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Environmental Impact Assessment Scoping Report

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September 2026





AQUA TERRA | CONSULTING

West Oxfordshire Energy Park: Preliminary Mineral Resource Statement

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West Oxfordshire Energy Park: Preliminary Mineral Resource Statement

Client

LDA Design Consulting Ltd,
17 Minster Precincts,
Peterborough,
Cambridgeshire,
PE1 1XX

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- Appendix B: Historical mapping

1. Introduction

1.1. Instruction

Aqua Terra Consultants Ltd (Aqua Terra) was instructed by LDA Design Consulting Ltd (the Client) on behalf of Low Carbon to provide a desk based preliminary mineral assessment statement for a parcel of land at Langford, Oxfordshire (the Site). Instruction to proceed in accordance Aqua Terra was confirmed by sub-contractor letter of engagement ref: 10403/RP/KN dated 16th July 2026.

1.2. Brief

The Client is preparing an application for a Development Consent Order (DCO) for the proposed West Oxfordshire Energy Park at the Site which is deemed a Nationally Significant Infrastructure Project (NSIP).

The proposed development is understood to include solar photovoltaic arrays, a battery energy storage system (BESS), substation, cable routes, temporary compounds and points of access.

Aqua Terra has been instructed to provide a preliminary mineral resource statement to support the proposed development of the Site through the DCO process.

1.3. Understanding

The Site lies within a Mineral Safeguarding Area (MSA), therefore, there is a requirement to submit a Mineral Resource Assessment (MRA) to confirm whether the extraction of the mineral is appropriate, environmentally feasible and/or practicable; or if prior extraction is not possible whether there is an overriding need for the development.

1.4. Scope

This report presents records of desk study research, which is in-turn used to present a preliminary MRA. The MRA seeks to satisfy Policy M8: Safeguarding Mineral Resources of the Oxfordshire Minerals and Waste Local Plan, September 2017.

1.5. Limitations

This report is written strictly for the benefit of the Client and bound by the conditions presented in Appendix A.

2. Policy Review

2.1. National Planning Policy

The National Planning Policy Framework (NPPF) summarises the Government's planning policies for England and how these are expected to be applied. Of particular relevance is Section 17 which considers 'Facilitating the sustainable use of minerals'.

It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation. Paragraph 223 states that planning policies should:

- a) provide for the extraction of mineral resources of local and national importance;
- c) safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked);
- d) set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development to take place;

2.2. Local Planning Policy

2.2.1. Oxfordshire Minerals and Waste Local Plan

The Site is covered by the Oxfordshire Minerals and Waste Local Plan, Part 1 – Core Strategy (Adopted September 2017) which sets out the planning strategies and policies for development associated with mineral supply and waste management until 2031.

Four mineral resources (sharp sand and gravel, soft sand, limestone and fuller's earth) have been identified as being economically important within the district and as such MSAs have been defined for each resource. There is no presumption that the minerals within the MSAs will be worked, but rather it is a tool to protect the resource from potential sterilisation from non-mineral development and indicates where Policy M8 will apply. Policy M8 is as follows:

Policy M8: Safeguarding mineral resources

Mineral resources in the Mineral Safeguarding Areas shown on the Policies Map are safeguarded for possible future use. Development that would prevent or otherwise hinder the possible future working of the mineral will not be permitted unless it can be shown that:

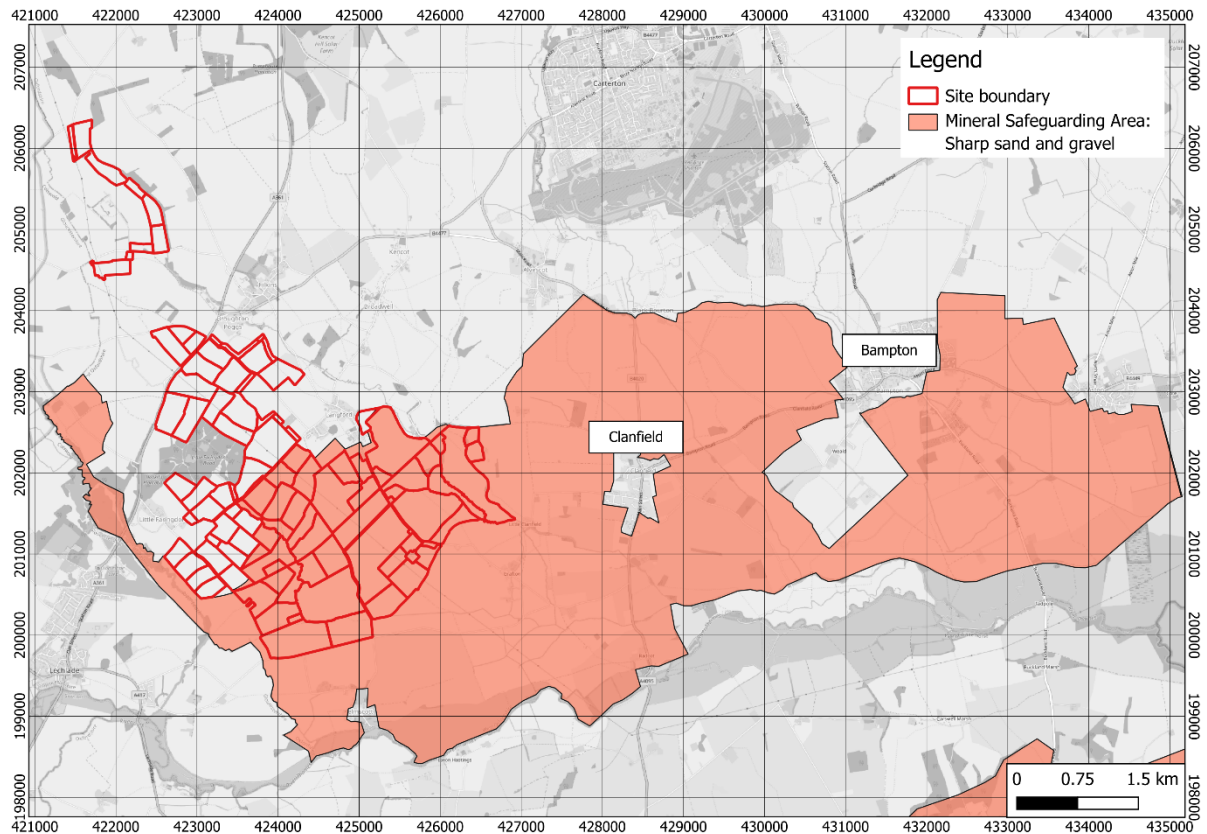
- (i) The site has been allocated for development in an adopted local plan or neighbourhood plan; or,
- (ii) The need for the development outweighs the economic and sustainability considerations relating to the mineral resource; or,
- (iii) The mineral will be extracted prior to the development taking place

The MSA for sharp sand and gravel resources, within which the Site lies (see Figure 2-1), is defined as encompassing sharp sand and gravel resources of significance in the main river valleys, in particular including the strategic resource areas identified in policy M3.

