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Planning and Development Consultant

Mineral Safeguarding Assessment

Varley Solar Farm
Land South of Cromhall, South Gloucestershire

Prepared on behalf of RES Ltd

Planning and Development Consultant

Report Title:	Mineral Safeguarding Assessment
Client:	RES Ltd
Proposal:	Planning Application for Ground Mounted Solar Farm
Date:	28th October 2022

Job Reference:	2022.66.116
Prepared by:	Chris Jarvis MRTPI
Reviewed by:	
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Drawings

1. Introduction

1.1 This report accompanies and supports a planning application for the construction of a new ground mounted solar farm on land at Varley Farm, to the south of Cromhall, South Gloucestershire.

1.2 Parts of the application site lie within the South Gloucestershire Mineral Safeguarding Area (MSA) as defined on the adopted Policies Map accompanying the South Gloucestershire Local Plan Policies, Sites and Places Plan. Policy CS10 of the South Gloucestershire Local Plan Core Strategy (2013) and Policy PSP 24 of The South Gloucestershire Local Plan Policies, Sites and Places Plan (2017) set out the Council's policy in respect of mineral safeguarding and this report is submitted to address the requirements of those Policies.

1.3 The report is based upon the advice set out within the Minerals Safeguarding Practice Guidance published by the Mineral Product Association and the Planning Officers' Society (2019), a review of publicly available information including the records of the British Geological Survey, South Gloucestershire Annual Monitoring Reports and Local Aggregate Assessments along with data provided by the client.

1.4 The report only considers the possibility of the sterilisation of a mineral resource and should not be relied upon for any other purpose than consideration of the mineral consultation and safeguarding policies of the adopted development plan.

2. Site Location and Description of Development

Site Location

2.1 The application site is located between the villages of Cromhall and Wickwar. The approximate centre of the site is found at national grid reference 370491; 190052.

2.2 The application site lies wholly within the administrative areas of South Gloucestershire Council and Cromhall Parish Council, although the southern boundary of the application site follows, in part, the boundary between Cromhall and Wickwar Parishes.

Site Description

2.3 The application site covers a large area of approximately 50.5 hectares of agricultural land lying between the B4058 to the west and the B4509 to the east.

2.4 The application site comprises of a series of irregular shaped agricultural fields, divided by mature hedgerows which include trees. Several individual mature trees also lie within the fields, with a small block of woodland, known as Lake Copse lying towards the southern part of the site, but outside the proposed development boundary. The application site is almost entirely flat in its profile, lying between around 55-60m AOD.

2.5 Publicly available historic mapping indicates that land within the overall application site has remained in agricultural use since at least the end of the 19th Century. Two Public Rights of Way cross the site, the first running in a generally north south direction between Talbot's End and Wickwar along the eastern boundary, crossing a small part of the site in the south eastern corner, a second runs west-east across the northern part of the site linking Heath's End and Talbot's End.

2.6 Immediately to the east of the site lies the Wickwar Quarry complex. Whilst mineral working has moved to the east of the B4509, it is understood that quarry restoration and concrete product manufacture continues at the former quarry site.

3. Site Geology

3.1. The superficial and bedrock geology underlying the site are discussed below and shown on the drawings accompanying this report.

Superficial Geology

3.2. British Geological Survey (BGS) 1:625000 mapping indicates that there are no superficial deposits.

3.3. 1:50000 mapping, details of which are provided on drawing 2022.66.115/3, indicates that around two thirds of the site, around 34 hectares, are overlain by superficial Alluvium deposits, described by the BGS as "*...a general term for clay, silt, sand and gravel. It is the unconsolidated detrital material deposited by a river, stream or other body of running water as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope. Synonym: alluvial deposits. Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.*"

3.4. The remaining circa 17 hectares do not contain any superficial deposits.

Bedrock Geology

3.5. BGS 1:625000 Mapping indicates that bedrock geology comprises DInantian Rocks (limestone with subordinate sandstone and argillaceous rocks) and Triassic mudstone, siltstone and sandstone.

3.6. BGS 1:50000 Mapping indicates that the site most of the site, around 32 hectares, is underlain by Mercia Mudstones, described by the BGS as:

"Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite widespread; sandstones are also present."

