MICK GEORGE

ENVIRONMENTAL SETTING AND SITE DESIGN REPORT

CROSS LEYS QUARRY
LEICESTER ROAD
THORNHAUGH
PETERBOROUGH
PE8 6NH

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Information Sheet

ENVIRONMENTAL SETTING AND SITE DESIGN (ESSD)
CROSS LEYS QUARRY, LEICESTER ROAD, THORNHAUGH, PETERBOROUGH, PE8 6NH

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ENVIRONMENTAL PERMIT VARIATION APPLICATION
ENVIRONMENTAL SETTING AND SITE DESIGN REPORT

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1.0 INTRODUCTION

1.1 Report Context

1.1.1 Sirius Environmental Limited (Sirius) has been commissioned by Mick George Limited to prepare an application to vary Environmental Permit EPR/DB3132AZ to support a scheme of restoration for the north-western section of Cross Leys Quarry, Thornhaugh, Peterborough. The existing permit was issued in 2012, before which the waste operations were carried out under Paragraph 9 waste exemptions.

1.1.2 Following recent planning approval for a revised scheme of restoration, Mick George Ltd are seeking to apply to restore the north-western section of the quarry through the permanent deposits of waste as recovery. Due to the presence of protect species and habitats, no further waste activities are proposed to be carried out under the permit in the south-eastern section of the quarry. Instead, the revised quarry restoration scheme has been designed to preserve and enhance biodiversity and habitats within the south-eastern section. The revised plans would still retain an element of the approved scheme, with the northern area remaining agricultural. To achieve restoration to agriculture in the north-western section of the site, the proposal seeks to import around 395,000m^3 of suitable non-hazardous restoration materials to raise the levels within the quarry void to create a gentle domed profile which would improve the surface water drainage and provide a superior quality of agricultural grazing land.

1.1.3 As part of this application it is necessary to prepare an Environmental Setting and Site Design (ESSD) Report. This report has been prepared in accordance with the Environment Agency's guidance "What to include in your environmental setting and site design report" (last updated 17th January 2024).

1.1.4 The waste recovery operations will fill the void created by previous limestone quarrying operations. As well as using existing stockpiles of site-won materials, the quarry void space in the north-western section of the quarry will require import of ~395,000m^3 of suitable restoration material. This will continue to comprise low risk imported inert waste, including suitable mineral, construction, demolition and excavation wastes. The restoration proposals will incorporate land restored to agriculture, some areas of woodland, shrubs and hedgerows, patches of ripped soils and earth mounds re-seeded with species rich grassland, as well as Great Crested Newt (GCN) ponds with surrounding wetland areas.

1.1.5 This application is also supported by a hydrogeological, stability, and environmental and accident risk assessments. These risk assessments have been completed in accordance with the requirements of the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

1.1.6 This report conceptualises the site in terms of the potential source pathway and receptors relationships to support the various risk assessments required to support the Environmental Permit Variation Application. These risk assessments (and relevant engineering and environmental controls) are presented in the relevant sections of the overall application submission document.

1.2 Site Details

Location and Access

1.2.1 Cross Leys Quarry is located approximately 2.8km south-west of the village of Wittering and approximately 16 km west northwest of Peterborough city centre. The application site has the postcode PE8 6NH and is centred on National Grid Reference (NGR) TF 02900 00536. The site is situated to the immediate south of the A47. The location of Cross Leys Quarry relative to its surroundings is presented in **Drawing No. MG1002/14/01**.

1.2.1 Entrance to and exit from the site is undertaken from the main access road (A47) (at NGR TF03114 00707) which runs adjacent to the northern site boundary. This access point was built in accordance with the provisions of a planning permission granted in 1981 (ref. P1166/80). It is aligned at approximately 45 degrees to the carriageway of the A47 (in the direction of Peterborough to the east). Visibility splays at the junction are provided. The access is currently blocked by large concrete blocks, beyond which is a metal gate.

Site Classification

1.2.2 The application will vary the current scheme of restoration to re-focus recovery operations to the north-western section of the quarry.

Application Boundaries and Site Security

1.2.3 The revised Environmental Permit Boundary for the revised waste recovery operations encompasses an area of ~28.4ha, of which restoration activities to which the revised proposals will result in the permanent deposits of future wastes placed over ~13.5ha of the permitted site. These boundaries are presented in **Drawing No. MG1002/14/02**.

1.2.4 The site is bounded to the north by the A47, to the east and southeast by agricultural land and to the southwest and west by Wittering Coppice Woodland. Beyond the site is located within a generally rural location, comprising agricultural land interspersed with woodlands and small settlements.

1.2.5 The site is bounded by dense vegetation (hedgerows and treelines) and stock fencing. The main access point for the site is gated.

Nearby Environmental Permitted Sites

1.2.6 The East Northants Resource Management Facility (ENRMF) is located ~1.3km to the southwest of the site and is a hazardous landfill and soil treatment centre. The ENRMF handles various hazardous waste streams, including ash residues from EfW and Biomass Plants, dredgings, contaminated soil and low-level radioactive waste. This site has been operational since 2009. Thornhaugh Landfill Site (a non-hazardous and stable non-reactive hazardous waste landfill) lies ~1.25km to the southeast of the site and has been operational since 2005. Both ENRMF and Thornhaugh Landfill site are operated by Augean South Limited.

Site Context

1.2.7 The quarry is located within a rural setting in which there are a limited number of residential properties located within 2km of the site. The A47 trunk road is located to the immediate north of the quarry, whilst agricultural land and

woodlands dominate areas beyond all boundaries of the site. The nearest residential property (Wittering Lodge) is located to the north of the south-eastern section of the quarry, ~125m from the operational extents of the future waste activities. Cross Leys Farm and the adjacent cottages are located ~515m and ~460m south respectively of the extent of future waste operations.

1.2.8 Collyweston Great Wood and Easton Hornstocks SSSI, National Nature Reserve (NNR) and ancient woodlands extend across an area of for a distance of over 2.5km to the west of the quarry. Bonemills Hollow SSSI extents ~1.7km to the northwest from immediately beyond the A47 to the north of the quarry. Bedford Purlieus Woods SSSI is located ~440m to the east of the future waste operations boundary. There are no RAMSAR sites, Special Areas of Conservation (SACs) or Special Protected Areas (SPAs) located within 2 km of the site boundary. Additionally, Cross Leys Quarry does not lie within an Air Quality Management Area (AQMA) or a Source Protection Zone (SPZ). Wittering Coppice Woodland is a protected habitat, namely a deciduous Ancient Woodland and lies adjacent to the site's western boundary.

1.2.9 The RAF Wittering Airfield, is situated approximately 1.6km to the north of the site. Businesses within 2km of the site include the aforementioned East Northants Resource Management Facility (situated c. 1.3km south west of the site) and the Thornhaugh Landfill site (1.25km to the south east).

1.2.10 DEFRA's "Magic Map" Application indicates that the historic land use in the area (250m grid) primarily consists of Enclosed Agriculture (including ancient, pre-modern and modern forms), with patches of woodland and forestry. This is interspersed with settlements, unimproved land and areas of Industry. For example, the area upon which the site lies is shown as having historic landscape classifications of both enclosed agriculture and industry (which is a reference to the presence of the quarry.

1.2.11 The site is within a Flood Zone 1, which means that the land has been assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

1.2.12 The site overlies a principal bedrock Aquifer which is classified as being of high vulnerability owing to soluble rock risk. The Bedrock geology over the north-western section of the site comprises Lower Lincolnshire Limestone, while the bedrock geology of the south-eastern section of the site consists of Upper Lincolnshire Limestone.

1.2.13 A summary of surrounding land uses, features, classifications and receptors is included within **Table ESSD1.**

Table ESSD1: Local land uses, features, classifications and receptors and their relevant distances from the boundary of future waste operations (within 1km).

ID	Receptor Name	Type of Receptor	Approximate nearest distance from the operational boundary	Direction from the future operational areas
R1	Principle Aquifer (Lincolnshire Limestone)	Groundwater	Underlying	N/A
R2	Priority Species	Flora and Fauna	On Site	N/A
R3	A47	Public Highway (Main Road)	Adjacent	North

ID	Receptor Name	Type of Receptor	Approximate nearest distance from the operational boundary	Direction from the future operational areas
R4	Collyweston Great Wood & Easton Homstocks & Wittering Coppice Woodland	National Nature Reserve (NNR), Special Site of Scientific Interest (SSSI), Ancient Woodland & Protected Habitat – Deciduous Woodland.	Adjacent+	West
R5	Agricultural Land	Agricultural	20m+ Adjacent+ 200m+ 150m+	North Northwest East South
R6	Wittering Lodge	Residential Property	125m	East & Northeast
R7	Bonemills Hollow	Special Site of Scientific Interest (SSSI), Protected Habitats – Lowland Calcareous Grassland & Lowland Fens.	25m+	North
R8	Bedford Purlieus	SSSI, Protected Habitat – Deciduous Woodland/ National Nature Reserve (NNR) & Ancient Woodland	440m+/780m	East and Southeast
R9	Cross Leys Farm	Industrial (Agricultural) Property	380m	South
		Residential Property	515m	
R10	Cross Leys Farm Cottages	Residential Properties	460m	South
R11	Public Footpaths / Bridle Ways	Public Right of Way	970m	Southeast

1.2.14 The waste related restoration operations will be restricted to the north-western of the current operations, as illustrated in **Drawing No. MG1002/14/02**. Please note, the approximate distances quoted in **Table ESSD1** are in relation to the intervening distance between the receptor and the future operational area, not the Environmental Permit boundary. The sensitive receptors identified in **Table ESSD1** are depicted upon **Drawing No. MG1002/14/10.**

Topography

1.2.15 The site sits in a flat lying land which forms part of a gently undulating landscape to the west of the Cambridgeshire Fenlands.

1.2.16 Cross Leys Quarry lies at about 65m AOD within the limestone upland plateau of Kesteven. The quarry occupies the top of an indistinct minor plateau within the general landform. The topography within the boundary of the site takes on an irregular undulating form due to the working of the limestone. Within the northern part of the site, levels are typically within the range of 63m to 75m AOD, whilst in the southern part, the levels range from 60m to 65m AOD.

1.2.17 Within the boundary of the site, the topography takes on an irregular undulating form due to the working of limestone and stockpiling of mineral wastes. Within the northern section of quarry levels typically range from 63m (at the south-

western corner) to 74m AOD (at the north-western corner), whilst in the southern part, the levels range from 65m to 60m AOD. The site entrance (and A47) is at an elevation of around 68m AOD, whilst the top of the mineral waste stockpile in the northern area is at an elevation of 78m AOD.

Compliance with the EA Approach to Managing and Protecting Groundwater

1.2.18 The waste operations proposed to be operated at Cross Leys Quarry constitutes a non-landfill waste operation that involves the permanent deposits of waste. This activity is therefore considered against Position Statement F1 of the EA approach to the managing and protecting groundwater.

1.2.19 The development site is not located within a Source Protection Zone 1 (SPZ1) and therefore it accords with the decision framework for Position Statement F1 under "The Environment Agency's Approach to Groundwater Protection" (v1.2; February 2018). Nonetheless, as the quarry void is situated sub-water table in parts within a principal aquifer, this triggers the requirement for a Hydrogeological Risk Assessment (HRA) (refer to *Doc. Ref.: MG1002/09).* However, the areas which are flooded with groundwater will be initially filled with site-won restoration materials, with all imported wastes deposited above the groundwater table.

2.0 SOURCE

2.1 Site Development

Sources of Information

2.1.1 The baseline of this report has been determined from a review of available published information, including:

- BGS 1:50,000 scale geology maps
- Environment Agency web-based data
- Data.gov.uk website
- DEFRA's MAGIC website

2.2 Historical Development

Historical Use of Land

2.2.1 A review of historical maps for the site and surrounding areas, indicate that during the nineteenth century, part of the site was previously used for quarrying, being labelled the "Old Quarry", although the old quarry footprint was considerably smaller during the nineteenth and twentieth centuries (the "old quarry" only covered the south-eastern section of the current quarry footprint). The surrounding areas were undeveloped and largely rural in nature. The Bedlams wooded area to the east was more extensive during this time. At this time the surrounding area was generally sparsely populated with some residential properties, namely Wittering Lodge and Cross Leys Farm, and further afield Bonemills Farm, Home Farm, Wittering Grange, Thornhaugh Hall and the small village of Wittering which comprised residential properties, a school, All Saint's Church, a Rectory and a Methodist Chapel. The A47 public highway is denoted upon maps dating back to the mid 1800's.

2.2.2 The 1:10,560 scale map dated 1952 (for the period 1842 – 1952; as a revision of the 1899 map with additions in 1950) depicts the site area as comprising undeveloped, rural land in the northern, southern and western site areas, with an old quarry situated in the eastern area. There was also another old quarry shown to be approximately 340m to the east of the site area. There was also an old gravel pit situated approximately 990m north-west of the current site boundary.

2.2.3 Over the course of the second half of the twentieth century, the village of Wittering remained fairly unchanged in terms of size and amenities.

2.2.4 Quarrying of limestone at the site began in the 1960's, the site has been mothballed since 2012.

2.2.5 The site originally received its Environmental Permit (EPR/DB3132AZ) in February 2012 for the importation of inert waste (including sand, soils, stones, wastes resulting from mining, as well as construction and demolition waste) for the purpose of stabilising and restoring the pipeline bund that traverses through the quarry.

2.2.6 This application seeks to restore the north-western section of the quarry to agriculture.

Other Relevant Land Uses

2.2.7 There are no other relevant land uses which may have given rise to potential sources of non-waste related contamination at the site.

Incidents

2.2.8 There are no environmental incidents that require discussion.

2.3 Proposed Development

2.3.1 The recovery operation is currently permitted on the edges of the pipeline buffer bund and the south-eastern section of the quarry. The future waste operations will support the restoration of the north-western section of the quarry to agriculture, including an area formerly restored via a Paragraph 9 Exemption). Infilling will consist of inert materials to final approved levels, as shown in **Drawing No. CL5/5**

2.3.2 A large proportion of the northern section of the quarry has already received restoration materials, including site-won materials and waste previously imported under a Paragraph 9 exemption. These areas will be regraded and restored using a topsoil and other overburden materials that were stockpiled as part of the former mineral related activities during the preliminary restoration activities that don't require the use of imported restoration materials.

2.3.3 The preliminary preparation activities will also extend to the formation of screening bunds along the eastern edge of the future quarry restoration area using existing stockpiles of quarry fines/wastes, together with the infilling of groundwater flooded areas located in the western and southwestern edges of the quarry base.

2.3.4 Future imported wastes will mainly be used to infill the central and eastern section of the restoration area, with a limited amount of wastes also likely to be required to supplement site-based topsoil and sub-soil/overburden materials to create the final restoration soil profile across all areas of the restoration footprint.

2.3.5 It is estimated that the infilling/restoration of the site will require the import and deposit c. 395,000m^3 (or *c.*790,000 tonnes) of suitable fill material over an anticipated period of between 2 and 10 years, depending on material availability. It is proposed that up to 400,000 tonnes of waste will be imported to the site each year.

Waste Types

2.3.6 Waste codes 17 05 06 and 19 13 02 are to be removed from the current list of wastes currently permitted for deposit at the site.

2.3.7 The waste codes to remain on the permit include inert wastes deriving from mineral/mining, construction, demolition and excavation activities and are presented in **Appendix ESSD1**.

Phasing

2.3.8 The scheme of restoration will be completed in five distinct phases, including a preliminary materials movement phase and four importation and restoration phases. The details of each of the phases are presented in **Drawing Nos. CL5/1 to CL5/5**.

Hydrogeological Risk Screening

2.3.9 Schedule 22 from The Environmental Permitting (England and Wales) Regulations 2016 covers all aspects in relation to groundwater activities. The regulations provide a consolidated system of environmental permitting relating to the relevant functions, granting of an environmental permit as well as the groundwater activities for which a permit may be granted.

2.3.10 The waste operations at Cross Leys Quarry constitute a Groundwater Activity under Schedule 22 of EPR2016 on the basis that it has the potential to lead to the indirect discharge of pollutants to groundwater. A Hydrogeological Risk Assessment has therefore been prepared in support of the application due to the aquifer status of the Lincolnshire Limestone and local groundwater resource potential.

Final Landform and After-Use

2.3.11 The final landform for the restored quarry area is presented in **Drawing No. CL 3/5.** It comprises land restored to agriculture, areas of woodland, shrubs and hedgerows, ripped soils and earth mounds to be seeded with species-rich grassland and retained existing waterbodies / ponds as well as a proposed GCN pond with surrounding wetland areas. The final restored levels tie in with those of the surrounding land which will support long-term surface water management requirements for the site.

3.0 PATHWAY AND RECEPTOR

3.1 Climate

3.1.1 Regional climate data has been sourced from the recording station located at Wittering Airfield, which is located approximately 1.7km to the north of the site.

3.1.2 Average monthly and annual rainfall depths and rainfall days for Wittering are presented in **Table ESSD2**. The average annual mean rainfall for this area is 613.55mm. The average potential evaporation totals for MORECS square 127, which includes Cross Leys Quarry, are between approximately 600 and 710 mm/yr.

Table ESSD2: Average Rainfall and days of rainfall (>1mm) at Wittering (1991-2020)

Month	Rainfall (mm)	Days of rainfall >= 1 mm (days)
Jan	46.96	10.13
Feb	38.92	9.33
Mar	38.99	8.73
Apr	44.15	8.77
May	49.55	8.43
Jun	52.91	9.03
Jul	55.51	9.13
Aug	59.86	9.23
Sep	52.85	8.33
Oct	63.34	10.19
Nov	57.5	11.17
Dec	53.01	10.67
Annual	613.55	113.12

Source: www.metoffice.gov.uk

3.1.3 The predominant local wind direction is from the south-western quadrant with the prevailing winds originating from the southwest and west-south-west, as seen in **Figure ESSD1.** Winds from these directions amount to ~ 27% of the wind. Wind from east and south-east, occurring relatively less frequently, with winds from the northwest and north occurring infrequently.

3.2 Geology

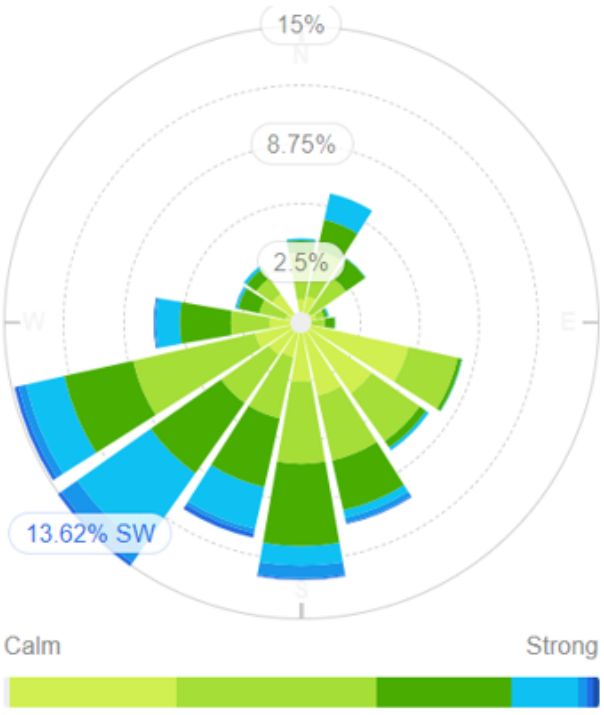
3.2.1 Upon review of published soil mapping[1], it is indicated that prior to development, the application site was underlain by 'shallow lime-rich soils over chalk or limestone' which allowed water to freely drain. Immediately to the south of the application site are 'lime-rich loamy and clayey soils with impeded drainage' whilst land immediately to the west is underlain by 'slowly permeable seasonally wet slightly acidic but base-rich loamy and clayey soils'.

3.2.2 Review of the British Geological Society (BGS) Geology of Britain Viewer[2] confirms that the application site was not underlain by superficial deposits prior to development nor are superficial deposits located about the site boundary.

[1] Cranfield University *(Accessed 13/11/2020)* http://www.landis.org.uk/soilscapes/
[2] BGS Geology of Britain Viewer *(Accessed 13/11/2020)* http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Figure ESSD1: Wind rose for Wittering Airfield meteorological recording station – five-year 2018-2023 annual average

Direction	Proportion
N	3.88%
NNE	6.09%
NE	3.63%
ENE	1.31%
E	1.57%
ESE	7.57%
SE	7.16%
SSE	9.45%
S	11.78%
SSW	10.08%
SW	13.62%
WSW	13.46%
W	1.08%
WNW	3.10%
NW	3.22%
NNW	0%



Source: www.willyweather.co.uk

3.2.3 The bedrock underlying the site comprises Lincolnshire Limestone. The south-eastern area of the quarry is underlain by the upper Lincolnshire Limestone Member which overlies the Lower Lincolnshire Limestone Member as observed in the north-western area of the quarry. The Lower Lincolnshire Limestone commonly includes sandy limestone or calcareous sandstone in their basal parts. Regionally the limestones dip at an angle of approximately 1 degree to the east. An overview of the regional bedrock geology is depicted on **Drawing No.: MG1002/14/08.**

3.2.4 The basal beds of the limestone rest quasi-comfortably on the Grantham Formation which comprise of mudstones, sandy mudstone and argillaceous siltstone-sandstones; these are in turn underlain by the Northampton Sand Formation (Sandstones and Ironstones) and the Whitby Formation (Lias Clay).

3.2.5 The Rutland Formation is observed to outcrop along the southern boundary of the site and beneath Wittering Coppice to the south-west. This unit comprises rhythmic grey marine and non-marine mudstones and siltstones and are not considered to be present across the application site but are recorded within borehole logs to the south.

3.2.6 A summary of the geology near the site is presented in **Table ESSD3** as defined from digital information from the BGS and historical site investigations for the quarry.

Table ESSD3: Summary of Regional Geology

Age	Formation	Description	Present beneath site?	Local approx. thickness
Quaternary	Head	Clay, silt, sand and gravel.	No – outcrop <100m to north	Variable – up to 1m
	Alluvium	Clay, silt, sand and gravel.	No – outcrop c.870m to south	Variable – up to 1m
	Glacial Till Deposits	Diamicton.	No – outcrop c.110m to SW	Up to 12m
Middle Jurassic	Blisworth Limestone Fm.	Pale-grey to off-white or yellowish limestones with thin marls and mudstones.	No – outcrop c.200m to south	10 – 15m
	Rutland Fm.	Rhythmic grey marine and non-marine mudstones and siltstones.	No – immediately on southern boundary	3 – 6m
	Lincolnshire Limestone Upper Member	Limestone dominated by high-energy ooidal and shell fragmental grainstones.	Yes – outcrop at surface	7 – 10m
	Lincolnshire Limestone Lower Member	Limestones dominated by low energy calcilutite, and peloidal wackestone and packstone. Commonly includes sandy limestone or calcareous sandstone in basal parts	Yes – outcrop at surface	
	Grantham Fm. (Lower Estuarine Series)	Mudstones, sandy mudstones and argillaceous siltstone-sandstone.	Yes, below limestone	9m
	Northampton Sand Fm.	Sandy, berthierine-ooidal and sideritic ironstone.	Yes, below limestone	15m
Lower Jurassic	Whitby Mudstone Fm.	Medium and dark-grey fossiliferous mudstone and thin siltstone.	Yes, below limestone	Up to 120m

3.2.7 BGS boreholes logs from around the perimeter of the quarry and the borehole log for the historic on-site water supply well (WS1) indicates that the Limestone and underlying Grantham Formation, Northampton Sand and Whitby Formation dip to the south or south-east across the site, with the base of the limestone (marked by basal sands) at around 58 mAOD along the northern boundary of the quarry (c. 7m thick) to around 53 mAOD (c. 10m thick) along the south eastern boundary. To the south of the quarry the limestone strata dips beneath clays of the Rutland formation. Details of the geology from boreholes surrounding the site are summarised in **Table ESSD4.**

Table ESSD4: Summary of Geology Recorded in Nearby Boreholes

BHID	National Grid Reference	Ground Level (mAOD)	Base of Rutland Fm. Clays (mAOD) (Thickness)	Base of Limestone (mAOD)[a] (Thickness)	Base of Grantham Fm. (mAOD) (Thickness)	Northampton Sand / Tops of Whitby Fm. (mAOD) (Thickness)
TF/00SW/24	TF 02825 00750	64.83	Not Present	58.1 (6.7m)	57.2 (0.91m)	52.6 (4.57m)
TF/00SW/30	TF 02923 00723	68.43	Not Present	58.4 (base not reached)	-	-
TF/00SW/98	TF 02612 00723	65.24	Not Present	57.6 (7.3m)	57.3 (0.3m)	53.04 (4.57m)
TF/00SW/111	TF 02411 00630	68.21	Not Present	59.07 (base not reached)	-	-
TF/00NW/80	TF 02595 00439	71.23	70.01 (1.22m)	54.77 (15.24m)	54.16 (0.61m)	49.28 (4.88m)
TF/00SW/78	TF 02710 00255	68.53	66.40 (2.13m)	52.07 (10.06m)	50.85 (1.2m)	46.89 (3.96m)

BHID	National Grid Reference	Ground Level (mAOD)	Base of Rutland Fm. Clays (mAOD) (Thickness)	Base of Limestone (mAOD)[a] (Thickness)	Base of Grantham Fm. (mAOD) (Thickness)	Northampton Sand / Tops of Whitby Fm. (mAOD) (Thickness)
TF/00SW/122	TF 03008 00254	66.66	63.00 (3.66m)	49.59 (10.36m)	48.68 (0.91m)	45.02 (3.66m)
WS1 (Historic on-site supply)	TF 030 006	68.16	-	56.56 (base not reached)	-	-

[a] –sands interpreted to form part of Lincolnshire Limestone Formation. Insufficient descriptive information available to distinguish if part of the Grantham Formation.

3.3 Hydrology

Hydrological Setting

3.3.1 The quarry lies within the sub-catchment of the River Nene, an EA Main River located approximately 4.5km to the southeast of the site at its closest. The Nene is fed by a series of minor tributaries which drain from the limestone plateau area in a predominantly southerly or south-easterly direction.

3.3.2 The quarry lies within the sub-catchment of the Wittering Brook, the closest watercourse to the site. The watercourse rises approximately 280m to the north of the existing quarry from where it flows easterly.

3.3.3 A minor drain flows along the western boundary of the quarry, along the edge of Wittering Coppice. It is unclear if this drain connects to any other drainage ditches; however, given the local topography it is likely that these drains will ultimately connect to a small stream, approximately 1km to the south which flows in an easterly direction through Bedford Purlieus National Nature Reserve and subsequently into the River Nene. The drain is located within the woodland to the west of the site and above the current excavated level of the quarry, there is therefore currently no direct runoff from the active site.

Current Site Drainage

3.3.4 Presently, all site-generated runoff is contained within the site boundary where it is routed towards the quarry floor and to numerous permanent and ephemeral ponds which have formed within the base of the quarry, allowing infiltration to the underlying aquifer system.

Surface Water Quality

3.3.5 As outlined above, the application site is situated within the sub-catchment of the Wittering Brook. The current EA WFD classification for this surface waterbody is summarised in **Table ESSD5.**

Table ESSD5: WFD Classification of Wittering Brook

Waterbody ID:	GB105032050350
Type:	River
Sub-catchment Area (Ha):	4,847
Length (km):	15.67
2016 Ecological Status:	Moderate
2016 Chemical Status:	Good
2016 Overall Status:	Moderate

Reasons for not achieving good status and for deterioration:	Diffuse source, agriculture and rural land management – Poor nutrient management. Diffuse source, agriculture and rural land management – Livestock. Point source, water industry – Sewage discharge (continuous).

Flood Risk

3.3.6 A review of all potential sources of flooding is shown in **Table ESSD6.**

Table ESSD6: Potential Sources of Flooding

Potential Sources of Flooding	Primary Flood Risk at the Site	Justification
Rivers or fluvial flooding	No	With reference to the Flood Map for Planning, the site lies within Flood Zone 1 (Low Probability), and within an area which is not at risk of flooding from rivers.
Sea or tidal flooding	No	The site is located approximately 52km inland and to the south-west of the Wash and is located at an elevation of between 60 – 65 mAOD.
Surface water and overland flow	No	The mapping indicates that there are localised areas of surface water flooding risk within the site boundary. This is associated with localised low-lying areas within the current site and pre-existing small ponds located within the site.
Groundwater	No	Previous site investigation identified the groundwater table as being at the base of the lower limestone series and therefore at the base of the mineral void. The proposal aims to restore the ground levels within the north-eastern area of the site to pre-existing conditions using inert waste material.
Sewers	No	Given the relatively rural setting it is considered unlikely that the site will benefit from either surface water or foul sewers.
Reservoirs, canals and other artificial sources	No	The 'long term flood risk' mapping confirms that the site is not at risk of flooding from reservoirs. There are no artificial sources within the vicinity of the site.

Water Dependant Ecological Sites

3.3.7 The quarry is immediately bound to the west and southwest by woodland habitats of Collyweston Great Wood and Easton Hornstocks SSSI and NNR and Wittering Coppice ancient woodland. These designations are all cited for their deciduous woodland habitats, together the associated species. The SSSI does not receive runoff from the quarry and lies upgradient of groundwater flow and is in large parts underlain by clays and mudstone of the Rutland Formation. None of these protected habitats are not dependant on groundwater within the limestone.

3.3.8 To the north and within the drainage valley of the Wittering Brook is Bonemills Hollow, a 14ha SSSI. This area is cited owing to several grassland communities

of calcareous and marsh types. The SSSI does not lie downgradient of groundwater flow from the quarry, nor does it receive surface water runoff from the quarry.

3.3.9 The Bedford Purlieus (SSSI) is located ~440m to the east of the future restoration area and extents across an area of 523Ha. This site is designated due to its ancient woodland habitat supporting a variety of woodland community types. Whilst this site is located down hydraulic gradient of the quarry relative to the direction of groundwater flow, the protected habitats are not dependant on groundwater within the limestone, nor does it receive surface water runoff from the quarry.

3.4 Hydrogeology

Aquifer Characteristics

3.4.1 The EA classify the Rutland Formation as a '*Secondary B Aquifer'*; the Lincolnshire Limestone series as a '*Principal Aquifer'*; whilst the underlying Grantham Formation is classified as a '*Secondary (Undifferentiated) Aquifer'*.

3.4.2 The EA aquifer classifications of the geological strata near the application site have been summarised in **Table ESSD7.**

Table ESSD7: Environment Agency Aquifer Classification

Geological Unit	Aquifer Classification	Description
Rutland Formation	Secondary B	"… predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering."
Lincolnshire Limestone (Upper and Lower Members)	Principal	"…layers of rock or drift deposits that have high intergranular and/or fracture permeability – meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale".
Grantham Formation	Secondary Undifferentiated	"…assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type".
Northampton Sand	Secondary A	"…permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers."
Whitby Formation	Unproductive Strata	"…rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow."

3.4.3 BGS mapping confirms that the limestone beneath the application site is classified as a highly productive aquifer. The limestone is characterised by a low intergranular porosity (13% - 21%) and corresponding low permeability of around $3x10^{-4}$m/d, because of this groundwater flow is primarily through

fractures which have been developed by karstic weathering. These fractures are typically located within the upper 30m of the aquifer unit.

3.4.4 It is reported Allen et al, (1997) that the transmissivity of the limestone often exceeds 1,000 m^2/day and can be as high as 5,000 to 10,000 m^2/day. Highest transmissivities are typically found within the confined limestone (where is dips beneath the Rutland Formation) and are likely to be lower in unconfined aquifers such as at the site. For the unconfined limestone the transmissivity has been modelled as 100-250m^2/day (Rushton, 1975).

3.4.5 Literature values of the matric porosity have been recorded as 13-18%, the fracture porosity which is of importance to the aquifer is estimated to be approximately 1% (Allen, et. al, 1997).

3.4.6 The underlying Grantham Formation typically acts as an aquitard between the limestone aquifer and the underlying Northampton Sand Formation. However, where the Grantham Formation is thin hydraulic continuity between the two units can be expected. Available boreholes logs suggest the “black clay” associated with the Grantham Formation is between 0.3m and 3m in thickness which indicates that there is potential for some connection between the two units.

3.4.7 BGS logs located around the periphery of the site also identify the present of between ~3.5 and ~5m of brown or running sands at the boundary between the Lower Lincolnshire Limestone and Grantham Formation. These sands are in hydraulic continuity with the overlying solid limestone.

3.4.8 Groundwater vulnerability at the application site is identified by the EA as “Major Aquifer - High”. The site does not lie within a groundwater Source Protection Zone (SPZ).

3.4.9 A pumping test was undertaken in support of an abstraction license application in September 1999 (Bardon Aggregates, 1999) for a water supply for the quarry. The results of this pumping test have been used to estimate the in-situ permeability of the limestone near Cross Leys Quarry. The results and analysis of the pumping test are included within **Appendix ESSD2**. These indicates the following range of permeabilities:

- Pump Test (Theis): $2.5x10^{-5}$m/sec (2.21m/day)
- Rising Head Test 1 (Bouwer & Rice): $1.17x10^{-4}$m/sec (10.11m/day)
- Rising Head Test 2 (Bouwer & Rice): $1.65x10^{-5}$m/sec (1.42m/day)

3.4.10 The pumping test data and the proven borehole yield (0.15 l/s) indicates that the limestone beneath Cross Leys Quarry has a relatively high permeability. A review of the well logs and water levels recorded during the test indicates that these permeability values are representative of the basal sands and not the solid limestone strata. The transmissivity value of 6.3m^2/d derived from WS1 is significantly lower than the anticipated transmittivity values for the solid limestone strata of 100-250 m^2/d.

Recharge Characteristics

3.4.11 Rainfall information obtained from Wittering observing Station at Wittering Airfield; situated approximately 1.6 km north of the site, indicates that the long-term average annual rainfall (1981 – 2010 inclusive) for the area is ~615.5mm/year.

3.4.12 Owing to the lack of overlying soils and superficial deposits within the application site incident rainfall onto the application site will readily form

groundwater recharge to the Lower Lincolnshire Limestone aquifer. The recharge capabilities across with the footprint of the quarry will be reduced by restoration with soils and the establishment of vegetative cover, resulting in increased evapotranspiration. Whilst run-off will increase as consequence of the restoration with low permeability fill, such waters will be redirected to either of several infiltration ponds that form part of the final restoration scheme. Regardless, the quarry represents a relatively small recharge area for the aquifer and the restoration proposal will not significantly influence the recharge capabilities of the aquifer.

Groundwater Levels and Flows

3.4.13 The saturated thickness of the unconfined limestone can be highly variable due to the rapid response to rainfall recharge. Resultantly, groundwater levels can often be very low or completely dry, particularly during the summer months.

3.4.14 Groundwater flow follows the regional dip of the strata, which is in an easterly direction. The nearest springs are located in the upper reaches of Bonemills Hollow Valley ~285m north of the quarry at an elevation of ~61-62mAOD. Further springs located within a 2km radius of the future operational area can be viewed in **Drawing No.: MG1002/14/06**.

3.4.15 A site investigation undertaken by SLR in 2001 prior to commencement of quarrying included the installation of three groundwater observation wells across the site. The monitoring data provided for the period June 1999 to August 2001 is summarised in **Table ESSD8**. The monitoring wells confirmed that prior to quarrying the groundwater levels ranged from ~56 mAOD in the east to ~64.5 mAOD in the west with flow towards the east southeast at a hydraulic gradient of ~0.01. These are considered to reflect natural groundwater levels across the site as the readings were taken prior to commencement of quarrying at the site.

Table ESSD8: Groundwater Levels (1999 - 2001)

BHID	Count	Groundwater Level (mAOD)			Range (m)
		Min	Mean	Max	
GW/BH1	64	63.96	65.13	66.48	2.52
GW/BH2	51	59.46	60.41	62.00	2.54
GW/BH3	49	55.54	56.57	58.47	2.93
WS1	49	59.48	60.31	61.04	1.56

3.4.16 Groundwater levels recorded between March 2021 and June 2024 are included in **Appendix ESSD3**. A summary table for this data in included in **Table ESSD9** below. The locations of the boreholes used to obtain these groundwater levels on site are included in **Drawing No MG1002/14/09.**

Table ESSD9: Groundwater Levels (2021-2024)

BHID	Count	Groundwater Level (mAOD)			Range (m)
		Min	Mean	Max	
(GW)BH2	38	58.91	60.47	64.36	5.45
(GW)BH3	34	55.07	55.83	56.80	1.73
BH1A	35	61.71	64.27	66.81	5.1
BH2A	11	60.82	62.50	62.70	1.88
BH3A	36	60.12	61.04	62.74	2.62
WS1	25	59.85	60.58	61.82	1.97

3.4.17 As can be seen from the monitoring data, there are no significant changes in current groundwater levels to those monitored prior to the commencement of mineral extraction at the site.

3.4.18 The data from 2021-2024 indicates that the average saturated depth of the aquifer is typically ~6.5m beneath at the north edge of the quarry increasing to ~8.5m in the southern edges. The presence of ~3.5 to 5m of brown/running sands at the boundary between Lower Lincolnshire Limestone Formation and Grantham Formation would indicate that a proportion of groundwater flow occurs through the basal sands with the remaining flow through the secondary permeable features of hard limestone strata.

Groundwater Quality

3.4.19 The BGS Baseline Report for the Lincolnshire Limestone (Griffiths et al, 2006) indicates the groundwater is mainly of the Ca-HCO_3-SO_4-Cl water type. The water quality in the unconfined aquifer is typically hard (high in mineral content; particularly calcium, carbonate and sulphate) and becomes progressively softer towards the east as the aquifer becomes confined by clay.

3.4.20 Conversely, the unconfined aquifer typically records low concentrations of trace metals, which typically increase down dip as the aquifer becomes confined.

3.4.21 Typical groundwater chemistry for key determinands within the unconfined Lincolnshire Limestone, as presented within the baseline series report, is summarised in **Table ESSD10.**

Table ESSD10: Unconfined Lincolnshire Limestone: Groundwater Quality

Determinand	UK DWS	Unconfined Aquifer Concentration			
		Minimum	Median	Mean	97.7th Percentile
pH (pH units)	-	7.1	7.3	7.4	8.4
Calcium (mg/l)	-	95.5	161.5	163.2	197.3
Magnesium (mg/l)	-	2.5	6.1	6.3	10.5
Sodium (mg/l)	200	9	21.7	23.8	61.9
Potassium (mg/l)	-	0.5	2.3	2.3	4.7
Chloride (mg/l)	250	25	57.1	59.1	88.3
Fluoride	1.5	0.05	0.18	0.18	0.52
Sulphate (mg/l)	250	58.2	120.5	121.7	188.6
HCO_3 (mg/l)	-	141.4	268.2	272.6	343.1
Arsenic (µg/l)	10	<0.5	<0.5	<0.5	0.579
Cadmium (µg/l)	5	<0.05	0.165	0.14	0.2
Chromium (µg/l)	50	<0.5	<0.5	<0.5	<0.5
Copper (µg/l)	2,000	0.6	2.2	2.27	4.23
Iron (µg/l)	200	<0.03	0.0025	0.57	7.05
Lead (µg/l)	10	<0.1	0.2	2.44	15.94
Mercury (µg/l)	1	<0.1	<0.1	<0.1	<0.1
Nickel (µg/l)	20	<0.2	<0.2	0.61	2.53
Zinc (µg/l)	-	3.7	10	10.61	15.36

3.4.22 Groundwater quality monitoring has been carried out in several historic and more recently installed boreholes located around the periphery of the future restoration area and quarry. The locations of these monitoring points are presented in **Drawing No.: MG1002/14/09.** An analysis of the monitoring data is presented in **Appendix ESSD4,** with a statistical summary presented in **Table ESSD11.**

Table ESSD11: Summary of monitored background groundwater quality at Cross Leys Quarry (Mar-2021 to June-2024)

Determinand	Units	Stat	BH2	BH3	BH1A	BH3A	WS1
Ammoniacal Nitrogen	mgN/l	Min	0.051	<0.05	<0.05	<0.05	<0.05
		Mean	0.51	0.26	0.33	0.19	0.16
		Max	1.4	0.93	1.4	0.59	0.68
Cadmium	µg/l	Min	<0.11	<0.11	<0.11	<0.11	<0.11
		Mean	<0.11	<0.11	<0.11	<0.11	<0.11
		Max	<0.1 (0.47)	0.12	<0.11	<0.11	<0.11 (0.12)
Chloride	mg/l	Min	23	16	31	7	7.3
		Mean	36.3	57.5	38.2	39.5	46.2
		Max	72	74 (95)	51	66	68
Chromium	µg/l	Min	<0.50	<0.50	<0.50	<0.50	<0.50
		Mean	1.82	2.32	4.49	4.93	4.92
		Max	7.3 (26)	7.9 (24)	8.3 (19)	9.5 (20)	16 (33)
Copper	µg/l	Min	<0.5	<0.5	0.93	<0.5	<0.5
		Mean	2.13	1.31	1.87	1.70	0.98
		Max	6.4 (14)	3.1	3.7	3.8	2 (6.2)
Iron	µg/l	Min	<5	<5	<5	<5	<5
		Mean	22.08	15.14	9.33	9.87	16.26
		Max	150 (340)	150 (720)	54	59	120 (310)
Lead	µg/l	Min	<0.5	<0.5	<0.5	<0.5	<0.5
		Mean	<0.5	<0.5	<0.5	<0.5	<0.5
		Max	<0.5 (6.9)	<0.5 (1.6)	<0.5	<0.5	<0.5 (2.2)
Magnesium	mg/l	Min	<0.2	5.8	4.3	4.2	4.5
		Mean	5.36	7.00	7.31	5.44	6.40
		Max	11	8.3 (15)	12 (18)	8.1	10
Manganese	µg/l	Min	<0.5	0.64	<0.5	<0.5	<0.5
		Mean	69.5	72.9	127.8	7.4	1.89
		Max	220	590	970	71	8.1 (35)
Nickel	µg/l	Min	<0.5	<0.5	<0.5	<0.5	<0.5
		Mean	1.92	1.44	1.85	1.03	0.52
		Max	6.7 (12)	3.7 (12)	4.5	2.8 (7.4)	0.67 (11)
Potassium	mg/l	Min	<0.5	1	1	0.8	0.77
		Mean	2.89	2.83	2.34	1.60	1.34
		Max	5 (34)	4.6	5.4	3.2	2.2 (31)
Selenium	µg/l	Min	<0.5	<0.5	<0.5	<0.5	<0.5
		Mean	0.54	0.54	0.59	0.58	0.54
		Max	1.1	1.2 (1.9)	1.4	1.3	1.2
Sodium	mg/l	Min	<1.5	32	20	7.3	8.8
		Mean	21.13	38.44	25.03	27.24	29.79
		Max	37	47	36	38	51
Sulphate	mg/l	Min	36	85	95	47	7.3
		Mean	99.9	175.6	179.3	125.6	104.6
		Max	180	230 (430)	470	200	140
Zinc	µg/l	Min	<2.5	<2.5	<2.5	<2.5	<2.5

Determinand	Units	Stat	BH2	BH3	BH1A	BH3A	WS1
		Mean	8.16	6.41	9.32	10.6	6.75
		Max	33	27	29	31	26

Highest statistical outlier quoted in brackets

3.4.23 The averages for each variable recorded from groundwater quality monitoring undertaken from Cross Leys quarry (presented in **Table ESSD11**) are generally comparable to or below those presented in the baseline groundwater quality recorded for unconfined Lincolnshire Limestone concentrations within the region. The only exceptions to this are chromium and iron concentrations in the groundwater recorded from all boreholes on site, as well as the average sodium in BH3 and sulphate in BH3 and BH1A which exceed their respective median values in **Table ESSD10.** Regardless of this, none of the variables monitored on site exceed their respective UK Drinking Water standards (where standards exist).

3.4.24 The quarry is located within the EA-classified groundwater waterbody "Welland Limestone Unit A". A summary of the Water Framework Directive (WFD) classification for the site is given in **Table ESSD12**.

Table ESSD12: WFD Classification for Welland Limestone Unit A

Waterbody ID:	**GB40501G445900**
Type:	Groundwater Body
Groundwater Area (Ha):	23,386
2016 Quantitative Status:	Poor
Quantitative Objective:	Good by 2027
2016 Chemical Status:	Poor
Chemical Objective:	Good by 2027
2016 Overall Status:	Poor
Overall Waterbody Objective:	Good by 2027
Reasons for not achieving good status and for deterioration:	Landfill Leaching – Waste treatment and disposal. Groundwater abstraction – Water industry.

Groundwater Abstractions and Source Protection Zones

3.4.25 There are a total of five licensed groundwater abstractions within a 2km radius of Cross Leys Quarry. Two relate to wells at Cross Leys Farm ~380m south of the site and are used for general agricultural uses. The other two are licensed to the owners of Wittering Grange Farm, in which abstractions are made from a borehole(s) located adjacent to the RAF Wittering, ~1.6km north of the quarry. These licenses allow use for general agriculture and private water supplies for household use. Finally, another groundwater abstraction is located at Rose Lodge located ~2km to the southeast of the quarry. Full details of these entries are included in **Appendix ESSD5.**

3.4.26 There are no Source protection Zones located within 2km of the site, with the nearest SPZ located ~3.5km to the north and ~4km northeast of the quarry, the extents of which are cut-off by the White-Water Brook Valley. There are also no groundwater Drinking Water Safeguard Zones within 2km of the quarry.

