 406	**79 947**
Crude oil							
Onshore	3 247	2 921	2 673	2 198	1 941	1 648	
Offshore	114 433	105 465	104 757	95 637	85 575	75 473	**69 665**
Condensates and other (c)							
Onshore	146	139	115	89	66	49	
Offshore	8 217	8 153	8 399	8 149	7 792	7 494	**6 913**
Iron ore	1	0.5	0.4	(h) 0.5	(h) 0.5	0.4	**0.3**
Non ferrous ores (metal content):							
Tin							
Lead	(h) 1.0	(h) 0.8	(h) 0.7	(h) 0.7	(h) 0.5	(h) 0.5	**(h) 0.5**
Zinc (fn content of mixed concentrate)							
Gold (kg)	…	…	…	…	…	…	**…**
Chalk (e)	9 213	8 205	8 587	8 066	7 997	7 105	**7 000**
Clay and shale (e)	10 838	10 426	10 306	10 680	11 164	10 898	**10 000**
Igneous rock (j) (k)	54 113	51 501	51 225	51 356	53 037	53 104	
Limestone (excluding dolomite)	84 348	88 238	80 688	78 935	81 641	77 596	
Dolomite (excluding limestone)	13 069	14 314	12 946	12 167	12 226	11 514	**90 000**
Sand and gravel:							
Land	79 950	80 793	75 401	72 984	78 145	75 171	
Marine (i)	21 671	20 604	19 023	18 227	19 188	19 495	**93 000**
Sandstone	14 900	19 967	18 362	18 259	18 844	18 685	**19 000**
Slate (g)	479	551	742	832	901	928	**900**
Ball clay (sales)	1 069	999	921	885	965	1 011	**1 015**
Barytes	54	(h) 66	(h) 59	(h) 57	61	62	**47**
Calcspar	…	12	(h) 10				
Chert and flint	…	2	2	…	2	2	**2**
China clay (sales) (d)	2 376	2 204	2 163	2 097	1 945	1 911	**1 762**
China stone	4	3	2	3	2	2	**1**
Fireclay (e)	595	459	491	528	402	395	**400**
Fluorspar (h)	36	50	53	56	50	61	**60**
Fuller's earth (sales) (d) (f)	66	52	44	34	28	6	
Gypsum (natural)	(h) 1 500	(h) 1 700	(h) 1 700	(h) 1 700	1 686	(h) 1 700	**1 700**
Lignite	…	…	…	…	…	…	**…**
Peat (000 m^3)	1 626	1 814	973	2 008	1 262	1 505	**1 500**
Potash (b)	966	882	900	1 040	912	732	**716**
Rock salt (h)	1 700	1 900	1 500	1 700	2 000	2 000	**2 000**
Salt from brine (h)	1 100	1 100	1 000	1 000	1 000	1 000	**1 000**
Salt in brine (h) (l)	3 000	3 000	3 200	3 200	2 800	2 800	**2 800**
Silica sand	4 095	3 848	3 833	4 073	5 011	4 146	**4 000**
Talc	5	5	6	6	4	6	**4**

(a) Slurry etc. recovered from dumps, ponds, rivers etc.
(b) Marketable product (KCl).
(c) Including ethane, propane and butane, in addition to condensates.
(d) Dry weight.
(e) Excluding a small production in Northern Ireland.
(f) BGS estimates based on data from producing companies.
(g) Slate figures include waste used for constructional fill and powder and granules used in industry.
(h) BGS estimate.
(i) Including marine-dredged landings at foreign ports (exports).
(j) Excluding a small production of granite in Northern Ireland.
(k) In addition, the following amounts of igneous rock were produced in Guernsey (thousand tonnes): 2000: 130; 2001: 134; 2002: 138; 2003: 142, 2004: 149; 2005: 129; and Jersey: 2000: 310; 2001: 365; 2002: 370; 2003: 290; 2004: 310; 2005: 305.
(l) Used for purposes other than salt making.

Sources: Office for National Statistics, Department of Business, Enterprise and Regulatory Reform (formerly Department of Trade and Industry), Dept. of Enterprise, Trade & Investment (Northern Ireland),Crown Estate Commissioners (marine sand and gravel produced for export),and company data.