3.7. The remaining 19 hectares are underlain by Cromhall Sandstones (around 17ha) and Oxwich Head Limestone (around 2ha) Cromhall Sandstones are described by the BGS as:

"Includes up to three tongues. The lower tongue comprises brown and red fine- to coarse-grained quartzitic sandstone with subordinate mudstones and sparse thin limestones. Base is locally conglomeratic. The middle tongue is similar but contains units of dolomitised limestone. The

upper tongue comprises grey and red coarse-grained quartzitic sandstones, sandy crinoidal and oolitic limestones, mudstones, siltstones and grey seatearths arranged in cyclic sequences. Units of crinoidal and oolitic limestone are locally developed. The formation was deposited mainly in a fluvial environment on a marine influenced coastal plain."

3.8. Oxwich Head Limestones are described by the BGS as:

"Thick bedded fine- to coarse-grained, recrystalised, bioturbated skeletal packstones with distinctive pale to dark grey mottling and pseudobrecciation and ooidal limestones. Units of dark grey, irregularly bedded skeletal packstones with shaly partings are developed at intervals. Thin unit of calcareous sandstone and sandy skeletal packstone [Pant Mawr Sandstone Member and Honeycombed Sandstone Member] at base in the Vale of Glamorgan and northwest crop of the South Wales Coalfield respectively. Unit of ooidal limestone in lower part [Penderyn Oolite Member] on northwest crop of the South Wales Coalfield. Palaeokarstic surfaces, overlain by red and grey clay palaeosols, punctuate the Formation; thin coals developed in palaeosols in Gower."

3.9. 1:50000 Bedrock geology is shown on drawing 2022_66_115/2.

Other Data Sources

3.10. Alongside the published BGS mapping, other data sources have been consulted including publicly available borehole data and the BGS Mineral Resource Map for Gloucestershire, an extract from which is provided at Figure 1 below.

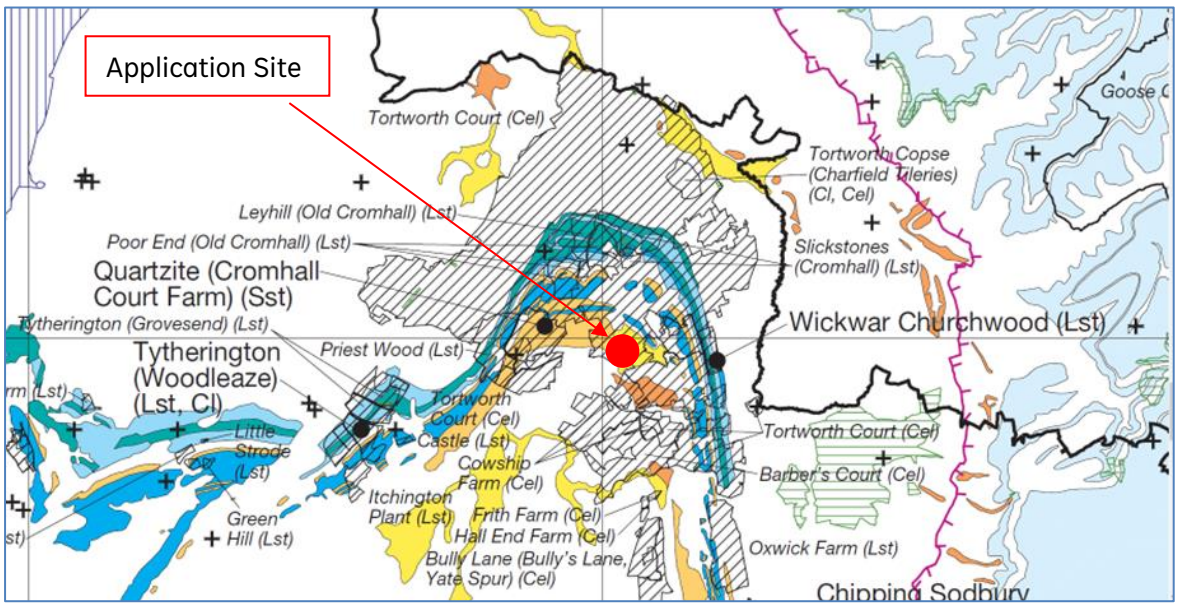


Figure 1 – Extract from Gloucestershire Mineral Resource Map

3.11. There are no publicly available historic borehole records within the application site. Outside the application area, four boreholes are recorded, however, three have no details attached. Only one borehole record ST97SW5, located at Talbot's End, over 250m to the north of the application boundary records the Clifton Down Group from and to an unknown depth.