Policy M3 states the principal locations for working aggregate minerals will be within the strategic resource areas, presented in the plans policy map. The Local Mineral and Waste Plan states that the large area of sharp sand and gravel resource within the part of the Thames Valley to the west of the Lower Windrush Valley, around Bampton and Clanfield are not included within the strategic resource

areas in policy M3, due to distance from areas of demand, both in direct distance and due to the relatively long routes that using the advisory lorry route network and avoiding unsuitable bridges and environmentally sensitive areas. Mineral resource demand can be met from the designated strategic resource areas within the plan period, and the local plan states “provision should not be made from the areas around Bampton and Clanfield”, which is understood to include the Site area, given it does not fall within a strategic resource area.

Figure 2-1 Oxfordshire Minerals and Waste Mineral Safeguarding Areas on Site



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3. Geo-environmental setting

The following section collates and presents available information pertinent to the Site and its local environs.

3.1. Site History

A review of historical Ordnance Survey (OS) mapping of the Site has been undertaken with a focus on potential mineral workings. The historical mapping is provided in Appendix B and a full review of the historical maps is provided in the Phase 1 Desk Study (ref: P25099_R1). OS mapping aligns with records of mines and quarries summarised in Table 3-2, with two on Site quarries noted. The gravel pit at Lower Farm is first shown in mapping from 1876 and the quarry at Broughtondowns Plantation is first shown labelled as 'old' on 1921 mapping. By 1971-1981, neither location is shown in OS mapping.

3.2. Geology

A review of British Geological Survey (BGS) 1:50,000 scale mapping indicates the geological sequence underlying the Site is as follows:

- Superficial geology (see Figure 3-1): The majority of the larger south eastern land parcel is underlain by the Summertown-Radley Sand and Gravel Member.

The Northmoor Sand and Gravel Member is present in the north, east and south of the land parcel and small outcrops of the Wolvercote Sand and Gravel Member are present at the west of the land parcel.

Alluvium is present in the area surrounding Broadwell Brook and Langford Brook.

There are several small outcrops of Head Deposits in the area east of Little Faringdon Woods and at the south west boundary of Site.

Superficial Deposits are largely absent across the western most extent of the south eastern land parcel and the entirety of the northwestern land parcel.

- Solid geology (see Figure 3-2): The Oxford Clay Formation (mudstone) underlies the majority of the larger south eastern land parcel.

Northwards of this, lies west-east trending bands of Kellaways Sand Member (interbedded sandstone and siltstone), Kellaways Clay Member (mudstone) and the Cornbrash Formation (limestone).

The southern most section of the smaller north western land parcel is also underlain by the Cornbrash Formation. The majority of this parcel is underlain by the Forest Marble Formation (mudstone). Small sections at the west and east of the parcel are underlain by limestone belonging to the Forest Marble Formation and White Limestone Formation respectively.

3.2.1. Mineral Resources

An industrial mineral assessment unit report was undertaken by the Natural Environment Research Council (NERC) in 1976, which focuses on sand and gravel resources between Lechlade and Standlake¹. The report divides mineral deposits into resource blocks with the on Site MSA found within Resource Block A.

¹ Robson, P. (1976). The sand and gravel resources of the Thames Valley, the country between Lechlade and Standlake: Description of 1:25,000 resource sheet SP30 and parts of SP20, SU29 and SU39. London: Institute of Geological Sciences.

For each mineral resource block a statistical assessment was undertaken based upon borehole logs, which is provided *Table 3-1* below. With only 5.6km² of the 16km² resource block lying on Site, estimates of volume and area far exceed that found on Site. However, mean thicknesses and grading percentages are relevant to the deposits on Site.

Table 3-1 Statistical assessment of sand and gravel resources: Block A (Robson, 1976)

Area		Mean thickness		Volume of mineral (Mm ³)	Mean grading percentage		
Resource block km ²	Mineral km ²	Overburden (m)	Mineral (m)		Fines (<1/16 mm)	Sand (1/16 – 4mm)	Gravel (>4mm)
16	14.5	0.7	3.7	51.4	7	48	45

The report finds the principal mineral bearing geological strata in the region to be the Northmoor Sand and Gravel Member and Summertown-Radley Sand and Gravel Member, both of which are River Terrace Deposits. There are four terraces in the region: Hanborough (Fourth Terrace) which is the oldest deposit lying some 27m above the River Thames; Wolvercote (Third Terrace), Summertown-Radley (Second Terrace) and Northmoor (First Terrace) which is the youngest, lying just above or at the level of the Alluvium on the valley floor. The first and second terraces are described further below.

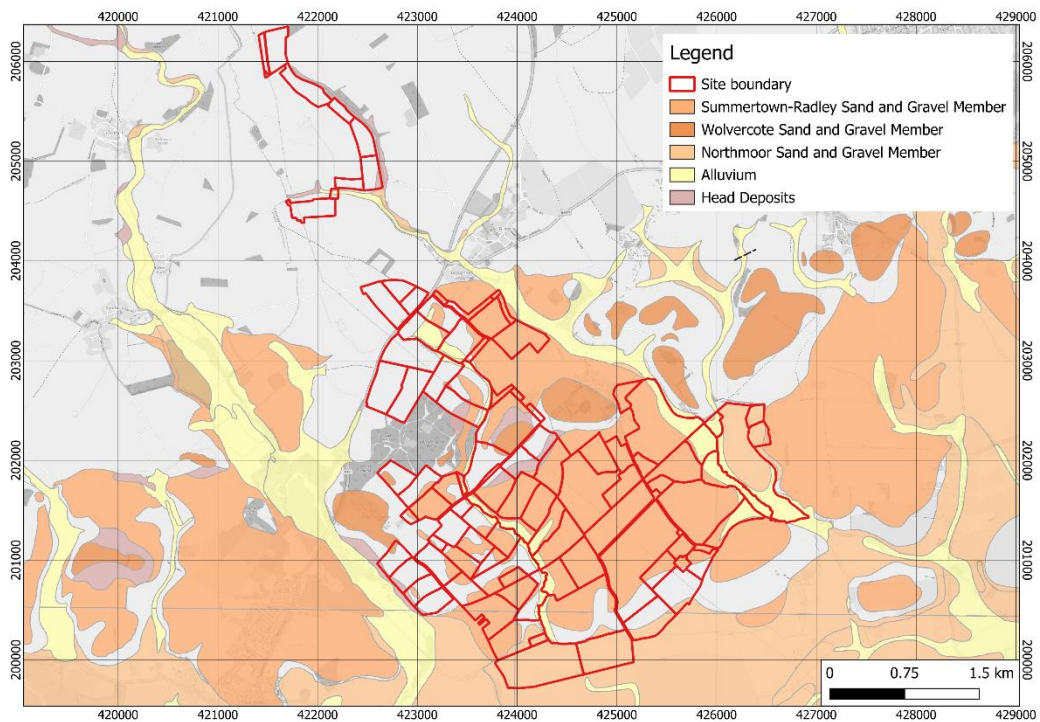
Summertown-Radley Sand and Gravel Member (Second Terrace)

The Second Terrace was deposited by a major river which meandered west to east along the Thames Valley, with the River Leach, River Windrush and Broadwell Brook as feeder streams. It lies at approximately 6m above the River Thames, although in places it is buried beneath Alluvium on the valley floor. It mainly comprises limestone gravel, although localised silt deposits overlie the gravels and silt-filled channels also dissect the gravels in some locations. The gravels are typically between 4m and 5m thick, although thicknesses of up to 7.5m are recorded, suggesting the presence of gravel filled channels which cut into the underlying Oxford Clay Formation.

