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Holme Lacy Road
Rotherwas
Hereford
HR2 6BQ

GWP Report No: 150820

Our ref: LOWERPF.MP210815.let.docx
Your ref:

By email only:

████████████████████
21 August 2015

Dear ██████████

Lower Parks Farm - Initial Desk Study Mineral Resource Evaluation

Further to your instruction, GWP Consultants LLP (GWP) has completed an initial desk study evaluation of the mineral resource potential of land at Lower Park Farms, Burghill, Herefordshire.

The work undertaken has involved a review of available published information. This letter report sets out the findings of the study.

1. Site Location

The site is located approximately 6km to the north-north-west of Hereford and 1km to the south west of Wellington. A site plan has been provided by Environmental Management Solutions and is presented in Appendix A. The site area being evaluated, which comprises the red bounded area shown on the site plan, covers c. 81ha.

2. Review of Available Information

The following sources of information relating to the site and the surrounding area have been reviewed:

- Information obtained from the British Geological Survey (BGS), comprising:
 - 1:625,000 scale bedrock and superficial deposits geology (Geindex Onshore).
 - 1:50,000 scale bedrock and superficial deposits geology (Geindex Onshore).
 - Borehole scans (Geindex Onshore).
 - 1:100,000 Mineral Resources Plan (Herefordshire and Worcestershire. 1999).
 - Mineral Resource Information for Development Plans (Technical Report WF/99/4. Herefordshire and Worcestershire: Resources and Constraints. 1999).

3. Geological Setting

The geological setting of the site, based on the published BGS 1:50,000 scale geological information, is shown on Drawing Nos. LOWERPF1508-1 (bedrock geology) and LOWERPF1508-2 (superficial deposits geology) and is summarised below:

- Bedrock geology – Raglan Mudstone Formation (Silurian) comprising interbedded siltstone and mudstone dipping gently to the east.
- Superficial deposits geology:
 - Glacial Till (Diamicton) (Quaternary), comprising a poorly sorted mixture of particles ranging in size from silt to boulders in a predominantly clay matrix. The Glacial Till is shown covering the greater proportion of the site area.

- Alluvium (Quaternary), variously comprising clay, silt, sand and gravel. Alluvium is shown covering areas forming valleys in the southern part of the site.
- Glaciofluvial Deposits (Quaternary) comprising sand and gravel. The Glaciofluvial Deposits are shown covering a tract of higher ground in the most northerly part of the site and an area in the south eastern corner of the site.

A plan showing the locations of boreholes in the general area for which the BGS holds records is presented in Appendix B. No boreholes are shown with or adjacent to the site.

Available records for boreholes drilled to the east of the site give evidence of the occurrence of thicknesses of sand and gravel of up to c. 9m thick associated with the Alluvium and the Glaciofluvial Deposits. Records for boreholes SO54NW91, SO54NW8 and SO54NW11 are presented in Appendix C.

Wellington Quarry (operated by Hanson) is located c. 2km to the east of the site. The quarry produces sand and gravel and is shown by the BGS 1:50,000 scale superficial deposits geology information to be located within an area covered by Alluvium.

It is understood that Planning Permission (DCC013281/M) was granted in 2004 (to the then Lafarge Aggregates Ltd) for the extraction of sand and gravel from land at St Donats Farm, Portway which lies adjacent to the southern boundary of the site. A screen shot from Hereford Council's website relating to this Planning Permission is presented in Appendix D. No documents relating to this Planning Permission are posted on the Hereford Council Website.

4. Mineral Resource Potential

It is considered that no mineral resource potential is associated with the bedrock geology comprising the interbedded siltstone and mudstone of the Raglan Mudstone Formation.

It is considered extremely unlikely that any sand and gravel mineral resources are associated with parts of the site underlain by Glacial Till.

It is possible that economically viable sand and gravel mineral resources may be associated with areas of the site which are shown by the available information to be underlain by Alluvium and/or Glaciofluvial Deposits. These areas are identified on Drawing No. LOWERPF1508-2.

The southern part of the site, which is shown by the BGS 1:50,000 scale superficial deposits geology information to be underlain by Alluvium, is shown to be included within a 'river sand and gravel resources' area on the BGS 1:100,000 Mineral Resources Plan.

Available information is insufficient to allow any estimate of the quality or the recoverable tonnage of sand and gravel which might be associated with any mineral resources which might be present within the site area.