3.12. The BGS Mineral Resource Map for Gloucestershire (2006) is understood to have informed the definition of minerals safeguarding areas. The Mineral Resource Map identifies that, around the application site there are extensive areas of carboniferous sandstone, limestone and dolomite and large areas have been subject to the grant of planning permission for the working of these minerals, along with clays and celestite.

3.13. Whilst it would appear that the application site has, historically, been subject to the grant of planning permission and forms part of a very large area historically granted permission for the working of Celestite, aerial photography and historic mapping would indicate that the site has not been subject to any large scale surface mineral working. It should also be noted that Celestite has not been worked in the UK since the early 1990s and no safeguarding areas for that mineral have been defined in adopted planning policy.

4. Mineral Extraction in South Gloucestershire

4.1. As the application site lies within a crushed rock minerals safeguarding area, only the possible impacts of the proposed development on crushed rock resources are considered further in this report.

4.2. In 2006 the British Geological survey published Mineral Resource Information in Support of National, Regional and Local Planning (BGS Report) for Gloucestershire (comprising Gloucestershire and South Gloucestershire), providing details of potentially viable mineral resources within the area. The BGS Report identifies that Gloucestershire produces crushed rock aggregates from limestone, sandstone and igneous rock, sand and gravel from River Terrace Deposits and sub alluvial gravel, building sand and building stone from bedrock sand deposits, hydrocarbons, clay and, historically, coal and evaporite minerals. The report also identifies that surface planning permissions exist, or did so at the time the report was published, around and across the application site.

4.3. South Gloucestershire has a long history of aggregate production. Land immediately to the east of the application site has been quarried for limestone since before the introduction of the modern planning system. Figure two below shows mineral working taking place at the adjacent Wickwar

Quarry complex in 1934. Whilst mineral working continues at the adjacent Wickwar Quarry complex, it is now concentrated on land to the west of the B4509 with concrete block manufacture taking place on land to the east. It is also understood that Churchwood Quarry, which is immediately adjacent to the eastern boundary of the proposed site, is no longer operational and the void created by mineral working is currently being filled in accordance with a grant of planning permission.

Figure 2 – Wickwar Quarry 1934 (with part of the application site in the background)

4.4. The current position with regard to aggregate production in South Gloucestershire is set out in the most recent West of England Local Aggregate Assessment (LAA) produced jointly by Bath & North East Somerset, Bristol City, North Somerset and South Gloucestershire Councils. The LAA covers the period 2009-2018 and confirms that, over that 10 year period, an average of 4.36 million tonnes of aggregate has been produced each year. Of that total, some 3.27 million tonnes per year was crushed rock aggregate, 0.4 million tonnes were marine sand and gravel and the remaining 0.68 million tonnes recycled aggregates.

4.5. The LAA also confirms that permitted reserves of crushed rock at the end of 2018 amounted to some 128.70 million tonnes, or almost 40 years when calculated against the ten year average. Whilst this total figure includes substantial reserves which may be included within dormant mineral planning permissions, this level of permitted reserves indicates that there is no need for the release of new or additional crushed rock mineral reserves in South Gloucestershire.

5. Relevant Planning Policy

5.1. Planning policy for minerals is set out in the National Planning Policy Framework and, at the local level, in the adopted South Gloucestershire Local Plan Core Strategy (2013) and the South Gloucestershire Local Plan Policies, Sites and Places Plan (2017).

National Planning Policy Framework

5.2. The National Planning Policy Framework (NPPF) was published in July 2021 and sets out the government's planning policies for England and how these are expected to be applied.

5.3. Chapter 17 of the NPPF sets out those policies that the Government believes will enable the sustainable use of minerals.

5.4. Paragraph 210 (c) identifies that planning policies should *"safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultations 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)."*

5.5. Paragraph 212 requires that local planning authorities should not normally permit other development proposals in Mineral Safeguarding Areas if it might constrain future use for mineral working.

5.6. Paragraph 213(f) requires that mineral planning authorities should plan for a steady and adequate supply of aggregates by *"maintaining land banks of at least 7 years for sand and gravel..."*

5.7. Planning Practice Guidance (PPG) in respect of minerals safeguarding defines the purpose of safeguarding as "*the process of ensuring that non-minerals development does not needlessly prevent the future extraction of mineral resources, of local and national importance"*.