Northmoor Sand and Gravel Member (First Terrace)

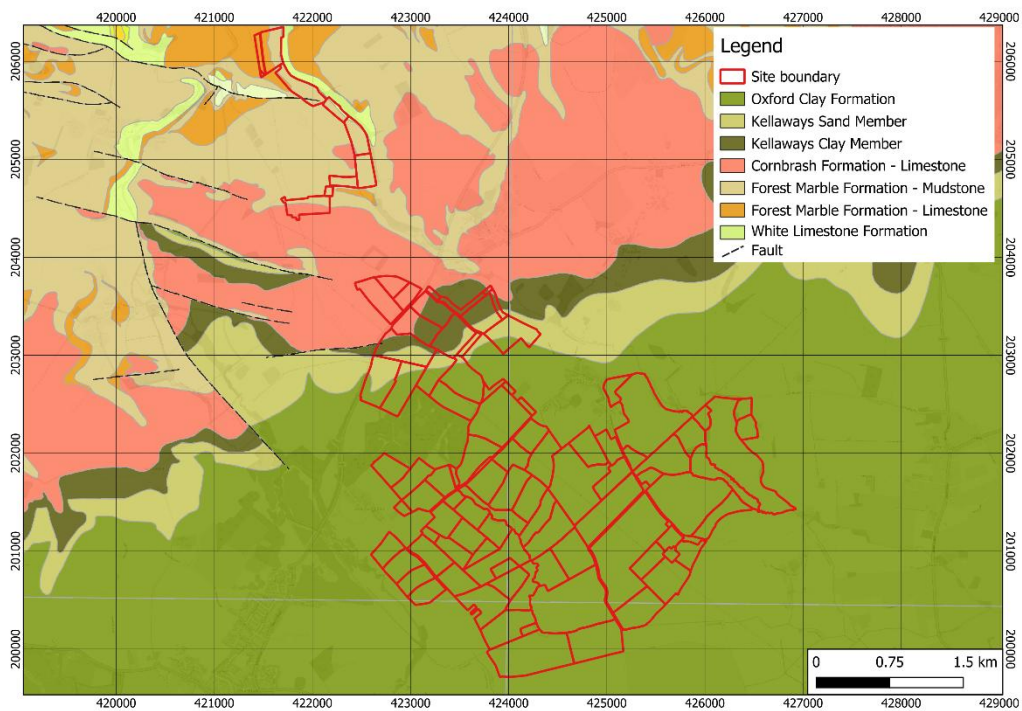
Formed during the last main phase of terrace deposition, where a phase of erosion reduced the remnants of the fourth and third terraces and channels of the Rivers Leach, Shellbrook and Windrush dissected the Second Terrace deposits. The First Terrace gravels were laid down south of the Second Terrace Deposits. Since their deposition, erosion and deposition by the River Thames and its tributaries has resulted in Alluvium, in turn dissecting the First Terrace Deposits. Gravels are composed of primarily limestone.

Figure 3-1 Published BGS superficial geology (1:50,000)



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Figure 3-2 Published BGS bedrock geology (1:50,000)



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3.2.2. Mining and quarrying

Within the BGS database there are 14No. records of mines or quarries within 250m of the Site, these are summarised in Table 3-2 below and presented in Figure 3-3 below. All records are surface mineral workings and have now ceased operation.

Table 3-2 BGS BritPits proximal to Site

Distance from Site (m)/ orientation	Grid reference	Name	Commodity
On Site	(425250, 202157)	Lower Farm	Sand and gravel
On Site	(421633, 206176)	Broughtondowns Plantation	Clay and shale
16m (E)	(422075, 205705)	Oxlease Farm	Limestone
69m (E)	(421769, 206378)	Broughtondowns Plantation	Limestone
90m (NE)	(422450, 205495)	Larklands	Limestone
129m (NW)	(423573, 203679)	Broughton Hall	Sand and gravel
180m (N)	(422650, 203980)	Broughton Poggs	Limestone
226m (NE)	(424208, 203552)	Filkin's Mill	Sand and gravel
227m (SW)	(424773, 202542)	St Matthew's Church	Sand and gravel
233m (NE)	(425549, 202976)	Langford	Sand and gravel
235m (NW)	(422390, 201075)	Little Faringdon Gravel Pit	Sand and gravel
245m (N)	(425454, 203044)	Langford	Sand and gravel
246m (SE)	(426319, 201131)	Lower Farm	Sand and gravel
248m (S)	(422470, 204460)	Broughton Poggs Quarry	Limestone

3.3. Hydrogeology

The Alluvium, Summertown-Radley Sand and Gravel Member, Northmoor Sand and Gravel Member, Wolvercote Sand and Gravel Member, Forest Marble Formation (mudstone) and Cornbrash Formation are classified by the Environment Agency (EA) as a Secondary A Aquifers. These are defined as comprising permeable layers that can support local water supplies and may form an important source of base flow to rivers. Groundwater vulnerability within these aquifers are classed as high.

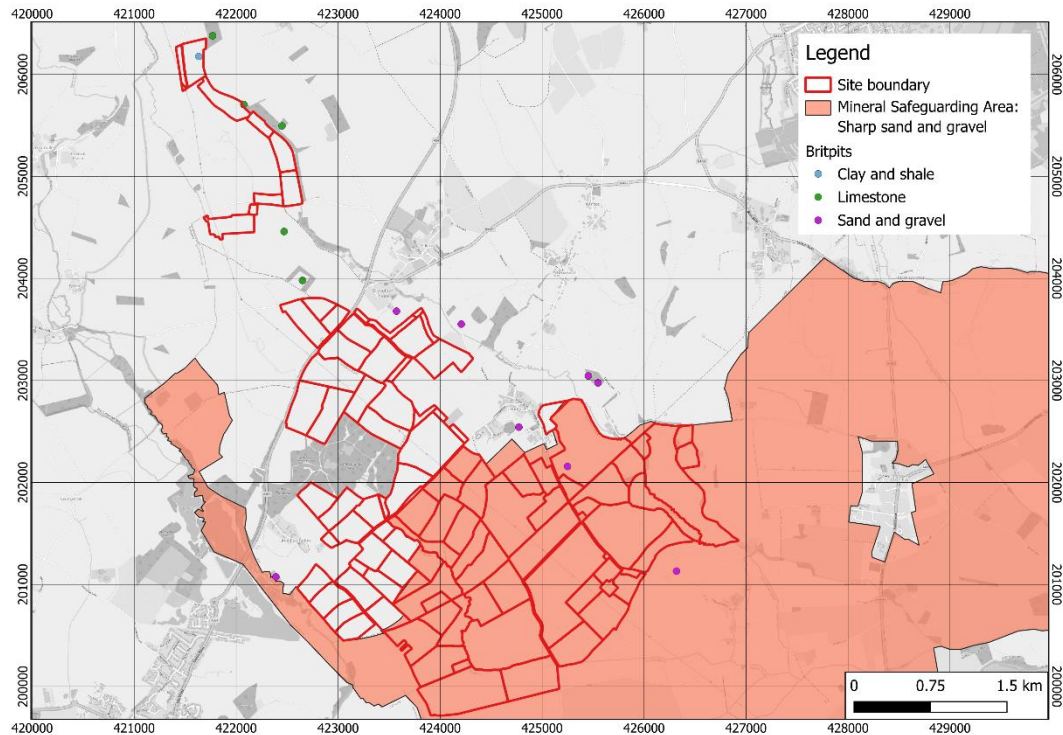
The superficial Head Deposits are classified as a Secondary Undifferentiated Aquifer. These are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value. Groundwater vulnerability within the Head Deposits is classed as high.