It is important to note that planning and other site development constraints are important considerations with any potential mineral development site.

5. Recommendations

In order to investigate further the mineral resource potential of the land at Lower Parks Farm, it would be essential to complete a programme of direct site investigation involving trial pitting initially possibly followed by borehole drilling together with sampling and laboratory testing of recovered sand and gravel.

Further, a review of geological information included in any publicly available documentation relating to the Planning Permission granted for St Donats Farm should be completed.

I trust that this letter report meets your requirements. Please do not hesitate to contact me if you have any queries.

Yours sincerely



Partner

Encs

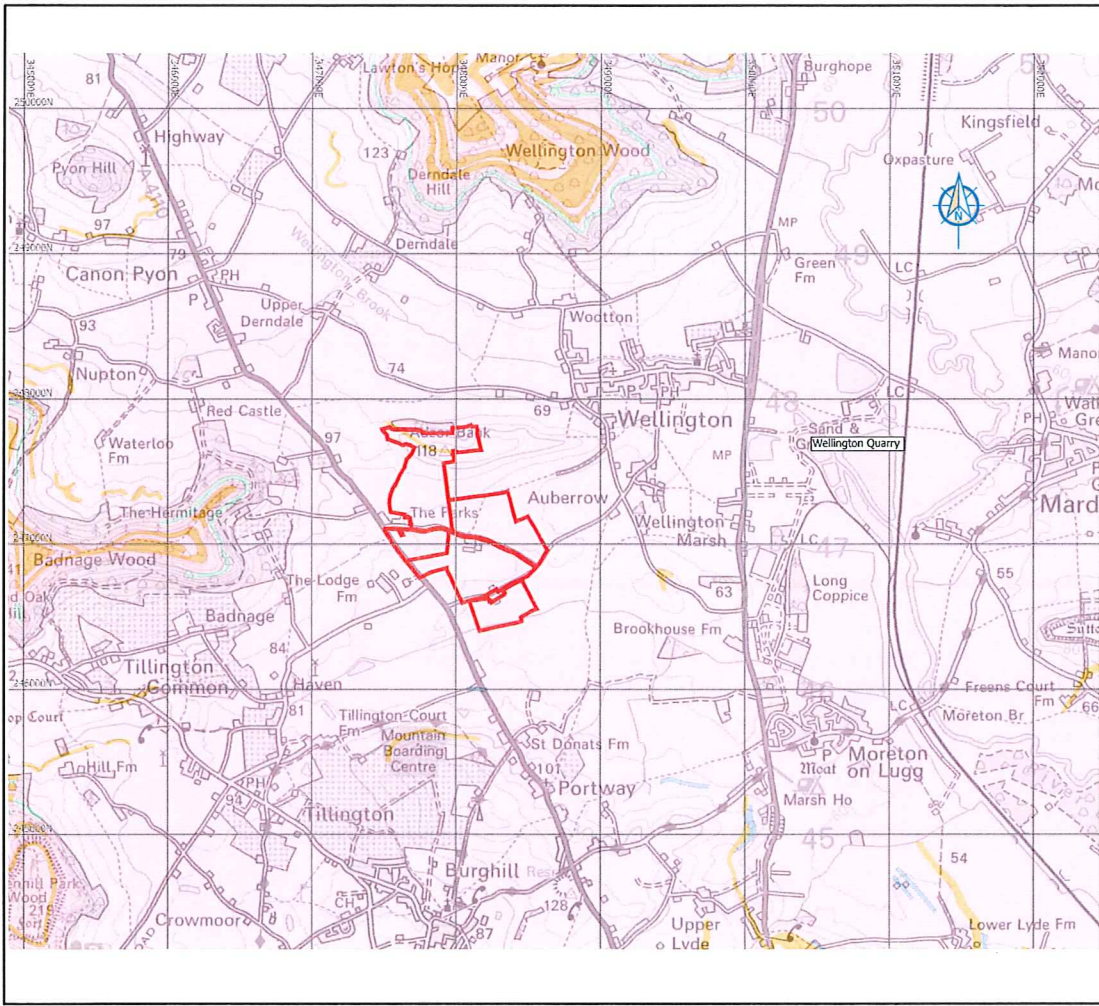
Drawing Nos. LOWERPF1508-1 and LOWERPF1508-2

Appendix A – Site plan provided by Environmental Management Solutions

Appendix B – Borehole location plan

Appendix C – Borehole records

Appendix D – Hereford Council website (Planning Permission DCC013281/M)