5.8. The PPG also provides guidance to district council's on the role that they play in safeguarding minerals including *"having regard to the local minerals plan when identifying suitable areas for non-mineral development in their local plans. District councils should show Mineral Safeguarding Areas on their policy maps".*

Local Planning Policy

5.9. The South Gloucestershire Local Plan Core Strategy (Core Strategy) was adopted in December 2013 and includes policies relating to minerals development, including those which are relevant to non-minerals development for the period 2006-2027.

5.10. The Core Strategy establishes the objectives of the Plan, including:

"Safeguarding mineral resources for the longer term while ensuring an adequate and steady supply to meet identified needs."

5.11. Policy CS9 of the Core Strategy seeks to manage the environment and heritage and states

"The natural and historic environment is a finite and irreplaceable resource. In order to protect and manage South Gloucestershire's environment and its resources in a sustainable way, new development will be expected to:

8. utilise natural resources, including minerals, soils and water, in an efficient and sustainable way

5.12. Policy CS10 of the Core Strategy relates directly to the supply and safeguarding of mineral resources and states:

Supply

Provision will be made for the extraction of 58 million tonnes of crushed rock between 2008 and 2026 (which represents 60% of the West of England's sub-regional apportionment) by maintaining a landbank of at least 10 years. In order to maintain this landbank, the existing Preferred Areas in the South Gloucestershire Minerals and Waste Local Plan will be rolled forward and any further resource requirement will be identified in the Policies, Sites and Places Development Plan Document.

Any proposal for the working of clay will only be allowed where it would support the level of capital investment required to maintain or improve Cattybrook Brickworks, or would meet a shortfall in the supply of clay to this brickworks.

Safeguarding

Mineral resources will be protected from permanent sterilisation by identifying Mineral Safeguarding Areas for the indicative hard rock and shallow coal resources identified by the British Geological Survey. These safeguarding areas will be defined in the Policies, Sites and Places Development Plan Document, together with consideration of the need to safeguard other

mineral resources. Until then, the Mineral Resource Areas defined on the Proposals Map will remain in effect.

5.13. The South Gloucestershire Local Plan Policies, Sites and Places Plan was adopted in November 2017 and sets out development management policies and allocates land, it implements the strategic policies of the Core Strategy.

5.14. Policy PSP 24 implements the mineral safeguarding requirements of Policy CS10 of the Core Strategy and states:

Mineral Safeguarding Areas are defined on the Policies Map for limestone, sandstone, brick and fire clay, and surface coal resources.
Within these defined areas, development proposals for non-mineral development will be acceptable where it is satisfactorily demonstrated that:
i. they do not sterilise, or unduly restrict, the future extraction of mineral deposits; or
ii. the mineral resource is no longer of value or potential value for safeguarding; or
iii. it is not practicable or environmentally acceptable to extract the mineral resource prior to the proposed development; or
iv. the development is temporary and would be completed and removed, and the site restored to a condition that does not inhibit extraction of the mineral within the timescale that the mineral resource is likely to be needed; or
v. there is an overriding need for the development, which outweighs safeguarding or prior extraction of the mineral deposit; or
vi. the mineral resource would not be sterilised by the development.
If planning permission is to be granted for non-mineral development within the MSA, applicants must demonstrate that the opportunity to recover mineral resource present has been considered. The prior extraction of minerals, where it is practicable and environmentally acceptable to do so, will be encouraged.

6. Assessment

6.1 Taking account of the foregoing, this section sets out an assessment of the likelihood of the proposed development sterilising viable crushed rock mineral resources.

6.2 The planning application seeks permission for the construction of a ground mounted solar farm on a site of around 50.5ha in area.

6.3 Drawing Ref 2022.60.109/2, which is based upon publicly available BGS data supported by the BGS Mineral Resource Map, shows that around 1/3rd of the application site is potentially underlain by crushed rock aggregate mineral resources. This is also the same area covered by the defined Mineral Safeguarding Area in the adopted Local Plan.