3.4.27 Peterborough City Council has indicated that there are two private water supplies within a 2.5km radius of the quarry, both located to the southeast of the site and believed to be groundwater sources, presumably from the confined limestone aquifer. The details of these extractions are summarised in **Table ESSD13.**

Table ESSD13: Details of Private Water Supplies

Ref No.	Supply Name	Address	Source	Usage	Distance and Direction from Site
PWS004	Nightingale Farm	Kingscliff Road, Wansford, Peterborough, PE6 7SA	Borehole	Residential	c. 2.3km SE
PWS008	Leedsgate Farm	Twin Oaks, Leedsgate Farm, Wansford, Peterborough, PE8 6NX	Borehole	Residential	c. 2km SE

3.5 Man-made subsurface pathways

3.5.1 Other than the monitoring boreholes associated with quarry and abstraction boreholes/wells previously discussed, other man-made pathways in the vicinity of the site are likely to include buried utility and service conduits either beneath the local road networks or within neighbouring fields, as well as the pipeline which transects the quarry to supply aviation fuel to RAF Wittering located ~1.6km north of the quarry. Specific details of any such conduits have not been identified due to the associated risk with the inert waste deposits.

3.6 Receptors and Compliance Points

3.6.1 Receptors within close proximity of the site are depicted in **Drawing Nos. MG1002/14/04 and MG1002/14/05.**

Controlled Waters

3.6.2 Potential receptors of waterborne contaminants from Cross Leys Quarry are:

- Groundwater Resources
- Surface water bodies
- Abstraction points

Groundwater

3.6.3 The groundwater within the Upper Lincolnshire Limestone forms the primary receptor to potential pollutants that may be released as a consequence of the waste recovery operations. For both hazardous substances the point of compliance will be downgradient edge of the future restoration area. For non-hazardous pollutants the point of compliance will be the downgradient edge of the quarry restoration area.

Surface Water

3.6.4 As discussed within the hydrology section, the Quarry lies within the sub-catchment of the River Nene, an EA Main River situated c. 4.5km to the southeast of the site at its closest. The quarry lies within the sub-catchment of Wittering Brook, the closest watercourse to the site which rises approximately 280m to the north of the existing quarry from where it flows easterly. Also, a minor drain flows along the western boundary of the quarry, along the edge of Wittering Coppice. Given the local topography, it is likely that this drain ultimately connects to a smaller stream, approximately 1km to the south which flows in an easterly direction through Bedford Purlieus National Nature Reserve and subsequently into the River Nene. However, it should be noted that this

drain is situated within the woodland to the west of the site and is above the current excavated level of the quarry, therefore, there is currently no direct runoff from the active site.

3.6.5 At present, site-generated runoff is contained within the site boundary where it is directed to the quarry floor and to numerous permanent and ephemeral ponds which have formed within the base of the quarry, allowing infiltration to the underlying aquifer system. There is no further surface water management in place at the site, and this will remain the same under the current proposal.

Amenity (Nuisance and Health Issues)

3.6.6 Due to the rural setting of the site, there are limited human receptors within 500m of the site. Details of all human, natural and cultural receptors located with 1km of the future waste operations are presented in **Table ESSD1.** In summary, the nearest human receptors include the residential property Wittering lodge and the A47 public highway.

3.6.7 There has been no excavation at the site since it was mothballed in 2012, therefore, dust emissions have not been an issue. During restoration of the quarry dust will be managed when necessary via water spraying to supress particle suspension. Additionally, most residential properties are situated a considerable distance from the site boundary and therefore there is little risk posed to them.

Ecology

3.6.8 As discussed in **Section 1.2,** there are two National Nature Reserves (NNRs) and three Sites of Special Scientific Interest (SSSIs) situated within 2km of the site boundary. These are Collyweston Great Wood and Eastern Hornstocks NNR and SSSI situated adjacent to the site's western boundary line, Bedford Purlieus SSSI and NNR which lies ~440m and ~780m respecitvely to the east and southeast of the site and the Bonemills Hollow SSSI which lies ~25m north of the site.

3.6.9 There are no RAMSAR sites, Special Areas of Conservation (SACs) or Special Protected Areas (SPAs) located within 2km of the site boundary.

3.6.10 None of the designated conservation areas located adjacent are hydraulically connected to the groundwater within the underlying limestone aquifer. The principal emissions that could potentially impact upon these designated habitats are dust, which will be managed in accordance with a Dust & Emissions Management Plan.

3.6.11 Prior to the commencement of waste imports to the site, a Biodiversity & Landscape Management Plan will be prepared for approval by the Mineral Planning Authority in accordance with conditions C13 of planning permissions held for the site. These conditions require this plan to include full details of all protected species avoidance and mitigation measures, including a reptile mitigation strategy, full details and specifications of ponds to be created, non-native species eradication programme and updated species surveys, which are to be based on the information submitted in support of the planning application for the current scheme of restoration for the quarry. A copy of the planning application and relevant permissions are included in **Appendices ESSD6** and **ESSD7** respectively.

4.0 POLLUTION CONTROL MEASURES

4.1 Site Engineering

Groundwater Management System

4.1.1 All imported wastes to support the quarry restoration will be deposited above the water table. The flooded areas along the western edges of the quarry will be infilled (excluding a small section to be retained as part of the restoration scheme) during the preliminary restoration phase using site-won materials only. No groundwater management will therefore be necessary to support the restoration activities.

Basal and Side Slope Engineering

4.1.2 Basal areas in which imported wastes will be deposited directly onto the limestone bedrock to depths in excess of 2m will be engineered with 500mm thick Artificially Established Geological Barrier to achieve a maximum permeability of $1x10^{-7}$m/s. The indicative footprint over which the AEGB will be required is presented in **Drawing No. MG1002/12/03.**

Capping

4.1.3 There is no requirement to limit the infiltration of waters through the surface of the wastes deposit. No surface capping will therefore be constructed.

Restoration

4.1.4 The restoration scheme approved in December 2020 would allow for the creation of predominantly agricultural restoration (12.7 ha) in westerly and northerly parts of the site and 12.8 ha of wildlife habitat in easterly and southerly parts of the site which would include the GCN receptor site. Across the whole site created habitats include woodland (1.2 ha), areas of water (3.85 ha), scrub (0.36 ha), species rich grassland (2 ha), wetland (0.85 ha) with 1,540 linear metres of hedgerows and 15 hedgerow trees. The receptor area for GCNs would be supplemented with six purpose built GCN mitigation ponds with adjacent earth-mound hibernacula constructed from excavated pond material.

4.1.5 The agricultural restoration area has a maximum crest elevation of 76 mAOD at a localised undulation situated centrally to the proposed field but for the most part levels would range from 65 mAOD and 70 mAOD. This is representative of topographical trends in the local area. Gradients within the proposed restored agricultural areas typically range from 1:8 to 1:25 and would be accessible by precision seeding and harvesting equipment (according to the limits set out in the former Minerals Planning Guidance 7). Alongside the A47, gradients would also be typically between 1:8 and 1:25.

4.1.6 The agricultural restoration area would incorporate land drains and surface water would be allowed to collect in ponds located in the corners of the restored landform. These ponds would provide an additional wetland feature within the site which would be beneficial for invertebrates, amphibians and reptiles.

4.1.7 The approved restoration scheme retains key components of the previously permitted scheme including woodland and scrub planting, agricultural and nature conservation land provision, and hedgerows.

4.1.8 The final soil profile of the restored quarry will formed using existing stockpiles of sub-soils and topsoil present across the quarry.

Surface Water Management

4.1.9 During the infilling phase of the development surface waters will continue to infiltrate directly into permeable ground. As final levels are achieved in each restoration phase area, any run-off will be collected by a network of perimeter ditches that will drain to infiltration lagoons that will form part of the final scheme of restoration.

Post Closure Controls (Aftercare)

Proposed after-use of the site

4.1.10 The quarry will be restored to create calcareous grassland, woodland and wetland habitats. Following this restoration, the site permit will be surrendered.

Post Closure Management of the site

4.1.11 Due to the inert nature of the waste materials deposits to restore the quarry there will be no post-closure management requirements for groundwater, surface water, leachate or ground gases.

4.1.12 Any monitoring requirements once final levels have been achieved will be subject to a review of monitoring data collected during the operational phase of the restoration activities.

Conditions when Permit Surrender is Acceptable

4.1.13 If monitoring data collected during the operational phase of quarry restoration demonstrates that the waste are do not present a risk to the human health or the environment, an application will be submitted to surrender the permit.

5.0 MONITORING

5.1 Weather Monitoring

5.1.1 Meteorological information will continue to be obtained from the local weather station located c.1.7km to the north of the site at RAF Wittering. This station provides total and effective rainfall, as well as the prevailing wind direction and strength.

5.2 Gas Monitoring

5.2.1 Only inert wastes consisting of mineral, construction, demolition and excavation wastes will be deposited at the site. Gas monitoring will be carried every quarter within perimeter gas boreholes to determine is there are any significant increases in ground gas concentrations as a result of the waste deposits.

5.3 Groundwater Monitoring

5.3.1 Groundwater will be monitored quarterly within perimeter groundwater boreholes as per the schedule presented in the Hydrogeological Risk Assessment (Doc. Ref.: MG1002/09) prepared in support of the application.

5.4 Surface Water Monitoring

5.4.1 Surface water within the infiltration lagoons will be monitored quarterly as per the schedule presented in the Hydrogeological Risk Assessment (Doc. Ref.: MG1002/09) prepared in support of the application.

6.0 SITE CONDITION REPORT

6.1 Previous Versions

6.1.1 A site condition report was prepared in November 2011 by WYG Environment in support of the Environmental Recovery Permit Application. This report was completed using the EA Site Condition Report Template (v2.0, 4th August 2008).

6.1.2 As the current proposed variation only extends the permit boundary to areas that will receive the permanent deposit of waste, this falls outside of the scope for a Site Condition Report. Therefore, there are to be no revisions to the original site condition report of 2011.

6.2 Additional Considerations

6.2.1 The information presented within the preceding sections of this report establishes the baseline site conditions for the Cross Leys Quarry, in terms of geology, surface water and groundwater conditions and their sensitivity.

6.2.2 The historic land use of the site, detailed in **Section 2.2,** does not identify any significant potentially contaminative land uses.

REFERENCES

Griffiths, KJ, Shand, P, Marchant, P and Peach (2006). *Baseline Report Series 23: The Lincolnshire Limestone.* British Geological Survey Commissioned Report No. CR/06/060N

Bardon Aggregates (1999). *Proposal to abstract water at Cross Leys Quarry, Peterborough.*

SLR Consulting (2001) *Cross Leys Quarry: Review of Mineral Permissions under the Review of Mineral Permissions under the Environment Act 1995 Application for Determination of Conditions – Environmental Statement*. Ref 4C/275/001 (March 2001)

DRAWINGS

APPENDICES

APPENDIX ESSD1

List of Waste Types

LIST OF PERMITTED WASTES

EWC Code	Description
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07.
01 04 09	Waste sand and clays.
17 01 01	Concrete.
17 01 02	Bricks.
17 01 03	Tiles and Ceramics.
17 01 07	Mixtures of concrete, bricks, tiles, and ceramics other than those mentioned in 17 01 06.
17 05 04	Soil and stones other than those mentioned in 17 05 03.
19 12 09	Minerals (for example sand, stones).
20 02 02	Soil and stones.

APPENDIX ESSD2

Pumping Test Data

Data Set: Z:\SLR\Projects\Active Projects\00275 Aggregate Industries\00233 - Cross Leys\Tech\HYD\Wking\Pum
Date: 11/02/18
Time: 16:27:44

PROJECT INFORMATION

Company: SLR
Client: AI
Project: 403-00275-00233
Location: Cross Leys
Test Date: 20/05/99
Test Well: WS1

AQUIFER DATA

Saturated Thickness: 2.87 m
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

No. of pumping wells: 1

Pumping Well No. 1: WS1

X Location: 0. m
Y Location: 0. m

Casing Radius: 0.075 m
Well Radius: 0.05 m

Fully Penetrating Well

No. of pumping periods: 17

Pumping Period Data

Time (min)	Rate (m^3/min)	Time (min)	Rate (m^3/min)
0.	0.0173	90.	0.0091
16.	0.0101	105.	0.0086
24.	0.0086	120.	0.0089
30.	0.0087	135.	0.0087
35.	0.0087	150.	0.009
45.	0.0093	165.	0.0087
55.	0.0094	180.	0.0085
60.	0.0094	210.	0.0088
75.	0.009		

OBSERVATION WELL DATA

No. of observation wells: 1

Observation Well No. 1: WS1

X Location: 0. m
Y Location: 0. m

Radial distance from WS1: 0. m

Fully Penetrating Well

No. of Observations: 16

Observation Data

Time (min)	Displacement (m)	Time (min)	Displacement (m)
16.	0.53	90.	0.74
24.	0.68	105.	0.76
30.	0.7	120.	0.78
35.	0.71	135.	0.77
45.	0.7	150.	0.77

Time (min)	Displacement (m)	Time (min)	Displacement (m)
55.	0.73	165.	0.74
60.	0.74	180.	0.74
75.	0.74	210.	0.74

SOLUTION

Pumping Test
Aquifer Model: Unconfined
Solution Method: Theis

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	7.344E-5	m^2/sec
S	4.949	
Kz/Kr	1.	
b	2.87	m

K = T/b = 2.559E-5 m/sec (0.002559 cm/sec)
Ss = S/b = 1.724 1/m

FILE COPY

Our Ref. 1141
Your Ref. Bardon Aggregates-alpha

2 September 1999

BARDON
AGGREGATES

Mr A Mozley
Resource Licensing Officer
Environment Agency
Waterside House
Waterside North
Lincoln
LN2 5HA

Dear Mr Mozley

Water Resources Act 1991
Proposal to Abstract Water at Cross Leys Quarry, Peterborough

Thank you for your letter dated 3 August 1999 with accompanying abstraction licence application pack.

As requested please find enclosed a duly completed application form and Form N1 in draft for your consideration.

I look forward to receiving your comments at your earliest convenience to enable the formal application to be made with accompanying application fee.

Yours sincerely

JOHN PENNY
Estates Surveyor – Midlands Region

BARDON AGGREGATES
NORTHERN DIVISION
Hulland Ward, Ashbourne,
Derbyshire DE6 3ET England
Telephone: +44 (0)1335 372222
Facsimile: +44 (0)1335 372397

N1

THE NOTES BELOW ARE FOR GUIDANCE ONLY AND DO NOT FORM PART OF THE NOTICE

WATER RESOURCES ACT 1991

NOTICE OF APPLICATION FOR A LICENCE TO ABSTRACT WATER

Name of applicant

Take notice that AGGREGATE INDUSTRIES UK LIMITED

Address - same address as first address in question A2 on application form

of BARDON HILL, COALVILLE, LEICESTERSHIRE

is applying to the Environment Agency for a licence to abstract water

Insert name of inland water and/or description of underground strata

from THE LINCOLNSHIRE LIMESTONE

Give NGR information as per your answer to question B3 on the application form

at/between National Grid Reference(s) TF 02950061

Give local site description including name of locality/parish/district etc

at CROSS LEYS QUARRY, WITTERING, PETERBOROUGH

The proposal is to abstract water at the following rates:

See answer to question B6 of the application form

0.5 cubic metres per hour 5 cubic metres per day

1375 cubic metres (per year) - (between ANNUALLY and ..... each year).

See answer to question B6 of the application form. Add any other details that will help explain your application to the public eg 'abstraction during winter months only"

The water will be used for AS A POTABLE SUPPY FOR DRINKING ETC.

A copy of the application and any map, plans and other documents submitted with it may be inspected free of charge at all reasonable hours at CROSS LEYS QUARRY,

Address in locality of proposed point of abstraction. See note in attached guidance

between ..... and ..... 19..

Enter dates between which documents will be available for inspection. The beginning date must not be earlier than the date the notice is first published in the local newspaper. The end date must be at least 28 days from the first date and at least 25 days from the date on which the notice is to be published in the London Gazette.

Any person who wishes to make representations about the application should do so in writing to the Environment Agency, AT WATERSIDE HOUSE, WATERSIDE NORTH, LINCOLN, LN2 5HA

Enter the address given in the Regional information sheet with the application form

before the end of the said period, quoting the name of the applicant.

Signed .....

Print name of applicant

Name/on behalf of J.C. PENNY ON BEHALF OF AGGREGATE INDUSTRIES UK LIMITED

Date SEPTEMBER 1999

For Environment Agency use only | Application reference number | Computer reference

ENVIRONMENT AGENCY

Water abstraction and impoundment
Application for a licence

Part A

Environment Act 1995, Water Resources Act 1991,
Water Resources (Licences) Regulations 1965

Everyone has to fill in Part A of the form

Please read the notes on how to fill in the forms

For Environment Agency use only

Proposal

☐ Part B of this form
☐ Part C of this form

Date first received

Date acknowledged informally

Date application valid

Date of statutory acknowledgment

Date determination due by

Date determined

Fee received

Receipt number

Comments

A1 Type of application

A1.1 Please tell us about the type of application you are making.

Are you applying

☑ for a new licence to abstract water? *please fill in Part A and Part B*

☐ to vary an existing licence to abstract water? *please fill in Part A and Part B*

☐ to impound water or alter an existing impounding works? *please fill in Part A and Part C*

☐ to create an impounding works and then abstract water? *please fill in Parts A, B and C.*

A2 The applicant

A2.1 Please give the full name and address of the person or organisation applying for the licence.

If you are applying on behalf of a partnership or other organisation, please read the notes which came with this form about answering this question.

If you need to give more than one name and address, put the first or trading name of the firm and use a separate sheet for the rest.

Name: AGGREGATE INDUSTRIES UK LIMITED

Address:
BARDON HILL
COALVILLE
LEICESTERSHIRE
Postcode LE67 1TL

Contact numbers

Phone 01530 510066

Fax

A4 Environmental appraisal

A4.1 Do you need to do an environmental appraisal?

If you have not already talked to us about whether you need to do this, or in some cases a formal 'Environmental assessment', please get in touch with us now.

No ☑

Yes ☐ *Please enclose a copy of the environmental information with this application form.*

A5 Checklist

A5.1 Please read through this list and tick the items you are sending us with this application.

☑ Part B of this form

☐ Part C of this form

☐ Notices of proposals to impound and/or abstract water as they appeared in local newspapers *we need original full pages from the newspapers – do not send copies*

☐ An environmental report

☑ A map of the site showing all the required details

☐ Continuation sheets for answers to question

A5.2 Fees

Please tick all that apply

☐ I enclose the correct fee for processing this application Please make cheques payable to the 'Environment Agency'

☐ Please send a receipt

☐ The Environment Agency has told me I do not have to pay an application fee

A6 Application and declaration

It is an offence to make a false statement when applying for a licence.

I declare that to the best of my knowledge the statements made in the application forms, including the map and any accompanying sheets, are true.

I apply to the Environment Agency to

☐ abstract water from an inland water

☑ abstract water from underground strata

☐ impede the flow of an inland water by means of impounding works

☐ vary licence number

Signature J.C.Penny

FOR AND ON BEHALF OF AGGREGATE INDUSTRIES UK LIMITED

Name J.C.PENNY ALICE AMIQ

Position REGIONAL ESTATES SURVEYOR

Date

For Environment Agency use only | Application reference number | Computer reference

ENVIRONMENT AGENCY

Application for a licence to abstract water

Part B

Environment Act 1995, Water Resources Act 1991,
Water Resources (Licences) Regulations 1965

Only use this part if you want

- **a new licence to abstract water**
- **to create an impounding reservoir and abstract water from it**
- **to vary an existing licence.**

B1 Applicant's name

This should be the same name as in answer to Part A question A2.1

AGGREGATE INDUSTRIES UK LIMITED

B2 Type of application

B2.1 Are you applying

- [x] for a new licence to abstract water? *go to 'B3 Location of abstraction'*
- [ ] to create an impounding reservoir and abstract water from it? *go to 'B3 Location of abstraction'.*
- [ ] to vary an existing licence?

Varying the licence

B2.2 Are you the licence holder?

No [ ] *please get in touch with us*

Yes [ ] *please give details and tell us about the changes you want to make in the box opposite. Please enclose the licence with this application.*

Licence number

Date issued

B2 Type of application *continued*

The changes you want to make

Name of point 3	Strata type

Site address	National Grid Reference
	Map label

Name of point 4	Strata type

Site address	National Grid Reference
	Map label

B4 Entitlement to apply

Please read the notes which came with this form before answering this question.

4.1 Are you the occupier or potential occupier?

We need to know if you are the occupier or potential occupier of

- the land adjoining the inland water
- the land which comprises the underground strata.

If you have different rights for different sites, please give details on a separate sheet.

☑ Occupier

☐ Expect to occupy from

B4.2 Do you have, or expect to have, rights of access?

This question applies only if your application is for abstraction from an inland water.

If you do not occupy the land adjoining the inland water, you may still apply for a licence providing you have a right of access to the inland water or will have such a right when we come to issue a licence.

If you have different rights for different sites, please give details on a separate sheet.

☐ Have right of access N/A

☐ Expect to have right of access from

B4.3 How have you marked the map you have enclosed to show

- the land you occupy or will occupy
- the land you have or will have right of access to?

For example, 'outlined in red'.

LAND AREA EDGED RED ON DRAWING NO. 1140/17 SHOWS THAT AREA HELD BY APPLICANT ON A LEASE

B5 Duration of licence

B5.1 How long do you want the licence to last?

☐ Indefinitely *please note that, even so, we may set a time limit*

☑ For a limited time *please give dates*

From

DATE OF ANY CONSENTED LICENCE

To

04/11/2008

B5.2 Would the licence be linked to a particular project?

No ☐

Yes ☑ How long is the project due to last?

☐ Indefinitely

☐ For a limited time *please give dates*

From

DATE OF ANY CONSENTED LICENCE

To

04/11/2008

Amount of water you intend to abstract

Maximum yearly *in m^3*	Maximum daily *in m^3*	Maximum hourly *in m^3*	Hours per day	Peak instantaneous flow rate *in l/s*
1375	5	0.5	10	9 liter/minute 0.15 litres/second.

her

/	/	/	/	/
Total	Total	Total	Total	Total
1375	5	0.5	10	0.15

Ref. 1141

Application for a Water Abstraction Licence - Cross Leys Quarry, Wittering, Peterborough - Aggregate Industries UK Limited

Statement Detailing Justification for Groundwater Abstraction Proposals

The Company has undertaken an assessment of alternative water sources for a potable supply. The Company has been advised by Anglian Water that the nearest suitable main to draw off a potable supply is located approximately 2.5 kilometres to the west of the quarry, situated along the Kings Cliffe Road, adjacent to the A47. The cost of putting in place such a facility would be considerable given the distance involved and inevitably statutory easement procedures would take a long period of time.

The quarry has a finite life and it is anticipated that quarrying will be completed by November 2008. Given the usage required, the quantities involved for a potable supply and the finite life of the quarry, it is duly considered that a potable supply drawn from the groundwater source would be reasonable.

Name : J C Penny
On behalf of : Aggregate Industries UK Limited
Date : 02/09/99

B10 Other considerations

B10.1 Have you asked a water company for a supply for any of the purposes listed in question B6.1?

No ☐ *go to question B10.2*
Yes ☑ *please give details*

Purpose you wanted water for

POTABLE SUPPLY

Company you applied to

ANGLIAN WATER

Date you applied

CIRCA. NOV 1998.

Result of application

IT WAS DETERMINED THAT THE COST OF A MAINS SUPPLY WOULD BE EXCESSIVE DUE TO THE NEAREST CONNECTION POINT BEING 2.5 KM TO THE WEST

B10.2 Are any of the abstraction point(s) in this application already licensed or in another application?

No ☑ *go to question B10.3*
Yes ☐ *please give details*

Name and address of site

Postcode

National Grid Reference

Serial number of licence (or date you applied for it)

B10.3 Will you store abstracted water on your land?

No ☐
Yes ☐ *please say how*

B10.4 How much of the water you abstract will be re-used?

B10.5 How have you calculated the quantities you need to abstract?

Please send us details of your calculations.

IT IS CONSIDERED THAT THE QUANTITY OF WATER INTENDED TO BE EXTRACTED WILL BE ENTIRELY APPROPRIATE FOR THE USE REQUIRED

B10.6 How do you make best use of your existing water supplies?

N/A.

B10 Other considerations continued

Discharging used water from the site

We need to know what will happen to any water you discharge from the site. *If you are abstracting water for more than one purpose, please give us details for each purpose on a separate sheet.*

B10.7 Do you intend to discharge used water from the site?

No ☐ *go to 'B11 Checklist'*
Yes ☑

B10.8 Do you have a consent from the Environment Agency to discharge water from this site?

Include permission you got from the old NRA or water authority.

No ☑
Yes ☐ please give the consent reference number

B10.9 What proportion of water will be discharged after use?

50 %

B10.10 Where will it be discharged?

Please give details such as 'public sewer', 'inland water'. Please mark the discharge points on the map.

SOAKAWAY MARKED ON DRAWING REF 1140/17.

B11 Checklist

B11.1 Please read through this list and tick the items you are sending us with this application.

☐ The existing licence you want to vary (if applicable)
☑ Proof of right to occupy or have access to the site
☑ Details of how you calculated the amount of water you intend to abstract
☐ Continuation sheets for answers to question(s)

Map *This should show*

☑ each point of abstraction marked
DRAWING REF. 1140/17
☑ the area of land over which you have rights of access marked
☐ the area(s) of land on which the water is to be used marked
N/A
☐ the site of any proposed reservoir marked
N/A
☑ the point(s) where used water will be discharged marked.

For applications from water undertakers

☐ We need to know how the discharged water will affect the water infrastructure in the area. *You may need to enclose separate information from local water or sewerage companies.*

FORM WR - 38

Agency No:

ENVIRONMENT AGENCY

BOREHOLE RECORD

A. SITE DETAILS

Borehole drilled for	Bardon Aggregates.	
Location	WS1	
NGR (8 fig) Ground Level (if known)	5030 3006 68.16 m. AOD.	Please attach site plan ✓
Drilling Company	Blue Diamond	
Date of drilling	Commenced: 10/5/99.	Completed: 13/5/99

B. CONSTRUCTION DETAILS

Borehole datum (if not ground level)..... Ground Level above ~~m below GL~~
(point from which all measurements of depth are taken eg flange, edge of chamber, etc)

Borehole drilled diameter	150	mm from	0	to	11.00 m/depth
	–	mm from	–	to	– m/depth
	–	mm from	–	to	– m/depth
Casing material uPVC Plain diameter	100	mm from	-0.34	to	6.40 m/depth
and type (eg plain steel, plastic slotted) uPVC Slotted diameter	100	mm from	6.40	to	10.27 m/depth
uPVC End cap diameter	100	mm from	10.27	to	10.40 m/depth
– diameter	–	mm from	–	to	– m/depth

Grouting details ..... 2.45 - 5.45 mbgl

Water struck at ..... 7.60 m (depth below datum - mbd)

– m (depth below datum - mbd)

Rest water level on completion (20/5/99) 7.49 m (depth below datum - mbd)

C. *TEST PUMPING SUMMARY* (Please supply fully details on Form WR - 39)

Test Pumping Datum (if different from borehole datum)	Ground Level. (mbd)	m above / below borehole datum
Pump Suction Depth	9.85	mbd
Water Level (Start of Test)	7.49	mbd
Water Level (End of Test)	8.27	mbd
Pumping rate	12.9m³/d : 0.15l/s	m³/d : l/s
for	4	days/hours
Recovery to (from end of pumping)	7.59 mbd in 26	mins : hrs : days
Date(s) of measurements	20/5/99	

Please Supply Chemical Analysis If Available to follow.

D. *STRATA LOG*

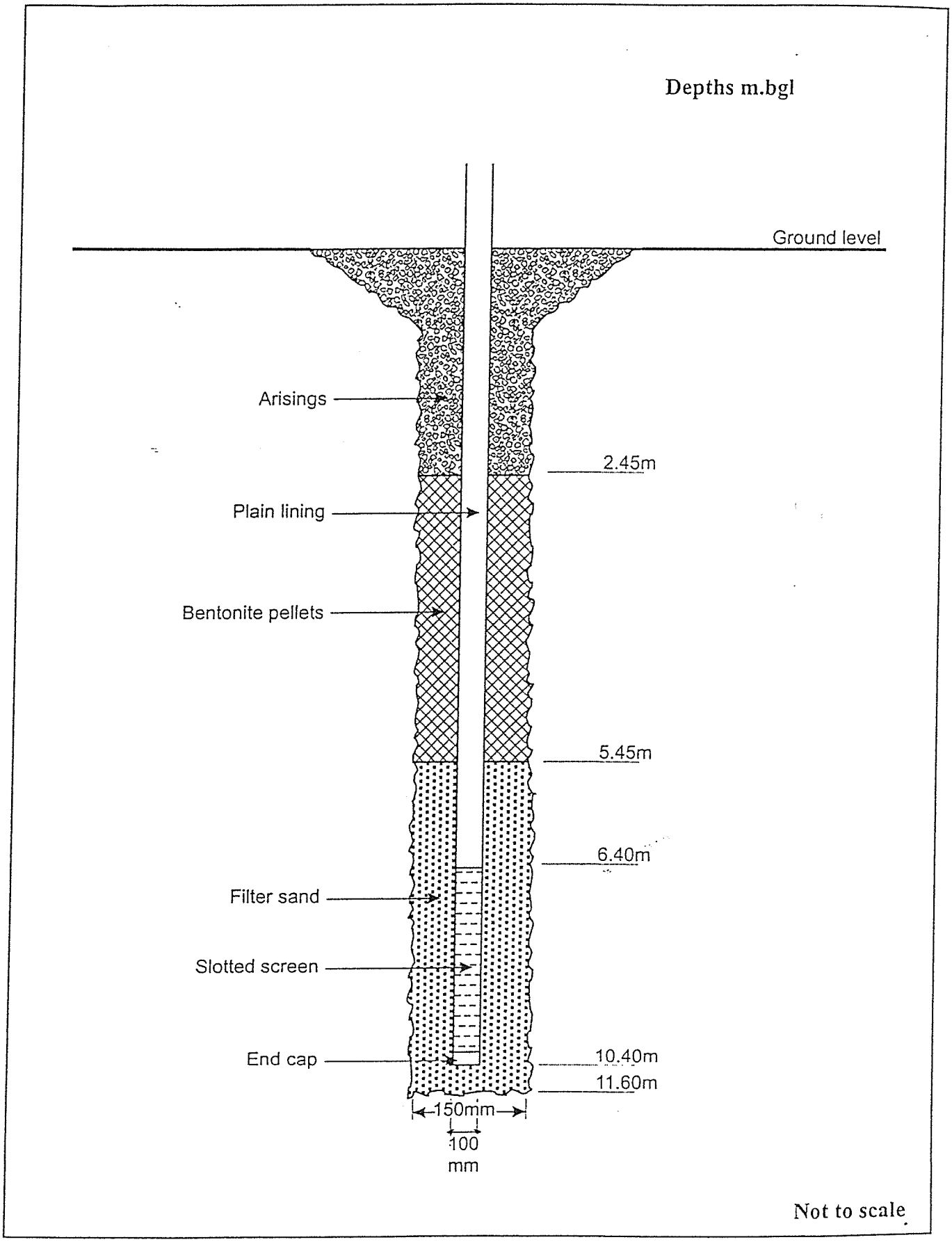
Geological Classification	Description of Strata	Thickness	Depth
(BGS only)		m	m
--	Clayey soil with limestone rubble	1	0 - 1.0
	Buff limestone	2.5	1.0 - 3.5
	Grey limestone	1.4	3.5 - 4.9
	Buff limestone	0.7	4.9 - 5.6
	Blue/grey limestone	0.4	5.6 - 6.0
	Buff weathered limestone	0.7	6.0 - 6.7
	Grey limestone	0.5	6.7 - 7.2
	Buff weathered limestone	0.4	7.2 - 7.6
	Fine silica sand.	3.4+	7.6 - 11.0
	[continue on separate page if necessary]		
	Other Comments (eg gas encountered, saline water intercepted, etc) Collapsing fine silica sands below 7.6mbgl - unstable without casing.		

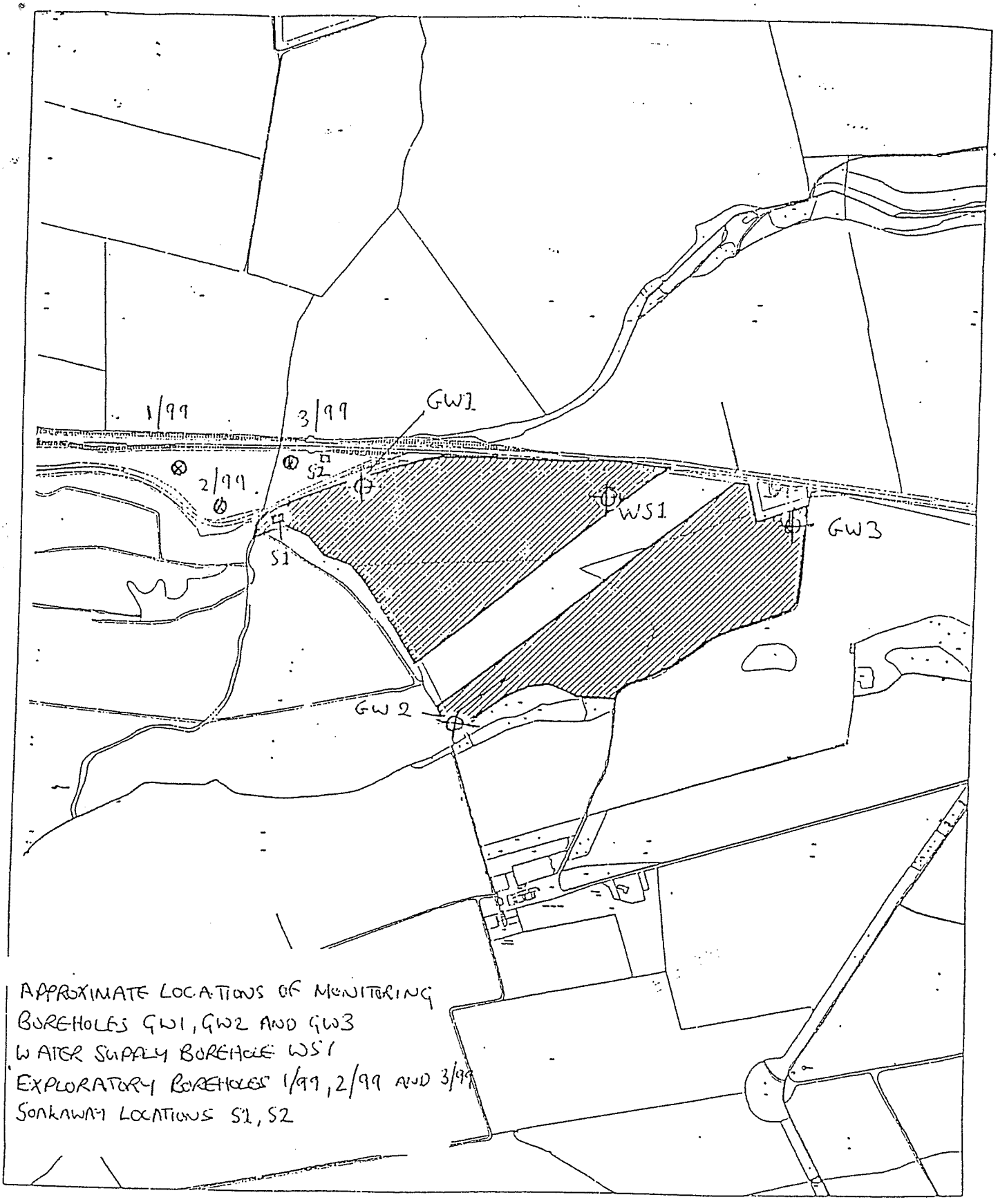
FOR OFFICIAL USE ONLY

FILE ..... CONSENT NO ..... BGS REF NO .....

LICENCE NO ..... USE OF BH ..... NGR .....

Construction details water supply borehole, WS1





APPROXIMATE LOCATIONS OF MONITORING BOREHOLES GW1, GW2 AND GW3
WATER SUPPLY BOREHOLE WS1
EXPLORATORY BOREHOLES 1/99, 2/99 AND 3/99
SOAKAWAY LOCATIONS S1, S2

ENVIRONMENT ACT 1995 - REVIEW OF MINERAL PLANNING PERMISSIONS
CLASSIFICATION: ACTIVE PHASE II

PIT NAME: WITTERING CROSSLEYS

PETERBOROUGH CITY COUNCIL

Scale 1:10000 Department Planning Services

Date 11th September 1998 Drg. no. MR (L) 9 Name SS PCC GIS

WS1 Pump Test Data

Initial startup and rising head test 1

Time	Time since start mins	Water level mbgl	Water level mbd	Drawdown m	Flow rate l/min
11:20	0	7.49	7.83	0.00	Pump started
	5	8.39	8.73	0.90	10.5
	10	9.76	10.10	2.27	16.4
11:49	29	9.76	10.10	2.27	Unable to pump, WL @ intake
11:57	0	9.76	10.10	2.27	
	0.5				
	1	9.40	9.74	1.91	
	1.5	7.96	8.30	0.47	
	2	7.86	8.20	0.37	
	2.5	7.78	8.12	0.29	
	3	7.72	8.06	0.23	
	3.5	7.68	8.02	0.19	
	4	7.65	7.99	0.16	
	4.5	7.63	7.97	0.14	
	5	7.61	7.95	0.12	
	5.5	7.59	7.93	0.10	
	6	7.58	7.92	0.09	
	6.5	7.57	7.91	0.08	
	7	7.56	7.90	0.07	
	7.5	7.56	7.90	0.07	
	8	7.56	7.90	0.06	
	8.5	7.55	7.89	0.06	
	9	7.55	7.89	0.05	
	9.5	7.55	7.89	0.05	
	10	7.55	7.89	0.05	
	10.5	7.54	7.88	0.05	
	11	7.54	7.88	0.05	
	11.5	7.54	7.88	0.05	
12:09:30	12.5	7.54	7.88	0.04	

Test undertaken on: 20 May 1999

Borehole dimensions

Datum: lowest point on liner top

	mbd
Ground level:	0.34
Rest water level:	7.83
Depth:	10.74
Pump intake:	10.19

Pump yield test

Time	Time since start mins	Water level mbgl	Water level mbd	Drawdown m	Flow rate l/min
12:10	0	7.53	7.87	0.00	Pump started
					30.0
					19.6
					12.2
					7.4
	16	8.06	8.40	0.53	10.1
	24	8.21	8.55	0.68	8.6
	30	8.23	8.57	0.70	
	35	8.24	8.58	0.70	8.7
	45	8.23	8.57	0.70	9.3
	55	8.26	8.60	0.73	9.4
	60	8.27	8.61	0.74	9.4
	75	8.27	8.61	0.74	9.0
	90	8.27	8.61	0.74	9.1
	105	8.29	8.63	0.76	8.6
	120	8.31	8.65	0.77	8.9
	135	8.30	8.64	0.77	8.7
	150	8.30	8.64	0.77	9.0
	165	8.27	8.61	0.74	8.7
	180	8.27	8.61	0.74	8.5
15:40	210	8.27	8.61	0.74	8.8

Rising head test 2

Time	Time since start secs	Time since start mins	Water level mbgl	Water level mbd	Drawdown m	
16:15	0	0.0	8.26	8.60	0.73	Pump off
	10	0.2	8.22	8.56	0.69	
	20	0.3	7.97	8.31	0.44	
	30	0.5	7.93	8.27	0.40	
	40	0.7	7.90	8.24	0.37	
	50	0.8	7.88	8.22	0.35	
	60	1.0	7.86	8.20	0.33	
	70	1.2	7.84	8.18	0.31	
	80	1.3	7.83	8.17	0.30	
	90	1.5	7.81	8.15	0.28	
	100	1.7	7.80	8.14	0.27	
	110	1.8	7.79	8.13	0.26	
	120	2.0	7.77	8.11	0.24	
	130	2.2	7.76	8.10	0.23	
	140	2.3	7.75	8.09	0.22	
	150	2.5	7.74	8.08	0.20	
	160	2.7	7.73	8.07	0.20	
	170	2.8	7.72	8.06	0.19	
	180	3.0	7.71	8.05	0.18	
	190	3.2	7.71	8.05	0.18	
	200	3.3	7.70	8.04	0.17	
	210	3.5	7.70	8.04	0.17	
	220	3.7	7.69	8.03	0.16	
	230	3.8	7.68	8.02	0.15	
	240	4.0	7.68	8.02	0.15	
	250	4.2	7.67	8.01	0.14	
	260	4.3	7.67	8.01	0.14	
	270	4.5	7.67	8.01	0.14	
	280	4.7	7.66	8.00	0.13	
	290	4.8	7.66	8.00	0.13	
	320	5.3	7.66	8.00	0.13	
	350	5.8	7.65	7.99	0.12	
	380	6.3	7.65	7.99	0.12	
	410	6.8	7.64	7.98	0.11	
	440	7.3	7.64	7.98	0.11	
	470	7.8	7.64	7.98	0.11	
	500	8.3	7.64	7.98	0.11	
	530	8.8	7.63	7.97	0.10	
	560	9.3	7.63	7.97	0.09	
	620	10.3	7.62	7.96	0.09	
	680	11.3	7.62	7.96	0.09	
	740	12.3	7.61	7.95	0.08	
	800	13.3	7.61	7.95	0.08	
	860	14.3	7.61	7.95	0.08	
	920	15.3	7.60	7.94	0.07	
	980	16.3	7.60	7.94	0.07	
	1280	21.3	7.59	7.93	0.06	
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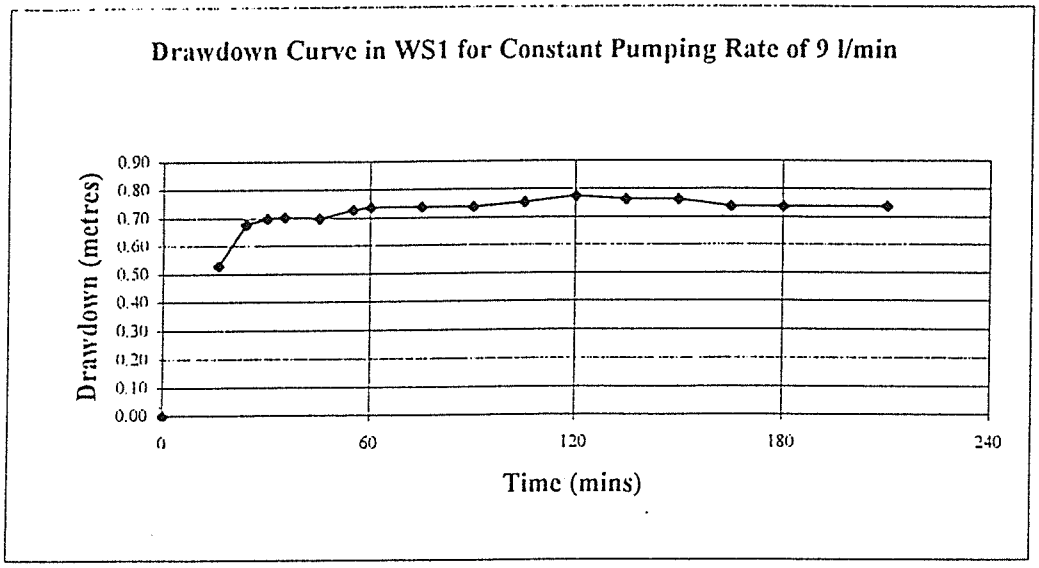
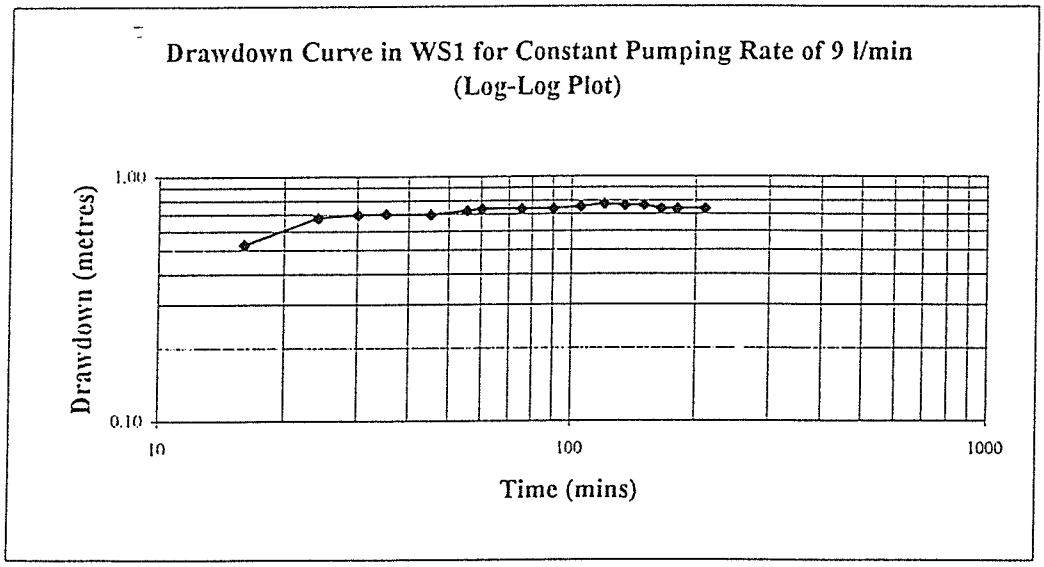
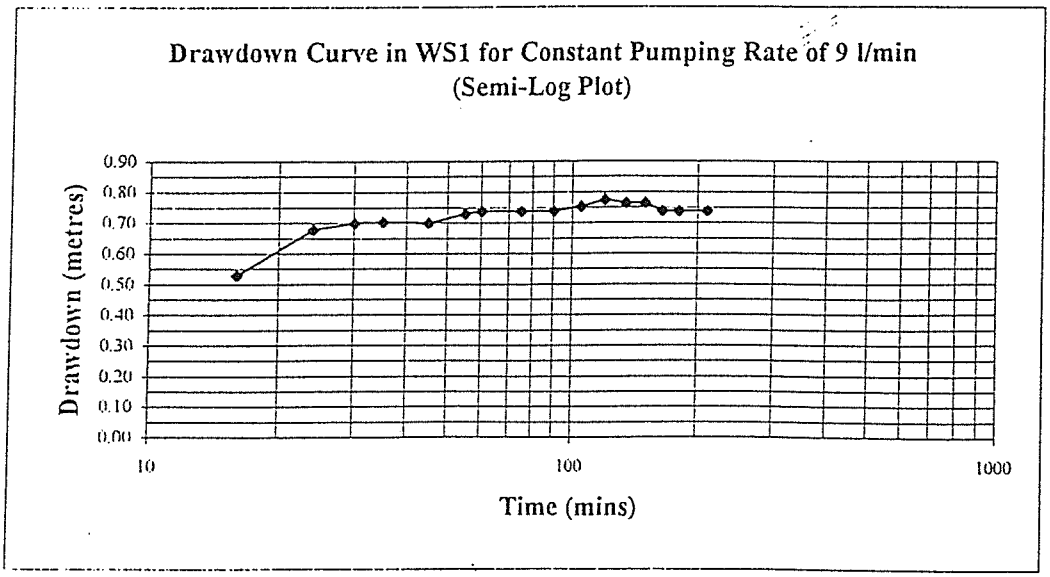
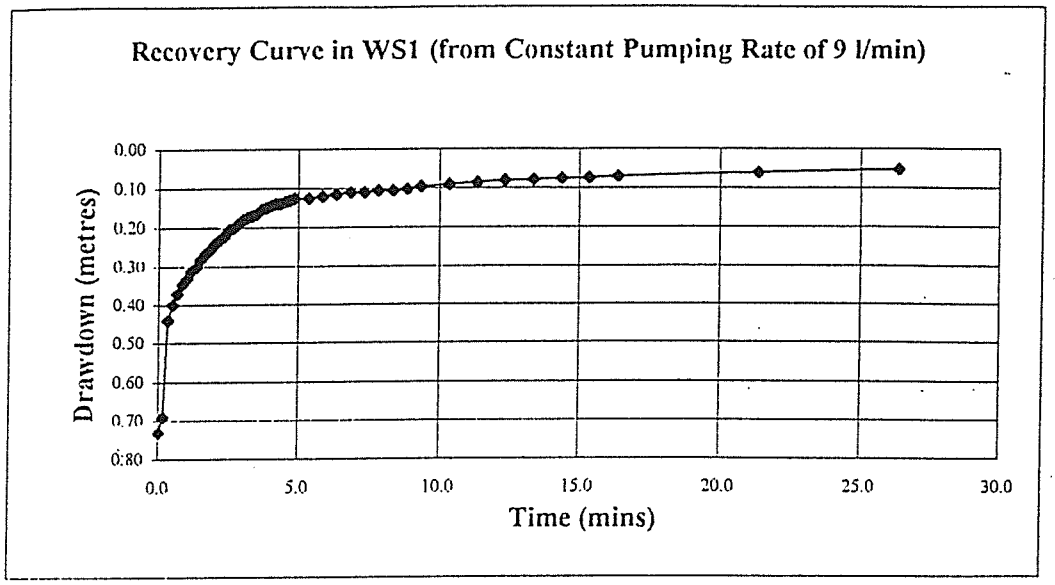
Cross Leys Quarry: Results of Low Yield Pump Test from Water Supply Borehole WS1