LEGEND

Lower Parks Farm

Bedrock geology

- St Maughans Formation - interbedded
- St Maughans Formation - Limestone
- St Maughans Formation - Sandstone
- Raglan Mudstone Formation - Calcareous mudstone
- Raglan Mudstone Formation - Sandstone
- Raglan Mudstone Formation - Siltstone and mudstone
- Bishop's Frome Limestone Member

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Version	Revision and completion notes	Date
A	Draft	21.08.2015

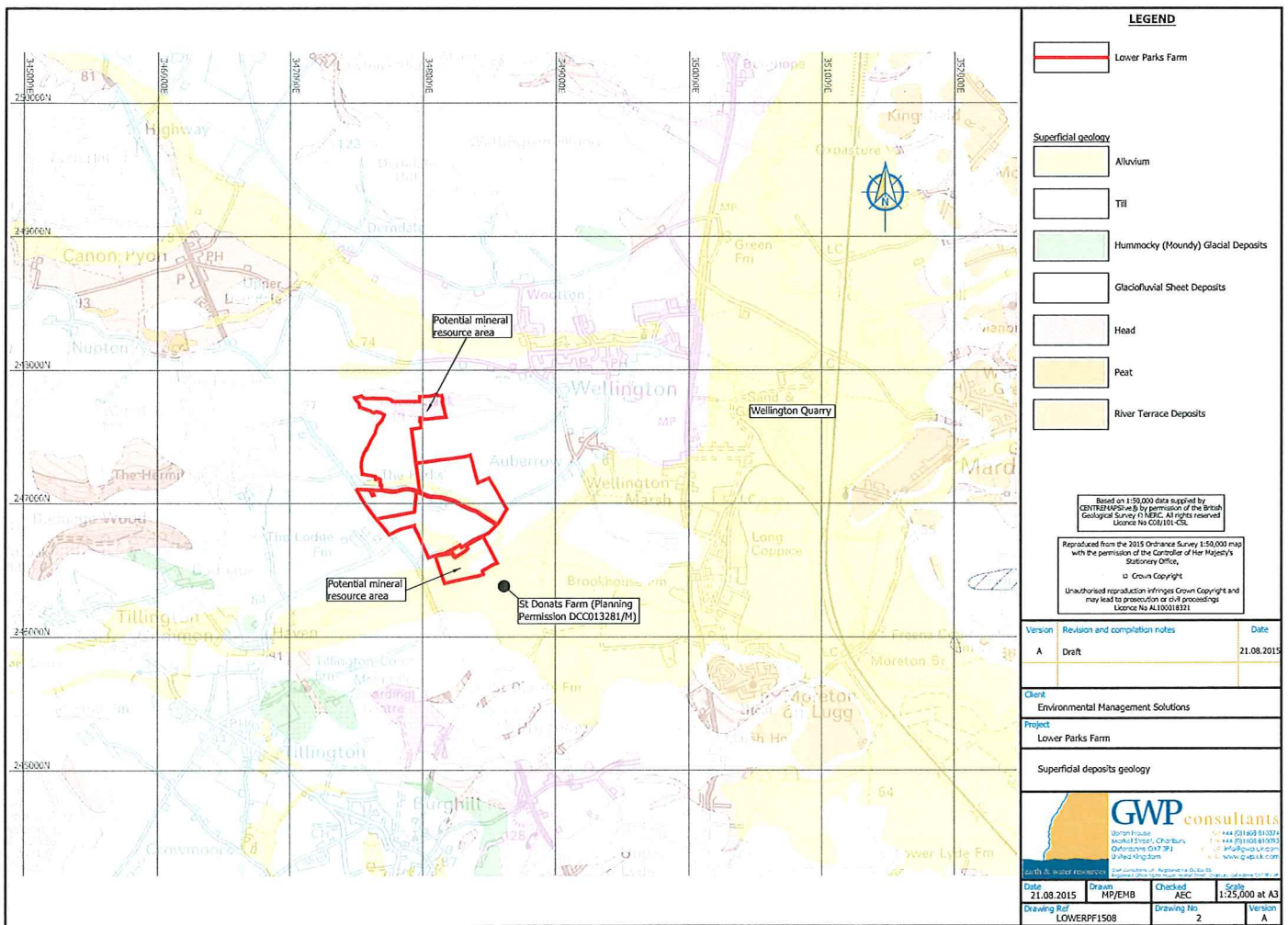
Client
Environmental Management Solutions