6.4 Nevertheless, the assumed extent of both sandstone and limestone, taken together with the extensive history of mineral working in the surrounding area (including the grant of planning

permission for surface mineral working at and around the application site) would suggest that a viable mineral resource may be present. However, this maximum total area takes no account of land ownership, field boundaries or other potential constraints to development which are likely to significantly reduce that maximum total area.

6.5 Nevertheless, the proposed development to which this assessment relates is temporary in nature, having a finite life of 40 years, following which site infrastructure would be removed and the site restored to its previous state. The life of the site would also appear to coincide with the estimated landbank of permitted crushed rock reserve in South Gloucestershire, which has been confirmed to be around 40 years

6.6 In addition, and unlike other forms of development, the installation of ground mounted solar panels does not require extensive or deep ground intrusion. Good practice guidance on the installation of ground mounted solar panels encourages development to be reversible, i.e. the proposal should seek to minimise trenching and foundations and it should be easy to restore a site to agricultural use. Intrusive development should therefore be avoided, instead ground anchors are encouraged to be pile driven, screw foundations or concrete blocks which are capable of easy removal. The installation of a ground mounted solar farm would therefore not permanently sterilise any mineral resources

6.7 Due to the nature of construction, this form of development would not give rise to extensive earthworks which could facilitate the incidental extraction of any mineral.

6.8 On this basis, this assessment demonstrates that the proposed development would not directly sterilise or unduly restrict the future extraction of mineral resources and complies with the requirements of bullet points i, iv and vi of Policy PSP24 and the requirements of paragraph 212 of the NPPF.

6.9 The site lies in close proximity to the former mineral workings at the Wickwar Quarry complex. It is understood that mineral working and processing is now concentrated on the west side of the B4509, with concrete product manufacturing and site restoration activities being undertaken to the west of the B4509. On that basis, the installation of a ground mounted solar farm is not likely to restrict operations or otherwise be incompatible with adjacent permitted use. The proposed development would therefore not unduly restrict or sterilise any mineral resources or existing mineral activities through proximity and complies with the requirements of Policy PSP24.

7. Conclusion

7.1. The application site lies partially within a crushed rock mineral safeguarding area and publicly available evidence would suggest that around a third of the site has the potential to be underlain by carboniferous sandstone and limestone deposits

7.2. The proposed development is limited in its timescale, with a lifespan of 40 years after which time the site would be returned to its current condition and use. The proposed development would therefore not permanently sterilise any mineral resources should they exist. In addition, the nature of the proposed development would not facilitate the incidental extraction of any potential mineral reserves.

7.3. This report demonstrates that no mineral reserve would be needlessly sterilised as a direct result of the proposed development or by proximity to the application site. Similarly, no mineral plant or infrastructure would be unduly restricted by the presence of the proposed solar farm.

7.4. The proposed development thereby complies with the requirements of Policy CS10 of the South Gloucestershire Local Plan Core Strategy and Policy PSP 24 of the South Gloucestershire Local Plan Policies, Sites and Places Plan along with the requirements of paragraph 212 of the National Planning Policy Framework and should not be precluded on mineral safeguarding grounds.

References:

Minerals Safeguarding Practice Guidance; The Mineral Products Association and The Planning Officers' Society; 2019