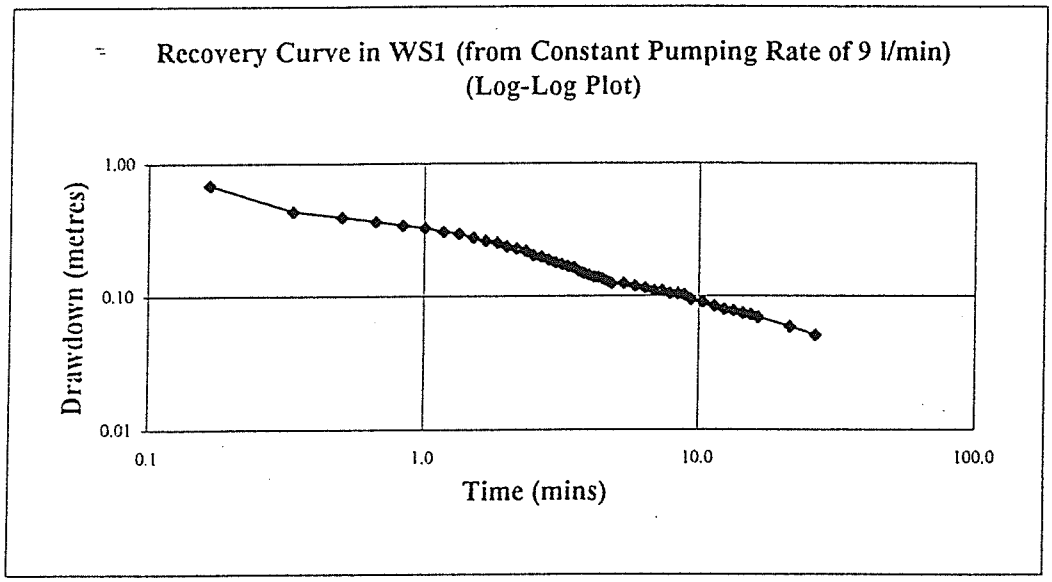


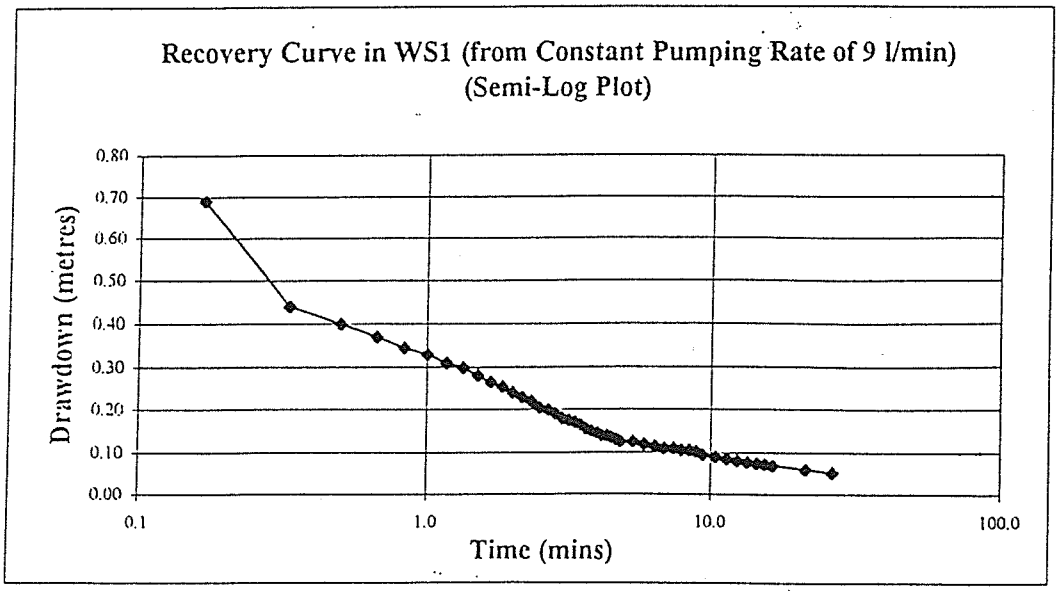


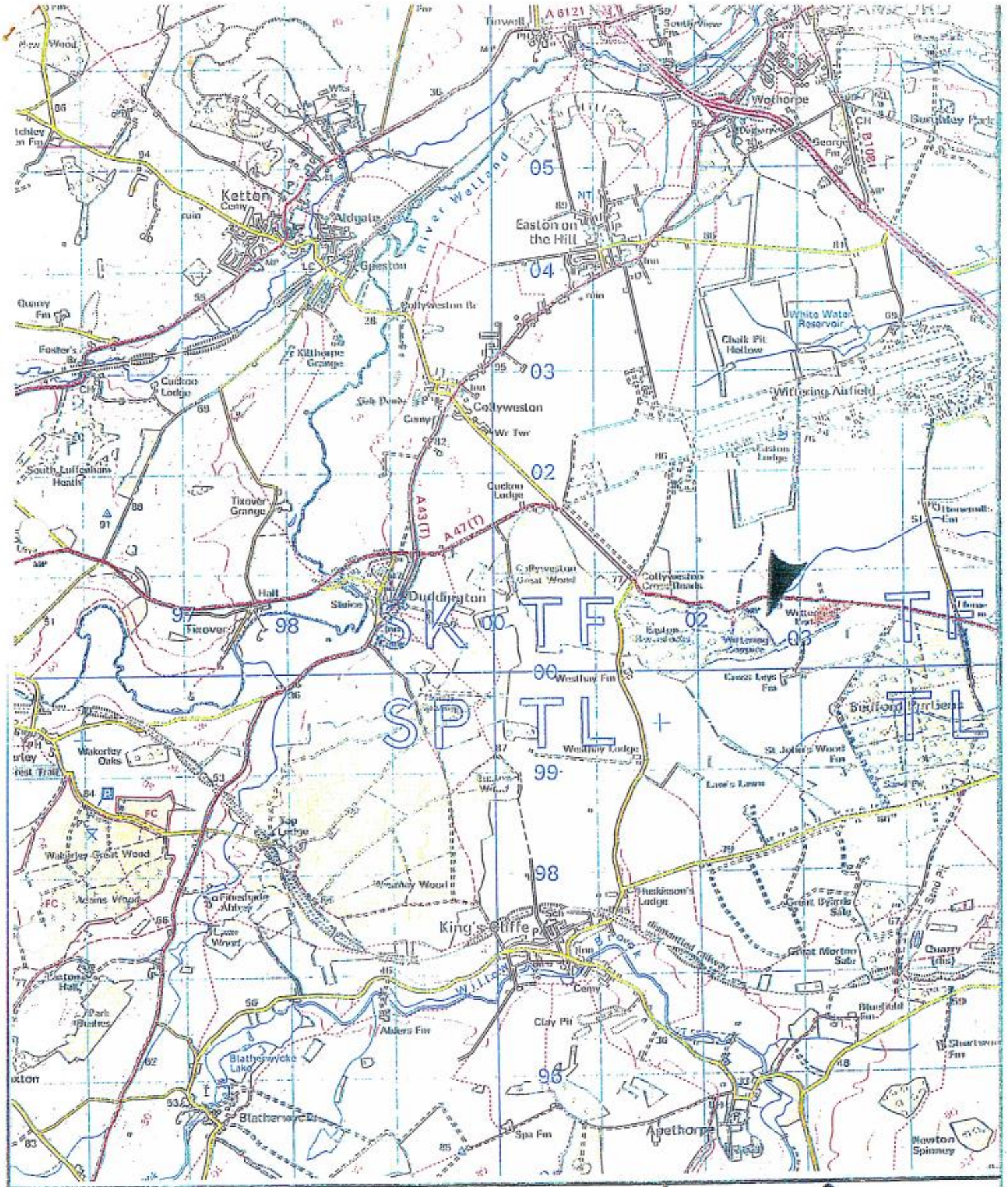


Cross Leys Quarry: Recovery Data from Water Supply Borehole WS1









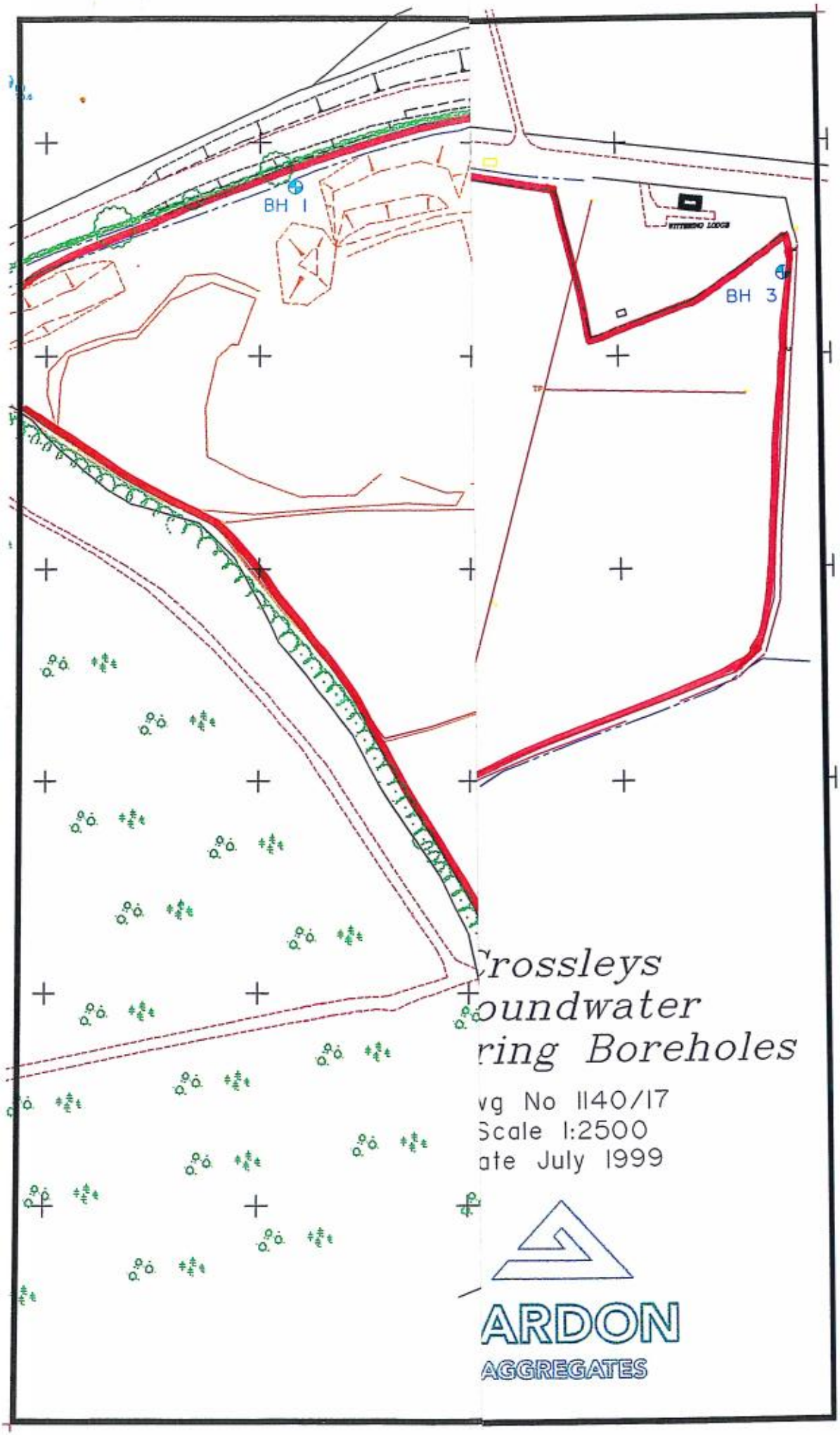
CROSS LEYS

AGGREGATE INDUSTRIES

LOCATION PLAN

SCALE: 1:50000

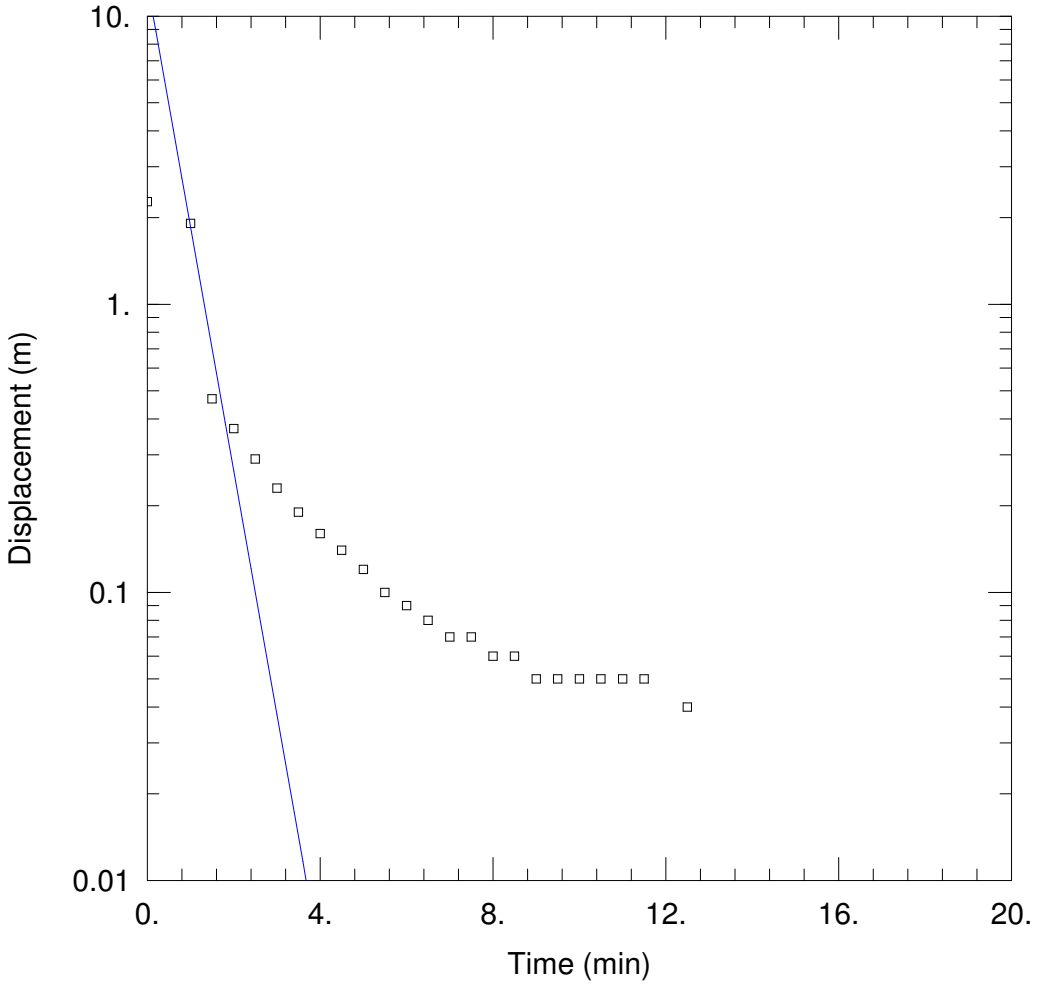
1140/13



Crossleys
oundwater
ring Boreholes

vg No 1140/17
Scale 1:2500
ate July 1999

ARDON
AGGREGATES



WELL TEST ANALYSIS

Data Set: Z:\...\WS1_Rising_Head.aqt
Date: 11/02/18 Time: 16:21:41

PROJECT INFORMATION

Company: SLR
Client: AI
Project: 403-00275-00233
Location: Cross Leys
Test Well: WS1
Test Date: 20/05/99

AQUIFER DATA

Saturated Thickness: 2.57 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (WS1)

Initial Displacement: 2.27 m
Total Well Penetration Depth: 4. m
Casing Radius: 0.075 m
Static Water Column Height: 2.57 m
Screen Length: 4. m
Well Radius: 0.05 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001173 m/sec
y0 = 13.04 m

APPENDIX ESSD3

Groundwater Levels Data (2021-2024) (Please Refer to Excel Spreadsheet File)

APPENDIX ESSD4

Groundwater Quality Data (2021-2024) (Please Refer to Excel Spreadsheet File)

APPENDIX ESSD5

Abstraction License Details (Please Refer to Excel Spreadsheet File)

APPENDIX ESSD6

Planning Application

CROSS LEYS QUARRY

Planning application for revisions to the restoration scheme

SLR Ref: 403.00275.00233
Version No: FINAL
April / 2019

BASIS OF REPORT

This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Aggregate Industries Limited (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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INTRODUCTION

1.1 This document comprises a Planning Statement and has been prepared by SLR Consulting Limited ('SLR') on behalf of Mick George Limited ('the applicant'). The statement is being submitted to Peterborough City Council (as Mineral Planning Authority, 'MPA') in support of three planning applications relating to land at Cross Leys Quarry, Peterborough.

1.2 Collectively, all three planning applications seek to amend the approved restoration scheme for Cross Leys Quarry, providing a comprehensive masterplan to ensure that the quarry workings are restored to beneficial after uses. A key driver for the revised scheme is the presence of Great Crested Newts, a European Protect Species, within the quarry workings. The restoration proposals reflect this valuable habitat and allow for a mix of nature conservation and agricultural after uses (being the after use originally envisaged).

1.3 It was originally thought that the planning application could be made pursuant to s.73 of the Town and Country Planning Act 1990 ('the 1990 Act') by 'varying' conditions relating to the approved restoration scheme. As part of a 'Screening' process (see below) the MPA indicated that a full application would be needed to cover the importation of inert materials to facilitate the agricultural restoration. In view of this the three applications seek permission for:

1) a full application under s.70 of the 1990 Act to allow for the importation and placement of restoration materials to facilitate the restoration of the northern part of the quarry to an agricultural after use;
2) an application under s.73 to amend the provisions of planning permission 99/01273/RMP (dated 11 October 2004) in relation to the approved restoration scheme for the southern part of the quarry to retain waterbodies and associated marginal habitats that have become valuable for Great Crested Newts; and
3) an application under s.73 to amend the provisions of planning permission 98/01252/MMFUL (dated 16 July 1999) in relation to the approved restoration scheme within the central corridor in the site, south of a pipeline (below and Chapter 2 for site description) again to retain waterbodies and associated marginal habitats that have become valuable for Great Crested Newts.

1.4 This Planning Statement aims to provide the MPA with sufficient information to determine the planning applications. In his respect, it considers the proposed development in the light of planning policy and considers the mitigation measures that are needed to ameliorate any identified impacts. It should be noted that the planning applications do not seek permission for mineral extraction as reserves at the quarry have been exhausted.

THE SITE

1.5 Cross Leys Quarry (the 'quarry') is located[1] approximately 16.6km to the west of Peterborough, 6.5km to the south of Stamford and 17.6km to the north east of Corby, within the administrative area of the City of Peterborough. More specifically, it is located immediately to the south of the A47, around 3.5km to the west-southwest of Wittering, 4km north east of King's Cliffe and 4.5km to the north west of Wansford.

1.6 Overall, the quarry extends to around 28.4 hectares (ha)[2] and is broadly rectangular in shape. The northern boundary is largely formed by the A47, demarcated by a belt of mature vegetation which provides an effective screen. The western boundary is formed by a block of woodland (Wittering Coppice) and agricultural field boundaries form the southern and eastern site boundaries.

1.7 The site is bisected by a north-east to south-west aligned pipeline (and associated corridor) which supplies aviation fuel to RAF Wittering. To the north of this pipeline the site contains the remnants of the processing plant, roadways and numerous stockpiles of both soils and mineral wastes. The southern part of the quarry contains a number of large waterbodies, along with further stockpiles of soils and an area along the southern boundary that has been restored.

1.8 The quarry site been mothballed since *c.* 2012 following the exhaustion of permitted limestone reserves. The presence of Great Crested Newts on site has affected the ability to restore the quarry in line with the approved scheme.

1.9 Within the adopted Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Development Plan Document the Cross Leys site is specifically allocated as an inert landfill site and as a site for inert waste recycling under policies W1 and W2. The site is shown on insert map 44 and the implementation issues set out in detail the matters that would need to be addressed in a planning application. The plan identifies that the Cross Leys site has a void capacity of 433,333m^3.

THE PROPOSED DEVELOPMENT

1.10 An integral aspect of the development of mineral sites is the restoration of the workings to a beneficial use (or uses) that reflects and respects the local environment. Often, restoration schemes can introduce biodiversity or other enhancements that did not exist previously within the site.

1.11 In view of the population of Great Crested Newts within the quarry it is recognised that a planning application is required to amend both the restoration scheme for the quarry workings and the duration of restoration operations to facilitate the satisfactory restoration of the site. The restoration scheme needs to provide a comprehensive approach to restoration and landscaping, with the production of a new masterplan, which affords adequate mitigation for the Great Crested Newt (GCN) population and their habitat on site.

[1] All distances measured from the centre of the site to centre of the settlement using Google Earth
[2] Including a pipeline corridor which bisects the quarry workings.

1.12 The revised restoration scheme therefore seeks to retain an element of the approved scheme, by returning the northern part of the site to agricultural use, but retain the habitats in the southern part of the site, thereby safeguarding the population of Great Crested Newt.

1.13 In relation to the agricultural restoration, the proposals seek to import around 395,000m^3 of inert restoration materials to raise the levels within the quarry void and create a gentle domed profile to aid with the drainage of surface water. In so doing a better quality agricultural scheme can be achieved.

THE APPLICANT

1.14 Mick George Limited (MGL) has grown to become one of the leading suppliers to the construction industry in the heart of East Anglia and East Midlands.

1.15 Operating with a single tipper truck in 1978, the company's commercial fleet size has now grown to be in excess of 400 HGV vehicles from over 25 sites, and now employing in excess of 1100 people. MGL specialise in bulk excavation and earthmoving services, demolition and asbestos removal, a wide range of skip hire and waste management services and aggregate & concrete supply, as well as our most recent facility management and retail offering.

1.16 Further information on the applicant can be obtained via it's website: https://www.mickgeorge.co.uk/

ENVIRONMENTAL IMPACT ASSESSMENT

1.17 The Environmental Impact Assessment Directive[3] (the 'EIA Directive') requires that, before granting 'development consent' for projects, including development proposals, authorities should carry out a procedure known as environmental impact assessment (or "EIA") of any project which is likely to have significant effects on the environment. The aim of the EIA Directive is to ensure that the authority giving consent for a project makes its decision in the knowledge of any likely significant effects on the environment. The first EIA Directive (85/337/EEC) came into force in 1988 and was subsequently amended in 1999 (Directive 97/11/EC) extending the range of development to which the Directive applies and made some small changes to EIA procedures. The Directive was further amended in 2003 by Directive 2003/35/EC and in 2009 by Directive 2009/31/EC. The initial Directive of 1985 and its amendments were codified by Directive 2011/92/EU[4] of 13th December 2011. As a result of a review process[5], on 26 October 2012, the Commission adopted a proposal for a revised Directive. The newly amended EIA Directive (2014/52/EU) came into force on 15 May 2014 to simplify the rules for assessing the potential effects of projects on the environment. This Directive has been adopted by the governments in the UK, with regulations coming into force in England on 16th May 2017.

[3] Directive 2014/52/EU of The European Parliament And Of The Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0052
[4] Directive 2011/92/EU of The European Parliament And Of The Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:026:0001:0021:EN:PDF
[5] Review of the Environmental Impact Assessment (EIA) Directive. http://ec.europa.eu/environment/eia/review.htm

1.18 The EIA Regulations specify the types of development for which an EIA is mandatory (Schedule 1 Projects) and those categories of development where an EIA may be required (Schedule 2 Projects).

1.19 The original planning permission at Cross Leys Quarry was for mineral extraction, with reclamation using mineral waste materials. More recent planning permissions have been granted allowing the importation of inert construction and demolition ('C&D') waste materials to assist in the restoration of the site and create more suitable landforms. It should be noted that mineral extraction at the quarry has ceased and remaining operations relate only to restoration of the quarry workings and subsequent aftercare management of the restored areas.

1.20 'Landfill operations' are addressed in Schedule 2 of the EIA Regulations. For installations for the disposal of waste the criteria for "*Schedule 2 development*" is noted as being cases where:

"*ii) the area of the development exceeds 0.5 hectare; or*
(iii) the installation is to be sited within 100 metres of any controlled waters."

1.21 Furthermore, the site is located adjacent to a 'sensitive area' as defined by the EIA Regulations; the planning permission boundary abuts with Collyweston Great Wood and Easton Hornstocks Site of Special Scientific Interest (SSSI).

1.22 The procedure used to determine whether a proposed project is likely to have significant effects on the environment is known as "*Screening*". When screening Schedule 2 projects, the local planning authority must take account of the selection criteria in Schedule 3 of the Regulations. Not all of the criteria will be relevant in every case. Each case should be considered on its own merits in a balanced way.

1.23 In accordance with the provisions of Regulation 6 of the EIA Regulations a formal request was made to the MPA on 6th July 2018 for a Screening. The MPA responded on the 25th July 2018 indicating that in their opinion, the development was not EIA development under the Regulations, and as such, and EIA would not be required. A copy of the MPA's Screening Opinion is included at **Appendix 1/1** to this Statement.

STRUCTURE OF THE STATEMENT

1.24 This first chapter of this statement provides an overview of the submission. Subsequent chapters provide a description of the quarry; describe the development proposals; and review relevant planning policy considerations. Following on from this, chapters provide an analysis and evaluation of the baseline conditions (existing environment) and the effects of the development on the human and natural environments on a topic by topic basis. Where potential environmental impacts are identified, mitigation strategies are put forward and residual impacts are assessed.

1.25 This document is presented as follows:

Background Information (Chapters 1 to 4): This part is descriptive in nature setting out an overview of the application site and the surrounding area. It describes the proposed development in detail and gives an overview of key planning policies.

Environmental Considerations (Chapters 5 to 8): For each subject area the relevant data and background information are provided and the potential impacts are considered. Where appropriate mitigation measures are proposed. The specific subjects considered are:

- Chapter 5 Water Environment
- Chapter 6 Landscape and Visual Impact
- Chapter 7 Ecology
- Chapter 8 Other Effects

PLANNING AND ENVIRONMENTAL PERMITTING

1.26 The Government has provided long standing advice on waste planning, making it clear that it is important to avoid unnecessary or confusing duplication. For example, Paragraph 183 of the National Planning Policy Framework states that *"…The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities*."

1.27 In addition, paragraph 7 (fifth bullet point) of the National Planning Policy for Waste states:

"When determining waste planning applications, waste planning authorities should: …

- *concern themselves with implementing the planning strategy in the Local Plan and not with the control of processes which are a matter for the pollution control authorities. Waste planning authorities should work on the assumption that the relevant pollution control regime will be properly applied and enforced".*

1.28 It should be noted that the previous disposal operations were authorised under an Environmental Permit issued by the Environment Agency (permit ref. EPR/DB3132AZ).

PROJECT TEAM

1.29 This statement has been prepared by SLR. SLR is a multi-disciplinary environmental consultant to the minerals and waste management industries, and also provides advice to local authorities and the Environment Agency on strategic issues . SLR is a registered Environmental Impact Assessor Member of the Institute of Environmental Management and Assessment (IEMA) and has secured the EIA Quality Mark awarded by IEMA.

1.30 In preparing this planning application and ES, SLR has drawn upon the expertise of an in-house team of specialists comprising planners, landscape architects, hydrologists and environmental scientists for the technical assessments. SLR has also worked closely with the applicant's management teams and technical staff to ensure that the working scheme is feasible as well as optimising environmental protection.

CONTENTS

INTRODUCTION

2.1 This chapter of the statement briefly describes the existing physical and environmental characteristics of the land associated with the application site, together with the wider surrounding environs. The application site is a term used to describe the land to which the planning application (and thus the intended development) relates. In view of the three applications, there are three application sites.

LOCATION

2.2 Cross Leys Quarry is located[1] approximately 16.6km to the west of Peterborough, 6.5km to the south of Stamford and 17.6km to the north east of Corby, within the administrative area of the City of Peterborough. More specifically, it is located immediately to the south of the A47, around 3.5km to the west-southwest of Wittering, 4km north east of King's Cliffe and 4.5km to the north west of Wansford.

2.3 For identification purposes the site is centred on National Grid Reference (NGR) TF 02941 00536 and illustrated on **Drawing CL 2/1**.

SITE DESCRIPTION

2.4 The quarry is broadly rectangular in shape with the northern boundary mainly formed by the A47, demarcated by a belt of mature vegetation which provides an effective screen. The western boundary is formed by a block of woodland (Wittering Coppice) and agricultural field boundaries form the southern and eastern site boundaries. Adjacent to the north eastern corner of the site is a residential property (Witting Lodge).

2.5 Overall, the quarry extends to around 28.4 hectares (ha)[2]. The approximate extent of the current planning permission boundary is shown in red on **Figure 2-1** below, which is based on aerial imagery produced by Google Earth (aerial image data from 25/06/2018). A copy of plan ref. CQ 2/2 (see **Appendix 2/1)**, which accompanied an Environmental Statement[3] produced in 2001 to support a submission under the Environment Act 1995 to review the mineral permissions, shows the extent of the existing planning permissions at the quarry, and should be referred to in considering the extend of each planning permission. **Drawing CL 2/2** shows the combined extent of the planning permissions edged in red based on OS mapping. Finally, **Drawing CL 2/3** shows the extent of the application site edged in red for the area within which inert restoration materials would be deposited.

[1] All distances measured from the centre of the site to centre of the settlement using Google Earth

[2] Including a pipeline corridor which bisects the quarry workings.

[3] Environmental Statement "*Review of Mineral permissions under the Environment Act 1995" (Ref. 4C/275/001).* SLR Consulting Limited March 2001 (the '2001 ES')

Figure 2-1
Site Location and Context

2.6 The quarry is bisected by a north-east to south-west aligned pipeline (and associated corridor) which supplies aviation fuel to RAF Wittering, located approximately 2km to the north of the quarry. The pipeline corridor is securely fenced and is approximately 10m in width. A dedicated crossing point has been constructed over the pipeline, with ramps leading up to the crossing point from the quarry workings.

2.7 To the north of this pipeline the site contains the remnants of the processing plant, roadways and numerous stockpiles of both soils and mineral wastes. This area extends to around 14 ha. At the north-western corner, the workings have been backfilled whilst along the western boundary (adjacent to Wittering Coppice) the quarry face is still visible, at the foot of which is a narrow water body, which expands adjacent to the pipeline. The area along the northern side of the pipeline has also been backfilled.

2.8 The southern part of the quarry extends to around 13 ha and contains a number of large waterbodies, visible rock faces, along with further stockpiles of soils and an area along the southern boundary that has been restored.

2.9 The quarry site been mothballed since *c.* 2012 following the exhaustion of permitted limestone reserves. Items of plant and machinery have been removed from the site, save for a few buildings/structures, such as those associated with electricity supply. However, large stockpiles of mineral waste and soils still exist within the site, as do concrete formations (associated with the processing plant and weighbridge for example) and tarmacked roadways.

2.10 Some restoration operations have been undertaken within the site, particularly along the southern boundary (as noted above) and north western corner.

Topography

2.11 The site is located in a flat lying land which forms part of a gently undulating landscape to the west of the Cambridgeshire Fenlands.

2.12 Cross Leys Quarry lies at about 65m AOD within the limestone upland plateau of Kesteven. The quarry occupies the top of and indistinct minor plateau within the general landform. The undulating plateau locally reaches elevations of 90m to 100m AOD and is deeply dissected by a series of watercourses, including the Willow Brook and the River Welland, flowing eastwards towards the fens. The eastern boundary of the limestone is formed by a gentle escarpment sloping gradually to the flat fen topography ranging in elevation from 0m to 10m AOD. The watercourses through the limestone upland provide localises pronounces topographical variation within the general pattern of the upland

2.13 Within the boundary of the site, the topography takes on an irregular undulating form due to the working of limestone and stockpiling of mineral wastes. Within the northern part of the site, levels are typically within the range of 63m (at the south-western corner) to 74m AOD (north-western corner), whilst in the southern part, the levels range from 65m to 60m AOD. The site entrance (and A47) are at an elevation of around 68m AOD, whilst the top of the mineral waste stockpile in the northern area is at an elevation of 78m AOD.

Access

2.14 Access to the site is off the A47 at NGR TF 03114 00707. The access, which was built in accordance with the provisions of a planning permission granted in 1981 (ref. P1166/80), is aligned at approximately 45 degrees to the carriageway of the A47 (in the direction of Peterborough to the east). Visibility splays at the junction are provided. The access is currently blocked by large concrete blocks, beyond which is a metal gate.

ENVIRONMENTAL CONTEXT

Other Mineral Operations

2.15 Two other mineral operations, along with a hazardous waste landfill site and a non-hazardous waste landfill site, exit in the vicinity of the quarry, being around 1.3km to the east and 1.3km and 2.8km to the west.

Landscape Context

2.16 The quarry is located within the north eastern part of National Character Area (NCA) 92[4] – Rockingham Forest. The key characteristics of this character area of relevance to the quarry are as follows:

- *Undulating landform rising to prominent scarp along edge of Welland Valley in Rockingham Forest;*
- *Large woodlands on higher ground enclose the landscape;*
- *High historic and nature-conservation interest in woodlands;*
- *Foreground views are occupied by large arable fields with low hedges, and;*
- *Undisturbed, deeply rural quality despite nearby towns and adjoining trunk roads.*

2.17 The quarry is identified in the Peterborough Landscape Character Assessment[5] within the western part of Landscape Character Area 2: "*Nassaburgh Limestone Plateau"* which has the following key characteristics:

- *Gently undulating limestone landscape;*
- *Large blocks of woodland, many ancient or semi-natural providing structure;*
- *Large arable fields with low hedgerows or dry-stone walls;*
- *Many areas of high nature conservation interest;*
- *Several active and disused and limestone quarries, and;*
- *Generally, a quiet rural ambience.*

2.18 The quarry is also located within Sub-Area 2c of the Peterborough Landscape Character Assessment: "*Wittering Limestone Plateau*". The strength of character in this area is described as *"disjointed"* due to the presence of RAF Wittering, the A1 corridor and the A47. The landscape strategy within Sub-Area 2c is to improve and conserve wooded parts of the landscape to "*increase the woodland linkage between existing areas to aid the development of ecological corridors"*. There is also a note that to address landscape sensitivity associated with development at RAF Wittering there is a need to "improve *the structure of the area largely through new woodland planting to provide stronger strategic linkages between the east and Rockingham Forest to the west."*

2.19 The proposed restoration scheme is similar to the approved scheme, in so far as it incorporates woodland and hedgerow planting to increase east-west habitat connectivity with other areas of woodland in the surrounding landscape. The proposed agricultural restoration would also restore the developed land to the rural character of farmland in the surrounding landscape, as would the approved scheme. The proposed scheme would retain the existing low-level wetland area.

2.20 Further details on the landscape character are contained in Chapter 6 of this statement

[4] NCA Profile: 92 Rockingham Forest, Natural England, 2014. Available online at: http://publications.naturalengland.org.uk/publication/4716243105873920?category=587130

[5] Peterborough Landscape Strategy – Landscape Character Assessment for Peterborough City Council, The Landscape Partnership, 2007. Available online at: https://drive.google.com/file/d/0B_3f1SsdQbrNb0Rmb1RucFdGZXM/view

Geology

2.21 Review of published soil mapping[6] indicates that prior to development the application site was underlain by 'shallow lime-rich soils over chalk or limestone'. Immediately to the south of the application site are 'lime-rich loamy and clayey soils with impeded drainage' whilst land immediately to the west is underlain by 'slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'.

2.22 Review of British Geological Survey (BGS) Onshore Geoindex[7] and mapping confirms that the application site was not underlain by superficial deposits prior to development nor do superficial deposits abut the site boundary.

2.23 The bedrock comprises the Lincolnshire Limestone and it is this limestone which has historically been worked at Cross Leys quarry. The south eastern area of the quarry is underlain by the Upper Lincolnshire Limestone Member which overlies the underlying Lower Lincolnshire Limestone Member which is observed to underlie the north western area of the quarry.

2.24 The basal beds rest quasi-conformably on the Grantham Formation which comprise of mudstones, sandy mudstone and argillaceous siltstone-sandstones; these are in turn underlain by the Northampton Sand Formation (Sandstones and Ironstones) and the Whitby Formation (Lias Clay).

Hydrogeology and Surface Water

Hydrogeology

2.25 The EA classify the Rutland Formation as a '*Secondary B Aquifer*'; the Lincolnshire Limestone series as a *'Principal Aquifer'*; whilst the underlying Grantham Formation is classified as a *'Secondary (Undifferentiated)'*. BGS mapping confirms that the limestone beneath the application site is classified as a highly productive aquifer.

2.26 Further details on the hydrogeological environment are contained in Chapter 7 of this statement.

Hydrology

2.27 The quarry lies within the catchment of the River Nene, an EA Main River located approximately 4.5km to the south east of the site at its closest. The Nene is fed by a series of minor tributaries which drain from the limestone plateau area in a predominantly southerly or south easterly direction.

2.28 The quarry lies within the sub-catchment of the Wittering Brook, the closest watercourse to the site. The watercourse rises approximately 280m to the north of the existing quarry from where it flows easterly.

2.29 Further details on the hydrological environment are contained in Chapter 7 of this statement.

[6] Cranfield University (Accessed 22/08/18) http://www.landis.org.uk/soilscapes/
[7] BGS Geoindex (Accessed 22/08/17) http://mapapps2.bgs.ac.uk/geoindex/home.html

Protected Designations

2.30 Figure **2-2** provides an extract from the MAGIC website showing key ecological designated features within 2.5km of the site boundary whilst Figure **2-3** illustrates the heritage designations (again within 2.5km).

Figure 2-2
MAGIC Search (Ecology)

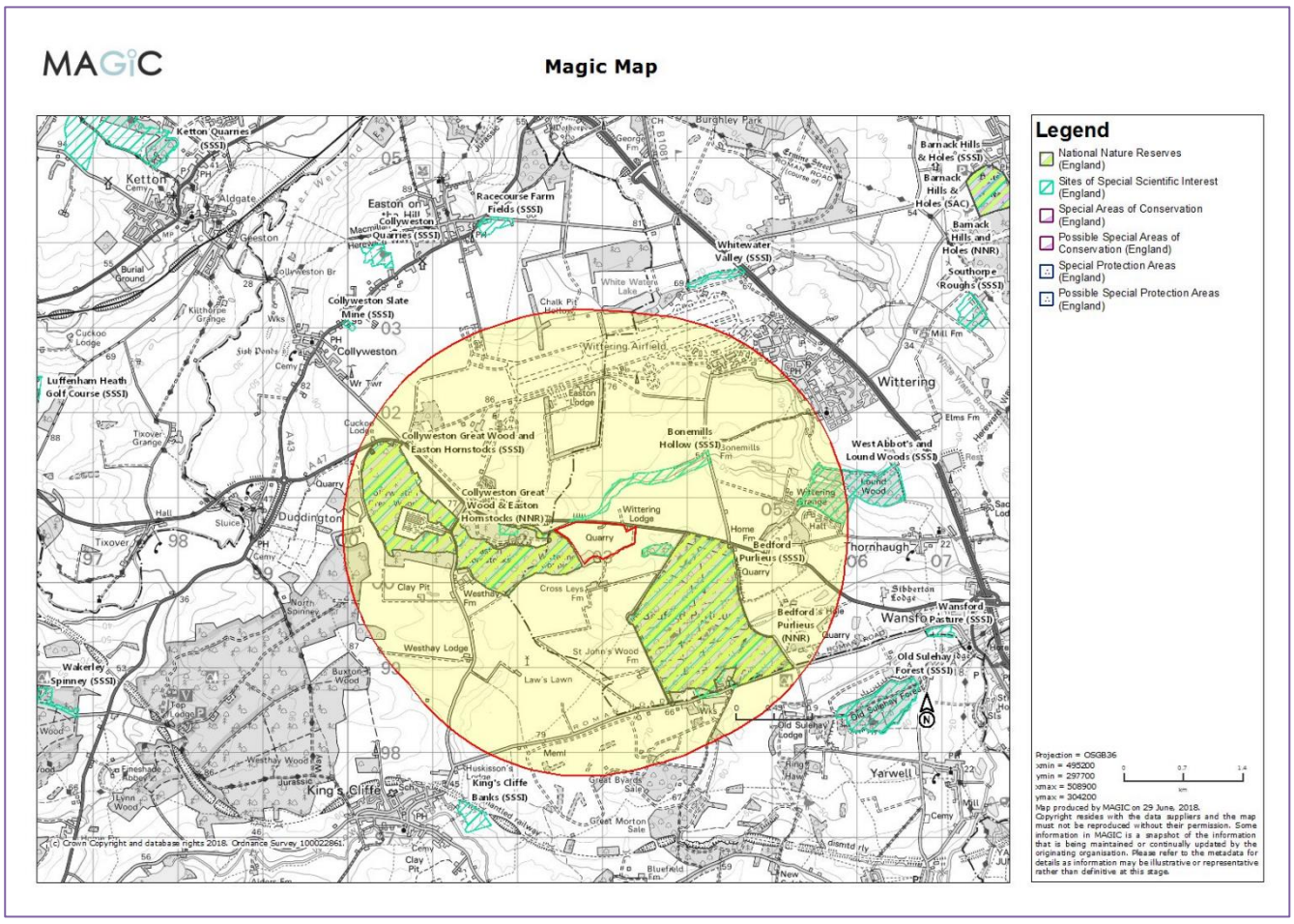


Figure 2-3
MAGIC Search (Heritage)

Ecology and Nature Conservation Designations

2.31 In addition to the adjoining Collyweston Great Wood and Easton Hornstocks (SSSI), the quarry is located close to a network of special sites of national nature conservation value. The following nature conservation designations are located within 2.5km of the quarry:

Sites of Special Scientific Interest

- Collyweston Great Wood and Easton Hornstocks (151.5 ha) - adjacent to the west;
- Bedford Purlieus (214.3 ha) – approximately 125m to the south-east;
- Bonemills Hollow (17.5 ha) – approximately 10m to the north (on north side of A47);
- West Abbot's and Lound Woods (50.32 ha) – approximately 1.9km to the east.