Project
Lower Parks Farm

Bedrock geology

Date 21.08.2015 **Drawn** MP/EMB **Checked** AEC **Scale** 1:25,000 at A3








Drawing Ref LOWERPF1508 **Drawing No** 1 **Version** A



LEGEND

 Lower Parks Farm

Superficial geology

-  Alluvium
-  Till
-  Hummocky (Moundy) Glacial Deposits
-  Glaciofluvial Sheet Deposits
-  Head
-  Peat
-  River Terrace Deposits

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Version	Revision and completion notes	Date
A	Draft	21.08.2015

Client
Environmental Management Solutions

Project
Lower Parks Farm

Superficial deposits geology



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South A. water resources
2nd Floor, 10, Regent Street, London, W1B 3AH

Date	Drawn	Checked	Scale
21.08.2015	MP/EMB	AEC	1:25,000 at A3
Drawing Ref	Drawing No	Version	
LOWERPF1508	2	A	

APPENDIX A

Site plan provided by Environmental Management Solutions

APPENDIX B

Borehole Location Plan



APPENDIX C

Borehole records

Form WR - 38 Agency No.

British Geological Survey

British Geological Survey

British Geological Survey

BOREHOLE RECORD

SOS4 173

A. SITE DETAILS

Borehole drilled for:	DAVIS BROOKS (BOREHOLE 1)
Location:	MORETON ON LUGG, HEREFORD
N.G.R.:	SO 501 465 Ground Level (if known): SURFACE
Drilling Company:	W.B. & A.D. MORGAN LTD., PRESTEIGNE, POWYS. LD8 2UF
Date of Drilling: Commenced:	02/01/01
Completed:	17/01/01

B. CONSTRUCTION DETAILS

Borehole datum (if not ground level)..... GROUNDLEVEL

(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)

Borehole drilled diameter..... 376 mm from 0 to 2 m/depth
 315 mm from 2 to 33 m/depth
 240 mm from 33 to 71 m/depth

Casing material Permanent Steel
 and type (e.g. plain steel, plastic slotted) diameter 220 mm from 0 to 14 m/depth

Grouting details – Pump from 14 m TO SURFACE

Water struck at – 0.5 to 9,56 m (depth below datum - mbd)

Rest water level on completion - 2 m (depth below datum - mbd)

C. STRATA LOG

Description of Strata	Thickness(m)	Depth(m)
Overburden	0.5	0.5
Red clay, gravels	1.5	2
Gravel, sands, red clay	7	9
Red marl, red/grey sandstone	8	17
Med hard grey sandstone	1.5	18.5
Med hard red sandstone	5.5	24
Med hard grey sandstone	3	27
Med hard red sandstone	6	33
Layers of red/grey med hard sandstone	38	71
Other Comments (e.g. gas encountered, saline water intercepted, etc.)		
Gravel Pack Quantity:	Temp Steel Casing	9 mtrs x 340 mm
Rig & Crew: Gryphon D. Morris & P. Eckley	Depth and Diameter	