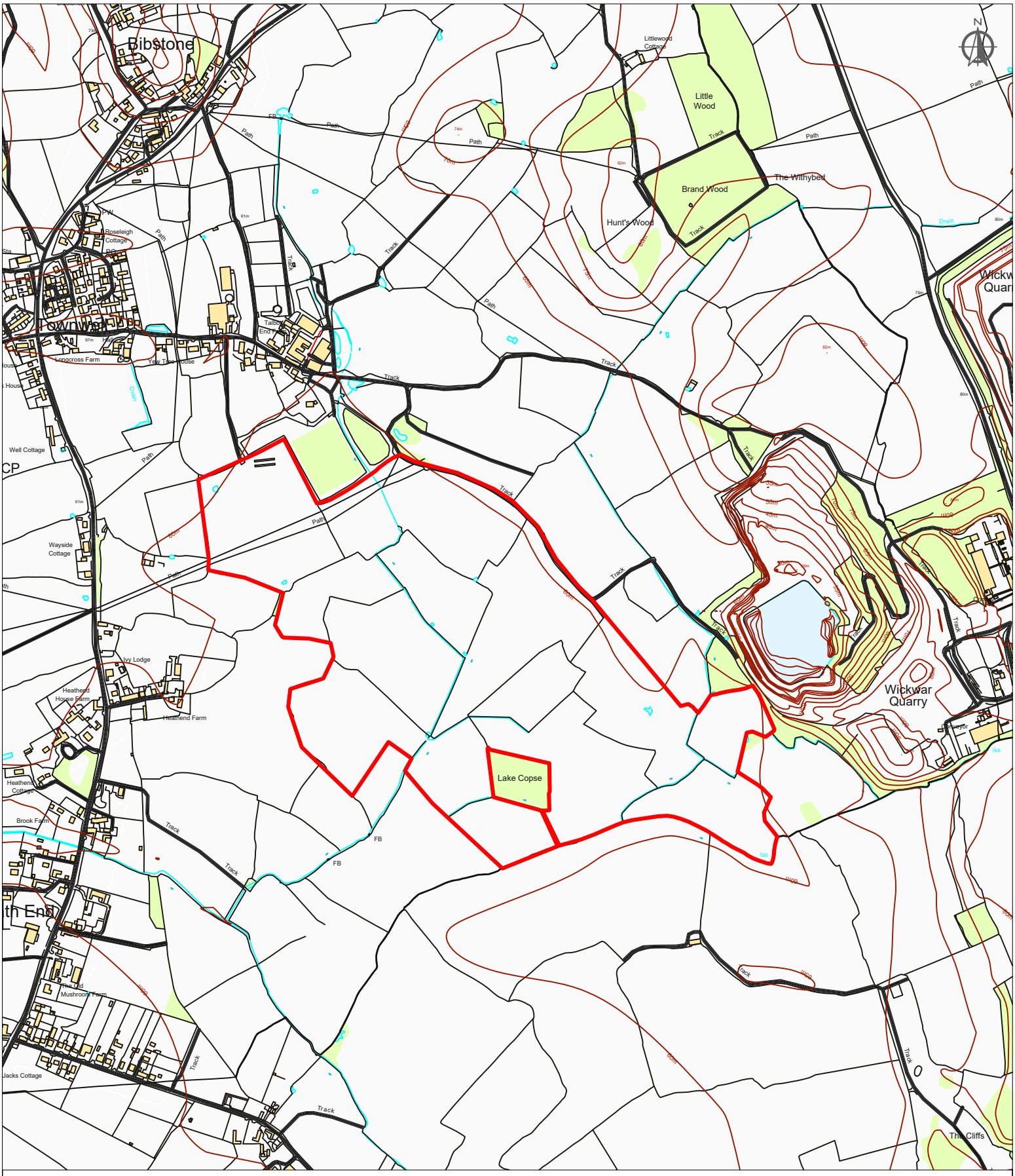
South Gloucestershire Local Plan Core Strategy; South Gloucestershire Council; 2013

South Gloucestershire Local Plan Policies, Sites and Places Plan; South Gloucestershire Council; 2017

West of England Local Aggregate Assessment 2009-2018; West of England Authorities; 2019

Mineral Resource Information in Support of National, Regional and Local Planning; Gloucestershire (comprising Gloucestershire and South Gloucestershire). British Geological Survey Commissioned Report CR/05/105N; Benham, A J, Harrison, D J, Bloodworth, A J, Cameron D G, Spencer, N A, Evans D J, Lott, G K and Highley, D E; 2006

The celestite resources of the area north-east of Bristol with notes on occurrences north and south of the Mendip Hills and in the Vale of Glamorgan: Description of 1:25,000 resource sheet ST68 and parts of ST59,69,79,58,78,67 and 77; NIckles, E F P, Booth, S J and Mosley P N; 1976



Title:
Site Location

Application Boundary (approximate)