National Nature Reservesw

- Collyweston Great Wood and Easton Hornstocks (149.4 ha) – adjacent to the west;
- Bedford Purlieus (207.8 ha) – approximately 445m to the south-east.

Cultural Heritage Designations

2.32 There are no Scheduled Monuments in close proximity or within 2.5km of the site. The closest is the '*Site of Manor House and Gardens'* (ref 1003632) located to the west of Collyweston, around 3.6km to the north west of the quarry.

2.33 There are 19 listed buildings within 2.5km of the quarry, the closest of which are located around 1.3km to the north west (part of RAF Wittering) and north east (Bonemills Farmhouse) of the quarry.

Landscape Designations

2.34 There are no Areas of Outstanding Natural Beauty (AONB) within 5km of the quarry.

Air Quality

2.35 The quarry does not lie within, or close to an Air Quality Management Area.

Water Environment

2.36 The quarry is not located within or close to a source protection zone; the closest is located over 3.8km to the north of the quarry.

2.37 A small part of the northern section of the quarry is shown on the Environment Agency (EA) mapping as being within Flood Zone 3; the vast majority of the quarry is classed as Flood Zone 1.

Human Receptors

2.38 The nearest residential property (Wittering Lodge) lies adjacent to the north eastern corner of the planning permission boundary, adjacent to the A47. The boundary to the property is formed by a belt of woodland, with a soils storage mound lying adjacent to the boundary. The next nearest property (Cross Leys Farm) lies around 350m to the south of the site boundary. No other residential properties lie within 1km of the site boundary.

2.39 The more substantial built up areas of Wittering, Wansford and King's Cliffe, as noted above, lie some distance from the quarry; the edge of Wittering (being the closest settlement) is around 2.5km from the site boundary.

2.40 RAF Wittering (and its associated runways and taxiways) is located around 2km to the north of the northern edge of the quarry boundary. The runway is orientated in an east-northeast to west-southwest fashion with the closest part of the runway (western end) being 1.78km from the quarry boundary.

PLANNING HISTORY

2.41 Cross Leys Quarry has operated since the late 1960's, originally as Peterborough Quarries Limited and subsequently by the applicant. The quarry is bisected by a Government Pipeline and Storage

System (GPSS), which supplies aviation fuel to RAF Wittering, located approximately 2km to the north of the quarry.

2.42 The quarrying operations have been subject to three planning permissions granted in 1967, 1978 and 1999; under the provisions of s.96 of the Environment Act 1995, these permissions have been subject to a formal review[8], with the application made on the 27 October 1999. Following the case of R v North Yorkshire County Council *ex part* Brown and Cartwright, the MPA requested that the submission be supported by an Environmental Impact Assessment (EIA). The applicant commissioned SLR to undertake the EIA and the Environmental Statement (ES) was submitted in March 2001. Following a period of consultation and consideration of the application, the MPA issued the new scheme of conditions on 11th October 2004.

2.43 The full planning history is set out below:

- **98/01252/MMFUL** Extraction of **additional** mineral reserves within existing quarry perimeter.
- **99/01273/RMP** Application for the determination of updated planning Conditions (Main Permission).
- **04/00850/WCMM** Variation of condition 15 of planning permission.
- **98/01252/MMFUL** to allow the operating company a reduction in the monitoring of noise levels too annually at two locations instead of three monthly at five locations.
- **06/00415/MMFUL** Importation of inert (construction and demolition) waste in order to assist in the overall restoration of Cross Leys Quarry.
- **98/01336/WCMM** Application to carry out development permitted by P0581/78 (extraction of limestone) without complying with condition 1 (relating to phasing of working).
- **09/00667/MMFUL** Importation of inert material to achieve beneficial restoration at Cross Leys Quarry.
- **10/00488/WCMM** Variation of condition 1 of planning permission 06/00415/MMFUL to vary the completion date of the permitted infilling from 31/07/2010 to 31/07/2012.
- **10/00500/SCOP** EIA Regulations Scoping Opinion at Cross Leys Quarry - Proposed extension of quarry workings and importation of inert material into the quarry.
- **11/01898/FUL** See Covering letter - The development hereby permitted shall be completed, apart from the aftercare works required by condition 14 by the 31st July 2014.
- **11/00017/SCREEN** Screening opinion.
- **11/01936/OTH** Environment Agency consultation request.
- **12/00005/SCOP** Scoping opinion request for (I) proposed importation of inert waste material and (ii) proposed extension of quarry workings and importation of inert waste material into the quarry.
- **12/01189/WCMM** Variation of condition 1 of planning permission.
- **10/00488/WCMM** to vary the completion date of the permitted infilling from 31/07/2012 to 31/07/2013.

[8] Application for the determination of new planning conditions.

CONTENTS

INTRODUCTION

3.1 This chapter describes the development for which planning permission is sought.

OVERVIEW

3.2 An integral aspect of the development of mineral sites is the restoration of the workings to a beneficial use (or uses) that reflects and respects the local environment. Often, restoration schemes can introduce biodiversity or other enhancements that did not exist previously within the site.

3.3 Within the adopted Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Development Plan Document (refer to Chapter 4 below) the Cross Leys site is specifically allocated as an inert landfill site and as a site for inert waste recycling under policies W1 and W2. The site is shown on insert map 44 and the implementation issues set out in detail the matters that would need to be addressed in a planning application. The plan identifies that the Cross Leys site has a void capacity of 433,333m^3.

3.4 In view of the population of Great Crested Newts within the quarry it is recognised that a planning application is required to amend both the restoration scheme for the quarry workings and the duration of restoration operations to facilitate the satisfactory restoration of the site. The restoration scheme needs to provide a comprehensive approach to restoration and landscaping, with the production of a new masterplan, which affords adequate mitigation for the Great Crested Newt (GCN) population and their habitat on site.

3.5 The revised restoration scheme therefore seeks to retain an element of the approved scheme, by returning the northern part of the site to agricultural use, but retain the habitats in the southern part of the site, thereby safeguarding the population of GCN.

3.6 In relation to the agricultural restoration, the proposals seek to import around 395,000m^3 of inert restoration materials to raise the levels within the quarry void and create a gentle domed profile to aid with the drainage of surface water. In so doing a better quality agricultural scheme can be achieved.

CURRENT STATUS

3.7 As set out in the previous chapters the quarry site been mothballed since c. 2012 following the exhaustion of permitted limestone reserves. Items of plant and machinery have been removed from the site, save for a few buildings/structures, such as those associated with electricity supply. However, stockpiles of mineral waste and soils still exist within the site, as do concrete formations (associated with the processing plant and weighbridge for example) and tarmacked roadways. Some restoration operations have been undertaken within the site, particularly along the southern boundary and north western corner.

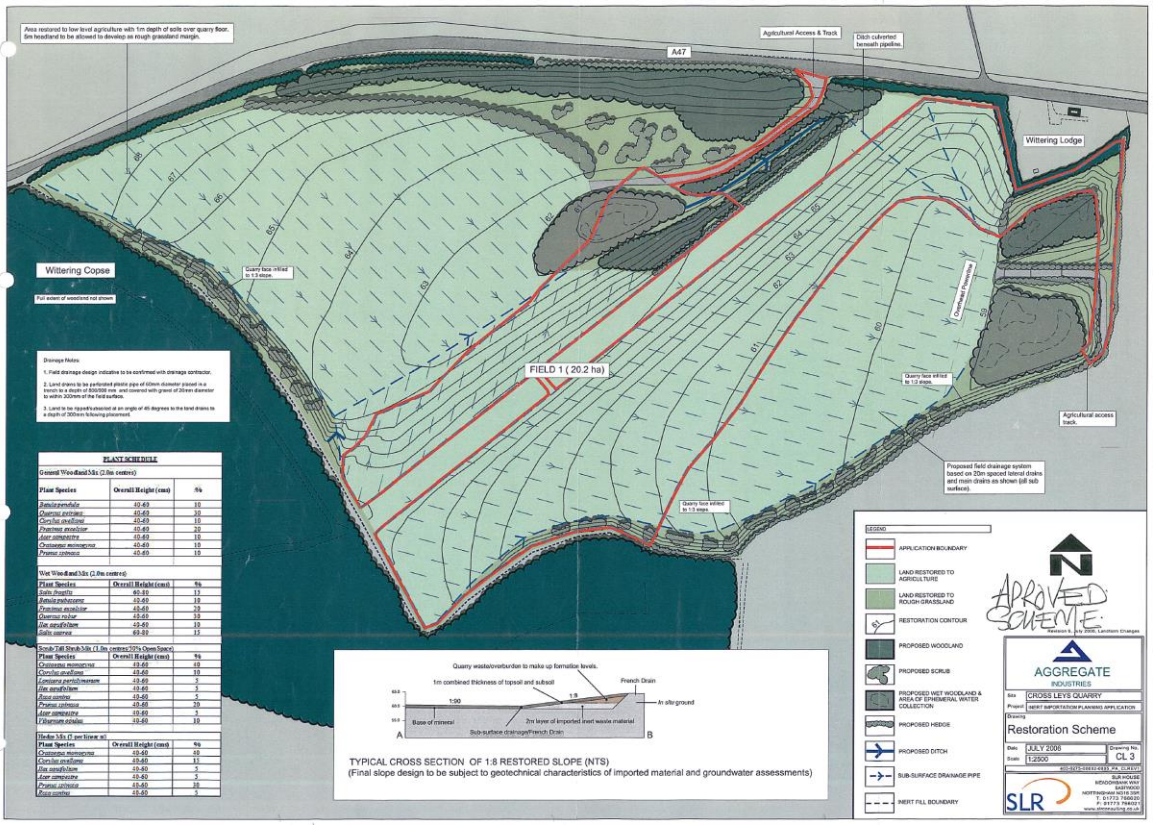
3.8 By virtue of condition 1 of planning permission 99/01273/RMP (the 'ROMP Permission') the winning and working of minerals ceased on 21 February 2016; as such no further extraction is permitted at

the quarry. Similarly, restoration was to be completed by 21 February 2016. In relation to planning permission 98/01252/MMFUL (dated 16 July 1999) condition C3 limited mineral extraction operations within the central pipeline corridor to be completed by 31 December 2004, with restoration completed by the end of December 2009. Again, no further mineral extraction is permitted within the quarry under this permission. Condition 27 of permission 98/01252/MMFUL required the submission of a progressive restoration scheme.

3.9 As part of a review process under the Environment Act 1995 an Environmental Impact Assessment was undertaken and reported in an Environmental Statement (ES)[1]. Notably, the ES addressed both the old mineral permission and the modern permission (ref. 98/01252/MMFUL).

3.10 The approved restoration scheme for the ROMP is shown on SLR Drawing CL 6/R1 (May 2004). This was subsequently amended by planning permission 06/00415/MMFUL which allowed for the importation of inert (construction and demolition) waste to assist with the overall restoration of the quarry by buttressing material against the quarry faces. The revised scheme is illustrated on Drawing CL 3 (July 2006) and illustrated in Figure 3-1 below.

Figure 3-1
Permitted Restoration Scheme



[1] Review of Mineral Permission under the Environment Act 1995: Environmental Statement. SLR ref 4C/275/001 (March 2001)

3.11 The approved restoration scheme would have created a predominately low-level agricultural restoration using both site derived quarry (mineral) waste and imported inert waste to create two agricultural fields (one on either side of the pipeline). Associated wildlife habitats, such as woodland and wet woodland, areas of ephemeral water collection, scrub and rough grassland and 0.9km of hedgerows would also have been created. The narrow strip of undisturbed ground through the centre of the site at approximately 68m AOD was retained providing a standoff for a pipeline. The site entrance at the north of the site would have been restored to approximately 68m AOD, with levels along the northern boundary, adjacent to the A47 rising to 70m AOD, towards the north-west. A 1m thickness of topsoil and subsoil would have been provided across the agricultural areas, above imported inert waste and mineral waste.

3.12 Networks of ponds and lagoons, typical of a quarrying operation have formed within the site. These are of varied size and form, but typically appear to be groundwater-fed. Ponds in the northern part of the site are at higher elevations and appear more prone to seasonal drying. Since 2012 Great Crested Newts have colonised the water bodies within the quarry, using the surrounding vegetation as terrestrial habitat. Great Crested Newts are a 'European Protect Species' and fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (The Habitats Regulations) as amended. Thus, strict controls are in place to protect the species from injury and safeguard their habitat and until a European Protect Species Licence (EPSL) has been obtained the site cannot be restored. Accordingly, the restoration scheme is no longer feasible (as it is unlikely that Natural England would grant an EPSL for the approved scheme which would result in the destruction of the GCN habitat) and an amendment is required to provide greater opportunities for this species than is currently provided by the existing consented scheme.

REVISED RESTORATION SCHEME

Introduction

3.13 The aims of the revised restoration scheme are as follows:

- to maximise agricultural land;
- to re-use on-site materials and import restoration materials as restoration fill within the site;
- to allow removal of any waste material that cannot be re-used on site, either to be sold off-site or removed and disposed of off-site;
- to re-use soils stored on site within the site, and;
- to conserve, maintain and where possible enhance the biodiversity value of the site. This includes maintaining the favourable conservation status of the Great Crested Newt (GCN) population and other wildlife on site in accordance with relevant statute, AI biodiversity policy commitments and local planning policies.

Ecological Context

3.14 Cross Leys Quarry is a former operational site set within a landscape dominated by arable farming with several large blocks of deciduous woodland. Prior to commencement of extraction it was managed as arable land and as such it was likely to represent a relatively impoverished flora and fauna in comparison to surrounding semi-natural habitats.

3.15 As noted in Chapter 2 above, directly west and adjacent to the quarry is the designated site of Collyweston Great Wood and Easton Hornstocks Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR). This site, which is the largest Northamptonshire remnant of the ancient Purlieu coppices of Rockingham Forest covers approximately 150ha.

3.16 There are several areas of the quarry where vegetation has been allowed to develop. These areas are principally where works have been restricted around known GCN ponds and along the length of an aviation fuel pipeline that transects the site. These habitats are characterised by grassland species such as couch grass (*Elymus repens*), cock'-foot (Dactylis glomerata), Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), spear thistle (*Cirsium vulgare*), cleavers (*Galium aparine*) and mouse ear (*Cerastium fontanum*). In some places scrub species, such as bramble (*Rubus fruticosa*) and buddleia (*Buddleia davidii*) have encroached.

3.17 As well as the more established areas of vegetation there are areas where bare ground has begun to be colonised by species such as colt's foot (*Tussilago farfara*), spear thistle, scentless mayweed (*Tripleurospermum inodorum*) and shepherd's purse (*Capsella bursa-pastoris*).

3.18 Networks of ponds and lagoons of varied size and form have formed within the base of the workings which supports a large population of Great Crested Newt (*Triturus cristatus*).

3.19 The final restoration scheme has been designed to provide greater opportunities for this species than is currently provided by the existing consented scheme, with considerably larger area and higher number of waterbodies and a larger area of suitable terrestrial foraging habitat. Other priority species of biodiversity important present on the site include common lizard (*Zootoca vivipara*) and badger (*Meles meles*). Waterbodies and scrub habitats support breeding bird species and a wintering bird assemblage of up to local importance and the site supports an invertebrate assemblage of local interest. All these features of biodiversity importance have been considered in the final restoration design.

Landscape Context

3.20 Cross Leys quarry is located to the south of the A47 and is set within a landscape dominated by arable farming with several large blocks of deciduous woodland. The site is located within the north-eastern part of National Character Area 92 – Rockingham Forest, which extends for over 5km north to Stamford and east to Peterborough and for over 20km to the south and south-west to Kettering, in a band over 10km wide. The key characteristics of this character area are defined as follows:

- Undulating landform rising to prominent scarp along edge of Welland Valley in Rockingham Forest;

- Large woodlands on higher ground enclose the landscape;
- High historic and nature-conservation interest in woodlands;
- Remnants of unimproved grassland throughout, with limestone heaths and fragments of acid bogs in the Soke of Peterborough;
- Foreground views are occupied by large arable fields with low hedges;
- Large mature landscape parks and country houses;
- Dry stone walls around villages, becoming more common in open countryside in Soke of Peterborough;
- Nucleated villages often in sheltered streamside locations;
- Distinctive buildings constructed in local stone: ironstone in west, limestone in east;
- Undisturbed, deeply rural quality despite nearby towns and adjoining trunk roads;
- Prominent, disused ironstone quarries (gullets) and abandoned second world war airfields; and
- A sharp transition between the countryside and the main towns of Kettering, Corby and Peterborough (lying just outside the area) which have developed rapidly in recent years.

3.21 At a more local level the site is identified in the Peterborough Landscape Character Assessment[2] as being located within the western part of Landscape Character Area 2: "*Nassaburgh Limestone Plateau*", and within Sub-Area 2c: "*Wittering Limestone Plateau*". Within Sub-Area 2c the following details apply:

- "Strength of Character" is defined as "Moderate."

  "The westerly sub area of the plateau has a relatively less undulating form. While there are also some prominent land uses the overall character of the sub area is more disjointed. This arises from the presence of RAF Wittering in the centre of the area, the A1 corridor and to a lesser extent the A47."

- "Condition" is defined as "Moderate."

  "Despite the presence of a number of large individual features such as Bedford Purleius and Burghley Park some parts have only scattered habitats e.g. south west of RAF Wittering. There has been some loss of parkland to arable at Burghley. The corridor along the A1 could be improved for both road user and from the adjacent landscape."

[2] Peterborough Landscape Character Assessment, The Landscape Partnership Ltd for Peterborough City Council. April 2007.

- "Landscape Strategy" is to "Improve and Conserve."

  "There should be a target to conserve the best of the landscape in the historic estates and large woodland blocks. However, there should be a target to substantially increase the woodland linkage between existing areas to aid the development of ecological corridors and to provide enhanced visual containment but within the context of a large to moderate scale landscape."

- In relation to "Sensitivity" the Assessment states:

  "Although the landscape has a reasonable structure the imposition of built development through the A1 and RAF Wittering adversely affects the quality and overall sensitivity of the area. Adverse development would be relatively less harmful in certain parts of the sub area than in the sub areas to the east. However, there is need to improve the structure of the area largely through new woodland planting to provide stronger strategic linkages between the east and Rockingham Forest to the west."

3.22 Within the local area, the site is part of broad band of ground, extending north to south typically between 60m to 80m AOD and gradually falling from west to east, reaching elevations of approximately 10m AOD associated with the River Nene 4.5km to the east. Localised high points include:

- RAF Wittering Airbase located 2km to the north of the site lies between 75m and 80m AOD;
- Wittering Coppice located immediately to the west of the site rises to 90m AOD at 0.3km away from the site boundary;
- Cross Leys Farm located 0.2km to the south, also lies at 75m AOD; and
- Part of Bedford Purlieus reaches 80m AOD 1km to the south-east.

Proposed Restoration Strategy

Outline of Proposed Restoration Scheme

3.23 The revised restoration proposal is illustrated on **Drawing CL3/5** and should be read in conjunction with the preceding phasing drawings **CL3/1 to CL3/4**. The restoration scheme has been prepared with the aim of providing a sustainable habitat resource for the existing population of GCN and other species of nature conservation importance, whilst also retaining some of the agricultural land identified in the approved scheme and thereby ensuring economic sustainability of the site for the landowner.

3.24 The proposed restoration scheme would allow for the creation of predominately agricultural restoration (12.7ha) in westerly and northerly parts of the site, and 12.8ha of wildlife habitat in easterly and southerly parts of the site which would include the GCN receptor site. Across the whole site proposed habitats include woodland (1.2ha), areas of water (3.85ha), scrub (0.36ha), species rich grassland (2ha), wetland (0.85ha) with 1,540 linear metres of proposed hedgerows and

15 hedgerow trees. The proposed receptor area for GCN would be supplemented with six purpose-built GGN mitigation ponds with adjacent earth-mound hibernacula constructed from excavated pond material.

3.25 **Drawing CL3/1** illustrates the preliminary material movements which are proposed to prepare the site for the importation of inert restoration wastes, and to ensure the protection of GCN. Stockpiles located to the south and east of the pipeline would be moved to free up the southern half of the site for use as the GCN receptor site. Stockpiles A to D (mixed material for use as topsoil) would be placed in temporary storage bund M located in the northern half of the site. Stockpile E (aggregates) would be used to backfill against the unstable face along the western site boundary.

3.26 Following movement of material in Stockpiles A to E the southern half of the site would be fenced off and used as the proposed GCN receptor site. The creation of GCN ponds, hibernacula, planting and seeding within this area would then be able to progress without being disturbed by restoration works in the northern half of the site. Apart from the removal of existing stockpiles and localised earthworks around proposed GCN ponds, existing levels and water-based habitats would be retained.

3.27 Concrete pads underlying the primary crusher and other plant foundations would be crushed and also used as backfill along the western site boundary. Subject to testing, other on-site materials (located to the northern site boundary) may need to be removed from site to a licenced facility.

3.28 **Drawings CL3/2 to CL3/5** illustrate the progressive restoration and soil movement strategy over three phases which would result in the creation of the final restoration landform with a 0.7m soil depth suitable for agricultural use (comprising 0.4m subsoil and 0.3m topsoil). All topsoil required in restoration would be site-sourced however it may be necessary to import subsoils during Phases 2B and 3 due to a shortfall of on-site material. Following completion of the whole restoration landform and soil spreading, organic matter would be incorporated into the topsoil layer. This would temporarily bulk up the topsoil layer until the organic matter decomposes.

3.29 The agricultural restoration area has a maximum crest elevation of 76m AOD at a localised undulation located centrally to the proposed field but for the most-part restored levels would range between 65m and 70m AOD. This is representative of topographical trends in the local area. Gradients within the proposed restored agricultural areas typically range from 1:8 to 1:25 and would be accessible by precision seeding and harvesting equipment (according to the gradient limits set out in the former Minerals Planning Guidance 7). Alongside the A47, gradients would also be typically between 1:8 and 1:25.

3.30 The agricultural restoration area would incorporate land drains and surface water would be allowed to collect in ponds located in the corners of the restored landform. These ponds would provide an additional wetland feature within the site which would be beneficial for invertebrates, amphibians and reptiles.

Landscape Strategy to Improve and Conserve

3.31 The proposed restoration strategy retains key components of the permitted restoration scheme including woodland and scrub planting, agricultural land provision and proposed hedgerows.

3.32 As described above, the "*Landscape Strategy*" for Sub-Area 2c "*Wittering Limestone Plateau*" is to "Improve and Conserve". The restoration strategy for Cross Leys quarry has been devised to comply with this objective by incorporating new woodland planting along the western edge of the site to extend the Wittering Coppice woodland located to the west and to aid the development of ecological corridors. The proposed hedgerow and tree planting along the northern site boundary provides further habitat connectivity to the east, linking to existing retained woodland habitats along the A47 and adjacent to Wittering Lodge.

Strategy for Conservation of Biodiversity, including Great Crested Newts (GCN)

3.33 Baseline ecological surveys at the site have recorded the following important biodiversity features:

- an "exceptional" population of GCN;
- a "good" population of common lizard;
- a breeding and wintering assemblage of birds of local importance;
- habitats, principally the mosaic of open sandy habitats, flower-rich ruderal and scrub which support an assemblage of invertebrates of importance in the Peterborough area.

Great Crested Newts and Reptiles

3.34 The restoration plan set out on **Drawing CL3/5** has revised the landscaping scheme that works towards meeting the likely needs for GCN and reptiles. The exact details of the approach to licenced mitigation would be set out and agreed in the form of a European Protected Species Licence issued by Natural England. The licence application would be submitted once full planning consent is in place for a final restoration scheme suitable for the conservation of this species.

3.35 The long-term strategy for maintaining favourable conservation status of the GCN population at the site is based around the following principles:

- retention of the key areas of breeding habitat to the east and south of the pipeline;
- creation of improved terrestrial habitat resource; and
- linkage of habitats within site and to wider habitat resource outside site.

3.36 These are discussed in more detail below. It is considered that the measures taken to protect and enhance GCN would also benefit the population of common lizard at the site.

Retention and enhancement of breeding habitat.

3.37 Field surveys in 2017 confirmed that GCN occur in all existing waterbodies within the site, although distribution is variable, with significantly larger numbers of individuals recorded from those ponds considered to be more suitable for amphibian breeding.

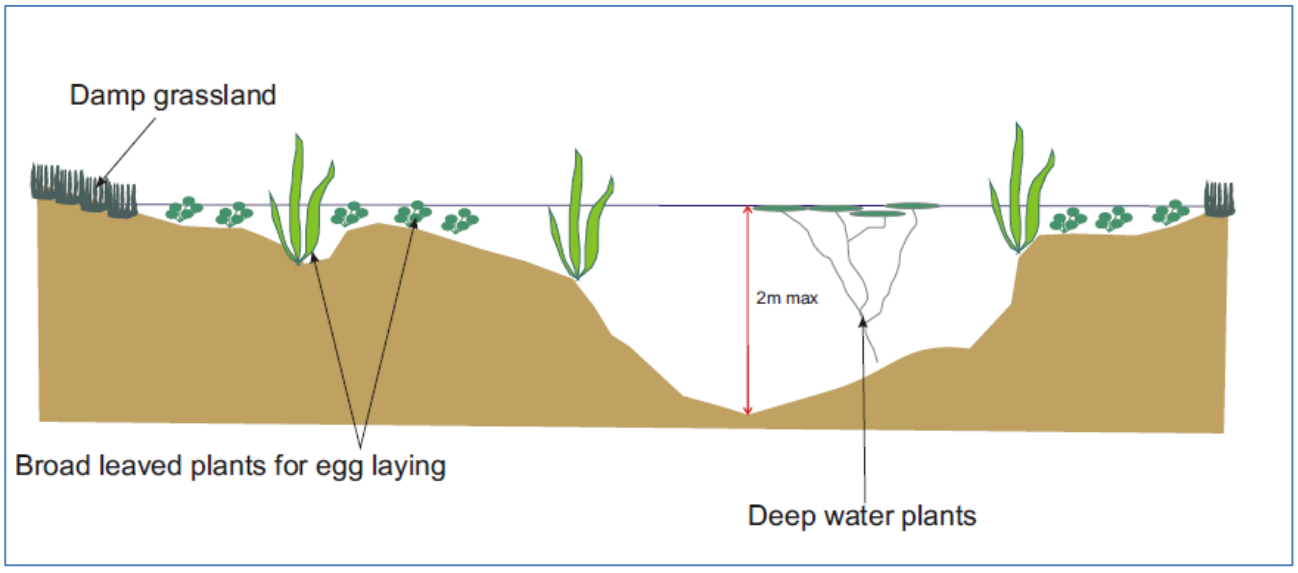
3.38 Overall, the site supports a 'Large' population of GCN, with breeding confirmed in 3 ponds (CL12.02b, CL12.04 CL12.08[3], refer to **Drawing CL 6/2** for pond locations). In 2017, the late spring-early summer weather was exceptionally dry across the UK and the smaller ponds dried out significantly by mid-June. During the Phase 1 habitat survey, only ponds CL12.07, CL12.08, and CL17.10 continued to hold sufficient water to sustain amphibian breeding. All three of these ponds are south and east of the pipeline and would be retained under the proposed restoration scheme.

3.39 Other pond features, principally those on the western flanks of the site (12.04, 12.02a and 12.02b), adjacent to the exposed quarried faces, are ephemeral. These ponds would be lost under the proposed restoration, principally because of the need to manage the geo-technical risks associated with the quarried faces above the ponds.

3.40 The three ponds to be retained in-situ as a long-term breeding resource for GCN includes a complex of interconnected channels and pools. These are colonised with aquatic marginal plants and the waterbodies form a key part of the breeding and foraging resource for GCN. These habitats would be retained and enhanced as part of the proposed restoration scheme.

3.41 In addition, a total of six purpose-built GCN breeding ponds are proposed to be created close to the existing, retained ponds. These have been specifically designed to be suitable for amphibian breeding and would have a profile similar to that illustrated below.

Figure 3-2
Example design for a pond suitable to support breeding GCN



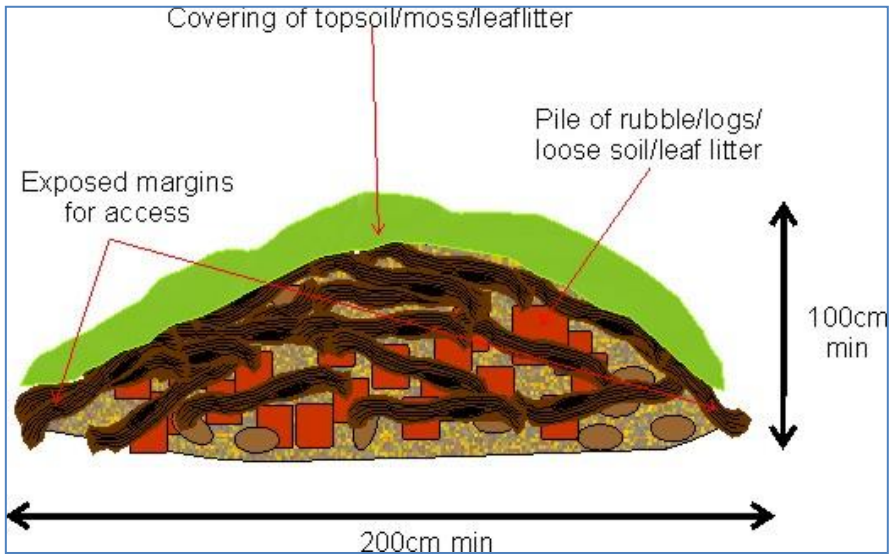
[3] Pond reference numbers include the year the pond was first subject to survey, i.e. '12' indicates ponds were surveyed and are largely unmodified since the 2012 surveys. '17' ponds were first observed in 2017 and have been created between 2012 and 2017.

Creation of improved terrestrial habitat resource

3.42 At the current time the site offers very little in the form of high value terrestrial habitat for GCN (much of the land being either bare or with nothing more than a scattered vegetation cover). It is proposed however that focussed around the proposed GCN ponds are a series of purpose-built hibernacula similar to that illustrated below. The location of these have been illustrated on **Drawings CL3/5 and CL3/7**. Earth mound hibernacula would be created from material extracted from GCN pond excavation and other crushed aggregates available on site, if available and deemed suitable.

3.43 The purpose-built ponds and hibernacula would be set within 12.8ha of wider terrestrial habitat which includes existing, retained waterbodies, rough grassland and areas of woodland and scrub planting, which provide opportunities for shelter and refuge for amphibians, reptiles as well as diverse foraging opportunities for the invertebrate assemblage.

Figure 3-3
Recommended hibernacula design for reptiles, amphibians and invertebrates



Linkage of habitats within site and to wider habitat resource outside site

3.44 Though GCN generally stay close to their breeding sites, if suitable terrestrial habitat resources for foraging and shelter and refuge are available in the vicinity it is known that they can move considerable distances, e.g. c.500m from breeding ponds, and may colonise new ponds by migration through suitable habitat. To facilitate this movement and interchange, the restoration scheme has been designed to provide suitable habitat linkages between retained breeding ponds retained and new GCN ponds created on site and to allow migration back into the existing woodland habitat to the west. GCN have previously been recorded within ponds in Collyweston Great Wood and Easton Hornstocks SSSI/NNR, although in recent years these ponds have become more ephemeral features.

Bird Assemblage

3.45 The site also supports a breeding and wintering bird assemblage of at least local interest. The large waterbodies in the south and east support small numbers of pochard and other wildfowl during the winter. Little ringed plover is considered likely to breed on bare ground around the large lake (pond 17.10). The retention of water features in the south of the site and the creation of new areas of scrub, rough grassland and hedgerows is considered likely to benefit the breeding and wintering bird assemblage in the long term.

3.46 Notwithstanding this, given the proximity of RAF Wittering a Bird Hazard Management Plan (BHMP) has been prepared by Pheonix Bird Control Services Limited. The BHMP has been prepared for use by site managers and ground staff, and it is intended to reduce the risk of bird/wildlife strikes and, in doing so, protect flight crews, passengers, aircraft and operational capability at RAF Wittering. The objectives of the BHMP can be summarised as:

- To assess the potential wildlife hazard to RAF Wittering as a result of proposed restoration plans for Cross Leys Quarry
- To reduce infringements of critical airspace by species that threaten operations at RAF Wittering;
- Ensure that adequate systems are in place to define roles, responsibilities and procedures for managing bird strike risk;
- Define the methods by which wildlife hazards are managed; and
- Outline the processes involved in monitoring bird strike risk and the ongoing evaluation of the BHMP.

3.47 Although it is not possible to prevent all bird strikes, this BHMP aims to help reduce the frequency and severity of bird strikes by focusing management efforts on species and habitats that constitute significant hazards to aircraft. This would be done by establishing site management techniques and processes to monitor the BHMP's success. This BHMP iterates measures that make Cross Leys Quarry less attractive for those targeted bird species and measures to prevent them using the site without unduly degrading on-site and neighbouring habitats.

3.48 A copy of the BHMP is included in Appendix 3/1.

Wider Biodiversity Benefits

3.49 Though the scheme has been designed to provide a sustainable habitat resource for the resident GCN population there are a range of other biodiversity gains that would occur because of this proposal which are described below:

Ponds

3.50 The restoration strategy for this site has been primarily based around meeting the needs of the resident population of GCN so several key pond habitats have been retained and their setting

improved through the provision of large areas of complimentary habitats around them. The creation of new ponds designed for GCN is consistent with the aim in the Local Habitat Action Plan for Cambridgeshire and Peterborough to create at least 5 new quality ponds per district council per year until 2015. The pond complex would also provide habitat for the diverse amphibian assemblage that exists at the site along with aquatic plants and invertebrates that currently exist or may colonise in the future.

Woodland

3.51 Woodland is a UK and local Biodiversity Action Plan Priority Habitat for Cambridgeshire and Peterborough. Lowland mixed deciduous woodland, the associated understory and ground flora contain some of the most important assemblages of animals, birds and plants of any British habitat. These woodlands have great landscape, cultural and historical importance in the county and the creation of 1.2ha of new woodland within the site would contribute towards increasing broadleaved woodland cover in the local area.

Rough grassland

3.52 The proposed restoration scheme provides for of grassland restoration at the site which would be managed as a resource for biodiversity. The Local Habitat Action Plan for Cambridgeshire and Peterborough sets out a target of creating 150 Ha of neutral grassland and this restoration scheme contributes to this overall aim. In addition to its value as a habitat and for the plant species such grassland can be an important habitat for ground nesting birds such as the priority species skylark and grey partridge as well as other species such as brown hare, amphibians and a large range of invertebrates, including glow worm.

Hedgerows

3.53 The proposed restoration scheme would provide of new hedgerow that would be planted with an appropriate mix of native species. The Cambridgeshire and Peterborough Biodiversity Action Plan sets a target for replanting of significant lengths of native species-rich hedgerow. This proposal is consistent with this aim and contributes to those targets set. The provision of such habitat and its associated verge would also be beneficial to several Key National Biodiversity Action Plan species such as brown hare, skylark, grey partridge, song thrush, linnet, tree sparrow, GCN and harvest mouse. This is in addition to small mammals and their predators, hedgerow birds, hibernating amphibians and invertebrates.

3.54 All proposed habitat creation is supportive of the objectives of the Cambridgeshire and Peterborough Biodiversity Action.

AFTERCARE MANAGEMENT PLAN

Introduction

3.55 The overall aim of the Aftercare Management Plan is to ensure the successful establishment and maintenance of a productive agricultural landscape in the northern half of the Site and a nature conservation area in the southern half of the Site, all in accordance with local Biodiversity Action

Plan targets as set out in the Cambridgeshire and Peterborough Biodiversity Action Plan (CBAP)[4] which includes hedgerows, ponds, lakes and standing water, grassland and woodland as priority habitats. The CPBAP also recognises the potential for valued habitats in mineral sites. Other relevant landscape planning policies are discussed in Chapter 5 – Landscape and Visual Appraisal, under Landscape Planning Context.

3.56 All maintenance proposals are considered from a landscape management perspective. Specific management and maintenance provisions for the GCN receptor site are not covered in this report but are set out in Chapter 6: Ecology / as part of the European Protected Species Licence (EPSL). The provisions of the agreed EPSL would take precedence over prescriptions set out here to ensure that Great Crested Newt habitat is correctly managed.

3.57 The Aftercare Management Plan covers a statutory 5-year period of aftercare following on from the development of the proposed restoration scheme detailed on **Drawing CL 3/5**.

Implementation of Proposed Planting and Seeding (Outline Specification)

Agricultural Grassland for Pasture

3.58 The proposed agricultural grassland would comprise the following seed mix (or similar and approved)[5]:

- 35% FOXTROT certified Late Perennial Ryegrass;
- 20% RODRIGO certified Int. Per. Ryegrass;
- 20% ORION certified Int. Perennial Ryegrass (T);
- 15% COMER certified Timothy;
- 7% ABERCONCORD certified Med. White Clover; and
- 3% ABERACE certified Small White Clover.

3.59 This species mix is characteristic of lowland grass meadows and would be sown to create a good quality, dense and productive grazing sward to minimise weed growth.

Native Structure Planting

3.60 The proposed planting specifications for structure planting are extracted from Drawing CL 3 (dated 2006) which illustrates the consented restoration scheme for Cross Leys Quarry. The proposed woodland mix has been adjusted to remove *Fraxinus excelsior* (Ash) due to restrictions on the sale and movement of ash trees for planting within the UK following recent problems with Ash Dieback disease (*Chalera fraxinea*)[6]. Percentages of *Betula pendula* and *Quercus petraea* have each been increased by 10% to compensate for this.

[4] Cambridgeshire and Peterborough Biodiversity Action Plan (CBAP) Available online at: http://www.cpbiodiversity.org.uk/biodiversity-action-plans

[5] Available to view online at: https://www.thegrassseedstore.co.uk/product-category/agricultural/long-term-grazing/

[6] Forestry Commission Advice on GB Chalara Fraxinea Legislation.
Available online at: https://www.forestry.gov.uk/forestry/INFD-8YRDY7

3.61 All tree and shrub planting would be individually protected either by 0.6m height translucent plastic spiral guards supported by a single stout cane or, in the case of the more bushy, species (such as Ilex aquifolium), a 0.6m high shrub shelter and timber stake.

3.62 During installation of proposed structure planning around site boundaries, care should be taken to protect existing woodland planting adjacent with hand digging methods used while planting within the root protection area of existing trees.

Table 3-1
Proposed Woodland Mix (plant at 2m centres)

Plant Species	Overall Height	% Mix
Betula pendula	40-60	20
Quercus petraea	40-60	40
Corylus avellana	40-60	10
Acer campestre	40-60	10
Crataegus monogyna	40-60	10
Prunus spinosa	40-60	10
		100

Table 3-2
Proposed Scrub/Shrub Mix (plant at 1m centres)

Plant Species	Overall Height	% Mix
Crataegus monogyna	40-60	40
Corylus avellana	40-60	10
Lonicera periclymenum	40-60	5
Ilex aquifolium	40-60	5
Rosa canina	40-60	5
Prunus spinosa	40-60	20
Acer campestre	40-60	5
Viburnum opulus	40-60	10
		100

Table 3-3
Hedgerow Mix (5 plants per linear metre)

Plant Species	Overall Height	% Mix
Crataegus monogyna	40-60	40
Corylus avellana	40-60	15
Ilex aquifolium	40-60	5
Acer campestre	40-60	5
Prunus spinosa	40-60	30
Rosa canina	40-60	5
		100

3.63 Hedgerow plants would be installed in a double-staggered row with 5 plants per linear metre. This would achieve a dense hedgerow providing strong habitat linkages east to west across the site.

3.64 The proposed hedgerow along the northern site boundary would be supplemented with 15 hedgerow trees. These would be installed as bare-root feathered transplants (2x feathered with 3 breaks) 125cm-150cm in height to provide immediate structure. Hedgerow trees would comprise 5no. *Acer campestre*, 5no. *Crataegus monogyna* and 5no. Quercus petraea. Trees to be spaced as shown on **Drawing CL 3/5** with *Acer campestre* and *Crataegus monogyna* planted in small groups of two and *Quercus petraea* spaced further apart allowing more room for individual trees to grow. Feathered trees are to be protected with 0.8m height translucent plastic guards and supported by a single wooden stake of 1.5m height.

Grass and Wetland Areas

3.65 Parts of the nature conservation area would be seeded to improve the diversity of grass and wetland areas. The aim is to create species rich grassland and to enhance areas of existing wetland. The tables below set out the species mixes which would be used to achieve the desired habitats.

Table 3-4
Species Rich Grassland (Emorsgate Mix EM1 Standard General-Purpose Meadow Mixture)

Plant Species	Common Name	% Mix
Wild Flowers		
Achillea millefolium	Yarrow	1
Centaurea nigra	Common Knapweed	5
Galium verum	Lady's Bedstraw	3
Leucanthemum vulgare	Oxeye Daisy	0.5
Lotus corniculatus	Birdsfoot Trefoil	0.5
Plantago lanceolata	Ribwort Plantain	1
Plantago media	Hoary Plantain	0.5

Plant Species	Common Name	% Mix
Primula veris	Cowslip	1
Prunella vulgaris	Selfheal	1
Ranunculus acris	Meadow Buttercup	2
Ranunculus bulbosus	Bulbous Buttercup	1
Rhinanthus minor	Yellow Rattle	2.4
Rumex acetosa	Common Sorrel	1
Trifolium pratense	Wild Red Clover	0.1
		20
Grasses		
Agrostis capillaris	Common Bent	8
Cynosurus cristatus	Crested Dogstail	40
Festuca rubra	Slender-creeping Red-fescue	28
Phleum bertolonii	Smaller Cat's-tail	4
		80

3.66 The above mix would be sown at 4g/m² in areas indicated on **Drawing CL 3/5**. Prior to sowing, soils would have been prepared by ripping to loosen the surface and any large stones removed. Ploughing or digging would then be undertaken to bury the surface vegetation and then the ground harrowed or raked to produce a medium tilth, and then rolled to produce a firm surface.

Table 3-5
Wet Grassland (Emorsgate Mix EP1 Pond Edge Mixture)

Plant Species	Common Name	% Mix
Wild Flowers		
Achillea ptarmica	Sneezewort	1
Angelica sylvestris	Wild Angelica	2.3
Caltha palustris	Marsh Marigold	0.1
Eupatorium cannabinum	Hemp Agrimony	0.6
Filipendula ulmaria	Meadowsweet	3
Geum rivale	Water Avens	1
Hypericum tetrapterum	Square-stalked St John's Wort	0.4
Iris pseudacorus	Yellow Iris	4
Lotus pedunculatus	Greater Birdsfoot Trefoil	1
Lycopus europaeus	Gypsywort	0.8
Lythrum salicaria	Purple Loosestrife	0.6
Mentha aquatica	Water Mint	0.1
Pulicaria dysenterica	Common Fleabane	0.1

Plant Species	Common Name	% Mix
Ranunculus acris	Meadow Buttercup	2.5
Scrophularia auriculata	Water Figwort	0.1
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin	1
Succisa pratensis	Devil's-bit Scabious	1
Vicia cracca	Tufted Vetch	0.4
		20
Grasses		
Agrostis capillaris	Common Bent	10
Alopecurus pratensis	Meadow Foxtail (w)	2
Anthoxanthum odoratum	Sweet Vernal-grass (w)	2
Briza media	Quaking Grass (w)	2
Cynosurus cristatus	Crested Dogstail	32
Deschampsia cespitosa	Tufted Hair-grass (w)	1
Festuca rubra	Slender-creeping Red-fescue	24
Hordeum secalinum	Meadow Barley (w)	1
Schedonorus pratensis - (Festuca pratensis)	Meadow Fescue (w)	6
		80

3.67 Pond edge mixture EP1 contains wild flowers and grasses suitable for sowing at the wet margins of ponds, streams and ditches and should be sown at 4g/m². The mixture would be used in proposed wetland areas to supplement existing wetland habitats on Site. The seed would be sown over the existing pond edge between areas of existing planting. These areas would need to have been cultivated ready for seeding using the method described above for the species rich grassland.

Outline Management Prescriptions

Monitoring

3.68 The restored site would be closely monitored throughout the a 5-year aftercare period so that the most suitable management regime can be defined on an area-by-area basis in accordance with the aftercare management plan. It is also proposed that an aftercare meeting or tele-conference would be held on an annual basis with the Local Planning Authority (LPA) to discuss the detailed schemes (and the condition of the Site and to agree the aftercare requirements for the following growing season).