The Forest Marble Formation (limestone) and White Limestone Formation are both classified by the EA as Principal Aquifers. These are defined as strategically important rock layers or deposits with high porosity and permeability that are vital for water supplies and/or river base flow. Groundwater vulnerability within both the Forest Marble Formation (limestone) and White Limestone Formation is classed as high.

There is one record of a historical on Site groundwater abstraction (at NGR 425300, 201600), this was for general farming, domestic and household (drinking, cooking, sanitary, washing, small garden) use.

There are 4 No active groundwater abstraction licences within 2km of the Site, with abstraction points located between 600m and 1.4km of the Site boundary. There are no records of active potable groundwater abstractions within 2km of the Site and the Site does not lie within an EA designated source protection zone (SPZ).

Figure 3-3 BGS Mineral Sites within 250m of the Site



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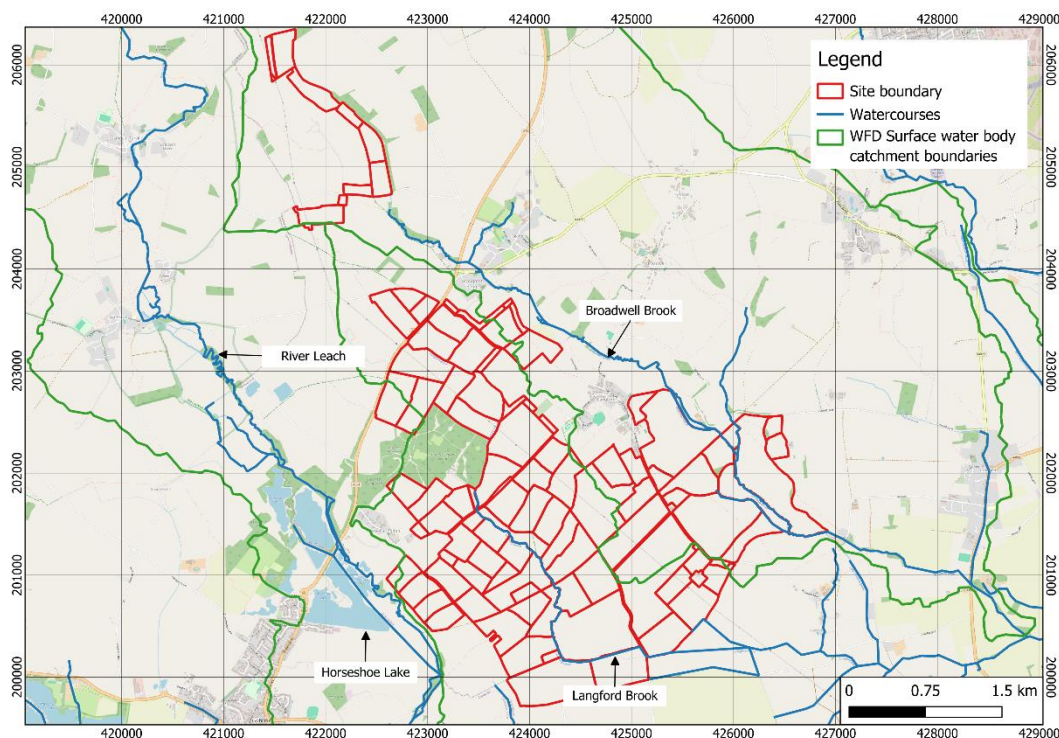
3.4. Hydrology

3.4.1. Surface water

Both the Broadwell Brook and Langford Brook flow across the Site. Broadwell Brook originates from an issues west of the north western Site, from here it flows in a south westerly direction across the north western Site, through Broughton Poggs before cutting through the east of the southern Site. Two unnamed tributaries of the Broadwell Brook also bisect the east of the Site. Langford Brook originates near Broughton Copse at the north west of Site, adjacent to the A361 and flows in a broadly south easterly direction across the south west of the Site. Several drains and unnamed watercourse which drain to the Langford Brook are present across the west of the Site.

Several lakes lie west of the Site in the area between Little Faringdon and Lechlade, including Horseshoe Lake, Lechlade Lake, Rough grounds Lake and Bushyleaze Lake. Key hydrological features are presented in Figure 3-4 below.

Figure 3-4 On Site hydrology



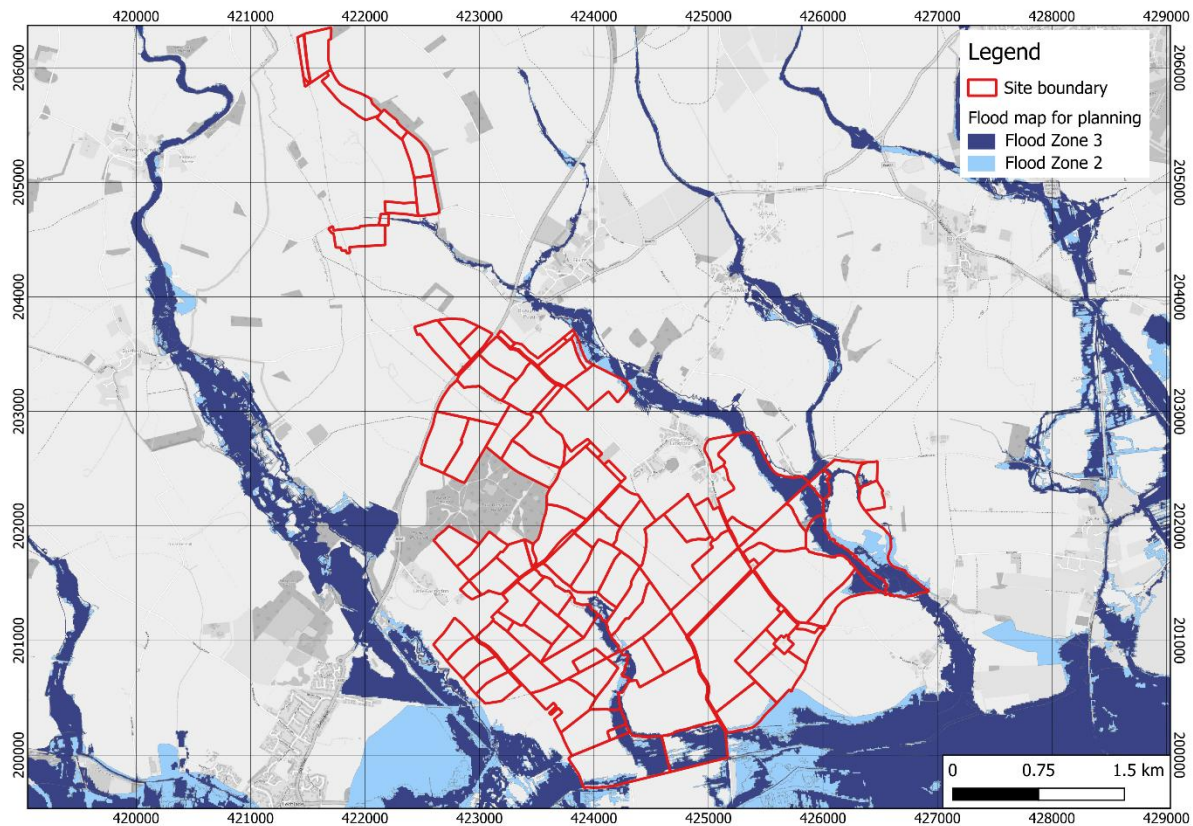
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3.4.2. Flooding