S054NW/S

R. L. DOUGLAS CONSTRUCTION LTD.
RECORD OF BORING

1" 198

5004 4 818
 5009

British Geological Survey
 FACT NO 62-0465

British Geological Survey

HEREFORD COUNTY COUNCIL
 NEWPORT SHREWSBURY TRUNK ROAD
 WELLINGTON BRIDGE
 NO 14.
 FACE LEVEL
 TO 23.5.72
 LITE 23.5.72

BOREHOLE No. 1
 TYPE OF BORING SHELL & AUGER
 DIAMETER 0.30m
 LINING TUBES TO 9m
 INCLINATION: VERTICAL

DESCRIPTION OF STRATA	SECTION	DEPTH BELOW SURFACE m.	THICKNESS m.	OLD LEVEL	SAMPLES			S.P.T. blow count per 300mm	GROUND WATER OBSERVATIONS	REMARKS
					TYPE	No.	DEPTH m.			
GRAVEL		0.00	0.60							
SOFT DARK BROWN CLAY WITH A LITTLE GREEN SAND.		0.60	0.60		1	0.75				
		1.20			2	1.50				
SOFT DARK BROWN CLAY WITH A LITTLE SAND AND SMALL ROUNDED GRAVEL. AT OCCASIONAL GREEN GREY SPOTS AND SMALL FRAGMENTS OF MICACEOUS SANDSTONE.		2.80			3	2.30				
		4.50			4	3.00				
COURSE BANGULAR DARK BROWN CLAY WITH SMALL TO MEDIUM ROUNDED FLAT GRAVEL.		4.50			5	4.50		✓ FIRST WATER ENCOUNTERED		
		5.00			6	5.00				
		6.80			7	7.50				
A LITTLE CLAY PRESENT FROM 7.5m		7.50			8	8.80				
FIRM DARK RED BROWN CLAY WITH MANY SMALL BANGULAR MUDSTONE RELICS CONTAINING UNCLE DARK RED BROWN MUDSTONE PENETRAVELY WEATHERED		8.80			9	9.52	72	FOR 15m		
		9.70					70	FOR 07m		

VERTICAL SCALE 1:10
 • DISTURBED SAMPLE
 ○ UNDISTURBED SAMPLE
 □ R. RAYMOND PENETRATION TEST
 □ C CONE PENETRATION TEST
 W GROUND WATER SAMPLE

SO SH NW/11

R. M. DOUGLAS CONSTRUCTION LTD.
RECORD OF BORING

British Geological Survey
No 52-0455

1:198
5009 4810

HERFORD COUNTY COUNCIL
SHREWSBURY TRUNK ROAD
BRIDGE

BORING No. 4
TYPE OF BORING SHELL & AUGER
DIAMETER 0.20m
LINING TUBES TO 0.4m
INCLINATION VERTICAL

DATE 5.72
NO. 5.72

LITHO STRATA	SECTION	DEPTH BELOW SURFACE m	THICKNESS m	O.D. LEVEL	SAMPLES			S.P. 1 Blows per 300mm	GROUND WATER OBSERVATIONS	REMARKS
					TYPE	No.	DEPTH m			
SOFT DARK BROWN CLAY WITH A LITTLE SAND & SHELLS		0.00								
		0.75								
		2.00								
		2.60								
SOFT UNB. DARK BROWN CLAY WITH MUCH COARSE SAND AND SOME SHELLS		2.00								
		2.60								
		2.60								
		2.60								
ANGULAR COARSE DARK GRAVEL SAND WITH SMALL ROUNDED GRAVEL AND TRACES OF CLAY.		2.60	0.60							
		2.60								
		3.00								
		3.00								
		3.00								
		3.00								
		3.00								
		3.00								
		3.00								
		3.00								
HARD UNBETTERED FRIABLE DARK RED BROWN CLAYEY SANDSTONE WITH GREY CRACK SPOTS THIS STONE IS VERY HARD AND COLLAPSES NEAR 8m		7.70								
		8.00								
		8.00								
		8.00								
		9.40								
		9.30								
		9.30								

British Geological Survey

British Geological Survey

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British Geological Survey

British Geological Survey

○ DISTURBED SAMPLE
● BULK SAMPLE

□ UNDISTURBED SAMPLE
W GROUND WATER SAMPLE

VERTICAL SCALE 1:50
□ R RAYMOND PENETRATION TEST
□ C CONE PENETRATION TEST

4

APPENDIX D

Hereford Council website (Planning Permission DCC13281/M)

Herefordshire Council

Planning application details

- [Return to search results \(https://www.herefordshire.gov.uk./planning-applications?search-term=E04000718&search-service=parish&search-source=Parish&search-item=Burghill\)](https://www.herefordshire.gov.uk./planning-applications?search-term=E04000718&search-service=parish&search-source=Parish&search-item=Burghill)
- [Make a new search \(https://www.herefordshire.gov.uk./planning-applications\)](https://www.herefordshire.gov.uk./planning-applications)