3.69 All works to be carried out in the southern half of the Site shall be checked against details provided within the European Protected Species Licence prior to implementation to ensure that no damage would be caused to the proposed GCN receptor site or GCN population. Adjustments to timings /

extent of works should be amended if necessary. To encourage a diversity of plant species and nature conservation value fertiliser would not be used in the southern half of the site. Herbicides would only be used with prior approval from a suitably qualified Ecologist and for use as part of long-term management aims, such as the treatment of invasive species.

3.70 All planting and seeding failures would be replaced on an annual basis and at rates stipulated by the LPA during the aftercare period to ensure maintenance of the agreed planting densities and land cover. All replacements would include plants of the same species of other such species as may be agreed with the LPA. If abnormal plant or tree failure persists then investigations and proposals for the remedying of site conditions would be prepared and agreed with the planning authority.

3.71 It is acknowledged that under the provisions of the Weeds Act 1959 that it is the responsibility of all occupiers of land - whether used for agriculture or not, to control injurious weeds, so that they do not spread. Provisions for weed control in different parts of the Site are discussed in the following sections.

Agricultural Grassland for Pasture.

3.72 For the proposed agricultural restoration, the aim is to initially produce a long-term ley. This aim would be reviewed from year two of the aftercare period onwards when a cereal crop may be substituted. As part of the 5-year aftercare period, it would not normally be appropriate to cultivate crops which leave the soil bare over the winter months, require harvesting late in the year because of the crop type (e.g. root crops) or climatic constraints, or have limited root pattern as these factors may cause unnecessary damage to the restored soils.

3.73 After establishment, i.e. from year two of aftercare onwards, proposed management would ideally be by light grazing with sheep and/or cattle for at least 10 weeks in each year without damaging the sward. Grazing at low intensity can be an important management tool, as it can contribute to the build-up of soil nitrogen and promote soil structural development.

3.74 The aim would be to remove the year's growth to achieve an average sward height of 75mm by the end of the summer. Stocking would not exceed 0.75Lu/Ha. Further restrictions (e.g. 0.6Lu/Ha) may be applied during the bird-nesting season or to allow plants to flower and set seed. It may be necessary to exclude livestock altogether during winter months and at other times if soils become wet. However, the actual management may be cutting for hay (with or without subsequent grazing), subject to the availability of stock.

3.75 Water supply for livestock is to be provided by the proposed field pond which is to be groundwater fed. Should additional drinking water sources be required such as water troughs, water pipes, fittings and surface boxes they shall be sited, fitted and operated according to manufacturer's instructions and where relevant, BS 3445-1 & 2. Other infiltration/soakaway areas around the Site perimeter would need to be subject to annual checks for weeds / debris such that their capacity for water retention and free drainage is maintained.

3.76 The agricultural area would be enclosed by fencing on all sides with stock-proof fencing and gates. The level of control of pests such as rabbits within the grazing land would be assessed throughout the aftercare period and control measures, such as installation of rabbit proof barriers included if necessary to protect the agricultural sward.

3.77 Weeds in the agricultural area shall be controlled by appropriate application of herbicides by a certified competent person, according to manufacturer's instructions (For example, NPTC Certificate of Competence for use of Pesticides) or, in areas of grass, by cutting or grazing. If agricultural areas are put under arable crops in later aftercare years, these may require regular weed control throughout the growing season as well as other sprays against diseases and other pests. Selection of herbicides, fungicides and pesticides would be carried out once arable crops have been identified. Periodic cutting of the emerging sward is envisaged for the first year to control weeds and encourage tillering. Use of herbicides near to waterbodies should be carried out in accordance with Environment Agency recommendations and relevant permissions sought to avoid polluting water sources.

Structure Planting (Woodland, Trees, Hedgerow and Scrub/Shrubs)

3.78 For the proposed structure planting (Woodland, trees, hedgerows and shrubs/scrub) the aim is to enhance the local landscape character through the introduction of new native planting and to provide habitat connectivity east to west across the Site for a range of wildlife. This would address habitat management objectives in the CBAP by linking existing woodland and other habitats of biodiversity value.

3.79 All areas of structure planting would be subject to a visual inspection on an annual basis to check for good strong foliage and growth so that the most suitable management regime/operations can be defined. Management regimes for structure planting may need to differ across the Site to maintain a productive agricultural field to the north, and a nature conservation area with a receptor site for GCN to the south. The EPSL documentation should be used to inform detailed management prescriptions for the southern half of the Site.

3.80 Re-adjustments and re-firming of the newly planted stock would be carried out as required. Fertiliser requirements would also be assessed on an annual basis throughout the aftercare period. If necessary tree and shrub planting would receive slow-release fertiliser, applied to the base of each plant, according to manufacturer's instructions, at the end of the second growing season. Although not anticipated at this stage, the requirements for watering of the new plantations would be assessed during the aftercare period and in particular during the first 12 months.

3.81 All tree and shrub planting would be protected and maintained in a weed-free condition. Planting areas would be cut as necessary to remove aggressive weed species and long grass from around individual plants. Plants, guards and canes which have become loose, over-tight or broken would be re-firmed and adjusted on an annual basis.

3.82 Longer term management of woodland and scrub should include reviewing opportunities for thinning and replanting with younger stock to promote age diversity, although this is unlikely to occur during the 5-year aftercare period.

3.83 For hedgerows the cutting regime would be based on 5-year rotational cutting, rather than annual, so that areas can be left untrimmed and to provide a source of berries for feeding animals and birds in the winter months. All cutting would take place outside of bird nesting season (bird nesting season is the beginning of March to end of August inclusive). Hedgerow trees would be managed in the longer term by pruning which would include the removal of low branches to maintain a distinct canopy and to prevent branches overhanging into adjacent field.

3.84 The requirements for secondary treatments would be reviewed on an annual basis, in order to identify and remedy any localised problems such as those outlined in the Agricultural Restoration section.

Nature Conservation Areas: Species Rich Grassland

3.85 For all new areas of species-rich grassland, periodic cutting of the emerging sward is envisaged for the first year to control weeds. Newly established grasslands would then be checked regularly for areas of failed germination and any remedial measures necessary undertaken prior to re-seeding. Irrigation and watering is unlikely to be required, as the objective is to create a more naturalistic and diverse habitat. It is also proposed to maintain some areas of species-rich grassland as long grass for over wintering invertebrates and cover for amphibians. These areas would be cut less frequently than set out below. In rough grassland areas, the general approach to the control of livestock and pests would be the same as for agricultural land.

3.86 Typically, the following management principles would apply to areas of proposed species rich grassland, however these would need to be checked against the EPSL to ensure that operations would not harm the proposed GCN receptor site. Mowing, for example may not be appropriate at certain times of the year.

- Mow newly sown meadows regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense. This would control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers.
- Cut back cornfield annuals before they die back, set seed or collapse: this cut would reveal the developing meadow mixture and give it the space it needs to develop.
- Carefully dig out any residual perennial weeds such as docks.
- In the second and subsequent years implement traditional meadow management based around a main summer hay cut in combination with autumn or spring mowing.
- Meadow grassland should not be cut from spring through to late July/August to give the sown species an opportunity to flower. After flowering in July or August take a 'hay cut' would be taken with a scythe, petrol strimmer or tractor mower to c 50mm. 'Hay' should be left to dry and shed seed for 1-7 days then be removed from site.
- Mow the re-growth through to late autumn/winter to c 50mm and again in spring if needed.

3.87 Once the sward is established, low intensity grazing would be appropriate. Typically, grazing should avoid the wetter winter months and be carried out over short periods if necessary to maintain an optimum stocking density over the whole area.

Nature Conservation Area: Wetland and Waterbodies.

3.88 Typically, the following management principles would apply to areas of proposed wet grassland; however these would need to be checked against the EPSL to ensure that operations would not harm the proposed GCN receptor site. Mowing, for example should be timed carefully in accordance with the EPSL and should use a cutter set at 150mm height.

- In the first year, annual weed growth around wetlands / edges of waterbodies may be cut back to encourage the development of a good perennial ground cover from the proposed Pond Edge seed mix.

- Once grasses and wildflowers have developed, variation in structure can be achieved by cutting back and removing short sections of vegetation every 2-3 years in rotation. Dense stands of single species may benefit from selective thinning. Machines and heavy equipment should be used with care on wet parts of the Site to avoid damage to soil and vegetation.

3.89 Once the sward is established, low intensity grazing would be appropriate. Typically, grazing should avoid the wetter winter months and should also avoid poaching pond margins excessively.

3.90 All retained waterbodies would be inspected on a three-monthly basis during the EPSL monitoring period and the 5 year-aftercare period (whichever is the longer) by a Competent Person as part of an operational inspection regime to ensure continued suitability for GCN habitat. These inspections would note any areas of instability and/or erosion and recommendations for control or remedial measures would be provided. These measures would be carried out at the earliest appropriate opportunity by the operator. If any significant issues are identified, the operator would engage the services of a Geotechnical Specialist where considered necessary by the Competent Person.

3.91 Throughout aftercare, the wetland margins would be left to gradual natural succession. If necessary, management cutting would be carried out on a rotational basis to control self-set species such as *Phragmites australis* (Common reed).

Nature Conservation Area: Natural Regeneration

3.92 The quarry is bisected by a pipeline that supplies aviation fuel to RAF Wittering. The existing management regime for the ground above this feature would be allowed to continue. Other parts of the site would also be allowed to regenerate naturally as part of the nature conservation area and GCN receptor site to the south.

3.93 The retention of some bare ground areas is valuable for invertebrates therefore it is not essential for natural regeneration of vegetation to achieve complete ground coverage. Annual reviews of developing habitats would be required to steer management towards creating a naturalistic and diverse mosaic of grassland and ruderals with cutting implemented if required to maintain between 5% and 30% of naturally regenerating areas as bare ground.

Aftercare Summary / Checklist

Table 3-6
Typical Annual Operations

Timings	Standard Operations to be carried out as required
Winter	• Complete record of previous year's operations • Complete replacement planting • Assess water levels in agricultural pond
Spring	• Visual inspection of all areas • Spring fertiliser on agricultural areas and associated planting • Readjustments and firming of planting areas • Replacement seeding on agricultural areas • Weed control all areas

Timings	Standard Operations to be carried out as required
	• Grass cut through planting areas • Assess water levels and drainage requirements
Summer	• Visual inspection of all areas • Spring fertiliser on agricultural areas and planting • Readjustments and firming of planting areas • Replacement seeding on agricultural areas • Weed control all areas • Grass cut through planting areas • Cutting and/or light grazing through agricultural areas • Assess water levels and drainage requirements
Autumn	• Visual inspection of all areas • Replacement seeding on agricultural areas • Rotational drain and ditch management • Assess water levels and drainage requirements

3.94 All operations listed in Table 3-6 would be co-ordinated with management actions, conditions and activities listed in the EPSL, as agreed by Natural England.

3.95 For all areas of the Site, the requirements for secondary treatments would be reviewed on an annual basis, to identify and remedy any localised problems. The following conditions would be assessed where relevant:

- Poor Drainage - would be assessed by recording areas of standing water in the winter, with possible remedy to be moling, subsoiling or installation of land drainage, subject to severity;
- Compaction - would be assessed by excavating inspection pits or recording areas of standing water in winter, with possible remedy to be subsoiling or other mechanical means, subject to severity;
- Settlement - would be assessed by visual inspection or topographical survey where necessary, with possible remedy to be localised re-grading, subject to severity;
- Vegetation Failure - would be assessed by visual inspection, with possible remedy to be cultivation and re-seeding, subject to severity. Vegetation failure may indicate other conditions; and
- Stone-picking - would be assessed by visual inspection and any stones lying on the surface that are larger than 100 mm diameter (i.e. they would not pass through a wire screen mesh of 100mm spacing), together with other objects likely to obstruct future cultivation, would be removed from the site.
- Fertiliser requirements - For agricultural areas, fertiliser and liming requirements would be assessed following soil samples and analyses on an annual basis throughout the aftercare period and would usually be based on MAFF indices.

OPERATIONAL CONSIDERATIONS

3.96 As noted above, part of the restoration scheme is dependent on the importation of inert restoration materials.

Infrastructure

3.97 To support the infilling operations the following infrastructure would be required:

- site office;
- weighbridge;
- stores; and
- wheelwash

3.98 The weighbridge would be standard surface mounted deck with concrete approach ramps; the weighbridge would be long enough to accommodate an articulated lorry. Adjacent to the weighbridge would be the weighbridge office and site reception. This would be a portable type pre-fabricated building typically being up to 15m in length by 3m wide and 2.6m high. The weighbridge would be located close to the site entrance, but set back far enough so that HGVs do not queue back onto the A47

3.99 The site office would also be a pre-fabricated portable type building. Welfare facilities would also be provided within the site office. Stores buildings would be ISO secure steel containers, typically 12m by 2.5m by 2.5m in height.

3.100 It is proposed that a temporary, mobile wheel wash would be installed at the site given the relatively short-term nature of the inert filling operation which is required to achieve the restoration scheme. The water for use in the wheelwash would be sourced on site. It would be recirculated via tanks that would be installed with the wheel wash.

3.101 There would also be a need to have a supply of fuel on site. This would typically be either a double skinned mobile unit or a double skinned tank placed on a bunded concrete pad to a specification which meets the relevant guidance.

3.102 All items of buildings plant and machinery wheel wash would be brought to the site with a low loader HGV and, where appropriate, would be erected in one day using a mobile crane.

3.103 Once the filling and restoration work had been completed, all buildings plant and machinery would be removed and the area reinstated in accordance with the restoration scheme described above.

Site Engineering

3.104 Subject to the provisions of the Environmental/Recovery Permit areas of the site to be tipped with inert waste would be engineered. This would involve regrading the quarry floor, placing and compacting a layer of clay to create a 'cell'.

Restoration Material Handling

3.105 The entrance to the quarry is off the A47, which fronts the northern boundary of the site.

3.106 Waste vehicles entering the site proceed to the weighbridge, where they are checked in by the Weighbridge Clerk and their details are recorded onto the facility's dedicated computer logging system. To ensure that the waste transfer note accompanying the assignment adequately identifies the imported material, a conformance check is carried out by a member of staff trained to a standard as stipulated by the Environmental/Recovery Permit.

3.107 All material deposited at the site would be inspected to ensure it conforms to the materials permitted under the Permit. Records would be maintained of the weight, nature and composition of the restoration materials deposited at the site.

3.108 Vehicles with completed waste transfer paperwork are released from the weighbridge to the operational tipping area. Access to the tipping area is via temporary haul roads. Within the site the haul road would be of a temporary nature and would be transient throughout the continued operations in order to effectively serve the operational cells. At the tipping area the HGV reverses to a designated point to deposit the load. The handling of the restoration material is limited to minimise the release of dust.

3.109 Restoration materials delivered to the deposit area would be examined upon deposition to ensure that the imported material complies with the schedule of permitted materials contained within the Permit. If imported restoration materials are found to be incorrectly described (on the paperwork) and fall outside the limits of the Permit, the load would be segregated, the Environment Agency informed, and the material removed from site for disposal at an appropriate facility. Following deposition, the restoration material is compacted by a tracked bulldozer or metal wheeled compactor (or similar), which passes and re-passes over the imported material to ensure that it is adequately compacted. This helps to conserve void space and reduce the differential settlement that can occur once landfilling has been completed.

Operating Hours

3.110 The site would operate in accordance with the extant operating hours set out in condition C6 of planning permission 99/01273/RMP. In this respect no development shall take place outside of the hours of:

- 0600 to 1900 hours Mondays to Fridays (except Public Holidays); and
- 0600 hours to 1300 hours on Saturdays, Sundays

3.111 There would be no working on Sundays, Bank or Public holidays.

CONTENTS

INTRODUCTION

4.1 It is clear from published guidance that the Government is committed to a plan led system, with the Development Plan forming the basis of all planning decisions. Section 38(6) of the Planning and Compulsory Purchase Act 2004 (PCPA 2004) confers a presumption in favour of development proposals which accord with the Development Plan unless material considerations indicate otherwise. Sub Section 5 of Section 38 also states that, "*if to any extent a policy contained in a development plan for an area conflicts with another policy in the development plan the conflict must be resolved in favour of the policy which is contained in the last document to be adopted, approved or published (as the case may be)*".

4.2 This principle has been developed and clarified by subsequent case law, which has confirmed that a particular proposal does not need to accord with each and every policy in a Development Plan; the key issue is that it accords with the overall thrust of Development Plan policies taken as a whole.

4.3 Accordingly, policy and plans play an important role in determining any planning application. At the local level, the Statutory Development Plan relevant to the proposals currently comprises the following documents:

- Cambridgeshire and Peterborough Minerals and Waste Core Strategy DPD (adopted 19 July 2011); and
- Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals DPD (adopted 22 February 2012).

4.4 Peterborough City Council has produced a number of Development Plan Documents (DPDs) including:

- Peterborough Core Strategy (adopted February 2011);
- Peterborough Site Allocations (adopted April 2012); and
- Peterborough Planning Policies (adopted December 2012).

4.5 However, none of the DPDs produced solely by Peterborough include policies aimed at regulating or controlling mineral developments. This is not unexpected given the provisions of the Town and Country Planning (Prescription of County Matters) (England) Regulations 2003 which provide that such matters fall under the jurisdiction of the MPA. The main considerations within Peterborough's DPD's therefore relate to the general policies and those aimed at safeguarding the environment. Given that the adopted Minerals and Waste DPD also contain policies for the protection of the environment there is a degree of duplication. In view of this and given that the Minerals and Waste DPD's are of a comparable age to Peterborough's DPD's, no further consideration is provided in this chapter to Peterborough's DPD's.

4.6 Other material considerations relative to the planning application include national statements of planning policy, such as the National Planning Policy Framework (NPPF), the National Planning Policy or Waste (NPPW) and the web-based Planning Practice Guidance.

4.7 This chapter sets out the planning policies and guidance that are relevant to the proposed development, namely the restoration of the quarry workings. The relevant policies are highlighted and an analysis provided of the extent to which the proposed development complies with policy.

NATIONAL PLANNING POLICY

4.8 National planning policies are now contained in the following documents:

- National Planning Policy Framework (NPPF), July 2018; and
- National Planning Policy for Waste (NPPW), October 2014.

4.9 Allied to these policy documents, the government has established the online 'Planning Practice Guidance' (PPG) resource which provides general procedural guidance as well as addressing environmental effects.

NPPF

4.10 The NPPF confirms that is does not contain specific waste policies but local planning authorities should still have regard to its policies so far as they are relevant. Key issues that have been identified as relevant include the presumption in favour of sustainable development and the approach of the NPPF to meeting the challenge of climate change by moving towards a low carbon economy.

4.11 At the heart of the NPPF is a presumption in favour of sustainable development. For decision making, paragraph 11 of the NPPF indicates that this means:

approving development proposals that accord with an up to date Development Plan without delay; or

where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:

i. the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or

ii. any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

4.12 In terms of 'Sustainable Development', the NPPF identifies three dimensions[1]: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

4.13 These objectives are not criteria against which every decision can or should be judged. Paragraph 9 of the NPPF provides that "Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area".

4.14 The restoration proposals being put forward in this planning application represent sustainable development when considered against these guiding principles. Mineral workings are often considered to be suitable sites for the deposit of inert restoration materials (and sometimes non-hazardous or hazardous wastes depending on the underlying geology) as part of a restoration scheme. This is recognised in the adopted Minerals and Waste DPD (see below). Before any material can be deposited, an Environmental or Recovery Permit would need to be issued by the Environment Agency; the permit would stipulate the engineering requirements and environmental controls needed to protect the environment. It is also important to note that planning permission (and an Environmental Permit) has previously been granted for the deposit of inert waste to help improve the overall quality of the restoration scheme. Finally, the proposals seek to safeguard a known population of Great Crested Newts, being a European Protected Species. As such it can be considered to be the "*right type*" (being suitable for the deposit of inert restoration material) and the "*right place*" in view of its proximity to the sources of waste, as evidenced by the previous grant of planning permission, as well as the existence of other similar facilities in the area.

4.15 Allied to this, the underlying requirement to move to a low carbon economy (para. 8 of the NPPF) and the role which the planning system can play in guiding development to sustainable locations (para. 9) also point to the proposed extension being the right location. In this context, the location of the application site close to the primary road network, including the A47, is of note.

[1] Paragraph 8, NPPF

4.16 The use of inert restoration materials to restore the quarry workings would not have any significant impacts on the environment (as demonstrated in the following chapters of this statement). Allied to this, the development proposals would lead to a beneficial use of a former mineral working by using the imported material to create a more sympathetic landform that reflects the local character. In so doing, it also provides a valuable resource for disposing of residual materials that cannot be re-used, recycled or have any further value recovered (see 'waste hierarchy' below).

4.17 The NPPF is supported by web-based guidance (the Planning Practice Guidance, PPG[2]) which replaces the original NPPF Technical Guidance issued in 2012. The NPPF, together with the PPG, sets out the overarching national policy and associated guidance respectively aimed at inter alia protecting the environment and local communities. Key paragraphs relevant to the proposals are summarised below.

Landscape

4.18 Section 15 of the NPPF, "Conserving and enhancing the natural environment", sets out criteria that are relevant to landscape. These include the protection of valued landscapes in a manner that is commensurate with their statutory status or identified quality in the development plan, recognition of the intrinsic character and beauty of the countryside and maintaining the character of undeveloped coast (paragraph 170).

4.19 In paragraph 172 it is stated that "*great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues*". It also set out that "*the scale and extent of development within these designated areas should be limited" and that "planning permission should be refused for major development other than in exceptional circumstances and where it can be demonstrated that that the development is in the public interest*". In addition, the NPPF sets out (paragraph 173) "*that within areas defined as Heritage Coast…. planning policies and decisions should be consistent with the special character of the area and the importance of its conservation*".

Natural Heritage (Ecology)

4.20 Relevant paragraphs in the NPPF are 175 to 176. These paragraphs provide that:

> *175. When determining planning applications, local planning authorities should apply the following principles:*
>
> *a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
>
> *b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the*

[2] http://planningguidance.communities.gov.uk/blog/guidance/minerals/

features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons58 and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

176. The following should be given the same protection as habitats sites:

a) potential Special Protection Areas and possible Special Areas of Conservation;

b) listed or proposed Ramsar sites; and

c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

Pollution and Amenity of Local Communities

4.21 Pollution issues are set out in paragraphs 170 and 178 to 183 of the NPPF. Paragraph 170 refers to preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

4.22 Paragraph 180 provides that "*decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life60;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".

4.23 Guidance can also be found in the web based Planning Practice Guidance. Firstly, the guidance addresses the ability to comply with the noise criteria is set out in the Planning Practice Guidance (paragraphs 019 to 022[3]). Secondly, the ability to adequately control and mitigate dust emissions is set out in the Planning Practice Guidance at paragraphs 023 – 032[4].

[3] Reference ID: 27-019-20140306 to 27-022-20140306
[4] Reference ID: 27-023-20140306 to 27-032-20140306

Protection of Ground and Surface Water

4.24 Guidance formerly contained in PPS25 is now within paragraphs 148 to 165 of the NPPF, together a complete section on flood risk contained in the web-based PPG (paragraphs 7-001 to 7-078).

National Planning Policy for Waste

4.25 National Planning Policy for Waste (NPPW) is the latest Government policy on planning for waste management facilities and objectives for sustainable waste management, replacing Planning Policy Statement 10[5]. NPPW sets out the key planning objectives, decision making principles and advice on determining planning applications. In the context of the development proposals, it is important to note that inert materials would be imported to the site to facilitate the restoration of the quarry workings to provide a suitable landform that would support agricultural use.

4.26 Paragraph 1 of the NPPW links it to the Waste Management Plan for England emphasising the role planning can play in providing a more sustainable and efficient approach to resource use and management. In this respect, the key points relating to the proposed development are:

- recognising the positive contribution waste management can make to the development of sustainable communities;
- providing a framework in which communities and businesses are engaged with and take more responsibility for their own waste including by enabling waste to be disposed of in line with the proximity principle; and
- helping secure the disposal of waste without endangering human health and without harming the environment.

4.27 The NPPW carries forward from PPS10 the concept of the 'waste hierarchy', which indicates that landfill is the least desirable solution, to be used where none of the options higher up the hierarchy are appropriate. The nature of the material to be accepted at the quarry (which would also be the same material as previously deposited within the quarry workings) is such that disposal is the only suitable management option. It is not possible to treat the waste to recover any valuable products from it and it is not suitable for thermal treatment to recover energy. As such tipping the inert restoration materials within a quarry void is the only option, but one that does lead to benefits in terms of the improved landform that can be created through the amended restoration scheme. In this respect, the PPG comments[6] "*Waste planning authorities should be aware that the continued provision and availability of waste disposal sites, such as landfill, remain an important part of the network of facilities needed to manage England's waste*".

4.28 Paragraphs 4 and 5 of the NPPW set out the policy considerations for the location of waste management facilities, referring to the 'proximity principle' and going on to consider[7] the extent to which the site supports other policies in the NPPW; the physical and environmental constraints on the development; the capacity of the transport infrastructure and the cumulative impact of existing and proposed waste facilities.

[5] Planning Policy Statement 10: Planning for Sustainable Waste Management. 2005
[6] Paragraph 048 Reference ID: 28-048-20141016
[7] Paragraph 5, NPPW.

4.29 In the context of the proximity principal paragraph 1 under Article 16 of the Revised Waste Framework Directive[8] requires Member States to take appropriate measures, in cooperation with other Member States where this is necessary or advisable, to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households, including where such collection also covers such waste from other producers, taking into account best available techniques. Paragraph 3 then adds "*The network shall enable waste to be disposed of or waste referred to in paragraph 1 [mixed municipal waste] to be recovered in one of the nearest appropriate installations, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health*". This is notable as firstly, it only refers to municipal waste and co-collected commercial & industrial waste. However, it is anticipated that a large proportion of the waste to be imported to the quarry would come from developments within Peterborough and the surrounding area. In relation to the physical and environmental constraints, later chapters in this volume have demonstrated the suitability of the site and also the suitability of the local highway network to accommodate the traffic generated. Finally, the studies undertaken as part of the planning application demonstrate that the proposed restoration works would not lead to any cumulative impacts.

4.30 The issues contained in Annex B of the NPPW have been addressed (where relevant) in chapters 6 to 12 of this statement in the context of land use planning. In this regard:

- "*protection of water quality and resources and flood risk management: Considerations will include the proximity of vulnerable surface and groundwater or aquifers. For landfill or land-raising, geological conditions and the behaviour of surface water and groundwater should be assessed both for the site under consideration and the surrounding area. The suitability of locations subject to flooding, with consequent issues relating to the management of potential risk posed to water quality from waste contamination, will also need particular care*" – The assessments undertaken demonstrate there will be no adverse impacts on water resources (refer to Chapter 7 of this statement).
- "*land instability: Locations, and/or the environs of locations, that are liable to be affected by land instability, will not normally be suitable for waste management facilities*" – there are no such stability issues at the site and geotechnical aspects are covered by the environmental permit. Notwithstanding this, placing waste against the quarry faces would improve the long term stability.
- "*landscape and visual impacts: Considerations will include (i) the potential for design-led solutions to produce acceptable development which respects landscape character; (ii) the need to protect landscapes or designated areas of national importance (National Parks, the Broads, Areas of Outstanding Natural Beauty and Heritage Coasts) (iii) localised height restrictions*." – the site is remote from designated landscape areas and there are few vantage points in the area that offer views into the quarry. This is considered through Chapter 6 of this statement.
- "*nature conservation: Considerations will include any adverse effect on a site of international importance for nature conservation (Special Protected Areas, Special Areas of conservation and RAMSAR sites), a site with a nationally recognised designation (Sites of Special Scientific Interest,*

[8] EC Directive 2008/98/EC on Waste

National Nature Reserves), Nature Improvement Areas and ecological networks and protected species" – the assessments undertaken demonstrate there would be no significant adverse impacts on international or national nature conservation sites or any locally designated sites or species protected under law. Moreover, the restoration proposals have been devised to safeguard the habitats of European Protected Species. (refer to Chapter 5 of this statement).

- "*conserving the historic environment: Considerations will include the potential effects on the significance of heritage assets, whether designated or not, including any contribution made by their setting*." – as the site has already been disturbed through quarrying operations then no direct effects on heritage assets would occur. The enclosed nature of the site by woodland (as evidenced through the Landscape and visual Appraisal) coupled with the limited number of heritage assets in the vicinity of the quarry mean that the likelihood of any significant indirect effects resulting are limited (refer to Chapter 6 of this statement).
- "*traffic and access: Considerations will include the suitability of the road network and the extent to which access would require reliance on local roads, the rail network and transport links to ports*" – the site has an established access onto principal highway network (A47). No significant effects were identified within the transport assessment undertaken as part of the previous EIA and the quarry has operated for many years without causing any demonstrable effects to highway safety or capacity. The proposals would not intensify operations over historic levels. (Refer to Chapter 8 of this statement).
- "*air emissions, including dust: Consideration will include the proximity of sensitive receptors, including ecological as well as human receptors. and the extent to which adverse emissions can be controlled through the use of appropriate and well-maintained and managed equipment and vehicles*" – air quality has been assessed in detail as part of the EIA and the existing approved mitigation measures would be continued to ensure there would be no adverse impacts on air quality (refer to Chapter 8 of the ES).
- "*Odours: Considerations will include the proximity of sensitive receptors and the extent to which adverse odours can be controlled through the use of appropriate and well-maintained and managed equipment*" – the nature if the material to be deposited is not odorous and so odour is not an issue that needs to be assessed.
- "*vermin and birds: Considerations will include the proximity of sensitive receptors. Some waste management facilities, especially landfills which accept putrescible waste, can attract vermin and birds. The numbers, and movements of some species of birds, may be influenced by the distribution of landfill sites. Where birds congregate in large numbers, they may be a major nuisance to people living nearby. They can also provide a hazard to aircraft at locations close to aerodromes or low flying areas. As part of the aerodrome safeguarding procedure (ODPM Circular 1/2003) local planning authorities are required to consult aerodrome operators on proposed developments likely to attract birds. Consultation arrangements apply within safeguarded areas (which should be shown on the policies map in the Local Plan). The primary aim is to guard against new or increased hazards caused by development. The most important types of development in this respect include facilities intended for the handling, compaction, treatment or disposal of household or commercial wastes*." - Such matters are normally addressed through the Environmental Permit. Again, the nature of the material to be deposited is such that vermin and birds are not a significant issue that needs to be addressed through the planning process.
- "*noise, light and vibration: Considerations will include the proximity of sensitive receptors. The operation of large waste management facilities in particular can produce noise affecting both the inside and outside of buildings, including noise and vibration from goods vehicle traffic*

movements to and from a site. Intermittent and sustained operating noise may be a problem if not properly managed particularly if night-time working is involved. Potential light pollution aspects will also need to be considered." - No significant effects were identified as part of the assessments undertaken for the previous EIA (refer to Chapter 8); no artificial lighting wold be required as part of the proposals.

- "*litter: Litter can be a concern at some waste management facilities*" – the nature of the material to be deposited is not usually associated with litter. Notwithstanding this, the management of litter would be considered as part of the Environmental/Recovery Permit; and
- "*potential land use conflict: Likely proposed development in the vicinity of the location under consideration should be taken into account in considering site suitability and the envisaged waste management facility*" – Through the grant of previous planning permissions, the issuing of Environmental Permits and the assessments contained in the current application, it has been demonstrated that there would be no significant effects upon any adjoining land uses.

THE DEVELOPMENT PLAN

4.31 In relation to minerals and waste, Peterborough City Council is working in partnership with Cambridgeshire County Council to produce the Minerals and Waste Development Plan. The Minerals and Waste Core Strategy was adopted in 2011 following a period of consultation and examination by an Inspector appointed by the Secretary of State. The Minerals and Waste Site Specific Proposals Development Plan Document (DPD) has similarly been adopted (February 2012). Peterborough City Council is also responsible for preparing the Local Plan: at present, four DPDs have been adopted by the City Council – the Peterborough Core Strategy; the Site Allocations DPD; the Peterborough Planning Policies DPD and the Peterborough City Centre Plan. The Council is also in the process of preparing a new Local Plan to replace these four DPDs.

4.32 As none of the four DPDs prepared solely by Peterborough City Council address minerals or waste management the Statutory Development Plan relevant to the proposals currently comprises the following documents:

- Cambridgeshire and Peterborough Minerals and Waste Core Strategy DPD (adopted 19 July 2011);
- Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals DPD (adopted 22 February 2012);

Cambridgeshire and Peterborough Minerals and Waste Core Strategy DPD

4.33 Within Chapter 4, "*Waste – Strategic Vision and Objectives*", **Policy CS2** recognises the growth that is planned for the plan area. It recognises that Construction / demolition and inert waste will be the largest waste stream to be managed. Whilst an increasing proportion of this waste will be recycled, a significant amount will still need to be disposed of; such waste will be used in a positive manner to secure restoration of mineral extraction sites. The policy also sets out several strategic objectives that will support the vision. This includes ensuring sufficient facilities are available to manage the projected waste arisings of Cambridgeshire and Peterborough; to develop a network of facilities which will contribute to ensuring 'self-sufficiency' within the Plan area; and to encourage waste management practices that do not incur unacceptable adverse impacts. It also includes several

objectives relating to safeguarding and protecting various facets of the environment, for example: to protect water resources; safeguard and enhance landscape; protect and enhance biodiversity; to safeguard residential amenity. These latter objectives are also covered by specific policies.

4.34 Chapter 7 sets out the spatial strategy for waste, identifying in Table 7.1 that 59Mt of construction and demolition waste will need to be managed over the plan period (being 2006 to 2026). Of this waste, a target of 70% has been set for recycling/recovery, leaving 17.7Mt to be managed by disposal to land, including restoration of mineral workings. Table 7.6 and the supporting text at paragraph 7.11 recognises that there is a significant shortfall in void capacity over the Plan period within the Plan area to manage residual inert waste arisings. As such the Plan identifies that an additional 12.09 million cubic metres of additional inert landfill capacity is needed up to 2026. This is translated into policy through **Policy CS14** (the Scale of Waste Management Provision) which sets out the minimum provision needed. **Policy CS20** expands upon this, recognising that a large proportion of the waste arisings will be managed through a strategic allocation at Block Fen/Langwood Fen. However, some 3.69 million cubic metres of capacity will be directed towards mineral extraction sites requiring restoration; these sites are identified through the Site Specific Proposal Plan (see below).

4.35 Of significant note to the proposals is **Policy CS25** which addresses the restoration and aftercare of mineral and waste management sites. The policy provides a requirement for mineral workings and waste management sites "*to be restored in a phased manner to a beneficial afteruse, with aftercare arrangements. Restoration proposals will be considered on a site by site basis*". It goes on to add

a. restoration schemes must reflect the strategic and local objectives for countryside enhancement and green infrastructure including those set out in Local Development Frameworks and the Green Infrastructure Strategies for Cambridgeshire and Peterborough;

c. where restoration could assist or achieve the creation of priority habitats and / or Cambridgeshire and Peterborough Biodiversity Action Plan targets the relevant biodiversity afteruse must be incorporated within the restoration scheme;

e. where there is high grade agricultural land, restoration back to this use may be appropriate

4.36 Chapter 11 ("*Development Control Policies*") sets out several policies aimed at safeguarding and protecting the environment. Those of note are discussed in the following paragraphs.

4.37 **Policy CS32** considers traffic and highways, seeking to promote sustainable methods of transporting minerals/waste and ensuring the highways network and site access can accommodate the traffic generated by a site. The proposals do not seek to alter the nature of the transportation of materials; the importation of restoration materials would be similar to the historic activities associated with the export of minerals, be it HGVs arrive loaded and leave empty. Moreover, the proposals would not lead to an intensification of use, as quarrying activities (and thus the export of aggregates) has now ceased. As such, traffic movements would be no greater than previously recorded at the site. It is acknowledged that the duration of HGV movements is over a longer period than originally envisaged given that the ROMP lanning permission only authorised operations up to 2016; however, a finite quantity of waste is required to achieve the final restoration and the importation of waste would be programmed over period of up to 6 years.

4.38 Protection of landscape character is contained in **Policy CS33.** As set out in Chapter 3 above, the proposals would not materially alter the landscape character from that already approved. This is considered further as part of the Landscape and Visual impact appraisal (refer to Chapter 5 below).

4.39 Paragraph 11.16 comments that *"this Plan has an important role to play in ensuring that the amenity and quality of life of people, including residential and recreational use of the countryside, will not be adversely affected to an unacceptable degree by mineral and waste development*". Paragraph 11.18 adds:

> *"In assessing the likely impact of proposals, including those arising from an intensification of an existing development, the MPAs / WPAs will have regard to the ability of the site to accommodate new, changed or increased activities without compromising the environmental conditions of the site, and the relationship of the site with neighbouring development."*

4.40 The proposals do not represent an intensification of use; such intensification is usually as a result of new operations coming on stream in close proximity to an existing operation or increasing the level of activity at an existing site. The proposals would not lead to increased HGV movements or intensification of operations. In this context it is important to note that extraction operations (and associated processing) have ceased. As such, the proposals accord with the thrust of the Core Strategy. These aspects are considered in more detail in Chapter 8 of this statement.

4.41 **Policy CS34** ("*Protecting Surrounding Uses*") states:

> *"Mineral and waste management development will only be permitted where it can be demonstrated that there would be no significant harm to the environment, human health or safety, existing or proposed neighbouring land uses, visual intrusion or loss to residential or other amenities".*

4.42 As noted above environmental amenity was considered as part of the previous EIA and the proposals were found to be acceptable. This has been considered in Chapter 8 of this statement and it has been concluded that the restoration proposals would not give rise to any significant harm.

4.43 Biodiversity is considered in **Policy CS35** and heritage issues are addressed through **Policy CS36**. In the context of biodiversity, Policy CS35 indicates that development will only be permitted where it has been demonstrated that there will be no likely significant adverse impact on sites of local nature conservation or geological interest. The policy adds that Where it can be demonstrated that there are overriding benefits development may be permitted subject to compensation and / or mitigation measures, including biodiversity creation and / or enhancement measures. Policy CS36 provides a presumption against development that would (a) have an adverse effect on any designated heritage asset, historic landscape and/or its setting and (b) any significant adverse impact on a site of local architectural, archaeological or historical importance.

4.44 The proposed changes would not lead to any material impact upon these facets of the environment that have not been considered as part of the earlier assessments of the mineral extraction operations. Moreover, in relation to biodiversity the ecological assessment concludes:

"*Overall it is considered that the proposed restoration scheme would provide opportunities to deliver a net gain for biodiversity and create higher value habitats for biodiversity in comparison to those currently present and proposed under the approved scheme.*"

4.45 The protection of water resources is addressed through **Policy CS39**. The policy sets out three tests that need to be met, namely that there would not be any significant adverse impact or risk to:

- the quantity or quality of surface or ground water resources; and
- the quantity or quality of water abstraction currently enjoyed by abstractors unless acceptable alternative provision is made; and
- the flow of groundwater at or in the vicinity of the site.

4.46 Consideration has been given to the water environment in Chapter 7 of this statement. From that assessment, it has been concluded:

"*The impact of the proposed development on the surrounding environment has been assessed considering mitigation incorporated into the site design. No additional mitigation is considered necessary and no significant residual impacts are identified. "*

4.47 As such it can be seen that in the absence of any significant adverse effect on the water environment, the aims of the policy are met.

4.48 Finally, **Policy CS40** addresses airport safeguarding indicating that "*development within the safeguarding areas of airports or aerodromes will only be permitted where it can be demonstrated that the development and associated operations and restoration would not constitute a significant hazard to air traffic*".

4.49 The proposals only make provision for the importation of inert restoration materials. It is usually the presence of organic waste within non-hazardous waste streams which attracts birds to a landfill site. As such the proposals for restoring the quarry workings using imported materials would not lead to increased bird activity. The retention of water bodies does have the potential to attract water foul and wading birds. To date, the water bodies have not resulted in large populations of birds visiting the site. However, recognising the proximity of RAF Wittering, a bird management plan has been prepared and included within this application.

Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals DPD

4.50 The key thing to note from this DPD is that the Cross Leys site is specifically allocated as an inert landfill site and as a site for inert waste recycling under policies W1 and W2. The site is shown on insert map 44 and the implementation issues set out in detail which matters would need to be addressed in a planning application.

4.51 The plan identifies that the Cross Leys site has a void capacity of 433,333m^3.

4.52 From chapter 3 above, it should be noted that the restoration scheme requires the importation of 390,000m3 of material, which is less than the amount envisaged in the DPD.

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INTRODUCTION

5.1 This chapter of the Planning Statement provides an appraisal of the potential landscape and visual effects arising from proposed changes to the consented restoration scheme for Cross Leys Quarry. The consented restoration scheme is illustrated on Drawing CL-3 dated July 2006. The proposed restoration scheme is illustrated on drawings CL3/1 to CL3/7 which form part of the restoration strategy document contained within Section 3 of this Planning Statement. An aftercare report prepared for the proposed restoration scheme is also included within Section 3 of this Planning Statement. The Landscape and Visual Appraisal (LVA) should be read in conjunction with consented and proposed restoration proposals as well as LVA drawings CL5/1 to 5 which include details of viewpoint locations and photography.

Existing Site Description and Context

5.2 As noted from Chapter 2 above, Cross Leys Quarry (the quarry) is located to the south of the A47 approximately 16km west of Peterborough and 3.5km south west of Wittering. Land within the quarry has been influenced by quarrying operations and some ancillary buildings and structures remain within the quarry along with stockpiles of mineral waste and soils, concrete formations (associated with the processing plant and weighbridge) and tarmac roadways. Scrub vegetation, ruderals and reeds have established naturally amongst stockpiled materials and the network of site ponds and lagoons.

5.3 The proposed restoration scheme has been developed to protect and enhance habitats for Great Crested Newts (GCN), the presence of which has been confirmed within the quarry since c. 2012. GCN are a European protected species and works in and around their habitat require a European Protected Species Licence (EPSL) from Natural England. Further details of the EPSL are included in Chapter 6 – Ecology.

5.4 The quarry is bisected by a pipeline (Government Pipeline and Storage System) that supplies aviation fuel to RAF Wittering. The proposed restoration scheme (**Drawing CL3/5**) has also been designed around this feature with proposed agricultural restoration to the north and habitat creation for GCN to the south. A phased restoration and soil movement strategy has been designed to use imported inert restoration materials as well as on-site materials in the proposed restoration scheme (see Drawings CL3/1 to 4).

Development Description

5.5 Table 5-1 shows the change in land area for each of the uses contained within the consented and proposed restoration schemes. In summary, there would be a reduction in farmland area in the proposed restoration scheme but an increase in nature conservation habitats amounting to a total of 12.8ha in the southern half of the site. The proposed conservation area for GCN would be supplemented with six purpose-built GGN ponds with earth-mound hibernacula constructed from material excavated during pond construction.

Table 5-1
Comparison of Proposed Restoration Habitats

Land Use / Habitat Type	Quantity in Consented Scheme	Quantity in Proposed Scheme	Difference
Agricultural restoration	20.2 ha	12.7 ha (including 0.2ha field pond)	-7.5 ha
Woodland	1.8 ha	1.2ha	-0.6 ha
Wet woodland	1.3ha	-	-1.3 ha
Rough grassland	6.8 ha	-	-6.8 ha
Scrub	0.5ha	0.36 ha	-0.14 ha
Hedgerow	1.2km	1.5km	+0.3km
Hedgerow trees	-	15no.	+15no.
Species Rich Grassland`	-	2ha	+2 ha
Wetland	-	0.85ha	+0.85 ha
Existing ground retained for natural regeneration	-	8.6 ha	+8.6 ha
Open water	-	3.85 ha	+3.85 ha

5.6 In the proposed restoration scheme, stockpiled material in the southern half of the quarry would be used as backfill or moved into temporary storage north of the pipeline at an early stage of the development to allow for restoration of the southern half of the quarry.

Landscape and Visual Appraisal

5.7 The LVA includes consideration of both the existing dormant/former quarry and the consented restoration scheme within the existing landscape and visual baseline. The existing baseline also includes the surrounding 3km study area. The proposed importation works, earthworks and revised final restoration scheme has been assessed against this baseline.

5.8 The main proposed changes to the consented restoration scheme which may have landscape and visual implications are listed below:

- reduction in agricultural restoration and increase in low-level wetland and GCN habitat to the south of the pipeline;
- increased height and mass of the restored agricultural landform with an increase in the maximum ridge height from 70m AOD to 76m AOD and the retention of the low-level floor at 60m AOD;
- revised location and smaller extent of proposed woodland, increase in length of proposed hedgerows; and
- changes in timescales and phasing. It would take approximately up to 6 years to fully complete the proposed restoration[1] compared to approximately 1-2 years to complete the consented

[1] As explained in chapter 3 the duration of the restoration works is dependent on the rate of infill, which is dependent on market conditions. It is likely that the infilling would be complete in c. 3 to 4 years but the application seeks a degree of flexibility to allow for fluctuations in the market.

restoration scheme. The change from the existing baseline to the proposed restoration scheme would be permanent.

5.9 The appraisal has been prepared in accordance with the Guidelines for Landscape and Visual Impact Assessment (3rd Edition), published by the Landscape Institute and Institute of Environmental Management and Assessment (hereafter referred to as 'GLVIA3').