EA mapping indicates the majority of the Site lies within Flood Zone 1 and is as such at low risk of flooding from rivers and the sea. However, areas adjacent to Langford Brook and Broadwell Brook lie within Flood Zone 2 and 3, and are moderate to high risk of flooding from rivers and sea. Low lying fields adjacent to these watercourses lie largely within Flood Zone 3 as is the case with the two most southerly fields on Site at the fields adjacent to Broadwell Brook at the east of Site. Given the Site lies within areas of high risk, it is recommended that a Flood Risk Assessment is completed for the Site.

Ambiental Risk Analytics surface water (pluvial) FloodMap, aligns with this showing the land closest to Langford Brook and Broadwell Brook to be at highest risk of surface water flooding. Highest risk on Site is associated with Broadwell Brook in the north east of the Site, based on a 1 in 30 year return period a flood depth >1m is estimated here. Across the majority of Site, risk of flooding from surface water is negligible.

Figure 3-5 Flood Zones from Flood Map for Planning



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3.5. Groundwater flooding

Mapping from Ambiantal Risk analytics, indicates the risk of groundwater flooding across Site to range between negligible and high. This is primarily controlled by the underlying geology. High risk areas of groundwater flooding are primarily associated with outcrops of Alluvium. The north western extent and southern edge of the southern Site are at moderate-high risk, associated with outcrops of the Cornbrash Formation and Northmoor Sand and Gravel Member. The north western Site ranges between moderate to moderate-high risk. The centre of the southern Site is classed as moderate risk. Risk across the remainder of the Site ranges between low to negligible. This risk assessment is based on a 1 in 100 year return period and a 5m digital terrain model.

4. Preliminary Minerals Assessment

As discussed in Section 2.2, the Site lies within a MSA for sharp sand and gravel. The following sections will discuss the Site in the context of Policy M8.

4.1. Policy M8 (i): The site has been allocated for development in an adopted local plan or neighbourhood plan

The Site has not been allocated for development within the West Oxfordshire District Local Plan (2031).

4.2. Policy M8 (iii): The need for the development outweighs the economic and sustainability considerations relating to the mineral resource

This section will firstly establish the extent of the workable mineral reserve on Site, through examination of the Sites geology and identification of existing infrastructure and receptors which may prevent mineral extraction. Culminating in a discussion of the impact of the proposed development on the mineral reserve.

4.2.1. Is the mineral resource present?

4.2.1.1. *Historical workings*

Figure 3-3 shows there is one historic gravel pit located within the MSA on Site, shown in earliest OS mapping from 1876. From mapping, this working appears to be small and localised. It is possible that earlier small historic workings are present within the MSA, however it is unlikely that any significant extraction of mineral resource on Site has already occurred.

4.2.1.2. *Geology*

The MSA for sharp sand and gravel resources, which the Site lies within, is defined in the Oxfordshire Minerals and Waste Local Plan as encompassing sharp sand and gravel resources of significance in the main river valleys. Figure 2-1 depicts the mapped BGS geology within the MSA, which is shown to encompass outcrops of river terrace gravels (Summertown-Radley Sand and Gravel Member and Northmoor Sand and Gravel Member), Head Deposits, Alluvium and the Oxford Clay Formation.

Historical borehole records from the industrial mineral assessment unit report undertaken between Lechlade and Standlake, provide records of thickness of overburden, thickness of mineral reserve and mean grading percentages for 7No boreholes within the sharp sand and gravel MSA on Site. There are also three additional historical boreholes on Site within the BGS database. These are summarised in Table 4-1. Thickness of mineral reserve ranges between 0.52m and 5.6m, with an average thickness of 2.31m. Thickness of overburden ranges between 0.36m and 1.2m, with an average thickness of 0.82m. Deposits are typically of high proportion sand and gravel, ranging between 74 and 95%, making high quality mineral reserves. However, fines content is higher locally, reaching up to 26% in SP20SW11.

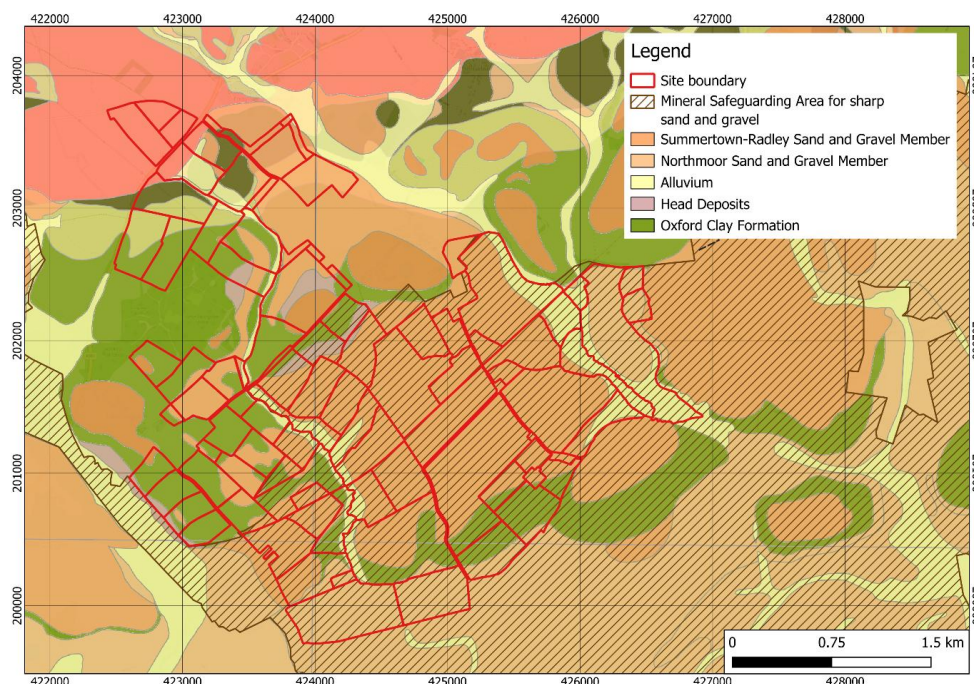
These boreholes all lie within the River Terrace Deposits. Nearby historical BGS logs within the Head Deposits, Alluvium and Oxford Clay Formation, were also examined to assess their suitability as a mineral reserve. These are summarised in Table 4-2. The Oxford Clay Formation is encountered within multiple boreholes on Site (for example SP20SW12 and SP20SE6) and is typically described as a stiff, bluish grey clay. No historic boreholes on or close to the Site lie within the Head Deposits, although the BGS memoir for the 1:50,000 Cirencester sheet describes the Head Deposits as 'brown