Client:
RES Group

Project:
Varley Farm

Drawing Ref:
2022.66.115/1

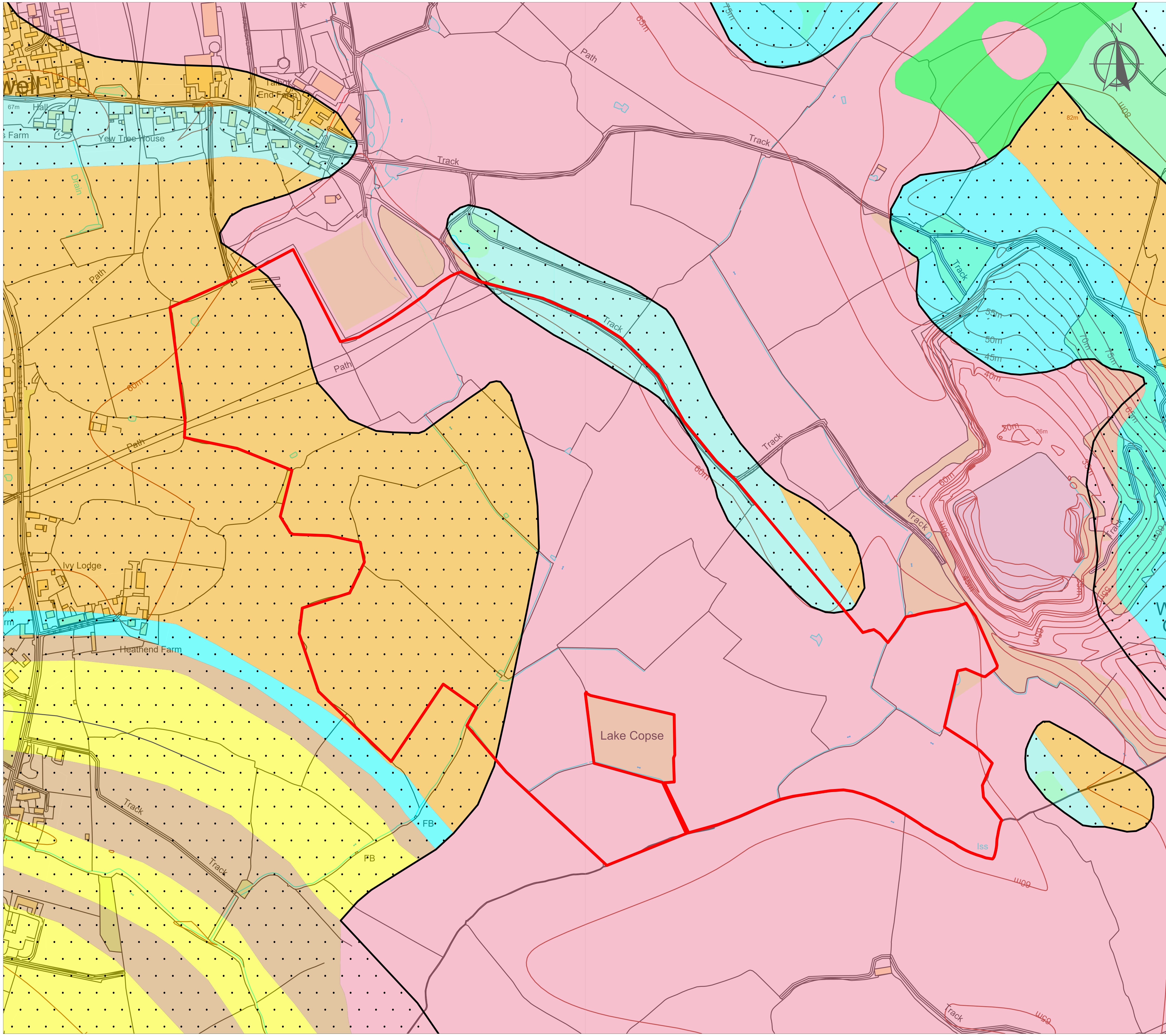
Scale@A4:
1:10000

Drawn by:
CJ

Date:
13th June 2022

15 Queen Square
Leeds
West Yorkshire
LS2 8AJ

Planning and Development Consultant



Notes

- Site Boundary
- Marros Group - mudstone,siltstone & sandstone
- Marros group - sandstone
- Tanhouse Limestone
- Cromhall Sandstone
- Oxwich Head Limestone
- Mercia Mudstone
- Clifton Down Limestone
- Blue Anchor Formation - mudstone
- Clifton Down Mudstone
- Mineral Safeguarding Area