5.10 Initially, a desktop study was undertaken to review the relevant publications, maps and plans relating to the proposed development and surrounding area. This was followed by fieldwork carried out in August 2018 to assess the visibility of the quarry within the surrounding 3km study area.

5.11 The remainder of this appraisal is divided into the following sections:

- Landscape Planning Context;
- Landscape Baseline;
- Landscape Effects;
- Visual Baseline;
- Visual Effects; and
- Conclusion

LANDSCAPE APPRAISAL

Landscape Planning Context

Landscape Designations

5.12 There are no landscape or landscape-related designations located within the quarry. Within the wider study area, there are the following listed buildings:

- RAF Wittering Outbuildings located 1.4km north-west of the Site (Grade II / II*);
- Bonemills Farmhouse and Farm Building located 1.45km north-east of the quarry (Grade II); and
- Home Farmhouse and adjacent buildings located 1.45km east of the quarry (Grade II).

5.13 Wooded areas located close to the quarry are designated as National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI). This includes Wittering Coppice which is located directly west of the quarry and Bedford Purlieus woodland located approximately 0.5km to the east of the quarry.

5.14 The wider 3km study area includes the following public rights of way:

- Bridleway *"Wittering 1"* is located approximately 1.4km north-east of the quarry at Old Oundle Road north of Bonemills Farm;
- Footpath "*Thornhaugh 3*" is located approximately 730m east of the quarry at the western edge of Bedford Purlieus Woodland; and

- Bridleway NE8 is located approximately 1.7km south west of the quarry between Stamford Road and an un-named Roman Road to the south.

National Planning Policy

5.15 The National Planning Policy Framework (NPPF)[2] requires planning authorities in England to provide for the restoration and aftercare of mineral sites at the earliest opportunity and that this is carried out to high environmental standards.

5.16 Under paragraph 10 of the NPPF there is a "*presumption in favour of sustainable development*" with paragraph 124, describing how "*good design is a key aspect of sustainable development*" and paragraph 127 describing how planning decisions should aim to ensure that developments "*function well and add to the overall quality of the area... are visually attractive as a result of good architecture, layout and appropriate and effective landscaping…establish or maintain a strong sense of place...*".

5.17 Under paragraph 170, there are references to *"protecting and enhancing valued landscapes…recognising the intrinsic character and beauty of the countryside…minimising impacts on and providing net gains for biodiversity and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land*".

5.18 Under Paragraph 174, the NPPF states that plans should:

- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*".

Local Policy

Cambridgeshire and Peterborough Minerals and Waste Core Strategy Development Plan Document

5.19 As noted from Chapter 4, the policies of the Cambridgeshire and Peterborough Minerals and Waste Core Strategy Development Plan Document (DPD)[3], which have relevance for the LVA include CS25 and CS33.

5.20 Policy CS25 considers "*Restoration and Aftercare of Mineral and Waste Management Sites*" and confirms that *"Mineral and Waste Planning Authorities will require mineral workings and waste management sites to be restored in a phased manner to a beneficial after use, with aftercare arrangements"* and that *"restoration schemes must reflect the strategic and local objectives for countryside enhancement*".

[2] National Planning Policy Framework (NPPF), Secretary of State for Ministry of Housing, Communities and Local Government (July 2018). Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/733637/National_Planning_Policy_Framework_web_accessible_version.pdf

[3] Cambridgeshire and Peterborough Minerals and Waste Development Plan - Core Strategy DPD) published by Cambridgeshire Council & Peterborough City Council (adopted July 2011). Available Online at: https://www.peterborough.gov.uk/council/planning-and-development/planning-policies/local-development-plan/#Policies_DPD_MWCoreStrategy

5.21 Policy CS33 relates to the "*Protection of Landscape Character*" which states that "*Mineral and waste management development will only be permitted where it can be demonstrated that it can be assimilated into its surroundings and local landscape character area in accordance with the Cambridgeshire Landscape Guidelines, local Landscape Character Assessments and related supplementary planning documents*".

Peterborough City Council Core Strategy DPD and Local Development Framework

5.22 Policy CS20 of the Core Strategy relates to landscape character and states that "*Planning permission will only be granted if the proposed development would:*

(a) recognise and, where possible, enhance the character and qualities of the local landscape through appropriate design and management;
(b) reflect and enhance local distinctiveness and diversity;
(c) make adequate provision as far as is reasonably practicable for the retention of features and habitats of significant landscape, historic, wildlife and geological importance;
(d) safeguard and enhance important views within the development layout;
(e) protect the landscape settings and separate identities of settlements; and
(f) provide appropriate landscape mitigation proportionate in scale and design, and/or suitable off-site enhancements".

5.23 Supporting documents to the Core Strategy include Peterborough's Green Grid Strategy (2007), which contains the Nassaburgh Woodland Connection Area Initiative. This initiative aims to achieve "*greater connectivity of the existing woodland resource through the creation of new woodland and hedgerows between existing blocks*". The accompanying Peterborough Green Infrastructure and Biodiversity SPD[4] (March 2018) also considers that "*It is important that existing natural features such as hedgerows, woodlands and water courses are identified and then incorporated into development proposals at the outset, around which connectivity of habitats can be further enhanced, benefiting priority habitats and species".* In addition, Peterborough City Council's strategic "*Green Infrastructure Corridor*" passes west to east through the quarry.

5.24 The Core Strategy also references The Cambridgeshire and Peterborough Biodiversity Action Plans[5] (CPBAP) which includes hedgerows, ponds, lakes and standing water, grassland and woodland as priority habitats. The CPBAP also recognises the potential for valued habitats in mineral sites.

5.25 The Peterborough City Council Interactive Mapping Service[6] identifies Cross Leys Quarry as a Regionally Important Geological Site (RIGS). This is due to the presence of the Lincolnshire Limestone and Collyweston Slate horizon in the exposed quarry faces. The consented restoration scheme proposed to backfill against the quarry faces to facilitate the agricultural restoration. The proposed restoration scheme also proposes this approach, but does retain a section of face along the western edge of the workings, south of the pipeline.

[4] Peterborough's Green Infrastructure and Biodiversity SPD (March 2018) Available online at: https://drive.google.com/file/d/1NTYA2oQexdMyGjjsxRT6C4h_iwcSk3Yd/view
[5] Cambridgeshire and Peterborough Biodiversity Action Plan (CBAP) Available online at: http://www.cpbiodiversity.org.uk/biodiversity-action-plans
[6] Peterborough Council Interactive Mapping Service, 2018. Available online at:https://peterborough.maps.arcgis.com/apps/webappviewer/index.html?id=1e47538c3218418e86741bf13a33a04b

5.26 Finally, the quarry is also identified on the borough wide proposals map as an existing minerals site with a Waste Site Allocation. The proposed restoration scheme would be developed using approximately 398,000m³ imported inert restoration materials whilst also recycling the stockpiled aggregates subsoils and topsoil's stored on site.

Landscape Baseline

Published Landscape Character Assessments

5.27 The quarry is located within the north eastern part of National Character Area (NCA) 92[7] – Rockingham Forest. The key characteristics of this character area of relevance to the quarry are as follows:

- *Undulating landform rising to prominent scarp along edge of Welland Valley in Rockingham Forest;*
- *Large woodlands on higher ground enclose the landscape;*
- *High historic and nature-conservation interest in woodlands;*
- *Foreground views are occupied by large arable fields with low hedges, and;*
- *Undisturbed, deeply rural quality despite nearby towns and adjoining trunk roads.*

5.28 The quarry is identified in the Peterborough Landscape Character Assessment[8] within the western part of Landscape Character Area 2: "*Nassaburgh Limestone Plateau"* which has the following key characteristics:

- *Gently undulating limestone landscape;*
- *Large blocks of woodland, many ancient or semi-natural providing structure;*
- *Large arable fields with low hedgerows or dry-stone walls;*
- *Many areas of high nature conservation interest;*
- *Several active and disused and limestone quarries, and;*
- *Generally, a quiet rural ambience.*

5.29 The quarry is also located within Sub-Area 2c of the Peterborough Landscape Character Assessment: "*Wittering Limestone Plateau*". The strength of character in this area is described as *"disjointed"* due to the presence of RAF Wittering, the A1 corridor and the A47. The landscape strategy within Sub-Area 2c is to improve and conserve wooded parts of the landscape to "*increase the woodland linkage between existing areas to aid the development of ecological corridors"*. There is also a note that to address landscape sensitivity associated with development at RAF Wittering there is a need to "improve *the structure of the area largely through new woodland planting to provide stronger strategic linkages between the east and Rockingham Forest to the west."*

[7] NCA Profile: 92 Rockingham Forest, Natural England, 2014. Available online at: http://publications.naturalengland.org.uk/publication/4716243105873920?category=587130

[8] Peterborough Landscape Strategy – Landscape Character Assessment for Peterborough City Council, The Landscape Partnership, 2007. Available online at: https://drive.google.com/file/d/0B_3f1SsdQbrNb0Rmb1RucFdGZXM/view

5.30 The proposed restoration scheme is similar to the approved scheme, in so far as it incorporates woodland and hedgerow planting to increase east-west habitat connectivity with other areas of woodland in the surrounding landscape. The proposed agricultural restoration would also restore the developed land to the rural character of farmland in the surrounding landscape, as would the approved scheme. The proposed scheme would retain the existing low-level wetland area.

Landscape Characteristics of the Site and Study Area

5.31 As discussed in the introduction, the existing quarry currently comprises a former limestone quarry located to the south of the A47. The quarry has variable topography and is bound by a 20m wide woodland belt to the north which provides separation from the A47 and Wittering Lodge. This existing woodland belt is retained in both the consented and proposed restoration schemes. Wittering Coppice is located just beyond the western site boundary. Following completion of the consented restoration scheme, the landscape within the quarry would be characterised by undulating farmland with smaller areas of woodland, hedgerows, scrub and grassland.

5.32 The wider study area comprises an agricultural landscape with arable fields of medium to large scale. Woodland also forms a notable land cover, particularly adjacent to the western edge of the quarry where Wittering Coppice / Easton Hornstocks and Collyweston Great Wood form a large woodland block. A similarly large area of woodland; Bedford Purlieus is located approximately 0.5km to the east of the quarry. These woodland areas are remnants of the Rockingham Forest and are also designated as National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI). The RAF base at Wittering is a notable area of non-agricultural land located around 1.5km north of the quarry.

5.33 Within the local landscape elevations range between 60m to 90m AOD and gradually fall from west to east, reaching elevations of approximately 10m AOD at the River Nene 4.5km to the east. The Willow Brook and River Welland flow eastwards towards the Fens and provide localised variation within the general pattern of uplands. Localised high points around the study area include:

- Wittering RAF Airbase located 1.5km to the north of the quarry lies between 75m and 80m AOD;
- Collyweston Great Wood located to the west of the quarry rises to 90m AOD 0.3km from the quarry boundary;
- Cross Leys Farm located approximately 350m to the south of the quarry lies at 75m AOD; and
- Part of Bedford Purlieus Woodland reaches 80m AOD 1km to the south-east of the quarry.

5.34 Settled areas around the quarry are limited as follows:

- The quarry is located approximately 3.5km to the south west of Wittering;
- Easton Lodge is located approximately 1.6km north of the quarry;
- Wittering Lodge is located approximately 40m north of the quarry, separated from it by a 20m wide woodland belt, and;
- Cross Leys Farm is located approximately 350m south of the quarry.

5.35 No Public Rights of Way cross the quarry. The closest routes in the wider study area are described in the '*Landscape Designations'* section.

Table 5-2:
Aesthetic Attributes of the Quarry and Study Area

Generic Aesthetic Attributes	Description of Attributes for the Quarry and Study Area
Scale	The existing quarry is a medium scale former quarry, split by a pipeline stand-off and is set within the context of a large scale agricultural and wooded landscape. RAF Wittering to the north of the study area is a large-scale landscape feature. Following restoration to the consented scheme, the quarry would continue to be of a medium scale.
Enclosure	The existing quarry is enclosed on all sides by a combination of woodland vegetation and undulating landform. Glimpsed views into the quarry are gained at the site entrance, otherwise visibility into the quarry from the A47 is limited by roadside vegetation. Wittering Lodge and the A47 are offset from the quarry by a 20m wide planted buffer. This degree of enclosure would be retained following development of the consented scheme. The addition of woodland planting in the consented scheme to the south of the A47 and Wittering Lodge would provide further enclosure.
Diversity	The topography of the existing quarry is diverse; with stockpiles, lagoons and previously restored areas. Following restoration to the consented scheme, the topography and use of the site would be simplified with large areas of rolling farmland. Additional diversity would be provided by the consented planting scheme. In the wider area diversity arises from the contrast between the extensive woodland of the former Rockingham Forest, arable fields, residential settlement and the RAF base.
Texture	The disturbed ground and short vegetation within the quarry has a rough texture; waterbodies/lagoons are smoother in texture. Following restoration to the consented scheme, the quarry would become smoother in texture overall with the introduction of farmland. Woodland vegetation in the surrounding study area is also more textured than the arable fields. The A47 and RAF base offer smooth tarmac textures and mown grass verges.
Form and Line	The existing quarry appears irregular in form and line due to the uneven topography. Following restoration to the consented scheme and establishment of gently undulating farmland, the quarry would appear more regular. The boundaries of the quarry are linear and include the strong line of the A47 to the north and the wooded edge of Wittering Coppice to the west as well as field boundaries to the south and east.
Colour	The existing quarry contrasts with the immediately surrounding landscape being bright yellow against the surrounding muted tones; greens of woodland, greens and browns of

Generic Aesthetic Attributes	Description of Attributes for the Quarry and Study Area
	farmland, and greys of roads and buildings. Following restoration to the consented scheme, the quarry would blend in more with the muted green tones of the surrounding landscape.
Balance	The landscape of the existing quarry is unbalanced due to the variety of stockpiles and lagoon areas. Within the wider study area, the existing quarry is also unbalanced compared to surrounding woodland and farmland. Following restoration to the consented scheme with farmland and woodland planting the quarry itself would be more balanced and it would also be more balanced in the context of the wider study area.
Movement	The exiting quarry is currently still, although the A47 immediately to the north is busy with fast moving vehicles. The surrounding roads and landscape are generally quiet with isolated farmsteads and individual properties located at intervals along narrower secondary roads and lanes. Other industrial activities in the wider study area increase vehicular movements along these roads, but they remain much quieter than the A47. There would be a temporary increase in on-site movement during working phases of the consented restoration however levels of movement would otherwise remain the same.
Pattern	There does not appear to be an underlying pattern within the existing quarry and the quarry does not fit within any particular pattern in the wider landscape. Woodland blocks to the west and east of the quarry provide evidence of the historic woodland pattern of the Rockingham Forest but overall the pattern of land use within the study area is irregular. The agricultural restoration of the consented restoration scheme would fit into the irregular field pattern of the surrounding area.

5.36 As a former quarry with stockpiles and lagoons the existing quarry is consistent with references to mineral extraction in the *Nassaburgh Limestone Plateau* Character Area of the Peterborough Landscape Character Assessment. The existing dormant quarry is not, however, currently consistent with other agricultural and wooded characteristics of the local landscape due to its former use as a quarry. Within the *Wittering Limestone Plateau* Landscape Character Sub-Area 2c, the A47 and RAF Wittering are noted as land uses which contribute to a more '*disjointed*' landscape character. The existing quarry contains land located adjacent to the A47 which has been previously developed and could therefore be included in this description.

5.37 The consented restoration scheme would change the character of the existing site from that of a former quarry to an undulating, farmed landscape with woodland and hedgerows. It is considered that the consented restoration scheme would be consistent with the key characteristics of the *Nassaburgh Limestone Plateau* Character Area which are associated with the rural character of the surrounding landscape and include undulating topography, farmland and woodland.

Landscape Value

5.38 Overall, the landscape value of the existing quarry is assessed to be **Low/Community**. The quarry has value in the local community due to its former use as a productive mineral extraction site; however, it is now unused and degraded in parts. Following restoration to the consented scheme, the landscape value of the site is assessed to be of **Community** level following improvements to the condition of the quarry and establishment of an agricultural landscape with woodland planting.

5.39 The quarry does not contain any landscape designations therefore the following factors identified in Table 5-3 have been referred to in establishing landscape value in accordance with Box 5.1 of GLVIA3.

Table 5-3
Landscape Value of the quarry and immediately surrounding area

Factor	Description
Landscape Quality	The landscape quality and condition of the existing quarry has been influenced by its development as a quarry and the presence of man-made elements, with parts of the site in poor condition such as the exposed face along the western boundary. The consented restoration scheme would improve the quality of the existing quarry by creating areas of good quality farmland and woodland. The broader study area has a variable landscape quality relating to farmland, woodland and other uses (RAF Base / settlement).
Scenic Quality	Views towards the existing quarry from the study area are typically screened due to the presence of woodland around the quarry boundaries and undulating landform. This would remain the case following development of the consented scheme. Glimpsed views into the quarry are possible at the quarry entrance – the quality of which would be improved following establishment of the consented scheme.
Rarity	The existing quarry is identified as a Regionally Important Geographical Site (RIGS) by Peterborough City Council due to the presence of the Lincolnshire Limestone and Collyweston Slate horizon. The consented scheme would backfill against this face to facilitate agricultural restoration. The quarry is otherwise not considered to be rare.
Representativeness	The existing quarry is not representative of the predominantly agricultural landscape within which it lies, and it contrasts with rural undeveloped parts of the landscape. There are several other quarries in the local area accessed from the A47 and the quarry is therefore partially representative of the trend for mineral extraction in this area. Following restoration to the consented scheme, the quarry would be more representative of the agricultural landscape in the surrounding area.
Conservation Interests	The existing quarry has been designated as a RIGS (see rarity) and is known to contain Great Crested Newts. The consented restoration scheme was developed prior to the discovery of GCN on site and therefore does not provide for their conservation. Within the wider study area, the quarry lies near National Nature Reserves / SSSI associated with the nearby remnant woodland of the Rockingham Forest. The

Factor	Description
	nearest of these is Wittering Coppice located adjacent to the western site boundary which is unaffected by the consented scheme.
Recreation Value	There are no Public Rights of Way (PRoW) crossing the existing quarry. The consented restoration would not introduce any new PRoW within the quarry. The nearest PRoW is located 0.5 km west of the quarry. There are no other notable recreational land uses in the study area.
Perceptual Aspects including tranquillity	The existing quarry is no longer operational and is therefore quiet however it is influenced by noise and movement from the adjacent A47. Construction of the consented restoration scheme would temporarily introduce noise and movement within the site. Upon completion of the consented scheme, the quarry would become quiet again apart from the occasional use of agricultural machinery on the restored farmland. The surrounding landscape is generally quiet but with noise and movement associated with road traffic and farm machinery.
Associations	No evidence of artistic or literary associations within the existing quarry or study area have been noted as part of this appraisal. The development of the consented restoration scheme would not change this.

Landscape Effects

5.40 The consented restoration scheme would restore the quarry to undulating farmland and woodland which would be in-keeping with the agricultural and wooded character of the surrounding landscape and the associated descriptions in the relevant Published Landscape Character Assessments.

5.41 The proposed restoration scheme would restore the northern part of the quarry to undulating farmland with woodland, but it would also incorporate low-lying wetland and grassland for nature conservation within retained areas of former mineral extraction to the south of the pipeline. Some characteristics of the existing quarry would therefore be retained in the southern half of the quarry, but these would comprise lower, enclosed parts of the quarry and would cover a relatively small and discrete area.

5.42 The aesthetic and perceptual aspects of the consented scheme that would change in the proposed restoration scheme are as follows:

- the scale of agricultural restoration would be reduced however the overall restored area would remain the same;
- the balance of the quarry would change, being divided into two distinct land uses; farmland to the north and a nature conservation area with wetlands to the south;
- the colours and textures of the restored site would change from muted greens of farmland and woodland to a combination of muted greens and yellows/browns of remaining quarrying areas and blues/greys of waterbodies.

- the smooth texture of the consented agricultural restoration would be replaced to the south of the pipeline by the rougher texture of the nature conservation area in the proposed restoration scheme containing grasslands, bare ground and scrub planting. Waterbodies would, however provide a smooth texture.
- vehicle movements would introduce noise and movement temporarily during the construction period.

5.43 The most noticeable change in the proposed restoration scheme is the retention of existing ground to the south of the pipeline instead of the consented agricultural restoration. Some of the aesthetic and perceptual aspects associated with the existing mineral working would therefore remain in the proposed restoration scheme. The proposed restoration would, however, improve the condition of this part of the quarry to provide a nature conservation area for GCN. The combination of agricultural land and improved former mineral workings would not be out of character with Landscape Character Area 2: "*Nassaburgh Limestone Plateau"* or Sub-Area 2c: "*Wittering Limestone Plateau*" which are noted to be influenced by agricultural land use, limestone mineral workings and areas with nature conservation interest.

5.44 The agricultural restoration in the proposed scheme would take longer to complete than in the consented scheme due to the increased volume of imported fill material required. The improvements to the southern half of the site would, however, be carried out more quickly due to the need to fence of this area and relocate GCN here prior to the importation of restoration material in the north. The retention of existing ground and habitats in the southern half of the quarry would mean an overall reduction in disturbance of existing landscape elements in the proposed restoration scheme than in the consented scheme. The existing vegetation around the quarry edges would remain and the sense of enclosure and screening from the A47 / Wittering Lodge would be retained through the development of the proposed restoration scheme.

5.45 Whilst there would be discernible changes to the restoration of the southern half of the quarry, the northern half would still be restored to agricultural land. The proposed restoration scheme would retain commitments to planting new woodland, hedgerows and scrub and it would also provide more diverse habitats than the consented scheme through the retention and enhancement of areas of disturbed land for wildlife and nature conservation.

VISUAL APPRAISAL

Visual Baseline

5.46 Fieldwork was carried out on Wednesday 22nd August 2018 to review the nature of views towards the quarry and the degree of screening provided by landform, vegetation and/or buildings from locations within the surrounding 3km study area. During the fieldwork, the weather conditions were clear and bright. Conditions were therefore considered suitable for assessing all views.

5.47 It was not possible to assess views from within the curtilage of nearby properties of Wittering Lodge and Cross Leys Farm and this would be outside the scope of this assessment which has focused on publicly accessible views.

5.48 It was difficult to safely obtain photographs towards the quarry from the A47 due to the volume of traffic and narrow verges with no pedestrian footways. Photographs were taken from the nearest laybys where it was safe to stop, and a visual assessment carried out while driving along the road route.

5.49 Generally, fieldwork indicated that the existing quarry is visible only from its immediate surroundings and the site entrance gateway. Potential visual receptors include:

- road users travelling along the A47 20m north of the quarry as well as Old Oundle Road (1km east of the quarry), Stamford Road (1.2km west of the quarry) and un-named Roman Road (1.9km south of the quarry);
- residents located close to the quarry at Cross Leys Farm (350m south) and Wittering Lodge (40m north);
- residents of farmsteads in the wider study area e.g. Easton Lodge (1.6km north); and
- users of Public Rights of Way / Bridleways (see landscape designations section for details).

5.50 The location of representative viewpoints is shown on **Drawing CL5/1**, with existing photographs shown on the Drawings CL5/2 to 5. Viewpoints 1, 2 and 3 are taken from locations within 1km of the quarry boundary and will be assessed for potential effects. Viewpoints 4, 5 and 6 are included to illustrate no visibility of the quarry from wider parts of the study area.

5.51 Photographs illustrating existing views from these locations were taken using a Nikon D3500 digital camera, set to a focal length which is the equivalent of a 50mm lens for a 35mm format camera. Views comprised relatively wide panoramas and it was therefore considered beneficial to present the photographs in this way. The panoramic views consist of several photographic frames and were digitally merged together using industry standard software and followed recognised guidance.

Visual Effects

Road users

5.52 Road users travelling along the A47 as well as other nearby local roads (Old Oundle Road, Stamford Road and the un-named Roman Road) could theoretically gain views of the quarry. Field work established, however, that the only likely visibility was glimpsed views through road-side vegetation along the west-bound A47. The site entrance offered a narrow view (see Viewpoint 2). Views from road users in passing traffic moving at speeds of up to 60mph would be transitory. Vehicles used for the importation of restoration materials would use this existing entrance. Views at the site entrance from the A47 would be of woodland planting around the site entrance in the consented restoration scheme. This would change to views of agricultural land in the proposed restoration scheme.

5.53 From other local roads the quarry is not visible due to a combination of intervening undulating landform and vegetation. This is illustrated by Viewpoints 4, 5 and 6. The importation of restoration materials and the change in the proposed restoration would therefore have no visual effect on these receptors.

Residents of Wittering

5.54 For the inhabitants of Wittering to the north east there would be no views of the quarry due to the presence of intervening landform and vegetation.

Residents of nearby properties

5.55 The residential properties located closest to the quarry are Cross Leys Farm and Wittering Lodge. It was not possible to gain access to these properties; however a review of aerial photography and survey data indicates the presence of a 20m wide woodland belt to southern curtilage of Wittering Lodge designed to screen views into the quarry. Wittering Coppice would also screen potential views from Cross Leys Farm.

5.56 It is possible that in partial or glimpsed views from these two properties the change from the consented agricultural restoration to the proposed nature conservation area in the southern half of the site would be perceived. In the proposed restoration, views would feature areas of grassland, scrub and waterbodies (stockpiles would have been removed). The proposed enhancements to the nature conservation area would assist in its assimilation into the surrounding landscape.

5.57 Views from residential properties in the wider study area such as Bonemills Farm and Westhay Lodge are well screened from the site by a combination of distance, intervening landform and vegetation. Viewpoints 4 and 6 illustrate this. The change in the proposed restoration would therefore have no visual effect on these receptors.

Users of Public Rights of Way (PRoW)

5.58 The PRoW located closest to the quarry is located approximately 730m south-east at the edge of Bedford Purlieus woodland (Viewpoint 3). There is no view of the application site from this location therefore there would be no visual effects arising from the change in the consented to the proposed restoration scheme.

5.59 Other PRoW in the wider study area have no visibility of the site either, being screened by intervening vegetation and undulating landform. This is reflected in Viewpoints 4 and 6.

CONCLUSIONS

5.60 Cross Leys quarry is a small scale unrestored quarry with stockpiles and partially flooded areas. The consented restoration scheme would restore the quarry to undulating farmland and woodland. The proposed restoration scheme has been developed to protect and enhance habitats for Great Crested Newts (GCN), the presence of which has been confirmed within the quarry since c. 2012. GCN are a European Protected Species and construction works in and around their habitat require a European Protected Species Licence (EPSL) from Natural England. The proposed restoration scheme therefore proposes to restore the northern half of the quarry to undulating farmland with woodland, but it would also incorporate low-lying wetland and grassland for nature conservation in areas of former mineral extraction to the south of the quarry.

5.61 The existing quarry contains no landscape or landscape related designations and the development of the consented scheme, or the development of the proposed scheme, would not change this. The value of the existing quarry following restoration to the consented scheme is assessed as Community level.

5.62 The proposed restoration scheme was found to be consistent with relevant planning policy at Local, County and National levels. The proposed restoration would be consistent with Local County and National planning policies relating to landscape character, wildlife habitats and restoration of mineral sites. The proposed restoration would also assist in the creation of habitats identified in the CPBAP and it would contribute to the Nassaburgh Woodland Connection Area Initiative set out in Peterborough's Green Grid Strategy, 2007. The proposed planting within the quarry would also support Peterborough City Council's strategic "*Green Infrastructure Corridor*" which passes west to east through the quarry by providing new vegetation between existing woodland blocks to the west and east of the quarry.

5.63 Some of the aesthetic and perceptual aspects associated with the existing mineral working would remain in the proposed restoration scheme. The combination of agricultural land and improved former mineral workings would not be out of character with Landscape Character Area 2: "*Nassaburgh Limestone Plateau"* or Sub-Area 2c: "*Wittering Limestone Plateau*" which are noted to be influenced by agricultural land use, mineral workings and areas with nature conservation interest.

5.64 The existing quarry is well contained visually from the surrounding landscape due to a combination of screening vegetation and undulating topography. The potential for visual effects on local receptors such as users of the A47, local-residents and users of public rights of way arising from the additional importation of materials and the change from the consented to the proposed restoration scheme is therefore limited.

5.65 The appraisal of potential landscape and visual effects has concluded that the development of the proposed restoration scheme (instead of the consented 2006 restoration scheme) would not harm the overall character and appearance of the quarry and its surrounding environment.

CONTENTS

INTRODUCTION

6.1 An Ecological Impact Assessment (EcIA) has been prepared to support a planning application in respect of the proposed restoration scheme at Cross Leys Quarry.

Site Background

6.2 Cross Leys Quarry is a former operational site set within a landscape dominated by arable farming. There is also a notable presence of several large blocks of deciduous woodland.

6.3 Prior to commencement of extraction the site was managed as arable farmland and as such it was likely to be of low ecological value in comparison to surrounding semi-natural habitats which include ancient woodland.

6.4 Following the extraction of limestone, the quarry now comprises a void within which there are extensive areas of stockpiled and imported materials, some of which are ultimately intended for use as restoration materials.

Details of the Proposed Development

6.5 The proposed restoration scheme is detailed on Drawing CL 3/5 (in Chapter 3) and has been prepared with the aim of providing a sustainable habitat resource for the biodiversity interests which are present within the quarry, whilst also restoring parts of the site back to agricultural land, as identified in the approved scheme.

6.6 The proposed restoration scheme would lead (in the westerly and northerly parts of the quarry) to the restoration of 12.7ha back to agricultural land. In the easterly and southerly parts of the quarry, wildlife habitats extending to 12.8ha would be retained and / or created. This would include a receptor site for great crested newts moved under licence from the other parts of the quarry. Six purpose-built great crested newt mitigation ponds would be created with adjacent earth-mound hibernacula constructed from excavated pond material.

6.7 More specifically, the habitats that would be established include broadleaved woodland (1.2ha), areas of open water (3.85ha), scrub (0.36ha), species-rich grassland (2ha) and wetland (0.85ha). New hedgerows (c. 1.5km) with 15 hedgerow trees are also proposed.

Purpose of this Assessment

6.8 The purpose of the EcIA is to:

- describe the baseline data collection and assessment methodologies used;
- summarise the baseline ecological conditions;
- identify and describe all potentially significant ecological effects associated with the proposed restoration scheme;

- set out the mitigation and compensation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects;
- identify how mitigation and compensation measures would/could be delivered;
- provide an assessment of the significance of any residual effects in relation to the effects on biodiversity and the legal and policy implications;
- identify appropriate enhancement measures and how these would/could be delivered; and
- set out the requirements for post-construction monitoring.

6.9 In addition to the EcIA, the following appendices are provided as supporting information:

- Appendix 6/1: Phase 1 Habitat Report and Target Notes;
- Appendix 6/2: Great Crested Newt Method Statement;
- Appendix 6/3: Reptile Report;
- Appendix 6/4: Wintering Birds Report;
- Appendix 6/5: Invertebrate Report; and
- Appendix 6/6: Data Search.

RELEVANT LEGISLATION AND PLANNING POLICY

Relevant Legislation[1]

Conservation of Habitats and Species Regulations 2018

6.10 The Conservation of Habitats and Species and Planning Regulations 2018 (the Habitats Regulations) transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb[2] wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

Wildlife & Countryside Act 1981

6.11 The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

[1] Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.
[2] Disturbance, as defined by the Conservation of Habitats and Species Regulations 2010, includes in particular any action which impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant); or which affects significantly the local distribution or abundance of the species.

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act; or
- Plant or cause to grow in the wild any plant species listed under Schedule 9 of the Act.

Protection of Badgers Act 1992

6.12 The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.

Natural Environment & Rural Communities (NERC) Act 2006

6.13 The NERC Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

6.14 Section 41 of the Act requires the publication of a list of habitats and species publish which are of principal importance for the purpose of conserving biodiversity. The Section 41 list (Section 42 in Wales) is used to guide authorities in implementing their duty to have regard to the conservation of biodiversity.

Relevant Planning Policy

National Planning Policy

6.15 The 2018[3] revision to National Planning Policy Framework (NPPF) sets out several recommendations as to how Local Planning Authorities should address and consider biodiversity matters in their local plans. Further to this the NPPF sets out measures to be taken when considering planning applications, as follows:

"175. When determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

[3] National Planning Policy Framework (July 2018) *Ministry of Housing, Communities and Local Government.*

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons58 and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

176. The following should be given the same protection as habitats sites:

a) Potential Special Protection Areas and possible Special Areas of Conservation;
b) *listed or proposed Ramsar sites59; and*
c) *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.*

The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined."

Local Planning Policy

6.16 As noted from Chapter 4 above the Core Strategy Policies of the Cambridgeshire and Peterborough Minerals and Waste DPD, which have relevance for the proposed restoration, is Policy CS35.

6.17 Policy CS35 relates to "*Biodiversity and Geodiversity*" and requires that "*Minerals and waste management development will only be permitted where it has been demonstrated that there will be no likely significant adverse impact on sites of local nature conservation or geological interest, such as County Wildlife Sites or Regionally Important Geological Sites, or any landscape feature that is of principal importance for wild flora or fauna*". In addition, "*Proposals for new habitat creation and enhancement must have regard to priorities set out in the Cambridgeshire and Peterborough Biodiversity Action Plan and supporting Habitat and Species Action Plans*".

6.18 The proposed restoration scheme at Cross Leys builds upon strategic green infrastructure initiatives set out in Peterborough's Green Grid Strategy, 2007[4]. Specifically, the proposed restoration would contribute to the

[4] Green Grid Strategy 2007, Natural Networks on behalf of Peterborough City Council. Available online at: https://www.peterborough.gov.uk/council/planning-and-development/conservation-trees-andhedges/natural-networks-partnership/#NaturalEnv_greeninfrastructure

6.19 Nassaburgh Woodland Connection Area Initiative which aims to achieve "*greater connectivity of the existing woodland resource through the creation of new woodland and hedgerows between existing blocks".* The proposed planting within the site would also support the strategic "*Green Infrastructure Corridor*" which passes west to east through the site.

6.20 Furthermore, the proposed restoration would assist in the creation of habitats identified in the Cambridgeshire and Peterborough Biodiversity Action Plan (CPBAP)[5] which include hedgerows, ponds, lakes and standing water, grassland and woodland. The CPBAP also recognises the potential for valued habitats in mineral sites, which is reflected in the retention of valued existing habitats in the proposed restoration scheme.

METHODOLOGY

6.21 The scope of this EcIA, i.e. the collection of baseline data, evaluation of ecological resources and description and assessment of the significance of impacts, follows guidelines set out by the Chartered Institute of Ecology and Environmental Management (CIEEM 2018)[6] and references therein.

Baseline Data Collection

Desk Study and Contextual Information

6.22 A desktop study was completed in 2017 by the Cambridgeshire and Peterborough Environmental Records Centre (CPERC). The CPERC report provided information on statutory and non-statutory designated sites, habitat inventories and records of protected or notable species within 2km search of the quarry National Grid Reference TF 0293 0060.

6.23 A number of sources of contextual information i.e. surveys undertaken at the quarry, have been referred to within the EcIA where appropriate. These are as follows:

- Phase 1 habitat survey reports completed in 2017;
- great crested newt method statement (part of the EPS Licence) completed in 2017;
- reptile survey report completed in 2017
- wintering bird survey report completed in 2017 and 2018; and
- invertebrate survey report completed in 2017.

Field Surveys

6.24 A number of protected and / or notable species were identified as being in need of further survey.

[5] Biodiversity Action Plans, Cambridgeshire and Peterborough Biodiversity Partnership. Available online at http://www.cpbiodiversity.org.uk/downloads

[6] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.

6.25 Surveys have been undertaken in accordance with CIEEM's Code of Professional Conduct when undertaking ecological work, full details of these surveys have been provided as appendices to this report, a brief summary of these surveys are detailed below.

Habitats

6.26 A habitat survey and mapping walkover was carried out by an experienced field ecologist from SLR on 12th June 2017 using the standard Phase 1 Habitat Survey methodology, as set out by the Joint Nature Conservation Committee (JNCC, 2010)[7].

6.27 A second visit was undertaken on 12th September 2017. The purpose of this visit was to assess the habitats/flora present to the north of a strip of restored grassland which marks the route of a fuel pipeline. This area would be affected by the planned clearance and levelling required to restore arable farmland.

6.28 The initial habitat surveys identified the potential for the following protected and notable fauna species to be present and a requirement for specific follow-on surveys:-

- great crested newts – Full details are provided as Appendix 6/2;
- reptiles – Full details are provided as Appendix 6/3;
- wintering birds – Full details are provided as Appendix 6/4; and
- invertebrates – Full details are provided as Appendix 6/5.

6.29 Summaries of the survey methodologies for these species/groups are provided below, with further details provided within the full reports provided as appendices to this chapter.

Amphibians

6.30 A desk study completed in 2010 identified a large population of great crested newts in ponds at Thornhaugh Quarry 1.4km west of the quarry.

6.31 Great crested newt surveys were undertaken by SLR in 2012 which recorded a medium-sized population within four ephemeral ponds present within the SSSI Collyweston Great Wood & Easton Hornstocks; the woods are situated adjacent to the western boundary.

6.32 Habitat Suitability Index (HSI) Assessments were completed for the ponds present within the quarry in 2017. The HSI exercise identified that all of the waterbodies present had the potential to provide breeding habitats for great crested newts, see Appendix 6/2 for HSI results.

6.33 Great crested newt surveys of the quarry waterbodies were undertaken by experienced and licensed surveyors from SLR in accordance with the standard published methodology (Natural England, 2001) between April and June in 2017.

[7] [7] JNCC (2003) Handbook for Phase 1 habitat survey – a technique for environmental audit.

Reptiles

6.34 The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) returned no records of reptiles from within the data search area.

6.35 The Phase 1 survey identified the presence of suitable reptile habitats which included a mosaic of scattered scrub, bare sand and restored grassland. The majority of these habitats were found to be present within the southern section of the quarry, see **Drawing CL 6/7.**

6.36 A reptile survey was undertaken in September and October 2017 using a combination of direct observation and checks of artificial refugia (No 145).

Birds

6.37 Wintering bird surveys were undertaken of suitable waterbodies using appropriate methodologies by an experienced ornithologist from SLR between October 2017 and March 2018. Bird registrations were recorded on field maps using British Trust for Ornithology (BTO) activity recording codes and one or two-letter species codes. The waterbodies which were surveyed are shown on **Drawing CL 6/2**.

6.38 During the walkovers of the quarry, any activity indicative of breeding birds was noted.

Invertebrates

6.39 Surveys for terrestrial invertebrates were undertaken by an invertebrate specialist with SLR on 12th June 2017 and 12th September 2017. The survey aimed to sample, through the use of appropriate methods, the range of habitats present which had the potential to be of value to invertebrates with the main target taxa being true flies (Diptera), beetles (Coleoptera) and bugs (Hemiptera).

Badgers

6.40 The desktop study highlighted the presence of badgers within the 2km search area. Generally speaking the habitats within the quarry were considered to be of low value to this species. Field evidence of badger was search for during the various habitat and other species surveys which were undertaken.

Hazel Dormouse

6.41 The 2010 desk study identified a large population of hazel dormouse within the SSSI Bedford Purlieus located 120m south-east at the closest point of the quarry boundary. Although within close proximity to the quarry, the species was scoped out of further survey work due to the lack of suitable habitat within the quarry.

Limitations

Desk Study

6.42 Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that protected species not identified during the data search do in fact occur within the vicinity of the site.

6.43 Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

Field Surveys

6.44 In respect of great created newt surveys, weather conditions during certain survey visits meant that the use of bottle trap was restricted in some circumstances. The eDNA sampling of off-site ponds within the neighbouring farm was not possible as access permission could not be obtained. The ponds indicated from previous surveys within Collyweston Great Wood were dry at the time of survey in 2017.

6.45 The above limitations are not considered to have had any material effect on the results of the great crested newt surveys.

6.46 Although a number of invertebrate surveying techniques were used, it is accepted that active methods of finding invertebrate species during the day may not necessarily result in the detection of invertebrates that are known to be particularly active during hours of darkness.

Assessment Methodology

6.47 The CIEEM Guidelines for Ecological Impact Assessment in the UK form the basis of the impact assessment presented in this chapter.

Determining Importance

6.48 In accordance with the CIEEM guidelines only ecological features (habitats, species, ecosystems and their functions/processes), which are considered to be important and potentially affected by the project should be subject to detailed assessment. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and would remain viable and sustainable.

6.49 Ecological features should be considered within a defined geographical context. For this proposal the following geographic frame of reference is used:

- International;
- National (i.e. England);
- Regional (i.e. East);
- County (i.e. Cambridgeshire); and

- Local (i.e. within circa 5km).

6.50 For designated sites, importance should reflect the geographical context of the designation. For example, a Site of Special Scientific Interest (SSSI) would normally be considered nationally important and a local designation i.e. a SINC should normally be considered important for the 'county'.

6.51 In accordance with CIEEM guidelines the value of habitats has been measured against published selection criteria where available. Examples of relevant criteria include Annex 1 of the Habitats Directive and descriptions of Section 41 habitats.

6.52 In assigning a level of value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Reference has therefore been made to published lists and criteria where available. Examples of relevant lists and criteria include species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive) and Section 41 species.

6.53 For the purposes of this assessment ecological features of Local importance or greater and/or subject to legal protection have been subject to detailed assessment. Effects on other ecological features are considered unlikely to be significant in legal or policy terms.

Impact Assessment

6.54 The impact assessment process involves the following steps:

- identifying and characterising impacts;
- incorporating measures to avoid and mitigate (reduce) these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects (if required); and
- Identifying opportunities for ecological enhancement.

6.55 Both direct and indirect impacts are considered: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. the introduction of artificial lighting which may not directly decrease the extent of vegetation but may influence the behaviour of nocturnal species.

6.56 For the purposes of this assessment, in accordance with CIEEM guidelines, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). Effects can be considered significant at a wide range of scales from international to local. For example, a significant effect on a SSSI is likely to be of national significance whilst a significant effect on a regionally important population of a species is likely to be of regional significance.

6.57 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area; and
- species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Avoidance, Mitigation, Compensation and Enhancement

6.58 A sequential process has been adopted to avoid, mitigate and compensate for ecological impacts. This is often referred to as the 'mitigation hierarchy'.

6.59 It is important for the EcIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- avoidance is used where an impact has been avoided e.g. through changes in scheme design;
- mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ;
- compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible; and
- enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Assessment of Cumulative Impacts and Effects

6.60 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a particular location. The potential for cumulative effects has also been considered as part of this assessment.

BASELINE ECOLOGICAL CONDITIONS

Designated Sites

Statutory Designated Sites

6.61 The following statutory designated sites are present within 2km of the quarry, the locations of the designated sites are shown in Appendix 6/6. The distances given below are approximate in relation to the boundary of the quarry:

- Collyweston Great Wood & Easton Hornstocks, immediately adjacent to the quarry boundary to the west, a designated Site of Specific Scientific Interest (SSSI) and National Nature Reserve (NNR). The site forms the largest remnant in Northamptonshire of the ancient Purlieu coppices of Rockingham Forest. A nationally uncommon coppice type is present, with a complex mosaic of vegetation correlating with soil characteristics.

- Bonemills Hollow, immediately adjacent the boundary to the quarry to the north, a designated Site of Specific Scientific Interest (SSSI). The site supports grassland communities of calcareous and marsh types, of which is of the Jurassic limestone type and is nationally restricted.
- Bedford Purlieus, located 120m south-east at the closest point to the quarry, a designated Site of Specific Scientific Interest (SSSI) and National Nature Reserve (NNR). The site is an ancient woodland which supports a variety of woodland community types that are nationally restricted to lowland England. The site is noted for its diversity of herbaceous plants and associated fauna, as well as the wide range of coppice woodland types present.

Non-Statutory Designated Sites

6.62 The CPERC report highlighted the presence of three non-statutory designated sites located within 2km of the quarry which are summarised below. Distances given are approximate in relation to the boundary of the quarry:

- Cross Leys Quarry, the quarry itself, is a local geological site.
- Bedford Purlieus - Wittering Road Verge, located 1km to the east at the closest point, a County Wildlife Site (CWS). The verge supports a rare vegetation type (NVC community CG3 upright brome grassland) and six calcareous grassland indicator species.
- Thornhaugh Quarry, located 1.5km south-east at the closest point, a County Wildlife Site (CWS). The site contains waterbodies with a large population of breeding great crested newts present.

Ancient woodland, Priority Habitats - Undesignated

6.63 Wittering coppice occurs 0.7km north-west from the closest point of the quarry boundary and contains Ancient and semi-natural woodland.

6.64 No further Section 41 priority habitats are identified by MAGIC within the 2km search area, outside of those within designated ecological sites noted above.

Site Habitats - Undesignated

Woodland and Scrub

6.65 A summary of habitats present within the quarry is provided below, detailed Target Notes can be found in Appendix 6/1, the locations of which are shown on the accompanying **Drawing CL 6/1**.

6.66 Scrubby woodland occurs within the quarry which is dominated by self-seeded young silver birch, typically 3-5m in height. The largest and most dense area of birch scrub has developed on stockpiled materials on the northern boundary. Smaller patches of trees and scattered scrub occur throughout the quarry. Beyond the northern site boundary are areas of tree planting, dominated by Italian alder, which has also self-seeded into the site. Other tree/shrub species recorded within the quarry include willow and butterfly bush.