silty clay passing down into clayey sandy gravel'. The industrial mineral assessment unit report undertaken between Lechlade and Standlake, records Head Deposits in one borehole where it is described as 'clay, silty, brown, with pebbles'. Given the high fine contents of both the Oxford Clay Formation and Head Deposits, these areas have been removed from the area of potential mineral reserve considered in this report.

No historic boreholes on Site encounter the Alluvium, however it is recorded in several boreholes off Site. In SP20SE22 and SP20SW9, this is encountered as a clay. This aligns with the description in the BGS memoir for the 1:50,000 Cirencester sheet, of a 'normally consolidated, grey, brown, more or less calcareous silty clay or silt often resting on a basal limestone gravel' ². In SP20SW199, Alluvium appears to be absent with instead the underlying River Terrace Gravels recorded as 'gravels' and in SP20SW7, the Alluvium is thought to be the 'overburden' recorded to 0.3m bgl. Whilst Alluvium itself is not considered to be an economic mineral resource given its high fines content, it is shown by historic boreholes to overlie the River Terrace Deposits. In nearby historic boreholes, the maximum recorded depth of Alluvium is 0.5m bgl, however the industrial mineral assessment unit report undertaken between Lechlade and Standlake, records thickness of Alluvium up to 2.5m. Areas of mapped Alluvium have been included within the area of potential mineral reserve considered within this report. Although it should be noted, in areas where Alluvium deposits are thicker, extraction of underlying mineral reserve may not be economic.

The MSA on Site spans an area of 5.87 km², removing areas where BGS mapping shows Head Deposits and the Oxford Clay Formation outcrop, reduces the mineral reserve area to 5.1km². At this stage it is considered reasonable to agree that the mineral resource is present.

Figure 4-1 BGS 1:50,000 mapped geology within the MSA



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² Sumbler, M G, Barron, A J M, and Morigi, A N. 2000. Geology of the Cirencester district. Memoir of the British Geological Survey, Sheet 235 (England and Wales).

Table 4-1 Summary of mineral reserve encountered on Site

Borehole ref.	Thickness of overburden (m)	Thickness of mineral reserve (m)	Mean grading percentage		
			Fines (<1/16 mm)	Sand (1/16 – 4mm)	Gravel (>4mm)
SP20SE43	0.65	0.5	-	-	-
SP20SE2	0.6	5.6	5	50	45
SP20SE6	1.2	1	7	60	33
SP20SE3	0.6	1.9	12	44	44
SP20SW12	1.1	5	6	57	37
SP20SE25	0.36	0.61	-	-	-
SP20SE82	*Geology GL-4.3m bgl recorded as "well"		-	-	-
SP20SW9	1.2	1.7	12	51	37
SP20SW16	1	2.5	5	57	38
SP20SW11	0.7	2	26	55	19
Min	0.36	0.5	5	44	19
Max	1.2	5.6	26	60	45
Mean	0.82	2.31	10.4	53.4	36.1

Table 4-2 Strata encountered in nearby historical borehole logs

Borehole ref.	Strata	Maximum depth (m bgl)
SP20SW12 (On Site, 424810, 201040)	Soil	0.3
	Clay, silty slightly sandy, with limestone and chert pebbles (Second Terrace Deposits)	1.1
	Sandy gravel with a 100mm sandy silt layer near the base. Gravel: fine with a little coarse, at the base. Sub rounded limestone with some sub angular flint and a little well rounded quartzite. Sand is medium and coarse with fine silty at the top, whitish brown. (Second Terrace Deposits)	6.1
	Mudstone, hard, black fossiliferous passing into clay, light bluish-grey (Oxford Clay)	6.6
SP20SE6 (On Site, 426020, 202500)	Soil	0.3
	Clay, silty, slightly sandy, light brown (First Terrace Deposits)	1.2
	Sandy gravel. Gravel: fine with a trace of coarse. Sub rounded limestone with some sub angular flint and a little mudstone. Sand: coarse and medium with fine, slightly silty, brown passing into grey. (First Terrace Deposits)	2.2
	Clay, stiff bluish-grey (Oxford Clay)	2.9
SP20SW199 (0.156 km, 424086, 203535)	Gravels	2
	Clay, mudstone	4.8
	Limestone	6

Borehole ref.	Strata	Maximum depth (m bgl)
SP20SE22 (1.43km east, 428300, 201030)	Alluvium: Clay, sandy, pale yellow	0.1
	First Terrace Deposits: Gravel: fine with coarse subrounded platy limestone with some subangular to subrounded flint and a little shell debris. Sand: coarse and medium with fine quartz and shell debris, orange-yellow	0.7
	Oxford Clay: Clay	3.7
	Soil, dark brown	0.2
SP20SW9 (0.98km west, 421640, 202070)	Alluvium: Clay, silty, light brown	0.5
	First Terrace Deposits: Gravel: fine with coarse tabular, subrounded grey locally iron-stained limestone with rare cobbles. Sand: coarse with medium and a little fine, slightly silty	3.9
	Oxford Clay: Clay, stiff, grey with fragile shells	4.4
SP20SW37 (0.66km west, 421850, 505380)	Overburden	0.31
	Ballast (gravel)	5.99

4.2.2. Constraints to mineral extraction

Several on Site constraints including the presence of main rivers, flood zones, conservation areas and scheduled ancient monuments may impact the economic viability of mineral extraction. These constraints are depicted in Figure 4-2 and discussed further below.

Two main rivers, Broadwell Brook and Langford Brook cut through the MSA. Two unnamed tributaries of the Broadwell Brook are also present in the east of the Site, also within the MSA. To afford the rivers appropriate protection from impact (e.g. from contaminated run off), a minimum of 8m buffer has been applied to the main rivers on Site. It is also noted that whilst sand and gravel workings are deemed water compatible in terms of flood risk.

Langford is designated as a conservation area, which borders the north east of the MSA on Site. A buffer zone of 250m has been applied, which extends onto the MSA, however in reality the buffer zone may be much larger to prevent potential harmful visual impacts to the conservation area.