Client:
RES Group

Project:
Varley Farm

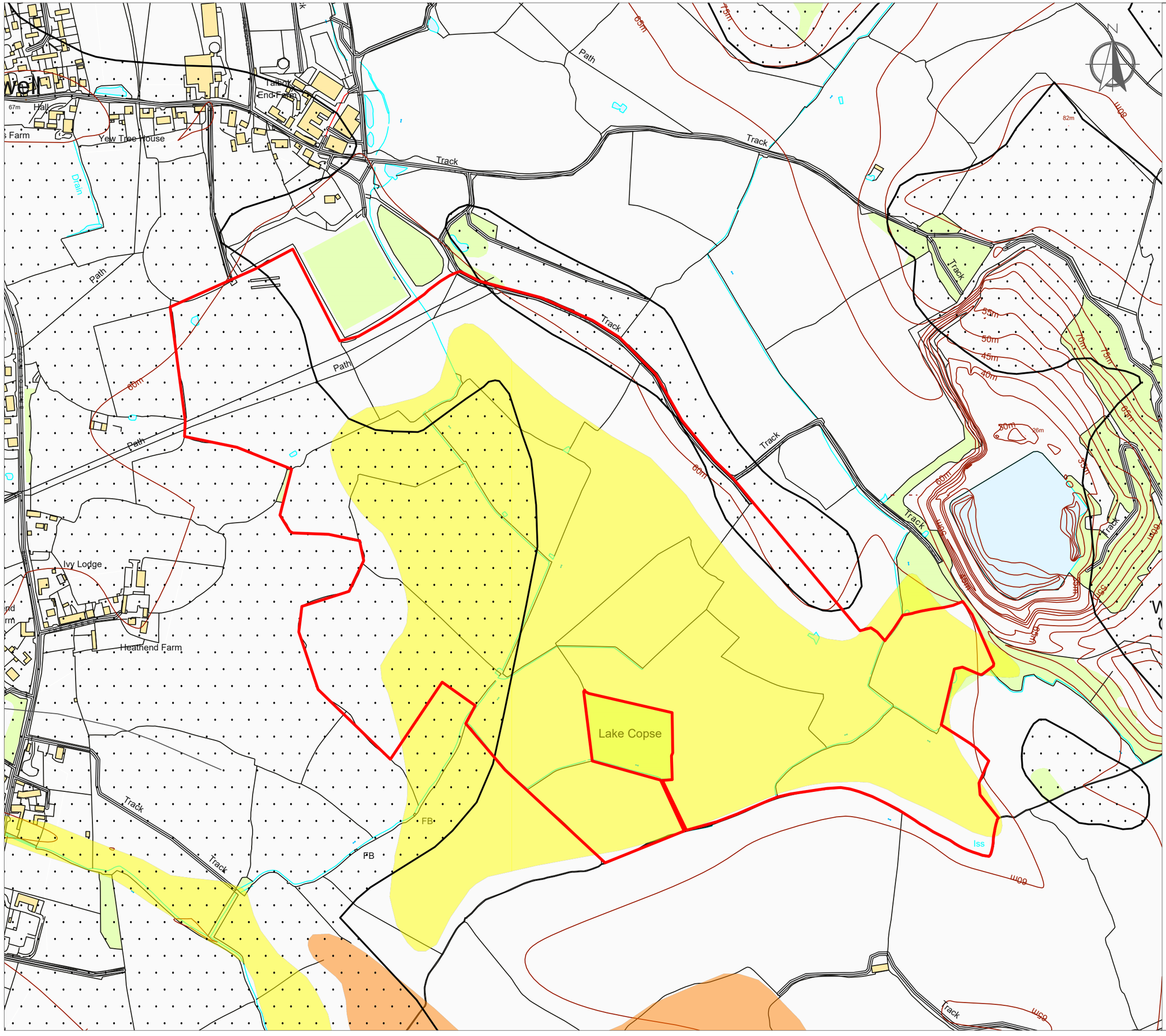
Title:
Bedrock Geology

Drawing Ref:
2022.66.115/2

Scale@A3:	Date:	Drawn by:
1:5000	13th June 2022	CJ

15 Queen Square
Leeds
West Yorkshire
LS2 8AJ

Planning and Development Consultant



Notes

- Site Boundary
- Alluvium
- River Terrace Deposits - sand & gravel
- Mineral Safeguarding Area

Client:
RES Group

Project:
Varley Farm

Title:
Surface Geology

Drawing Ref:
2022.66.115/3

Scale@A3:	Date:	Drawn by:
1:5000	13th June 2022	CJ

me wp
15 Queen Square
Leeds
West Yorkshire
LS2 8AJ
Planning and Development Consultant