Figure 6-1 - Birch scrub growing in the northern part of the site.

Ruderal, Bare Ground and Man-modified Habitats

6.67 Much of the quarry is dominated by a mosaic of ruderal, short-perennial and ephemeral plants occurring on heavily disturbed substrates associated with the former quarry. Large areas of bare ground occur, principally in the northern part of the quarry. These habitats support a rich diversity of plants, including "weedy" vegetation, such as cudweed. Japanese knotweed is present, with at least 3 discrete patches recorded on sandy bunds.

Figure 6-2 - Bare ground, scattered butterfly bush scrub and ephemeral habitats across the northern part of the former quarry.

Lakes, Ponds and Swamp

6.68 The south-eastern part of the quarry supports a large (approximately 4ha) and recently created waterbody. A smaller (approx. 1ha) and longer-established waterbody is present in the south-west

part of the quarry. Both waterbodies appear relatively shallow, but are sparsely vegetated with little evidence of aquatic plants recorded. Smaller ponds, including ephemeral waterbodies, are found throughout the quarry.

Figure 6-3 - Smaller pond (CL.12.08), with abundant marginal vegetation of reed mace and soft rush with scattered willow scrub.

Figure 6-4 - Large lake (CL.17.10), with bare sandy shoreline, supports water fowl

Species

6.69 A suite of protected species surveys have been undertaken which are summarised below. Further details are provided in the enclosed Appendices. Ecological survey work has been carried out between 2017 and 2018 in relation to the proposed restoration scheme.

Plants

6.70 The desk study returned no records of plant species protected under the Wildlife and Countryside Act 1981 (as amended) (WCA) within the 2km search area.

6.71 The data search identified records of invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within 2km of the quarry; these include Himalayan cotoneaster (*Cotoneaster simonsii*), Japanese knotweed (*Fallopia japonica*) and New Zealand pigmyweed (*Crassula helmsii*).

6.72 During the Phase 1 habitat walkover Japanese knotweed was noted, one stand within the margins of tall ruderal herbs in the restored grassland to the west, and the others at the base of a vegetated slope in the northern section of the quarry.

6.73 Small areas of locally abundant New Zealand pigmyweed were noted along the eastern margin of a seasonal lagoon located on the western border to the north of the fuel pipeline.

6.74 Tree of Heaven plant was recorded on site and is a non-native species but not a notified Schedule 9 WCA species. The precise locations of the invasive species noted are detailed in the Target Notes of the Phase 1 habitat survey in Appendix 6/1, with the accompanying Phase 1 map in **Drawing CL 6/1**.

6.75 Full details of the methods, timings and results of the habitat surveys are provided in Appendix 6/1.

Amphibians

6.76 The desktop study identified the presence of common frog, common toad and great crested newt (GCN) within the search area.

6.77 The local records centre highlighted the findings of previous surveys completed within the search area up until 2012, 1,800 GCN records were attributed to the quarry itself and Thornhaugh Quarry, a similarly disused quarry located 1.2km east-south-east of the application at the closest point.

6.78 Previous surveys carried out on site by SLR in 2012 identified the presence of a medium-sized population of GCN.

6.79 Updated surveys were undertaken between April and June 2017 confirmed the presence of a large population of GCN within the waterbodies present in the quarry.

6.80 The survey encompassed 8 waterbodies within the quarry and comprised of an initial Habitat Suitability Index (HSI) assessment, followed by seven night time surveys using a combination of torch counts, egg searches and bottle trapping. A peak count of 55 was recorded in one survey night with an overall count of 106 individuals (a “large” population) during the survey period.

6.81 Full details of the methods, timings and results of the amphibian survey are provided in Appendix 6/2.

Reptiles

6.82 No records for reptiles were returned by the desk study.

6.83 During the Phase 1 walkover it was noted that the quarry had the potential to support reptile species. A mosaic of patchy habitats was noted within the south of the quarry which could provide ample basking and sheltering opportunities. Further survey work was recommended due to these habitats being likely to be lost or disturbed.

6.84 The field surveys were completed in September and October 2017 and involved the use of 145 artificial reptile refuges deployed in suitable habitat, followed by seven field survey visits to check these refuges and other suitable refugia in suitable weather.

6.85 A population of common lizard were confirmed to be present within the quarry. A peak count of 11 individuals was recorded on one survey visit, see **Drawing CL 6/7** for reptile locations.

6.86 No other species of reptile were recorded during the surveys.

6.87 With reference to the Key Reptile Site assessment guide from Froglife (1999), the quarry does not qualify as a "Key Reptile Site"; however, the population of common lizard present was assessed as being "Good".

6.88 Full details of the methods, timings and results of the reptile surveys are provided in Appendix 6/3.

Birds

6.89 Records of a number of bird species were returned during the desk study, including notable species i.e. those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and species identified as conservation priorities in England (Section 41 Species under the NERC Act).

6.90 The initial Phase 1 survey found that the quarry had the potential to support a notable assemblage of wintering bird species due to the presence of shallow open water.

6.91 Six wintering bird surveys were completed with a total of 17 species being recorded during the surveys. Of these, two red list species were recorded in the vicinity of the ponds, six amber list species were also recorded around the water bodies and nine green list species recorded away from the waterbodies. Of these two species are listed a Section 41 species and or a Birds of Conservation Concern (BoCC) species (dunnock (*Prunella modularis*), meadow pipit (*Anthus pratensis*). The number of bird species recorded was low.

6.92 During habitat surveys in June a pair of little ringed plover, a Schedule 1 Wildlife and Countryside Act 1981 (as amended) species, were observed and were considered to be likely breeders within the quarry. Further observations during the habitat surveys also identified non-breeding protected and notable species flying over/through or temporarily using the quarry, including red kite (*Milvus milvus*), linnet (*Linaria cannabina*), common tern (*Sterna hirundo*), song thrush (*Turdus philomelos*) and sand martin (*Riparia riparia*).

6.93 No evidence of sand martin burrow nests were observed, however stockpiles present appear to be suitable to support this species and colonisation in future years cannot be discounted.

6.94 Full details of the methods, timings and results of the wintering bird surveys are provided in Appendix 6/4.

Invertebrates

6.95 The desk study included a number of Section 41 NERC 2006 species of butterfly, moth and beetle within 1km of the site at Bedford Purlieus NNR.

6.96 The presence of glow worm (*Lampyris noctiluca*) was recorded during site surveys. Although this species does not currently have a national conservation status, this widespread species is thought to have declined in distribution and abundance (Gardiner, 2009).

6.97 Two Species of Principal Importance in England (Section 41 NERC 2006) were found on the site – small heath butterfly (*Coenonympha pamphilus*) and cinnabar moth (*Tyria jacobaeae*)[8]. Both were recorded in scattered locations in low numbers.

6.98 A small number of plantbug (*Lygus pratensis*) adults were recorded which is a Red Data Book listed species.

6.99 Three nationally scarce species were also recorded including, *Curculionid* weevils - namely *Pseudostyphlus pillumus* and *Trichosirocalus horridus* and the truebug *Rhopalus parumpunctatus* which has a very sparse distribution in the wider region.

6.100 In addition, a number of 'Local' species[9] were recorded throughout the quarry, with numbers higher in the southern section.

6.101 Full details of the methods, timings and results of the invertebrate surveys are provided in Appendix 6/5.

Badger

6.102 During various surveys field signs of badger activity were noted including worn mammal tracks. A well-used badger latrine is located near to the northern boundary of the site, situated on a sandy bund.

6.103 No badger setts were identified within the quarry during these surveys. However, due to signs of activity being present future use of the quarry for the construction of setts cannot be discounted.

[8] Cinnabar features in a list of 69 moth species that have declined in population strength by a significant amount in the past 25 years. These were defined as "not yet rare" and were flagged as UK Biodiversity Action Plan species "**for research only**". This list has been incorporated into the current priority listing process and these species are now therefore of statutory interest.

[9] 'Local' is a designation derived from the development of Recorder software by JNCC in the early 1980s to the 1990s. The software is current (Recorder 6) and the designation is still valid as an indication of those species that are not commonly encountered but maybe widespread in distribution.

PREDICTED TRENDS

6.104 In the absence of formal restoration, vegetation cover would slowly increase over time, in particular fast colonising invasive species such as buddleja, birch and willow. It is likely that invasive plant species would continue to expand in extent.

6.105 It is predicted that with no future management the quantity and quality of habitats used by GCN, reptiles and notable birds will decline as they undergo succession. As there is little to no connecting habitat to the wider landscape at present, the populations of these species could be significantly impacted.

SUMMARY OF IMPORTANT ECOLOGICAL FEATURES

6.106 Table 6-1 provides a summary of the important ecological features taken forward in this EcIA in terms of being in need of further comment and / or specific impact assessment.

6.107 Whilst the ecological features listed in Table 6-1 are considered 'important', there are additional features given consideration in the context of general mitigation and enhancement proposed as part of the proposed landscaping and ecological enhancement.

Table 6-1
Summary of Important Ecological Features

Ecological Feature	Importance of Feature	Legal Status and/or Importance
Collyweston Great Wood & Easton Hornstocks	National importance.	Designated SSSI and NNR receiving high level of legal protection.
Bedford Purlieus	National importance.	Designated SSSI and NNR receiving high level of legal protection.
Bonemills Hollow	National importance.	Designated SSSI receiving high level of legal protection.
Great crested newt	Local importance.	Fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (The Habitats Regulations). Large population of breeding GCN present.
Reptiles	Local importance	Protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of part of sub-

Ecological Feature	Importance of Feature	Legal Status and/or Importance
		section 9(1) and all of sub-section 9(5) only. As such, it is an offence to intentionally kill, injure or trade these species. A 'Good' sized population of common lizard is present.
Bird Assemblage	Site importance.	All birds receive protection under Wildlife & Countryside Act 1981 (as amended) whilst nesting; species listed on Schedule 1 receive additional protection from disturbance whilst nesting. Large waterbodies to the south suitable for wintering birds, some localised areas suitable for breeding birds – pair of little ringed plover noted.
Invertebrates	Site importance.	Notable/key species have been flagged up in this assessment using British conservation designations (i.e. where these have not yet undergone assessment using IUCN criteria) and those species designated into the relevant threat categories under IUCN criteria. Small populations of two S41 NERC species, one Red Data Book species, three Nationally scarce species, and the notable presence of glow worm were identified.
Badger	Site Importance.	The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it. Field evidence of badger activity was recorded but setts are absent.

Ecological Feature	Importance of Feature	Legal Status and/or Importance
		A watching brief is required prior to works commencing.
Invasive Plant Species	N/A	Offence under the Wildlife and Countryside Act to cause the spread of these species given their inclusion on Schedule 9 of the Act. Two localised stands of Japanese knotweed and New Zealand pigmyweed were identified.

ASSESSMENT OF EFFECTS AND MITIGATION MEASURES

6.108 This section describes the predicted effects and proposed mitigation measures of the proposed restoration scheme, focusing on the important ecological features identified above.

Potential Effects on Designated Sites

Potential Impacts

6.109 Collyweston Great Wood & Easton Hornstocks (SSSI and NNR) and also Bonemills Hollow (SSSI) are present in close proximity to the quarry as shown in Appendix 6/6.

6.110 The quarry has been worked for minerals for many years without detrimental effects being experienced, such as changes to hydrology.

6.111 The hydrology study (Chapter 7) confirms no runoff from the quarry is received by either Collyweston Great Wood and Easton Hornstocks (SSSI and NNR) or Bonemills Hollow (SSSI), as neither lie down groundwater gradient of the quarry. As such, it is therefore a reasonable assumption that there would be no associated cumulative ecological impact in terms of indirect ecological impacts that may be linked to hydrology regimes.

6.112 The potential for impacts to occur during restoration is therefore considered to be low. The movement of restoration materials and use of heavy machinery to achieve restoration profiles may result in the generation of dust, which in the absence of mitigation may result in localised deposition occurring in the absence of mitigation.

6.113 The potential exists for invasive plant species to colonise adjacent designated sites unless they are eradicated, although no strong pathways for colonisation exist such as linked watercourses.

Proposed Mitigation

6.114 Dust suppression measures would be implemented to ensure that dust is not generated which could potentially be deposited off-site.

6.115 Invasive plant species would be subject to an eradication programme to prevent spread to the neighbouring landscape and protected sites.

Significance of Residual Effects

6.116 No adverse residual effects are predicted in respect of statutory designated sites.

Potential Effects on Site Habitats

Potential Impacts

6.117 The revised restoration scheme would result in the direct loss or removal of pioneer and ruderal vegetation across the quarry.

6.118 Five ponds would be lost in the north and two ponds subject to modification in the south of the quarry.

6.119 The large waterbodies in the south of the quarry are being retained and would be subject to habitat enhancement works at the margins for amphibians and birds.

6.120 Habitats in the north of the quarry are to be lost with the area back filled with waste from the southern re-profiling as well as through the additional importation of inert restoration materials to form the restored profile.

Proposed Mitigation

6.121 The loss of the ponds in the northern section of the quarry would be mitigated for by retaining and enhancing the large waterbodies in the southern section of the quarry, a further six GCN ponds are to be created to enhance the provision breeding habitats.

6.122 Removal/modifications to the retained waterbodies in the south of the quarry would be mitigated through the creation of higher value marginal habitat for amphibians and birds.

6.123 The creation of habitats with higher value to a variety biodiversity in the south of the quarry, as well as the creation of a pond on the western boundary in the north and tree belt for habitat connectivity will, to an extent, mitigate the loss of the less favourable habitats in the northern section.

Significance of Residual Effects

6.124 No significant residual effects are predicted on the site habitats.

Potential Effects on Invasive Species

Potential Impacts

6.125 There is a risk that restoration activities could inadvertently result in the spread of invasive plant species. This would be an undesirable effect upon the quarry's biodiversity and, in the context of Japanese knotweed and New Zealand pigmyweed, could constitute an offence under the Wildlife and Countryside Act if operations cause this species to spread given its inclusion on Schedule 9 of the Act.

Proposed Mitigation Measures

6.126 It is recommended that all invasive plant species are removed by an appropriately experienced contractor prior to site clearance works to avoid causing the further spread of these species.

6.127 As part of the aftercare inspections all newly created habitats would be inspected on an annual basis to ensure no invasive non-native species have re-established. If such species are found to have established, appropriate remedial action would be implemented by a contractor.

Significance of Residual Effects

6.128 The removal of invasive non-native plant species would have a positive effect at the Site level.

Potential Effects on Fauna

Great Crested Newts

Potential Impacts

6.129 The potential impacts include the loss of breeding ponds and terrestrial habitats, see **Drawing CL 6/3** for Impacts Map.

6.130 The proposed restoration scheme would involve the loss of five ponds, of which two have been confirmed as GCN breeding ponds. Terrestrial habitats would also be lost.

6.131 In the absence of mitigation, the potential impacts are considered significant to GCN involving the killing/injuring of individuals during the initial clearance works and loss of aquatic and terrestrial habitat.

Potential Mitigation Measures

6.132 The Great Crested Newt is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (The Habitats Regulations).

6.133 Mitigation in respect of GCN would implemented in accordance with a European Protected Species Licence granted by Natural England.

6.134 A "traditional" approach to mitigation (i.e. fencing and pitfall trapping) would be taken unless it could be demonstrated to the satisfaction of Natural England that the provisions of the EPS Licensing policies would be an acceptable alternative.

6.135 The three main waterbodies in the southern section of the quarry are to be retained and enhanced and a further six GCN ponds created.

6.136 The re-profiling of the existing terrestrial habitat would provide more suitable high value terrestrial habitat for GCN, and also result in greater connectivity of habitats within the quarry and to the wider habitat resource outside of the quarry, enabling possible recolonisation of the species within the neighbouring SSSI Collyweston Great Wood & Easton Hornstocks.

Significance of Residual Effects

6.137 The currently approved restoration scheme which would return the site to agriculture does not cater for the conservation of the large population of GCN which is present and consequently, if implemented, would result in significant impacts on the population.

6.138 The revised restoration scheme would deliver the necessary measures required to retain the population of GCN and as such would have a positive residual effect.

Reptiles

Potential Impacts

6.139 A 'Good' population of common lizard as defined by the Froglife Key Reptile Site assessment guide from Froglife (1999) was identified within the quarry during the surveys.

6.140 The proposed restoration scheme would result in the need to re-profile areas of known/potential reptile habitat within the quarry which would result in their loss. The removal of this vegetation would have the potential to kill or injure reptiles present when removal takes place. These works, in the context of the immediate setting, would result in the reduction of reptile habitats, which could potentially affect the status of local populations.

Potential Mitigation Measures

6.141 The commonly occurring reptile species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of part of sub-section 9(1) and all of sub-section 9(5) only. As such, it is an offence to intentionally kill, injure or trade these species.

6.142 To ensure that the proposed restoration scheme complies with the relevant legislation and conservation objectives for reptiles, a Reptile Mitigation Strategy (RMS) would need to be implemented. Due to the localised areas of habitat to be affected, and likely low numbers of reptiles likely to be present, the RMS would be based upon staged habitat manipulation to reduce suitability and attractiveness over a period of five days prior to vegetation being search for reptiles ahead of vegetation removal taking place.

6.143 Based on the scale of habitat concerned and relatively low likelihood of reptiles being present in these areas, no formal reptile fencing or translocation is proposed or deemed necessary, although the above stages would be overseen by an ecologist in order to capture and relocate any reptiles found to suitable habitats beyond the working area.

Significance of Residual Effects

6.144 As such, no significant impacts to reptiles are predicted and, taking the positive habitat creation set out within the proposed restoration scheme, it is considered the residual situation will be one of higher value to reptiles as a whole.

Birds

Potential Impacts

6.145 The potential impacts to breeding birds relate to direct impacts i.e. whilst nesting, and indirect impacts i.e. loss of foraging habitat reducing population fitness or displacement of breeding territories.

6.146 Though no formal breeding bird surveys were completed within the quarry, the potential for breeding birds was noted during the Phase 1 surveys. Limited opportunities for nesting birds were considered to occur; however, the requirements of those ground-nesting species associated with bare ground and pond interfaces such as little-ringed plover are currently catered for.

6.147 Due to the size of the waterbodies to the south of the quarry, the potential presence of wintering birds was predicted. Follow-on surveys found that a wintering bird assemblage of only site-level importance was present.

6.148 The vegetation clearance works associated with the proposed restoration scheme have the potential to result in the destruction of active nest sites if they are undertaken during the nesting season (March to August).

6.149 The potential also exists that non-breeding wintering birds could experience disturbance through increased levels of activity within the site.

Potential Mitigation Measures

6.150 The nests of wild birds, regardless of how common the species are, are protected under the Wildlife and Countryside Act 1981 (as amended) whilst they are occupied or being built.

6.151 The potential for direct impacts relates to the loss of any active nest sites that may occur during initial clearance works if this is undertaken during the nesting season. Such works can either be timed to avoid the nesting season (the season is March to August) or subject to an advance check for nesting birds if this is not possible. In either scenario, the potential impacts would be avoided.

6.152 The retention of water features in the south of the quarry and the creation of new areas of scrub, rough grassland and hedgerows is considered likely to benefit the breeding and wintering bird assemblage in the long term.

Significance of Residual Effects

6.153 No significant residual impacts are predicted in relation to birds.

Invertebrates

Potential Impacts

6.154 Invertebrate surveys were completed on the basis that the quarry provides a mosaic of suitable habitats for a range of invertebrate species. The surveys recorded the presence of a small number of notable species.

6.155 The potential impacts to invertebrates relate to the loss of habitats during the initial site clearance works.

Potential Mitigation Measures

6.156 No specific mitigation measures for invertebrates is proposed. The wider habitat creation measures proposed below are deemed appropriate to ensure that the quarry can continue to support a comparable, if not greater, assemblage of invertebrates.

Significance of Residual Effects

6.157 No significant impacts to invertebrates are predicated and, taking the positive habitat creation set out in the proposed restoration scheme into account, it is considered the residual situation would be one of higher value to the notable species highlighted during the surveys as well as invertebrates as a whole.

Cumulative Effects

6.158 A review of the Peterborough City Council planning portal[10] did not highlight any current planning applications, or from within the last five years, within the immediate vicinity of the quarry which could potentially result in cumulative effects to the important ecological features identified in this EcIA.

Proposed Compensation and Enhancement Measures

6.159 A series of compensation and enhancement measures are proposed, as set out in the restoration plan in Drawing CL 3/5. The habitat provision has been maximised where possible and includes the following key elements:

- broadleaved woodland (1.2ha);
- waterbodies (3.85ha);

[10] https://planpa.peterborough.gov.uk/online-applications/spatialDisplay.do?action=display&searchType=Application, accessed 29/01/19.

- scrub (0.36ha);
- species rich grassland (2ha);
- wetland (0.85ha);
- hedgerows (1,540 linear metres); and
- 15 hedgerow trees.

6.160 The above habitats and features have been selected, where possible, to provide enhanced habitat provision in respect of the large population of great crested newts which are present when compared to the existing consented scheme.

6.161 In addition, the following are proposed to provide specific enhancement features for fauna:

- creation of sandy habitats, flower-rich ruderal and scrub mosaic – amphibians, reptiles and invertebrates;
- hibernacula – amphibians, reptiles and invertebrates; and
- retention of large waterbodies in the south with the creation of areas of scrub, rough grassland and hedgerows – breeding and wintering birds.

Summary of Potential Impacts, Mitigation, Residual Effects and Proposed Compensation Measures

6.162 A summary of potential impacts, proposed mitigation, and residual effects for each important ecological feature is provided in Table 6-2 below, which also includes a summary of proposed biodiversity enhancements.

Table 6-2

Summary of Potential Impacts, Proposed Mitigation, Residual Effects and Proposed Biodiversity Enhancements.

Ecological Feature	Value	Nature of Impact	Mitigation, Compensation and Enhancement	Anticipated Residual Impact
Collyweston Great Wood & Easton Hornstocks	Designated SSSI and NNR	N/A	N/A	Neutral / Minor Positive
Bedford Purlieus	Designated SSSI and NNR	N/A	N/A	Neutral / Minor Positive
Bonemills Hollow	Designated SSSI	N/A	N/A	Neutral / Minor Positive
Site Habitats	Local level.	Loss of habitats in the north including 5 ponds, re-profiling of terrestrial habitats	Six GCN ponds, enhanced terrestrial habitat, habitat connectivity,	Positive at local level.

Ecological Feature	Value	Nature of Impact	Mitigation, Compensation and Enhancement	Anticipated Residual Impact
		and ponds in the south.	enhanced marginal habitats, woodland and hedgerow plantation.	
Great crested newts	Local level.	Significant loss of five ponds including two with confirmed breeding and disturbance and re-profiling of terrestrial habitats.	Six GCN ponds covering 1224m^2 and three earth bank hibernacula would be created as part of the restoration scheme	Positive at local level, with significant long term gains.
Reptiles	Local level	Minor losses of potential foraging habitat.	Implementation of RMS, provision of habitats of higher value and areas of hibernacula as part of the proposed restoration scheme.	Positive at local level.
Bird Assemblage	Site level.	Potential loss of individual breeding territories for commonly occurring species.	Avoidance of habitat removal during nesting season, provision of higher value habitat.	Positive at site level.
Invertebrates	Site level.	Potential loss of suitable habitat.	Provision of higher value habitats for locally occurring species as part of the proposed restoration scheme.	Positive at site level.
Invasive Species	N/A	Potential to cause spread/colonisation of newly created habitats.	Removal prior to clearance works and monitoring of created habitats.	Positive at site level.

SUMMARY AND CONCLUSIONS

6.163 SLR was instructed by the applicant to establish the ecological baseline and assess a proposed revision to the current restoration scheme at Cross Leys Quarry.

6.164 A desk study has been completed which has recorded the presence of a three nationally important sites (SSSI/NNR/ancient woodland) within close proximity to the quarry.

6.165 Baseline studies have included initial habitat surveys in 2017 followed by specific surveys for great crested newt, reptiles, wintering birds and invertebrates in 2017/2018.

6.166 The surveys confirmed the presence of a large population of GCN, a 'good' population of common lizard and small numbers of notable invertebrate species. The wintering and likely breeding bird interest of the quarry is of less than local significance for non-water birds.

6.167 Prior to the commencement of works a series of protected species surveys may be required, depending on the length of the intervening period and whether there had been changes in the condition/extent of site habitats, to update the baseline surveys completed in 2017/2018 and note any changes in the biodiversity of the site.

6.168 It is considered that no significant residual effects are predicted in respect of the statutory sites situated in the wider area provided that appropriate measures are taken.

6.169 The proposed restoration scheme would improve the connectivity of Collyweston Great Wood & Easton Hornstocks in the landscape through the creation of habitat corridors. This may lead to the re-colonisation by great crested newts of the ephemeral ponds which are present within the woodland.

6.170 The current restoration scheme is no longer acceptable as it does not take into account the biodiversity interest of the quarry which includes a large population of great crested newts.

6.171 The proposed restoration scheme would involve the retention and enhancement of aquatic and terrestrial habitats in the south of the quarry to provide a receptor site for great crested newts and reptiles. A range of other species would benefit from these provisions including breeding and wintering birds and invertebrates.

6.172 To ensure future viability of the quarry habitats and biodiversity a Landscape and Ecology Management Plan (LEMP) should be implemented to enable monitoring following the completion of the proposed restoration scheme.

6.173 Overall it is considered that the proposed restoration scheme would provide opportunities to deliver a net gain for biodiversity and create higher value habitats for biodiversity in comparison to those currently present and proposed under the approved scheme.

CONTENTS

INTRODUCTION

7.1 A qualitative assessment of the potential impact the proposed development (as described in Chapter 3 above) might have on the water environment has been undertaken. This comprises of a review of the sites baseline condition followed by an assessment of the potential impact of the proposed development and identification of any required mitigation measures required to safeguard the water environment.

7.2 The assessment has involved the following:

- a desk study to confirm current hydrological and hydrogeological conditions;
- identification of measures to avoid and mitigate any adverse impacts resulting from the proposed development; and
- evaluation of the residual significance of these impacts by considering the sensitivity of the baseline environment, the potential magnitude of identified impacts and the likelihood of their occurrence, following mitigation.

7.3 The desk top study was undertaken to:

- describe the geological, hydrogeological and hydrological setting;
- describe surface water hydrology, including watercourse and springs within and adjacent to the application site boundary;
- identify flooding risks (which are reported as a standalone flood risk assessment, see **Appendix 7/3**); and
- identify sensitive hydrogeological and hydrological features which may potentially be impacted by the proposed development.

Policy Context

7.4 The development proposals have had regard to technical guidance, relevant Pollution Prevention Guidelines, Environmental Permitting Regulations and other codes of best practice in order to limit the potential for contamination of ground and surface waters, the potential for flooding to be caused by the development, and other potential impacts on the water environment.

European Legislation

7.5 The key piece of European Legislation that protects the UK's water environment is the Water Framework Directive (2000/60/EC). This Directive protects all elements of the water cycle and seeks to enhance the quality of groundwaters, surface waters, estuaries and coastal waters.

National Legislation and Policy

7.6 Key national legislation and policy relevant to this proposed development includes:

- Environmental Permitting (England and Wales) Regulations 2016;
- Environment Act 1995;
- the Environment Agency's (EA) statutory obligations over the management and control of pollution into water;
- The Environment Agency's Approach to Groundwater Protection, Environment Agency, February 2018 (Version 2);
- the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 in England and Wales;
- Flood and Water Management Act, 2010;
- National Planning Policy Framework, Published by Department for Communities and Local Government, 2018; and
- the web-based Planning Practice Guidance published by Department for Communities and Local Government, 2018.

Local Planning Policy and Strategy

7.7 Local planning policy and strategy documents include:

- Peterborough Core Strategy (adopted February 2011);
- Peterborough Site Allocations (adopted April 2012); and
- Peterborough Planning Policies (adopted December 2012).

Information Sources

7.8 The following sources of information have been consulted to characterise the geology, hydrogeology and hydrology of the area within and surrounding the application site:

- British Geological Survey (BGS) online maps (www.bgs.ac.uk/data/mapViewers/home.html) for details of geology, borehole logs and groundwater classifications;

- The British Geological Survey (2006). The Chalk Aquifer System of Lincolnshire. Research Report RR/06/03;
- MAGIC Website (www.magic.defra.gov.uk/magicmap.aspx) for details on aquifer classification, groundwater source protection zones and groundwater vulnerability;
- GOV.UK Flood Map for Planning (www.flood-map-for-planning.service.gov.uk) for details on flood risk;
- Environment Agency (EA) Catchment Data Explorer Website (www.environment.data.gov.uk/catchment-planning) for Water Framework Directive classifications for groundwater, rivers and coast;
- Site specific site investigation data;
- SLR Consulting Ltd (March 2001) Cross Leys Quarry: Review of Mineral Permissions under the Review of Mineral Permissions under the Environment Act 1995 Application for Determination of Conditions – Environmental Statement. Job Ref: 4C/275/001;
- Mick George (July, 2012). Cross Leys Quarry Peterborough, Variation of Planning Condition No.1, Environmental Statement; and
- SLR Consulting Ltd (June, 2018). Cross Leys Quarry 'Screening Request', Job Reference: 403.00275.00233.

BASELINE CONDITIONS

7.9 The baseline conditions are assessed with reference to the following:

- site setting and topography;
- geology;
- hydrogeology; including aquifer characteristics, groundwater levels and flows, recharge mechanisms, water abstractions and discharges and surface water quality;
- hydrology; including catchment overview, flood risk and surface water quality and;
- ecologically designated sites.

7.10 The hydrogeological and hydrological data have been used to confirm the existing conceptual site model and have been used to assess the potential impacts associated with the continuation of landfilling and the proposed minor changes to the site restoration profile.

Site Setting and Topography

7.11 The application site is currently a non-operational quarry located approximately 4km to the north east of the village of King's Cliffe and 3.5km to the south west of the village of Wittering. The application site is wholly located within the administrative area of Peterborough City Council.

7.12 Land use within the surrounding area comprises agricultural land and woodland. The quarry is bound along the south-western boundary by Wittering Coppice, part of Collyweston Great Wood & Easton Hornstocks Site of Special Scientific Interest (SSSI). Open farmland is present to the south and west. The air base RAF Wittering is located approximately 1.7km to the north. The quarry is accessed via the A47 which bounds the northern site boundary. The site setting is shown on **Drawing CL 7/1**.

7.13 The quarry is bisected by a Government Pipeline and Storage System (GPSS), which supplies aviation fuel to RAF Wittering.

7.14 The quarry is located within flat lying land which forms part of a gently undulating landscape to the west of the Cambridgeshire Fenlands. Cross Leys Quarry lies at about 65m AOD within the limestone upland plateau of Kesteven. The quarry occupies the top of an indistinct minor plateau within the general landform. Within the northern part of the site, levels are typically within the range of 63m to 75m AOD, whilst in the southern part, the levels range from 60m to 65m AOD.

7.15 The site was originally open grassland, with records of quarry workings beginning in the eastern area of the site at the end of the 19th Century. Cross Leys Quarry has operated since the late 1960's as Peterborough Quarries Limited and subsequently by the applicant.

7.16 Since 2012, the quarry has been non-operational following the exhaustion of permitted limestone reserves. Stockpiles of mineral waste and soils still exist within the site as well as concrete formations and tarmacked roadways.

7.17 The restoration proposals involve the infilling of the quarry workings to the north west of the pipeline with inert materials to create two agricultural fields. The area to the south east of the pipeline would be retained as a low lying ecological area which would be largely retained in its current conditions, with the exception of some ecological improvements.

Geology

7.18 Review of published soil mapping[1] indicates that prior to development the application site was underlain by 'shallow lime-rich soils over chalk or limestone'. Immediately to the south of the application site are 'lime-rich loamy and clayey soils with impeded drainage' whilst land immediately to the west is underlain by 'slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'.

[1] Cranfield University (Accessed 22/08/18) http://www.landis.org.uk/soilscapes/

7.19 Review of British Geological Survey (BGS) Onshore Geoindex[2] and mapping (see **Drawing CL 7/2**) confirms that the application site was not underlain by superficial deposits prior to development nor do superficial deposits abut the site boundary.

7.20 The bedrock comprises the Lincolnshire Limestone (see **Drawing CL 7/3**) and it is this limestone which has historically been worked at Cross Leys quarry.

7.21 The south eastern area of the quarry is underlain by the Upper Lincolnshire Limestone Member which overlies the underlying Lower Lincolnshire Limestone Member which is observed to underlie the north western area of the quarry.

7.22 The basal beds rest quasi-conformably on the Grantham Formation which comprise of mudstones, sandy mudstone and argillaceous siltstone-sandstones; these are in turn underlain by the Northampton Sand Formation (Sandstones and Ironstones) and the Whitby Formation (Lias Clay).

7.23 Regionally the limestones dip at an angle of around 1° to the east.

7.24 The Rutland Formation is observed to outcrop along the southern boundary of the site and beneath Wittering Copice to the south-west. This unit comprises rhythmic grey marine and non-marine mudstones and siltstones and are not considered to be present across the application site but are recorded within borehole logs to the south.

7.25 A summary of the geology near the Site is given in Table 7-1, based on digital information from the BGS and historical site investigations for the quarry. The geological setting is shown on **Drawing CL 7/2** (Superficial Geology) and CL7/3 (Solid Geology).

Table 7-1
Summary of Regional Geology

Age	Formation	Description	Present beneath site?	Local approx. Thickness
Quaternary	Head	Clay, silt, sand and gravel.	No – outcrop <100m to north	Variable – up to 1m
	Alluvium	Clay, silt, sand and gravel.	No – outcrop c.870m to south	Variable – up to 1m
	Glacial Till Deposits	Diamicton	No – outcrop c.110m to SW	Up to 12m
Middle Jurassic	Blisworth Limestone Fm.	Pale-grey to off-white or yellowish limestones with thin marls and mudstones.	No – outcrop c.200m to south	10 – 15m

[2] BGS Geoindex (Accessed 22/08/17) http://mapapps2.bgs.ac.uk/geoindex/home.html

Age	Formation	Description	Present beneath site?	Local approx. Thickness
	Rutland Fm.	Rhythmic grey marine and non-marine mudstones and siltstones.	No – immediately on southern boundary	3 – 6m
	Lincolnshire Limestone Upper Member	Limestone dominated by high-energy ooidal and shell fragmental grainstones.	Yes – outcrop at surface	7 - 10m
	Lincolnshire Limestone Lower Member	Limestones dominated by low-energy calcilutite, and peloidal wackestone and packstone.	Yes – outcrop at surface	
	Grantham Fm. (Lower Estuarine Series)	Mudstones, sandy mudstones and argillaceous siltstone-sandstone.	Yes, below limestone	9m
	Northampton Sand Fm.	Sandy, berthierine-ooidal and sideritic ironstone.	Yes, below limestone	15m
Lower Jurassic	Whitby Mudstone Fm.	Medium and dark-grey fossiliferous mudstone and thin siltstone.	Yes, below limestone	Up to 120m

7.26 BGS borehole logs from around the perimeter of the quarry and the borehole log for the historic on-site water supply well (WS1) indicates that the Limestone and underlying Grantham Formation, Northampton Sand and Whitby Formation dip to the south or south-east across the site, with the base of the limestone at around 60m AOD along the northern boundary of the quarry (c.3 – 7m thick) to around 53m AOD (c.10m thick) along the south eastern boundary. Across the southern part of the quarry the limestone strata dips beneath clays of the Rutland formation. Details of the geology from boreholes surrounding the site are summarised in Table 7-2 and borehole locations are shown on **Drawing CL 7/5**.

Table 7-2
Summary of geology encountered in nearby Boreholes

BHID	National Grid Reference	Ground Level (mAOD)	Base of Rutland Fm. Clays (mAOD) (Thickness)	Base of Limestone (mAOD) (Thickness)	Base of Grantham Fm. (mAOD) (Thickness)	Northampton Sand / Top of Whitby Fm. (mAOD) (Thickness)
TF/00SW/24[3]	TF 02825 00750	64.83	Not Present	62.39 (2.44m)	58.10 (4.29m)	52.64 (5.46m)

[3] Published borehole log TF/00SW/24: http://scans.bgs.ac.uk/sobi_scans/boreholes/467344/images/10810869.html

BHID	National Grid Reference	Ground Level (mAOD)	Base of Rutland Fm. Clays (mAOD) (Thickness)	Base of Limestone (mAOD) (Thickness)	Base of Grantham Fm. (mAOD) (Thickness)	Northampton Sand / Top of Whitby Fm. (mAOD) (Thickness)
TF/00SW/30[4]	TF 02923 00744	68.43	Not Present	60.51 (7.92m)	58.37 (base not reached)	-
TF/00SW/98[5]	TF 02612 00723	65.24	Not Present	62.49 (2.75m)	58.00 (4.49m)	53.04 (4.96m)
02411/8702[6]	TF 02411 00630	68.21	Not Present	60.59 (7.62m)	59.07 (base not reached)	-
TF/00NW/80[7]	TF 02595 00439	71.23	70.01 (1.22m)	59.64 (10.37m)	54.76 (4.88m)	49.28 (5.48m)
TF/00SW/78[8]	TF 02710 00255	68.52	66.39 (0.97m)	56.33 (10.06m)	52.07 (4.26m)	46.89 (5.18m)
TF/00SW/122[9]	TF 03008 00254	66.66	63.00 (3.66m)	52.64 (10.36m)	49.59 (3.05m)	44.41 (5.18m)
WS1 (historic on-site supply)	TF 030 006	68.16	Not Present	57.76 (10.4m)	-	-

Hydrogeology

Aquifer Characteristics

7.27 The EA classify the Rutland Formation as a *'Secondary B Aquifer'*; the Lincolnshire Limestone series as a *'Principal Aquifer'*; whilst the underlying Grantham Formation is classified as a *'Secondary (Undifferentiated)'*.

7.28 A summary of the EA aquifer classification of the geological strata near the application site is given in Table 7-3.

[4] Published borehole log TF/00SW/30: http://scans.bgs.ac.uk/sobi_scans/boreholes/467350/images/10810875.html
[5] Published borehole log TF/00SW/98: http://scans.bgs.ac.uk/sobi_scans/boreholes/467418/images/10810944.html
[6] Published borehole log 02411/8702: http://scans.bgs.ac.uk/sobi_scans/boreholes/467431/images/10810957.html
[7] Published borehole log TF/00NW/80: http://scans.bgs.ac.uk/sobi_scans/boreholes/467400/images/10810926.html
[8] Published borehole log TF/00SW/78:http://scans.bgs.ac.uk/sobi_scans/boreholes/467398/images/10810924.html
[9] Published borehole log TF/00SW/122: http://scans.bgs.ac.uk/sobi_scans/boreholes/467442/images/10810968.html

Table 7-3
Environment Agency Aquifer Classification

Geological Unit	Aquifer Classification	Description
Rutland Formation	Secondary B Aquifer	'…predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.'
Lincolnshire Limestone (Upper and Lower Members)	Principal Aquifer	'…layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.'
Grantham Formation	Secondary Undifferentiated	'…assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.'
Northampton Sand	Secondary A Aquifer	'…permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.'
Whitby Formation	Unproductive Strata	'…rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.'

7.29 BGS mapping, see **Drawing CL 7/4**, confirms that the limestone beneath the application site is classified as a highly productive aquifer.

7.30 The limestone is characterised by a low intergranular porosity (13% - 21%) and corresponding low permeability of around $3x10^{-4}$m/d, because of this groundwater flow is primarily through fractures which have been developed by karstic weathering. These fractures are typically within the upper 30m of the aquifer unit.

7.31 It is reported that the transmissivity of the limestone often exceeds 1000m^2/day and can be as high as 5000 to 10,000m^2/day. Highest transmissivities are typically found within the confined limestone (where it dips beneath the Rutland Formation) and are likely to be lower in unconfined aquifers such as at the site.

7.32 Literature values of the matrix porosity have been recorded as 13-18%, the fracture porosity which is of importance to the aquifer is estimated to be around 1% [10].

7.33 The underlying Grantham Formation typically acts as an aquitard between the limestone aquifer and underlying Northampton Sand Formation. However, where the Grantham Formation is thin

[10] British Geological Survey, (1997), The physical properties of major aquifers in England and Wales

hydraulic continuity between the two units can be expected. Available borehole logs suggest the "black clay" associated with the Grantham Formation is between 1m and 3m in thickness, indicating that there is the potential for some connection between the two units.

7.34 Groundwater vulnerability at the application site is identified by the EA as 'Major Aquifer High'. The site does not lie within a groundwater Source Protection Zone (SPZ).

7.35 A pumping test was undertaken in support of an abstraction license application undertaken in September 1999[11] for a water supply for the quarry. The results of this pumping test have been used to estimate the in-situ permeability of the limestone near Cross Leys Quarry. The results of the pumping test are included with **Appendix 7/1** and pump test analysis has been undertaken using the Aqtesolv software package, results of which are included within **Appendix 7/2**, and indicates the following range of permeabilities:

- Pump Test (Theis): $2.56x10^{-5}$m/sec (2.21m/day)
- Rising Head Test 1 (Bouwer & Rice): $1.17x10^{-4}$m/sec (10.11m/day)
- Rising Head Test 2 (Bouwer & Rice): $1.65x10^{-5}$m/sec (1.42m/day)

7.36 The pumping test data and the proven borehole yield (0.15l/s) indicates that the limestone beneath the Cross Leys site has a relatively high permeability.

Recharge Characteristics

7.37 Rainfall information, obtained from the Wittering observing Station; around 3.5km north east from the application site, indicates that the long-term average annual rainfall (1981 – 2010) for the area is 608.9mm / year.

7.38 Due to a lack of overlying soils and superficial deposits within the application site incident rainfall onto the application site will readily form groundwater recharge to the Lower Lincolnshire Limestone aquifer.

Groundwater Levels and Flows

7.39 The saturated thickness of the unconfined limestone can be highly variable due to the rapid response to rainfall recharge. As a result, groundwater levels can often be very low or completely dry, particularly during summer periods.

7.40 Groundwater flow is likely to follow the regional dip of the strata, in an easterly direction.

7.41 A site investigation undertaken by the applicant prior to commencement of quarrying[12] included the installation of three groundwater observation wells across the site. The monitoring wells

[11] Bardon Aggregates (2 Sep 1999) *Proposal to abstract water at Cross Leys Quarry, Peterborough*

[12] SLR Consulting (March 2001) Cross Leys Quarry: *Review of Mineral Permissions under the Review of Mineral Permissions under the Environment Act 1995 Application for Determination of Conditions – Environmental Statement*, Ref: 4C/275/001

confirmed that prior to quarrying groundwater levels ranged from c.56m AOD in the east to 64.5m AOD in the west with flow towards the east southeast at a hydraulic gradient of c.0.01.

7.42 Groundwater levels were previously monitored from four monitoring locations located around the quarry as part of a former abstraction license for a water supply well located roughly in the centre of the quarry. The borehole locations are shown on **Drawing CL 7/5**. The monitoring data provided for the period June 1999 to August 2001 are summarised in Table 7-4, and indicative groundwater contours are presented on **Drawing CL 7/5**. These are considered to reflect natural groundwater levels across the site as the readings were taken prior to commencement of quarrying at the site.

Table 7-4
Groundwater Levels (1999 – 2001)

BHID	Count	Groundwater Level (mAOD)			Range (m)
		Min	Mean	Max	
GW1	64	63.96	65.13	66.48	2.52
GW2	51	59.46	60.41	62.00	2.54
GW3	49	55.54	56.57	58.47	2.93
WS1	49	59.48	60.31	61.04	1.56

7.43 The monitoring data and groundwater contours confirms that groundwater flow is in a south easterly direction across the quarry with water levels ranging from c.65m AOD in the north west to c.56m AOD in the south east.

7.44 The data also indicates that the saturated depth of the limestone was typically 2m to 3m thick with a seasonal variation of 2m to 3m.

Groundwater Quality

7.45 The EA has confirmed that there are no groundwater quality monitoring locations within a 2km radius of the site, nor is there any site specific monitoring data. Baseline chemistry is however outlined within the BGS/EA baseline report series for the Lincolnshire Limestone[13].

[13] BGS/EA (2006) *Baseline Report Series: 23. The Lincolnshire Limestone*, Ref: CR06/060N

7.46 The chemistry data indicates that the majority of samples show a Ca-HCO_3 to Ca-HCO_3-SO_4-Cl water type. The unconfined aquifer at outcrop (as is the situation across the application site) the groundwater quality is typically hard (high in mineral content; particularly calcium, carbonate and sulphate) and becomes progressively softer towards the east as the aquifer becomes confined by clay.

7.47 Conversely the unconfined aquifer typically records low concentrations of trace metals, which typically increase down dip as the aquifer becomes confined.

7.48 Typical groundwater chemistry for key determinands within the unconfined Lincolnshire Limestone, as presented within the baseline series report, is summarised in Table 7-5.