Steeple Morden Quarry (Plantation Quarry)
TL 298 402 Royston
Omya UK Ltd.
Chalk, Cretaceous, Holywell Nodular Chalk Formation, White Chalk Subgroup (Middle Chalk)
Chalk whiting
Industrial carbonate

Steeple Morden Quarry (Station Road Quarry)
TL 304 391 Steeple Morden
Omya UK Ltd.
Chalk, Cretaceous, Holywell Nodular Chalk Formation, White Chalk Subgroup (Middle Chalk)
Chalk whiting
Industrial carbonate

Central Bedfordshire Council

Kensworth Quarry (Valley Lime Works)
TL 023 197 Dunstable
CEMEX UK Cement
Chalk, Cretaceous, White Chalk Subgroup (Middle Chalk)
Cement manufacture

Lower End Quarry (Totternhoe Lime Works)
SP 980 222 Dunstable
H G Clarke & Sons, Stone Masons
Chalk, Cretaceous, Totternhoe Stone Member, Zig Zag Chalk Formation, Grey Chalk Subgroup
Building stone

Essex County Council

Newport Quarry (Chalk Farm)
TL 526 331 Newport
Needham Chalks Ltd.
Chalk, Cretaceous, White Chalk Subgroup
Agricultural lime

Hertfordshire County Council

Bedwell Quarry (Bedwell Park)
TL 283 089 Little Berkhampsted
Bedwellbury Ltd.
Chalk, Cretaceous, White Chalk Subgroup
Agricultural lime
Constructional fill

Norfolk County Council

Caistor Quarry
TG 241 048 Caistor St Edmund
Needham Chalks Ltd.
Chalk, flint-bearing, Cretaceous, White Chalk Subgroup
Agricultural lime

Castle Acre Quarry
TF 835 149 Swaffham
Needham Chalks Ltd.
Chalk, flint-bearing, Cretaceous, White Chalk Subgroup (Upper Chalk)
Agricultural lime

Hillington Quarry
TF 724 244 King's Lynn
West Norfolk Lime Ltd.
Chalk, Cretaceous, Grey Chalk Subgroup (Lower Chalk)
Crushed rock aggregate
Agricultural lime
Building stone

Suffolk County Council

Barton Mills Quarry (Chalk Hill)
TL 711 719 Tuddenham
Needham Chalks Ltd.
Chalk, Cretaceous, White Chalk Subgroup (Middle Chalk)
Industrial use
Agricultural lime

East Midlands

Lincolnshire County Council

South Thoresby Quarry
TF 406 773 Alford
GBM Waste Management
Chalk, Cretaceous, Ferriby Chalk Formation, Grey Chalk Subgroup
Crushed rock aggregate
Industrial carbonate
Agricultural lime

Welton le Marsh Quarry (Highfield Quarry)
TF 453 689 Welton Le Marsh
Welton Aggregates Ltd.
Chalk, Cretaceous, Ferriby Chalk Formation, Grey Chalk Subgroup
Crushed rock aggregate

Welton le Marsh Quarry Extension (Highfield Quarry)
TF 452 691 Welton Le Marsh
Welton Aggregates Ltd.
Chalk, Cretaceous, Ferriby Chalk Formation, Grey Chalk Subgroup
Crushed rock aggregate

South East

Buckinghamshire County Council

Pitstone Quarry (No. 2 Quarry)
SP 946 144 Pitstone
Clark Contracting Ltd
Chalk, Cretaceous, White Chalk Subgroup
Agricultural lime
Chalk fill

Hampshire County Council

Manor Farm Chalk Pit (Monk Sherborne)
SU 608 555 Monk Sherborne
G B Foot Ltd.
Chalk, flint-bearing, Cretaceous, Seaford Chalk Formation, White Chalk Subgroup
Agricultural screened chalk

Somborne Lime Quarry (Lower Brook)
SU 338 273 Kings Somborne
Somborne Chalk Quarry
Chalk, Cretaceous, White Chalk Subgroup (Upper Chalk)
Agricultural lime

Isle of Wight Council

Cheverton Chalk Quarry
SZ 450 842 Shorwell
Island Lime & Chalk Ltd.
Chalk, Cretaceous, White Chalk Subgroup
As dug aggregate
Crushed rock aggregate
Agricultural lime

Duxmore Chalk Pit
SZ 550 875 Mersley Down
Reynolds & Read Ltd.
Chalk, Cretaceous, White Chalk Subgroup
As dug aggregate
Screened Chalk
Agricultural lime