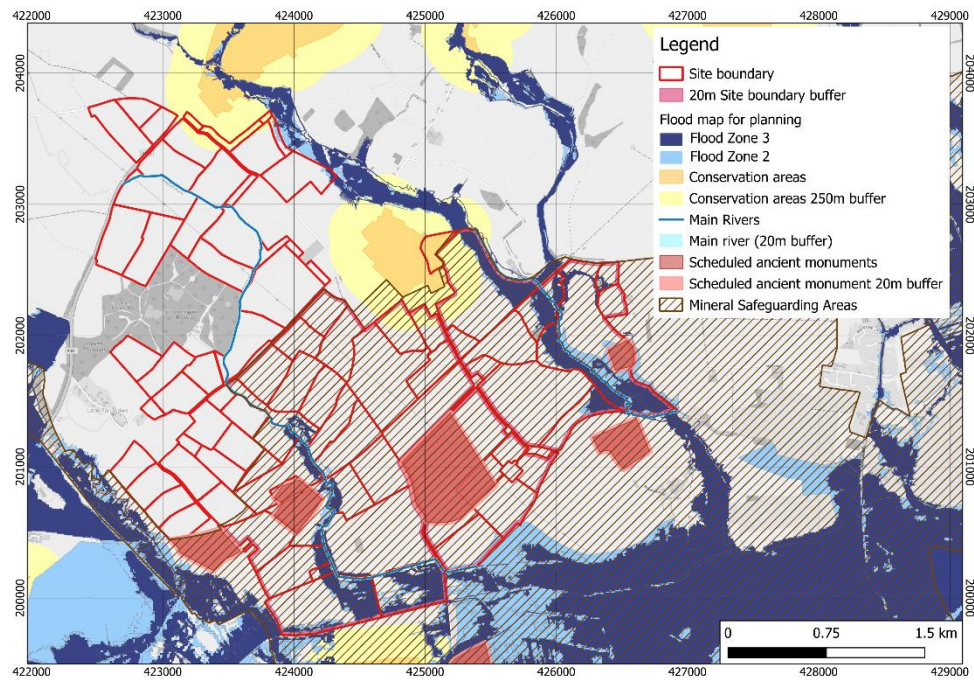
Several scheduled ancient monuments are present on Site, which includes a probable prehistoric or roman settlement. Assuming a Scheduled Monument Consent could not be obtained for sand and gravel extraction in these areas, these effectively sterilise the underlying mineral resource. A minimum 20m buffer has been applied to these.

As well as maintaining buffer zones around protected areas, if the mineral resource was to be extracted, a suitable buffer zone would have to be maintained around the excavation itself. This is firstly to allow for safe working areas/ slope angles and secondly to screen the Site, to limit the potential for visual and noise impacts. The buffer zones are anticipated to be at least 20m wide.

Accounting for the constraints discussed above, as well as the mapped outcrop of workable mineral reserves reduces the area of potentially workable mineral reserve on Site to 4.1km². The presence of flood zones within the south and east of the mineral reserve has not been included in this calculation, as sand and gravel workings are deemed water compatible in terms of flood risk. Although it should be noted that flood risk downstream will need to be closely managed, creating an economic constraint.

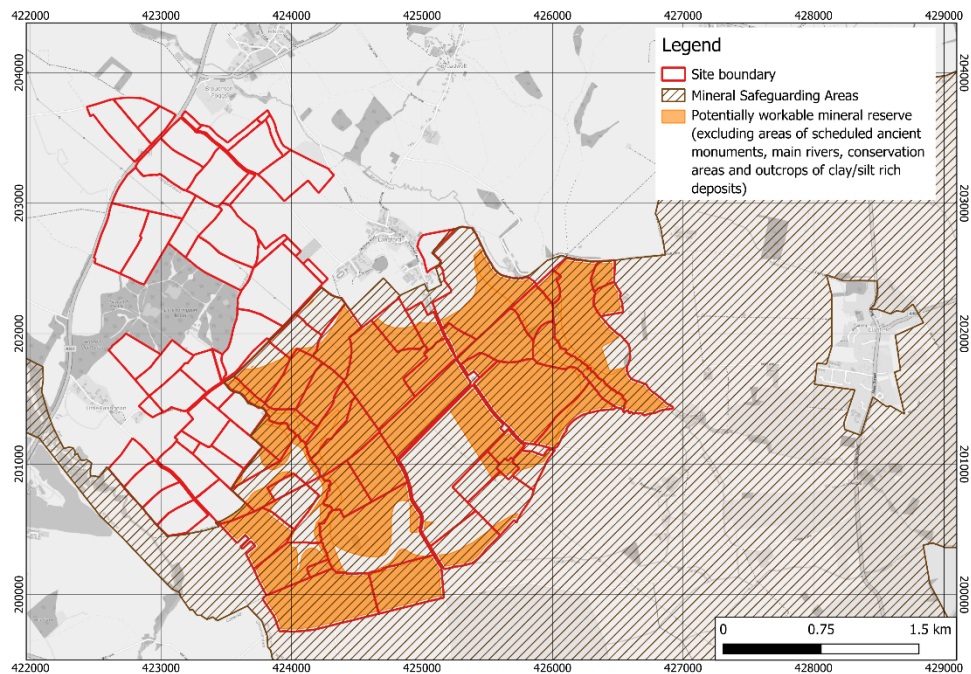
Based on a potentially workable mineral reserve area on Site of 4.1km² and an average thickness of 2.31m, the extractable mineral reserve volume on Site is estimated as 0.0095km³ (9.5Mm³).

Figure 4-2 On Site constraints in mineral extraction



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Figure 4-3 Area of potentially workable mineral reserve



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4.2.3. Need for the mineral resource

Oxfordshire County Council's 2025 Local Aggregate Assessment (LAA) sets a requirement for the provision of 0.986Mtpa (million tonnes per annum) of sharp sand and gravel. This is based on a ten year average demand of 0.868Mtpa and a 3 year average of 0.928Mtpa.

National policy and planning requires mineral reserves with planning permission amounting to least 7 years supply to be maintained for sand and gravel. At the end of 2024, the sand and gravel landbank in Oxfordshire accounts for 6.3 years. Therefore, at the time of writing of the most recent LAA, to meet the 7 year supply requirement, an additional 3.022 million tonnes of sand and gravel reserves were needed. However, there were five outstanding planning applications for sharp sand and gravel extraction totalling 4.88 million tonnes at the time of writing the LAA. None of these proposals have yet been approved by Oxfordshire. In addition to these applications, planning permission was recently granted in May 2026 for the extraction of 550,000 tonnes of sand and gravel over a 5 year period at White Cross Farm Quarry in Wallingford. Therefore, based on current applications and recent permissions, this more than accounts for supplies for the next 7 years.

It should also be noted that whilst the Site is located within a MSA, it is not located within a Strategic Resource Area as designated in policy M3 of the Oxfordshire Minerals and Waste Local Plan. Furthermore, the Local Plan states that mineral resource demand can be met from the designated strategic resource areas within the plan period, and "provision should not be made from the areas around Bampton and Clanfield". The Sites location in relation to Bampton and Clanfield is presented in Figure 2-1, which lie 4.3km and 1.1km east of the Site respectively.