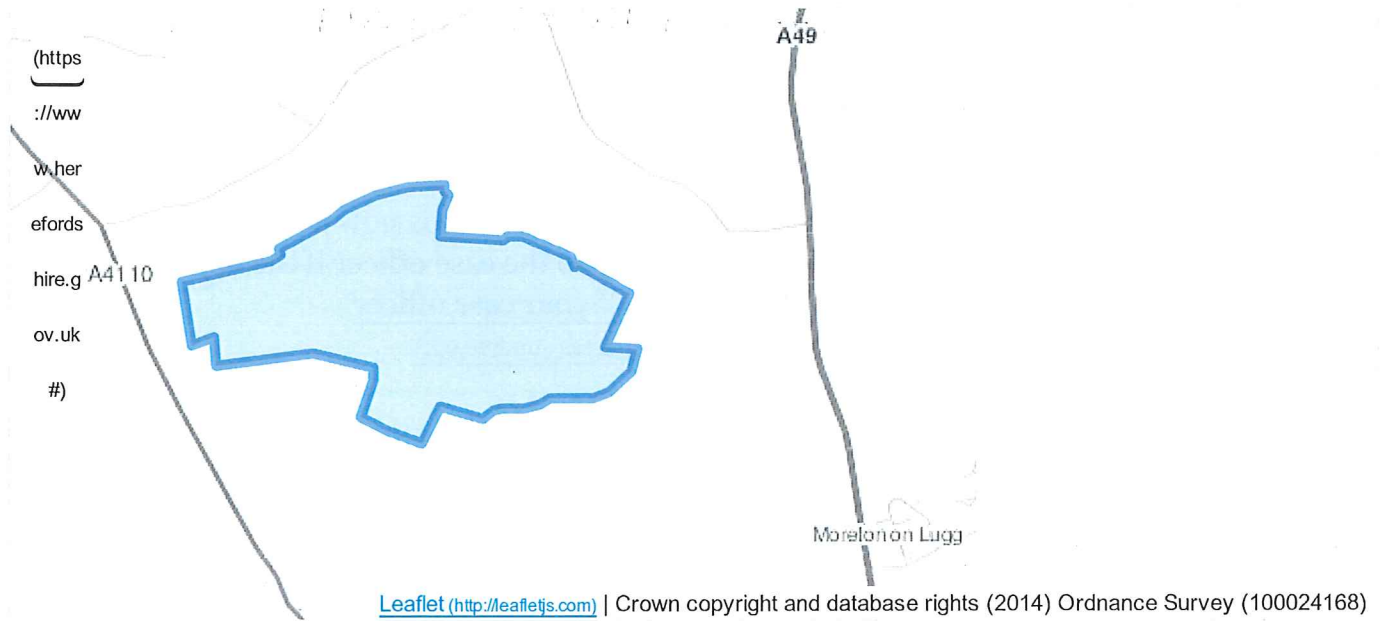
Commenting on this planning application through this website is now closed. Representations may however be submitted directly to the case officer if the application has not yet been determined. [Find contact details of your case officer \(https://www.herefordshire.gov.uk/media/5379955/dm_team_areas_update.pdf\)](https://www.herefordshire.gov.uk/media/5379955/dm_team_areas_update.pdf).

General information

Number	DCC013281/M
Historic Reference Number	CW2001/3140/M
Current status	Determination Made
Decision	Approved with Conditions
Type	Minerals
Location	St Donats Farm Portway Hereford (https://www.herefordshire.gov.ukdetails/map?id=013281)
Proposal	Extraction of sand and gravel, erection of associated processing plant and buildings; restoration to agricultural land and lakes without complying with Condition 1 subject to which planning permission was granted under reference SH961199 (Hereford and Worcester County Council reference 407402) on 3rd January 1997
Parish	Burghill
Ward	Z_Dinmore Hill 1998-2003
Easting/Northing	348840 - 246316.5
Case officer	Nick Dean
Contact details	Contact details of your case officer (https://www.herefordshire.gov.uk/media/5379955/dm_team_areas_update.pdf)
Agent name	Unknown
Agent address	Lafarge Aggregates Limited P.O. Box 36, Retford Road Worksop Notts S81 7YU
Applicant name	Lafarge Aggregates Ltd
Applicant address	Bradgate House, Groby Leicester LE6 OFA
Publicity date	Friday 7 December 2001
Comments by	Thursday 23 September 2004

Application dates

Date received	Tuesday 27 November 2001
Date validated	Tuesday 27 November 2001
Consultation start date	Friday 7 December 2001
Consultation end date	Thursday 23 September 2004
Decision date	Thursday 23 September 2004
Target determination date	Tuesday 22 January 2002



Relevant documents

There are no documents associated with this planning application.

Commenting on this planning application through this website is now closed. Representations may however be submitted directly to the case officer if the application has not yet been determined. [Find contact details of your case officer](#) (https://www.herefordshire.gov.uk/media/5379955/dm_team_areas_update.pdf).

A to Z of services

A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z