4.2.4. Need for the proposed development

The UK government has committed to obtaining net zero greenhouse gases by 2050, as part of this goal, the government is aiming to achieve clean power by 2030, this includes a target of 45-57 gigawatts total installed capacity for solar farms by 2030, about 2.5 times the installed capacity in March 2025 (18.1 GW). The National Planning Policy Framework (2012) requires local authorities to support the delivery of renewable and low carbon energy and associated infrastructure and to help increase the use and supply of renewable and low carbon energy. A renewable energy and low carbon assessment undertaken for West Oxfordshire identified the district had significant potential for further solar farm development³. Furthermore, the site area is identified as lying within an area 'more suitable' for solar farms⁴.

The proposed development would generate approximately 500MW of renewable energy.

4.2.5. Discussion

Whilst the Site holds an estimated workable mineral reserve of 9.7Mt, it does not lie within a Strategic Resource Area and the Oxfordshire Minerals and Waste Local Plan specifies that "provision should not be made from the areas around Bampton and Clanfield". Furthermore, Oxfordshire currently has more than the required 7 years of permitted reserves. Therefore, it is considered there is not a short term need for the mineral reserve on Site with other sites being better suited.

³ LDA Design. (October 2016). Renewable Energy and Low Carbon Energy Assessment and Strategy for West Oxfordshire. LDA Design.

⁴ LDA Design. (October 2016). Renewable Energy and Low Carbon Energy Assessment and Strategy for West Oxfordshire. LDA Design.

The solar farm has a design life of 40 years, therefore the mineral resource would not be permanently sterilised by the development and could be extracted following decommissioning of the solar farm.

4.3. Policy M8 (iii): The mineral will be extracted prior to the development taking place

This section will address if it is appropriate and practicable to extract the mineral prior to the development taking place.

4.3.1. Environmental impact of extraction

A preliminary assessment of the potential environmental impact of extraction on Site prior to the Proposed Development is summarised in Table 4-3. The extensive potential negative impacts upon air quality, noise and landscape show that prior extraction may not be practicable on the Site.

Table 4-3 Summary of potential environmental impacts due to mineral extraction

Topic	Potential impacts	Effect
Air Quality	Large scale earthworks in close proximity to existing residential properties in Langford, as well as intensive use of plant and machinery could have a significant impact on air quality if not managed correctly.	Potential negative impact
Agriculture	The mineral resource extraction will temporarily sterilise the agricultural land (assuming it is restored following cessation). Whilst it is acknowledged that the proposed development will also temporarily impact the agricultural use, however livestock can continue to be grazed beneath and around the arrays.	Potential negative impact
Community	Mineral extraction will have a range of visual, noise and air quality impacts on the local community. Langford is a designated conservation area.	Potential negative impact
Cultural Heritage	The conservation area of Langford neighbours the MSA, the village would likely see a significant increase in traffic passing by as well as potential visual, noise and air quality impacts should mineral extraction go ahead. There are also several scheduled ancient monuments on Site, which would require preservation.	Potential negative impact
SSSI impact	The Site lies within the SSSI impact risk zone for Cotswold Water SSSI and consultation with Natural England would be required to ensure no impact.	Potential negative impact
Ecology	The Broadwell and Langford Brooks both lie within the MSA. Mineral extraction has a potential to impact river health through sediment runoff and alteration to natural flood zones.	Potential negative impact
Landscape and Visual Impact	Mineral extraction will have negative landscape and visual impact until the Site is fully restored.	Potential negative impact
Land Quality and Ground Stability	There is not expected to be potential impacts on land quality provided control measures regarding fuels and chemicals are adhered to. The excavations will require stand offs and potentially benched/ terraced excavations depending on the depth of the resource, which will reduce the area of workable deposit.	Neutral impact

Topic	Potential impacts	Effect
Socio-economic	The Site could provide sand and gravel for local construction projects, as well as provide jobs to the local residents.	Potential positive impact
Sound, Noise and Vibration	Noise from mineral extraction and traffic may impact the local community.	Potential negative impact
Traffic and Transport	The volume of traffic to Site will significantly increase. Currently Broadwell Road and Calcroft Lane provides access to the east of the Site, which pass through Langford and Clanfield respectively. Lechlade Road provides access to the north west of the MSA which runs between Little Faringdon and Langford. The Oxfordshire Minerals and Waste Local Plan acknowledges that there is poor connectivity in the Site area, and using the advisory lorry route network, avoiding unsuitable bridges and environmentally sensitive areas creates long routes. Increased traffic will likely impact local residents.	Potential negative impact
Waste and Material Resources	Excavated overburden material will potentially be re-used to restore the Site.	Neutral impact
Water Resources and Flood Risk	Mineral extraction may impact groundwater and surface water quality in the vicinity of the Site. Both the Alluvium and River Terrace Deposits within the MSA are classed as Secondary A Aquifers. Areas surrounding Broadwell and Langford Brooks lie within Flood Zones 2 and 3 and are at high risk of flooding from surface water. Mineral extraction within the flood plain may impact flooding downstream.	Potential negative impact Neutral impact (water compatible)

5. Conclusions

The sharp sand and gravel MSA on Site has been defined by Oxford County Council. The MSA encompasses outcrops of River Terrace Deposits, Alluvium, Head Deposits as well as areas where superficial deposits are absent and the London Clay Formation outcrops. Historical BGS borehole logs have been examined to confirm the suitability of each deposit as a mineral reserve. Given their high fines content, areas where Alluvium, Head Deposits and Oxford Clay Formation outcrop are not considered as part of the on Site mineral reserve.

In addition to the geology, several other constraints will likely impact the area of mineral reserve that is workable. These include: the presence of two main rivers through the MSA; the presence of a conservation area (Langford); the presence of several scheduled ancient monuments across the Site; as well as the need to maintain buffer zones around excavations to allow for safe working areas/slope angles and to screen the Site.

Accounting for these factors, the maximum total extractable volume of sharp sand and gravel within the MSA on Site is calculated in to be approximately 9.5Mm³, based on an average reserve thickness of 2.31m.

The most recent Oxfordshire LAA (end of 2024) illustrated that current permitted sharp sand and gravel reserves fall below the required 7 years, accounting for 6.3 years. However, based on applications and permissions since this time it is estimated that up to an additional 5 million tonnes has become active.

Therefore, current sites may be demonstrated to meet and exceed the required 7 years. It is also important to note that whilst the Site is located with a MSA, it is not located within a Strategic Resource Area as designated in policy M3 of the Oxfordshire Minerals and Waste Local Plan. The Local Plan states that mineral resource demand can be met from the designated strategic resource areas within the plan period, and "provision should not be made from the areas around Bampton (4.3km east) and Clanfield (1.1km east).

Whilst the Site is considered to represent an important reserve of sharp sand and gravel, based on the wording in the adopted Local Plan and current reserves within strategic areas, the Site and wider area are not considered to be suitable for a proposed extraction site.

As noted in Section 4.2.5, the proposed development is also temporary in nature and, as such, the sterilisation of resources is not permanent. Therefore following decommissioning and subject to planning policy at the time, the Site may be suitable for mineral extraction.

Report Conditions