Table 7-5
Unconfined Lincolnshire Limestone: Groundwater Quality*

Determinand (µg/l unless otherwise stated)	UK DWS	Unconfined Aquifer Concentration		
		Minimum	**Median**	**97.7th Percentile**
Ph (ph units)	6-9	7.10	7.30	8.40
Calcium (mg/l)	-	95.5	161.5	197.3
Magnesium (mg/l)	-	2.50	6.10	10.50
Sodium (mg/l)	200	9.00	21.70	61.90
Potassium (mg/l)	-	0.50	2.30	4.70
Chloride (mg/l)	250	25.0	57.1	88.3
Sulphate (mg/l)	250	58.20	120.5	188.6
HCO_3 (mg/l)	-	141.4	268.2	343.1
Arsenic	10	<0.50	0.375	0.579
Cadmium	5	<0.05	0.165	0.20
Chromium	50	<0.50	<0.50	<0.50
Copper	2000	0.60	2.20	4.23
Iron	200	<0.03	0.0025	7.05
Lead	10	<0.1	0.20	15.94

Determinand (µg/l unless otherwise stated)	UK DWS	Unconfined Aquifer Concentration		
		Minimum	**Median**	**97.7th Percentile**
Mercury	1	<0.1	<0.1	<0.1
Nickel	20	<0.2	<0.2	2.53
Selenium	10	0.70	1.05	1.70
Zinc	5000	3.70	10.0	15.36

Note: Groundwater Quality as stated in BGS baseline report series on Lincolnshire Limestone[13].

7.49 The quarry is located within the EA-classified groundwater waterbody 'Welland Limestone Unit A'. A summary of the Water Framework Directive (WFD) classification for the site is given in Table 7-6 below:

Table 7-6
WFD classification for Welland Limestone Unit A

Waterbody ID:	GB40501G445900
Type:	Groundwater Body
Groundwater Area (Ha):	23,386
2016 Quantitative Status:	Poor
Quantitative Objective:	Good by 2027
2016 Chemical Status:	Poor
Chemical Objective:	Good by 2027
2016 Overall Status:	Poor
Overall Waterbody Objective:	Good by 2027
Reasons for not achieving good status and for deterioration:	Landfill Leaching – Waste treatment and disposal Groundwater abstraction – Water industry

Groundwater Abstractions and Source Protection Zones

7.50 The EA has confirmed that there are no licensed groundwater abstractions within a 2km radius of the quarry, the closest licensed abstraction being one associated with a groundwater Source

Protection Zone (SPZ) more than 12km to the north east. This SPZ does not extend as far as the application site.

7.51 Peterborough City Council has indicated that there are two private water supplies within a 2.5km radius of the quarry, both located to the south east of the quarry and believed to be groundwater sources, presumably from the confined limestone aquifer. The locations are shown on **Drawing CL 7/4** and details outlined in Table 7-7.

Table 7-7
Details of Private Abstractions

Ref No.	Supply Name	Address	Source	Usage	Distance and Direction from Site
PWS004	Nightingale Farm	Kingscliffe Road, Wansford, Peterborough, PE6 7SA	Borehole	Residential	c.2.3km SE
PWS008	Leedsgate Farm	Twin Oks, Leedsgate Farm, Wasnsford, Peterborough, PE8 6NX	Borehole	Residential	c.2.0km SE

Hydrology

Hydrological Setting

7.52 The quarry lies within the catchment of the River Nene, an EA Main River located approximately 4.5km to the south east of the site at its closest. The Nene is fed by a series of minor tributaries which drain from the limestone plateau area in a predominantly southerly or south easterly direction.

7.53 The quarry lies within the sub-catchment of the Wittering Brook, the closest watercourse to the site. The watercourse rises approximately 280m to the north of the existing quarry from where it flows easterly.

7.54 A minor drain flows along the western boundary of the quarry, along the edge of Wittering Coppice. It is unclear if this drain connects to any other drainage ditches; however, given the local topography it is likely that these drains will ultimately connect to a small stream, approximately 1km to the south which flows in a easterly direction through Bedford Purlieus National Nature Reserve and ultimately into the River Nene. The drain is located within the woodland to the west of the site and above the current excavated level of the quarry, there is therefore currently no direct run-off to this drain from the active site.

Current Site Drainage

7.55 At present, all site-generated runoff is contained within the site boundary where it is routed towards the quarry floor and to numerous permanent and ephemeral ponds which have formed within the base of the quarry, allowing infiltration to the underlying aquifer system.

Surface Water Quality

7.56 As described above, the application site is located within the sub-catchment of the Wittering Brook. The current EA WFD classification for this surface waterbody is summarised in Table 7-8.

Table 7-8
WFD classification for Wittering Brook

Waterbody ID:	GB105032050350
Type:	River
Sub-catchment Area (Ha):	4,847
Length (km):	15.67
2016 Ecological Status:	Moderate
2016 Chemical Status:	Good
2016 Overall Status:	Moderate
Reasons for not achieving good status and for deterioration:	Diffuse source, agriculture and rural land management – Poor nutrient management. Diffuse source, agriculture and rural land management – Livestock. Point source, water industry – Sewage Discharge (continuous).

Flood Risk

7.57 A review of all potential sources of flooding is shown in Table 7-9.

7.58 A full assessment of flood risk and surface water drainage is included within **Appendix 7/3**.

Table 7-9
Potential Sources of Flooding

Potential Sources of Flooding	Primary Flood Risk at the Site	Justification
Rivers or Fluvial Flooding	No	With reference to the Flood Map for Planning, the Site lies predominantly within Flood Zone 1 (Low Probability), and within an area which is not at risk of flooding from rivers.
Sea or Tidal Flooding	No	The Site is located approximately 52km inland and to the south-west of the Wash and is located at an elevation of between 60 and 65m AOD.

Potential Sources of Flooding	Primary Flood Risk at the Site	Justification
Surface Water and Overland Flow	No	The mapping indicates that there are localised areas of surface water flooding risk within the Site boundary. This is associated with localised low-lying areas within the current site and pre-existing small ponds located within the Site.
Groundwater	No	Previous site investigation identified the groundwater table as being at the base of the lower limestone series and therefore at the base of the mineral void. The proposal aims to restore the ground levels within the north-eastern area of the Site to pre-existing conditions using inert waste material.
Sewers	No	Given the relatively rural setting it is considered unlikely that the Site will benefit from either surface water or foul water sewers.
Reservoirs, Canals and other Artificial Sources	No	The 'long term flood risk' mapping confirms that the Site is not at risk of flooding from reservoirs. There are no artificial sources within the vicinity of the Site.

Water Dependent Ecological Sites

7.59 The quarry is immediately bound to the south west by Collyweston Great Wood and Easton Hornstocks, a Site of Specific Scientific Interest (SSSI) and National Nature Reserve (NNR). The site is cited due to presenting a wide range of fauna and woodland flora, the latter reflecting the soils locally. The SSSI does not receive runoff from the quarry and lies up groundwater gradient.

7.60 To the north and within the drainage valley of the Wittering Brook is Bonemills Hollow, a 14 ha SSSI. This area is cited due to supporting several grassland communities of calcareous and marsh types. The SSSI does not lie down groundwater gradient of the quarry nor does it receive surface water runoff from the quarry.

PROPOSED DEVELOPMENT

7.61 The proposed development is described in detail in Chapter 3 of this statement and provides for the restoration of the quarry workings using site-derived and imported inert material. No new or additional mineral extraction is proposed.

7.62 The development can be split into two areas, split by the pipeline which bisects the site (see above and Chapter 2).

7.63 The area to the north west of the pipeline would be infilled to create two agricultural fields, similar to the pre-development conditions. The agricultural restoration area would have a maximum crest elevation of 75m AOD, and restored levels would mainly be between 65 and 70mAOD.

7.64 The area to the south-east of the pipeline would be retained at its current elevations, retaining the existing waterbodies along with some ecological improvements to include areas of wet grassland, woodland and habitat creation for Great Crested Newts.

ASSESSMENT OF IMPACTS

7.65 This section identifies the potential impacts of the proposed development on the hydrogeological and hydrological environments. It also assesses the likelihood of occurrence of each identified impact. The assessment includes the effect of mitigation measures incorporated into the design of the scheme; where additional mitigation is required these measures are identified.

Best Practice Measures and Embedded Mitigation

7.66 The proposed development has been designed and would be managed in accordance with relevant UK guidance and good practice for quarrying, landfilling and construction guidance.

- Good Practice Guidance on Controlling the Effects of Surface Mineral Working on the Water Environment. Report to the Department of Communities and Local Government and to the Mineral Industry Research Organisation, March 2008.
- Control of Water Pollution from Construction Sites - Guide to Good Practice, CIRIA 2002;
- The Environment Agency's Approach to Groundwater Protection, Environment Agency, February 2018 (Version 2); and
- Environmental Good Practice on Site C650, CIRIA 2005.

7.67 Appropriate best practice for preventing water pollution and erosion from construction sites has historically been provided by Environment Agency Pollution Prevention Guidelines (PPG). It is noted that the PPG were withdrawn in December 2015, however in the absence of more up to date guidance these are considered to continue to provide appropriate guidance on good environmental practice. Relevant guidance for the quarrying and proposed restoration operations include:

- PPG1 General Guide to the Prevention of Pollution (PPG1, July 2013)
- PPG2 Above Ground Oil Storage Tanks (PPG2, August 2011)
- PPG5 Works and maintenance in or near water (PPG5, October 2007)
- PPG6 Working at Construction and Demolition Sites (PPG6, May 2012)
- PPG7 Safe Operation of Refuelling Facilities (PPG7, July 2011)
- PPG8 Safe Storage and disposal of used oils (PPG8, February 2004)
- PPG13 Vehicle washing and cleaning (PPG13, July 2007)

- PPG18 Managing Fire Water and Major Spillages (no date given)
- PPG21 Pollution Incident Response Planning (PPG 21, March 2009)
- PPG22 Incident Response – dealing with spills (PPG22, March 2011)

7.68 The restoration material would comprise of a mixture of site won and imported inert materials (being typically excavation materials comprising clays and soils), this would comprise only of natural wastes which meet Inert Waste Acceptance Criteria (WAC) and will not pose a risk to groundwater or surface water.

7.69 An environmental/recovery permit would be required for the import of restoration material and this would be supported by a site specific hydrogeological risk assessment to assess and demonstrate that the restoration material would not pose a risk to the surrounding groundwater aquifer. It is likely that the hydrogeological risk assessment will include recommendations for monitoring groundwater levels and quality prior to, during and following the restoration works.

7.70 The following embedded mitigation would be included within the scheme:

- the restoration works would be undertaken in a phased manner and seeding / planting of the restoration soils would be progressively undertaken;
- a traffic management plan would be used to minimise the risk of accidents and the generation of suspended solids;
- fuels stored on site would be stored in bunded tanks;
- spill kits would be maintained on site and drip trays would be used when maintenance of site vehicles is undertaken;
- provision would be made for foul water facilities on site for site staff. Foul water would drain to a sealed tank for off-site disposal at an appropriately licensed facility;
- potable water would be brought to site (in a bowser or in bottles) for use in site welfare facilities; and
- a surface water management plan is proposed to collect and manage surface water runoff shed from the site (see **Appendix 7/3**).

Groundwater

Groundwater Quality

7.71 During the restoration of the north western part of the quarry there is the potential to impact groundwater quality within the limestone aquifer, from the use of machinery and from the imported materials. This could occur via direct emission into the aquifer from accidental spillage of raw materials, uncontrolled surface water run-off, fuels and lubricants from the vehicles moving

around the site and the accidental spillage of potentially polluting liquids from any associated works within an active site.

7.72 The area to the south east of the pipeline would not require any imported materials. However, some localised movement of vehicles and machinery to complete the restoration will be required.

7.73 Given the best practice and embedded mitigation detailed above the potential impact on groundwater quality during the filling of the site is considered to be minor and no mitigation is required.

Groundwater Levels and Flows

7.74 The proposed development does not seek to alter the extent or depth of the existing quarry void. Current drainage paths would be maintained and site-generated runoff from the north-western part of the site will be allowed to infiltrate to ground via three infiltration ponds. Local recharge rates would therefore not be altered.

7.75 The south-eastern part of the site will be retained at current elevations and the existing permanent and ephemeral ponds will be retained and continue to be in continuity with groundwater. Any run-off within this area would continue to drain to ground as per the current situation.

7.76 It is considered that the proposed development would not result in a significant impact on groundwater levels or flow.

Surface Water

Surface Water Quality

7.77 All operations would be undertaken in accordance with requirements set out in the Restoration Permit and relevant Guidance for Pollution Prevention (GPPs).

7.78 All site-generated runoff would be contained within the site boundary and there would be no off site discharge to adjacent surface water.

7.79 It is therefore considered that the potential impact on surface water quality would be negligible.

Surface Water Flows and Flood Risk

7.80 Presently all surface water runoff generated onsite is contained within the site boundary where it infiltrates to ground. The site surface water management plan (see **Appendix 7/3**) proposes to maintain this method of discharge with runoff to remain onsite. Run-off from the restored north western part of the quarry would be routed to one of three infiltration catchment ponds in continuity with the limestone bedrock, and run-off from the south-eastern part of the site would remain as per the current situation.

7.81 The surface water management scheme has been designed in accordance with best practice, guidance outlined within the SuDS manual and with relation to comments received from Natural England and Peterborough City Council.

7.82 Consequently, there would be no impact upon offsite surface water flow regimes and no increased flood risk.

CONCLUSIONS

7.83 This chapter provides a comprehensive description of the baseline hydrological and hydrogeological conditions at the site. The impact of the proposed development on the surrounding environment has been assessed considering mitigation incorporated into the site design. No additional mitigation is considered necessary and no significant residual impacts are identified.

CONTENTS

INTRODUCTION

8.1 The previous chapters of this statement have set out what the applicant and SLR consider to be the main environmental issues that could potentially arise through the development proposals. The rationale for this was set out in the screening request submitted to Peterborough City Council (refer to Chapter 1).

8.2 This chapter sets out other effects that may arise and the reasons why any detailed assessment is not considered necessary to support the planning application. In particular, regard has been given to the findings of a previous Environmental Impact Assessment[1] which was undertaken to support the application for the determination of new planning conditions under the Environment Act 1995 (the ROMP Review).

AIR QUALITY

8.3 The proposed restoration operations, particularly the importation of inert waste materials has the potential to affect air quality through the emission of particulate matter, often referred to as dust. The nature of the material to be imported is such that it would not give rise to any emissions of odour.

8.4 Dust has the potential to affect the amenity of human receptors near the site, as well as the neighbouring ecological designations, such as Collyweston Great Wood and Easton Hornstocks SSSI.

8.5 The nearest residential property (Wittering Lodge) lies adjacent to the north-eastern corner of the planning permission boundary, next to the A47. The boundary to the property is formed by a belt of woodland, with a soils storage mound lying adjacent to the boundary. The next nearest property (Cross Leys Farm) lies around 350m to the south of the site boundary. No other residential properties lie within 1km of the site boundary.

8.6 The more substantial built up areas of Wittering, Wansford and King's Cliffe, as noted above, lie some distance from the quarry; the edge of Wittering (being the closest settlement) is around 2.5km from the site boundary.

Dust Emissions

8.7 Dust emissions from restoring quarries are associated with materials handling (typically soils, clays and similar materials) as well as the movement of vehicles within the site, especially on unsurfaced roads. In addition, the periodic processing of imported materials to produce secondary aggregates can lead to dust emissions. The emitted particles are typically classified by reference to the particle size (diameter); in this respect, whether they are larger or smaller than 10 micrometres (µm). Particles smaller than 10 µm are referred to as fine particles, or PM10, whereas those greater than

[1] As reported in an Environmental Statement "*Review of Mineral permissions under the Environment Act 1995" (Ref. 4C/275/001).* SLR Consulting Limited March 2001 (the '2001 ES')

10 µm are termed 'dust'. Both can potentially give rise to amenity issues associated with dust deposition and soiling of surfaces.

8.8 In the context of the proposals, it is the larger dust particles that would be more common due to the limited handling of the imported materials.

8.9 The most important meteorological parameters governing the atmospheric dispersion of dust are:

- wind direction - determines the broad transport of the emission and the sector of the compass into which the emission is dispersed;
- wind speed - affects ground level concentrations of emissions by increasing the initial dilution of pollutants in the emission; and
- atmospheric stability - a measure of the turbulence, particularly of the vertical motions present.

8.10 Allied to this, rain will reduce the likelihood of dust emissions.

8.11 For the larger particles, deposition tends to be closer to the source of the emission, typically being between 100m and 200m from the source[2]. PM10 can travel further from the source, typically up to 1km.

Consideration of Effects

8.12 The effects of dust from the quarry were considered in Chapter 13 ("*Dust*") of the 2001 ES. That assessment considered the potential effects from quarrying operations, processing and restoration, having regard to the proximity of the workings on nearby receptors.

8.13 The assessment noted that operations would be undertaken within a void, which with the presence of Wittering Coppice, would shield operations from the predominantly south westerly winds. Section 13.6 of the 2001 ES considered the effects on the nearest sensitive properties, commenting that problems associated with dust are most likely to occur within 100m to 200m of the boundary of the site. In section 13.6.1, the assessment notes that, based on the meteorological data, winds in excess of 5.6m/s (being the speed considered necessary to lift dust particles from the ground) would blow towards Wittering Lodge from Phase 5 for 6.1% of the year, i.e. about 22 days. This reduces to 2.76% of the year (i.e. around 10 days) for operations in Phase 7, which is adjacent to Wittering Lodge. The access road is around 210m from Wittering Lodge and for most of its length, much further. Again, using the meteorological data, winds in excess of 5.6m/s blow from the access towards Wittering Lodge for about 1.35% of the year (i.e. around 5 days).

8.14 Section 13.6.2 of the 2001 assessment considers the effects at Cross Leys Farm, located to some 310m south of the site. The assessment stated that winds in excess of 5.6m/s would blow towards the property from Phases 5 and 6 for around 5% of the year (i.e. 18 days).

[2] Based upon research document - DETR, The Environmental Effects of Dust from Surface Mineral Workings (Dec 1995).

8.15 The assessment put forward mitigation measures to ameliorate the effects of dust, based on best practice. Measures included:

- use of water bowser
- spraying of stockpiles
- sheeting of vehicles
- imposition of speed limits

8.16 Overall, the assessment concluded that "*whilst there is a possibility that periodically small impact resulting from dust may occur, it is likely to be of short duration and should at no time result in air quality guidelines or criteria levels being exceeded*".

8.17 There are no additional sources of dust during the proposed operations than those already undertaken on site. Allied to this, the sources of dust would not be in a different geographic location within the site (as would be the case for a lateral extension of the quarry for example); therefore, there wouldn't be any change to separation distances between the source and sensitive receptor. Moreover, operations involving the deposition of inert waste would be undertaken within the northern part of the quarry, which is much further from the two receptors compared to the operations considered in the 2001 ES.

8.18 The proposals are not considered to increase the level of environmental risk from dust emissions associated with the operation of the site than that currently posed by the existing operations on site. Indeed, with the removal of the mineral processing operations, the risk of dust emissions is reduced, even when considering the intermittent processing of imported wastes. It is only the period over which potential impacts from dust could be experienced that has changed; the proposals would not lead to an increase in magnitude.

8.19 The potential for dust impacts on sensitive ecological systems can be associated with the chemical effects of the dust and physical effects of the deposited material on the ecosystem.

8.20 The majority of the research undertaken has focussed on the chemical effects of alkaline dusts, such as those from limestone quarries. A summary of a review of available research on behalf of the DETR[3] concluded that:

'[...] the issue of dust on ecological receptors is largely confined to the associated chemical effect of dust, and particularly the effect of acidic or alkaline dust influencing vegetation through soils.'

8.21 An Interim Advice Note (IAN) prepared as a supplement for Volume 11, Section 3, part 1 of the DMRB (and now incorporated into HA207/07[4]) suggests that only dust deposition levels above 1,000 mg/m^2/day are likely to affect sensitive ecological receptors. This level of dust deposition is approximately five times greater than the level at which most dust deposition may start to cause a

[3] Department of the Environment, Transport and the Regions (DETR) 1995: *The Environmental Effects of Dust from Surface Mineral Workings – Volume Two.*

[4] Design Manual for Roads and Bridges. Volume 11, Section 3. Part 1 HA207/07. Annex F.

perceptible nuisance to humans. Furthermore, it is stated that most species appear to be unaffected until dust deposition rates are at levels considerably higher than this[5].

8.22 The potential effects of dust upon the ecological designations, particularly the Natura 2000 sites, has been addressed as part of the ecological assessment reported in Chapter 6 above.

Existing Controls

8.23 A planning condition has been imposed in the extant ROMP Permission to ameliorate the effects of dust. Condition C7 required the submission of a scheme detailing a programme for the suppression and management of dust, including:

- The suppression of dust caused by the moving and storage of soil and overburden, stone and other material within the site;
- The fitting of all plant with effective dust control measures; and
- Dust suppression on haul roads.

8.24 Allied to this, emissions of fugitive dust from the importation of waste would be controlled and mitigated through the provisions of an Environmental Permit/Recovery Permit issued by the EA. The processing of imported materials to produce secondary aggregates would similarly be covered by a permit, issued by the Local Authority.

8.25 In view of this, it is considered that suitable controls are already in place and with the continued employment of such controls the effects of the development can be suitably mitigated.

NOISE

8.26 Typically, consideration of the effects of noise generated by a development relate to the loss of amenity at nearby residential receptors. Noise from the proposed development would be generated through the use of plant and machinery such as:

- mobile plant used for any engineering operations (temporary periods only);
- HGV's importing the waste; and
- mobile plant used to move, spread and compact the waste.

8.27 Noise levels at nearby receptors are influenced by factors such as topography and the duration that the particular item of plant is operating for (often referred to as the 'on-time'). It is typically when items of plant are working close to the final tipping levels that noise levels can be at their greatest; at other times, noise is shielded by the landform of the quarry, including peripheral screen mounds (such as those erected in the vicinity of Witering Lodge).

[5] Guidance for Undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs (Supplement to DMRB 11.3.1), Interim Advice Note 61/04, March 2005.

Consideration of Effects

8.28 A noise assessment was undertaken and reported in Chapter 8 of the 2001 ES. As part of the assessment, consideration was given to the prevailing noise climate at the two receptors located close to the site; namely Wittering Lodge and Cross Leys Farm. Based on noise levels of plant and machinery working at the site a series of predictions were made to the receptors to ascertain what the noise levels would be during the operation of the development. The predicted noise levels were then compared against existing limits set in planning conditions and current guidance.

8.29 For Wittering Lodge, the background noise levels (L_{A90}) were measured to be between 42 and 43 dB(A), with the corresponding $L_{Aeq,1h}$ being in the region of 66 to 67 dB(A). The assessment notes that the noise climate at the receptor is influenced by road traffic on the A47. For Cross Leys Farm, the background noise level was measured to be around 33dB(A), with the corresponding $L_{Aeq,1h}$ being in the region of 61dB(A).

8.30 In terms of predicted noise levels, the assessment commented at Section 8.6.2 that noise from quarrying operations when conducted close to Wittering Lodge could be as high as 67dB(A) at the property; the elevated levels being caused by the use of a 'pecker'. By increasing the height of a screen mound, the noise levels would be attenuated and when the pecker was not operational, noise levels would be in the region of 50 – 51 dB(A). For Cross Leys Farm the assessment at Section 8.6.3 noted that noise from quarrying operations would be in the region of 47 – 48 dB(A), reducing to 43 – 44 dB(A) when the pecker was not operational.

8.31 Overall, the assessment concluded:

"Since the noise level predictions have been carried out on a worst case basis and giving consideration to the high existing ambient noise levels due to aircraft activity from the nearby RAF Wittering, it is considered that the majority of the working of Cross Leys site would take place, as described above in accordance with the guidelines set out in MPG11 . Noise generated by the site activities would not, therefore, have any significant detrimental effect on the amenity of the properties surrounding the site. Intermittently, during operations at closest approach to Wittering Lodge noise levels would be in excess of 55 dB LAeq, due mainly to the operation of the "pecker". At no time would these noise levels exceed the higher criterion for temporary operations from MPG 11."

8.32 The current ROMP Permission provides control over noise limits through the imposition of condition C10; this condition provides that noise from site operations shall not exceed 53dB $L_{Aeq,\ 1hr}$ free field at Wittering Lodge and 45 $dB_{LAeq,\ 1hr}$ free field at Cross Leys Farm. Higher levels are permitted for temporary operations, including restoration, for periods up to eight weeks in any 12 month period and within 200m of the site boundary.

8.33 Other conditions require plant and machinery to be silenced at all times (condition C9) and regulate the use of reversing alarms (condition C8).

8.34 Since the grant of the ROMP Permission there has not been any substantial change to planning guidance relating to noise. It is noted that the web-based PPG still recommends a limit of 55dB(A)[6]. Considering that the proposed restoration operations would not use a pecker, and processing operations would be limited to periodic use of a mobile crusher, then noise levels associated with the proposed operations would be lower than predicted in the 2001 ES.

8.35 It is therefore considered that through the action of existing planning condition suitable controls already exist to protect the amenity of local residents. As such, it is difficult to see how the proposals for the restoration operations would give rise to any significant adverse effect in terms of noise emissions.

TRAFFIC

Highway Conditions

8.36 All waste materials would be imported to the site via the existing site entrance on the south side A47. The access is a 'T' junction in the form of a bell mouth some 40m in width. Gates are set back around 30m from the road edge. The A47 is a single carriageway subject to the national speed limit.

8.37 The A47 is part of the Primary Route Network and provides links between Leicester and Peterborough, as well as the A1, which provides links to the north and south. The junction with the A1 is located around 4.5km to the east.

8.38 A review of the "Crashmap" website shows that in the past five years up to 2017 there are no accidents in the immediate vicinity of the site entrance. Within 3km to the west there are three accidents recorded (two classed as slight and one serious), whilst within 3km to the east there are five records (one fatal, three serious and one slight). The fatal accident occurred close to the junction with Old Oundle Road and involved one vehicle. The three serious accidents and one slight are clustered wound the entrance to another mineral operation (Cookes Hole Quarry/Thornhaugh Landfill Site). Of these accidents within 3km of the site entrance, only two involved 'Goods vehicles'. Further to the east and west accidents are recorded in the vicinity of the junctions with the A1 and A45 respectively.

8.39 For the period between 2008 to 2012, there are again no accidents recorded at the site entrance. Within 3km to the west there are four, two of which are classed as fatal (the other two being slight). To the east there are six records, with one being classed as fatal (the others being slight). Of these accidents, two involved 'Goods Vehicles'.

Consideration of Effects

8.40 Consideration of the effects of HGV movements associated with the quarry site were assessed in Chapter 9 of the 2001 ES. From the assessment, it is noted that HGV movements were stated as being 106 movements per day, based on an output of 260,000tpa.

[6] Paragraph: 021 Reference ID: 27-021-20140306

8.41 Overall, the 2001 assessment concluded that "*the existing access arrangements are considered to be of a good modern standard and well maintained for the existing and proposed quarry use*". It went on to add that "*the existing highway infrastructure is considered to have sufficient capacity to accommodate the existing levels of traffic generated by operations at Cross Leys Quarry and therefore no mitigation measures are considered to be necessary to continue to accommodate the proposed levels of traffic*".

Existing Controls

8.42 The extant ROMP Permission includes a number of conditions aimed at minimising the effects of traffic movements including the following:

- Condition C2 – existing access to be used
- Condition C3 – Wheel cleaning facilities to be provided

8.43 Whilst it is noted that some trimming back of vegetation will be needed, it is considered that the entrance is still suitable. The proposals do not seek to intensify HGV movements into or out of the site. Indeed, if waste imports are less than the historic levels the effects of HGV movements would be further reduced. In this context, it is anticipated that waste would be imported at around 100,000tpa to 150,000tpa, and so, using an average payload of 20t, equates to between 36 to 55 movements per day. This is considerably less than the historic levels referred to above.

8.44 In view of the standard of the site entrance; the links to the wider Primary Route Network; together with the existing mitigation it is difficult to see how the proposed restoration operations would give rise to any significant effect on the highway network.

CUMULATIVE EFFECTS

8.45 There is a broad range of opinion on the definition of cumulative impacts[7]. The widely accepted definition is that provided by the United States Council on Environmental Quality in 1978:

> *'the impacts on the environment which result from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time".*

8.46 The Institute of Environmental Management and Assessment (IEMA) goes on to comment that cumulative impacts may occur:

[7] Page 11/4. Guidelines for Environmental Impact Assessment. IEMA

Physical-chemical transport	A physical or chemical emission is transported away from a proposed project where it then interacts with another pollutant (e.g., air emissions, waste water effluent, sediment). Several entirely separate developments can therefore have a cumulative impact at a location some distance away from the project location
Nibbling loss	Occurring as a result of the gradual disturbance and loss of land and habitat (e.g., clearing of land for new housing and roads.)
Spatial and temporal crowding	Cumulative effects can occur when too much is happening within too small an area and in too brief a period of time. Spatial crowding results in an overlap of effects (e.g., noise from a road adjacent to an industrial site, confluence of stack emission plumes). Temporal crowding may occur if effects from different actions overlap or occur before the receptor has had time to recover.
Growth-inducing potential	A project can induce further projects to occur. (e.g., bypass for a town creating new development opportunities)
Combined effects	These occur when different types of effects all affect the same receptor. Assessed individually they may be considered to be insignificant, but when combined result in a significant effect on the receptor (e.g. perceived change in the quality of life of a household or community)

8.47 Cumulative impacts have also been described[8] as being those impacts caused by the sum of the projects impacts on the environment component, and/or the projects impacts when added to those of other past, present or future projects. Cumulative impacts can be:

- additive, aggregative or "nibbling", namely the simple sum of all of the impacts;
- synergistic, where impacts interact to produce an impact greater than the sum of the individual impact; and
- neutralising or antagonistic impact, where the impacts counteract each other, reducing the overall impact.

8.48 Cumulative impacts may therefore result from a number of situations:

- the interaction or proximity of two or more current mineral operations (not necessarily for the same type of mineral) or developments of a similar nature;
- the continuation of a particular working over a period of time through successive extensions;

[8] Methods of Environmental Impact Assessment. P Morris and R Therivel. UCL Press 2000

- the interaction or accumulation of different impacts at one site, affecting a range of sensitive receptors; and
- a combination of the above scenarios.

8.49 In considering the potential cumulative effects, it is important to keep in mind the extant planning permissions for the landfill site and associated infrastructure.

Other Mineral and Waste Management Facilities

8.50 There are two other mineral operations and two landfill sites in the vicinity of Cross Leys Quarry. To the east of the site are Crook Hole Quarry (Mick George) and Thornhaugh landfill site (Augean). The landfill site accepts mainly non-hazardous waste streams, but can accept asbestos wastes in a specially prepared cell as well as stable non-reactive hazardous waste (SNRHW). To the west of the site is North Cliffe landfill site and Resource Management Facility (Augean) and a further quarry. Kings Cliffe facility can accept hazardous waste as well as low level radioactive waste.

8.51 The closest of these operations to the site are the Augean sites, both of which are located over 1.3km to the site boundary. In view of the separation distance, coupled with the limited number of receptors between the sites, the likelihood for cumulative effects are very limited, if at all.

8.52 As such, no further consideration of cumulative effects is considered necessary.

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CROSS LEYS QUARRY

Bird Hazard Management Plan

Pre-Consent Draft Copy

Version No.1 Rev A

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PHOENIX BIRD CONTROL SERVICES LTD

Contents

Acknowledgements

This Wildlife Hazard Management Plan has been written for Aggregate Industries UK limited (Aggregate Industries) and prepared in consultation with Phoenix Bird Control Services Ltd, and Aggregate Industries. The content is based on best practice guidance found in CAP772 and requirements of the Ministry of Defence, Defence Infrastructure Organisation (DIO).

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Authority

The organisation responsible for implementing this Plan is the Operator in conjunction with the landowners. Additional roles and responsibilities are outlined in section **3 Implementation / Roles and Responsibilities** of this plan.

Prepared by Alan Marenghi Date: 19 December 2018
Phoenix Bird Control Services ltd

Contact Details

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Phoenix Bird Control Services Ltd			
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Defence Infrastructure Organisation			
Peterborough City Council			

Record of Amendment

No.	Date of Amendment	Section	Details	Signed	Date

Record of Review

No.	Date of Amendment	Section	Details	Signed	Date

1 INTRODUCTION

1.1 Background

1.1.1 Phoenix Bird Control Services Ltd (Phoenix) has been commissioned by Aggregate Industries to prepare a Bird Hazard Management Plan (BHMP) in respect of the approved development at Cross Leys Quarry, Peterborough. This version supersedes all previous versions of the BHMP for the approved development.

1.1.2 This BHMP serves to complement a planning application to amend the restoration and to outline the requirements for the operator and the Landowners to maintain bird control at the Cross Leys Quarry site in accordance with the covenants, set out in the agreement, they have made with Peterborough City Council and the Secretary of State for Defence.

1.1.3 The approved quarry restoration areas occupy the 13km statutory bird strike safeguarding zone for RAF Wittering, which is located approximately 1.75km to the North of the site. A number of areas of open water are situated in the vicinity of the site, some of which have been colonised by Great Crested Newts. Considering this, changes to the original restoration must be made to incorporate wetland areas and reduce / mitigate habitat loss to Great Crested Newts. AI acknowledges that restoration of parts of the site to wetland has the potential to increase the population of birds 'hazardous' to air traffic. This initial draft bird hazard management plan and amendments to the restoration scheme were prepared in October 2018 and aim to minimise impacts to Air Safety whilst complying with statutory legislation on the protection of Great Crested Newts.

1.1.4 Due to the proximity of the site to the aerodrome, measures are to be put in place to reduce the risk of bird strikes during the life time of restoration and at the restored site **in perpetuity**.

This BHMP relates to the areas indicated on the revised Drawings CLQ-Rest-05. It has been prepared in accordance with Civil Aviation Authority (CAA) guidelines for bird control measures which may be employed to reduce the risk of bird strikes.

1.2 Objectives

1.2.1 The BHMP has been prepared for use by site managers and ground staff, and it is intended to reduce the risk of bird/wildlife strikes and, in doing so, protect flight crews, passengers, aircraft and operational capability at RAF Wittering. The objectives of the BHMP can be summarised as:

- To assess the potential wildlife hazard to RAF Wittering as a result of proposed restoration plans for Cross Leys Quarry
- To reduce infringements of critical airspace by species that threaten operations at RAF Wittering;
- Ensure that adequate systems are in place to define roles, responsibilities and procedures for managing bird strike risk;
- Define the methods by which wildlife hazards are managed; and
- Outline the processes involved in monitoring bird strike risk and the ongoing evaluation of the BHMP.

1.2.2 Although it is not possible to prevent all bird strikes, this BHMP aims to help reduce the frequency and severity of bird strikes by focusing management efforts on species and habitats that constitute significant hazards to aircraft. This will be done by establishing site management techniques and processes to monitor the BHMP's success. This BHMP iterates measures that make Cross Leys Quarry less attractive for those targeted bird species and measures to prevent them using the site without unduly degrading on-site and neighbouring habitats.

2 SITE INFORMATION

2.1 Site Location

2.1.1 Cross Leys quarry is an operational site set within a landscape dominated by arable farming with several large blocks of deciduous woodland. Prior to commencement of extraction it was managed as arable land and as such it was likely to represent a relatively impoverished flora and fauna in comparison to surrounding seminatural habitats

2.1.2 The Cross Leys Quarry site occupies the bird strike safeguarding zone encompassing RAF Wittering. The amended restoration proposals would not bring quarrying operations any closer to RAF Wittering.

2.1.3 The site is located approximately 12 kilometres North West of Peterborough.

2.1.4 The site is more particularly located along the A47, 4km west of the village of Wansford and 1.5 km to the south of the Aerodrome at RAF Wittering

2.1.5 For identification purposes, the site and main operational area are centred on National Grid Reference (NGR) TF 02963 00504; the proposed northern area of the restoration is centred on National Grid Reference (NGR) TF 02779 00566 and, the proposed southern area of the restoration is centred on National Grid Reference (NGR) TF 03042 00420.

2.1.6 The application site comprises an area of approximately 27 hectares and includes the existing Cross Leys Quarry processing plant area and the proposed Northern and Southern restoration areas separated by a pipeline that runs through the centre of the site. The application site is shown edged red on Drawing CLQ-Rest-05

2.2 Approved restoration and current situation

2.2.1 The approved restoration scheme for the Cross Leys Quarry (Drawing CL3, dated July 2006) would have created a predominately low-level agricultural restoration with associated wildlife habitats such as woodland and wet woodland, areas of ephemeral water collection, scrub and rough grassland and 0.9km of hedgerows. The narrow strip of undisturbed ground through the centre of the site at approximately 68m AOD was retained providing a standoff for a pipeline. The site entrance at the north of the site would have been restored to approximately 68m AOD, with levels along the northern boundary, adjacent to the A47 rising to 70m AOD, towards the north-west. A 1m thickness of topsoil and subsoil would have been provided across the agricultural areas, above imported inert waste and overburden.

2.2.2 Cross Leys now comprises a void where limestone has been extracted within which there are extensive areas of stockpiled and imported materials which are ultimately destined for use as restoration materials.

2.2.3 Networks of ponds and lagoons, typical of a quarrying operation have formed within the site. These are of varied size and form, but typically appear to be groundwater-fed. Ponds in the northern part of the site are at higher elevations and appear more prone to seasonal drying. The pond network and surrounding terrestrial habitat supports a large population of Great Crested Newt (*Triturus cristatus*).

2.2.4 There are several areas of the site where vegetation has been allowed to develop. These areas are principally where works have been restricted around known GCN ponds and along the length of an aviation fuel pipeline that transects the site. These habitats are characterised by grassland species such as couch grass (*Elymus repens*), cock'-foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), spear thistle (*Cirsium vulgare*), cleavers (*Galium aparine*) and mouse ear (*Cerastium fontanum*). In some places scrub species, such as bramble (*Rubus fruticosa*) and buddleia (*Buddleia davidii*) have encroached. As well as the more established areas of vegetation there are areas where bare ground has begun to be colonised by species such as colt's foot (*Tussilago farfara*), spear thistle, scentless mayweed (*Tripleurospermum inodorum*) and shepherd's purse (*Capsella bursa-pastoris*).

2.3 Proposed Restoration

2.3.1 The approved scheme is no longer considered to be achievable due to the presence of GCN which are fully protected by law under schedule 5 of the Wildlife and Countryside Act (as amended). AI now seeks to identify an alternative restoration strategy for the site, which endeavours to retain existing GCN habitats to the east and south of the pipeline. Habitats in this area would be enhanced to provide a receptor site for the proportion of the GCN population that resides in the northern part of the site and would require translocation

2.3.2 The revised restoration proposal is illustrated on Drawing CLQ-3/5 and should be read in conjunction with the preceding phasing drawings CL3/2 to CL 3/4. The restoration scheme has been prepared with the aim of providing a sustainable habitat resource for the existing population of GCN and other species of nature conservation importance, whilst also retaining some of the agricultural land identified in the approved scheme and thereby ensuring economic sustainability of the site for the landowner.

2.3.3 The proposed restoration scheme would allow for the creation of predominately agricultural restoration (12.7ha) in westerly and northerly parts of the site, and

12.8ha of wildlife habitat in easterly and southerly parts of the site which would include the GCN receptor site. Across the whole site proposed habitats include woodland (1.2ha), areas of water (3.7ha), scrub (0.36ha), species rich grassland (2ha), wetland (1ha) with 1,540 linear metres of proposed hedgerows and 15 hedgerow trees. The proposed receptor area for GCN would be supplemented with six purpose-built GCN mitigation ponds with adjacent earth-mound hibernacula constructed from excavated pond material.

2.3.4 Revised restoration proposals have been prepared as part of this submission and illustrated in Drawings CL3/2, CL3/4 and CL3/5

2.3.5 The working of the existing Limestone void at this location and subsequent restoration will leave existing water bodies and create new areas of open water. This has the potential to attract populations of bird species which are attracted to the water bodies and whose presence would increase the risk of bird strikes. The size and behavioural characteristics of the species which are attracted to areas of open water (Geese, other waterfowl and Gulls in particular) pose a significant hazard to Aircraft and as such need to be stringently managed

2.3.6 The aim of the revised proposals is to enhance GCN and other habitats as far as possible, whilst minimising the key habitats that will be attractive to large or flocking birds hazardous to air traffic. The principal considerations have been removing islands (or connecting existing islands via land bridges) and improving bank-side/marginal design/planting and stock fencing to deter land egress for waterfowl.

2.3.7 As described in the drawing submitted with this proposal, the restoration of the site would be worked in a phased manner with the soils directly placed into the previously worked-out void wherever possible; although storage mounds exist at present and temporary storage mounds may be required at certain stages of the development.

2.3.8 It is recommended that this plan (and the threshold levels / trigger points) is subject to review by the client, LPA and MOD and update at least every five years as the development proceeds.

3 IMPLEMENTATION / ROLES AND RESPONSIBILITIES

3.1 Site Operator

3.1.1 The Operator will establish and maintain a working relationship with personnel at RAF Wittering in order to maintain effective bird management for air traffic safety purposes.

3.1.2 The Operator will develop, monitor and annually evaluate the BHMP with emergency reviews when required. The evaluation of the BHMP will include all

signatories to the S106 agreement for the site.

3.1.3 As a responsible neighbour, the Operator will establish communication protocols between The Operator, the landowner, the MOD and the aerodrome operator to coordinate the application of all wildlife control measures on the site with aerodrome operations and to provide notification of any failure of effective wildlife control.

3.1.4 During restoration activities the appointed Cross Leys Site Manager is responsible for the day to day implementation of the BHMP by ensuring that tasked organisations are fulfilling their responsibilities as outlined in this section of the BHMP.

3.1.5 The Operator will take all reasonable measures to maintain the passive controls outlined in this BHMP in order to reduce the attractiveness of the site to birds.

3.1.6 The Operator will allow the MOD, Aerodrome operator or their designated representatives access to the site without prior notification (subject to site management requirements during the working of the site) to monitor bird/wildlife concentrations, wildlife management procedures and areas of standing water.

3.1.7 The landowners and The Operator will allow access to the MOD and the aerodrome operator or their appointed representatives to undertake wildlife control at the site should the aerodrome operator consider this to be necessary for the purposes of maintaining air traffic safety, subject to site management requirements during the working of the site (in the event of a failure of bird management required from the site operator or landowner).

3.2 Site Manager

3.2.1 The Site Manager will be responsible for initial implementation, monitoring and periodic evaluation of the active control measures outlined in this BHMP, in accordance with The Operator instructions

3.2.2 The Site Manager will be responsible for monitoring, documenting and controlling birds and wildlife at Cross Leys Site, in accordance with the provisions of this BHMP

3.2.3 The Site Manager shall maintain sufficient levels of expertise, licensing and equipment in order to provide active control measures as outlined in the **4.5 Active Control Measures** section of this BHMP.

3.2.4 The Site Manager shall, in response to a reasonable request from the MOD or the aerodrome operator, disperse any feral geese, gulls, waders, Grey Heron, waterfowl, water birds, starlings or other bird populations in accordance with the management provisions detailed at section 4.5.8 or otherwise considered by the

MOD or aerodrome operator to pose an unacceptable hazard to air traffic.

3.2.5 The Site Manager will be responsible for maintaining a monthly record of all observed wildlife, control actions, results of dispersal/control actions, lethal control actions and current status of wildlife (including the effectiveness of current passive controls). Entries should include:

- Location on site
- Number of Birds/Wildlife encountered (to species level)
- Nil returns if no birds/wildlife are encountered
- Activity of birds/wildlife encountered (feeding, loafing, perching, flying etc.)
- Active control method used
- Effect of control method and direction of dispersal (if the birds/wildlife were dispersed)
- Any bird/wildlife carcass found
- Birds/wildlife culled

3.2.6 Where requested to do so, the Site Manager will attend meetings with DIO, MoD and/or aerodrome operator representatives on behalf of or in conjunction with The Operator in order to provide information on the current hazard levels at the site and the progress of mitigation efforts.

3.3 MOD / DIO Safeguarding

3.3.1 MOD will inform the Aerodrome operator (if unaware), The Operator and Peterborough City Council of any increased hazard at the site that requires immediate actions, or any breach of the legal agreements associated with this BHMP.

4 WILDLIFE HAZARD MANAGEMENT

4.1 Hazard Identification

4.1.1 The working of the site and movement of materials during restoration has the potential to create a variety of habitats that can be attractive to wildlife and as such pose a hazard to air traffic. In particular, the following habitats are attractive to large or flocking bird species that would pose a hazard to air traffic:

- Areas of open water (attractive to waterfowl, water birds and gulls)
- Drainage ditches (attractive to waterfowl, water bird and gulls)
- Excavated Land (attractive to corvids, gulls, waders, ground nesting

birds)

- Areas of Rough ground (attractive to small mammals, corvids, gulls, waders, pigeons and ground nesting birds)
- Soft earth accessible to rabbits and other small mammals (which in turn attract large birds such as raptors)
- Soil heaps / temporary soil bunds (attractive to corvids, gulls, starlings, pigeons)
- Areas of unmanaged vegetation (attractive to small mammals, ground nesting birds)

4.1.2 In order to reduce the risks associated with these habitats, Passive Control Measures will be implemented to prevent the formation of or reduce the impact of such habitats by making them less attractive or accessible to birds and other wildlife. These measures are outlined in section **4.4 Passive Control Measures**.

4.1.3 Even with passive control measures in place, birds and other wildlife may visit the site to feed, loaf, shelter, roost or nest as a direct or indirect result of sand and gravel extraction. Where this occurs, measures will be implemented to disperse them from the site. These measures are outlined in section **4.5 Active Control Measures**.

4.2 Target Species

4.2.1 Control measures should be aimed at the reduction of all those birds which by virtue of their size and flocking behaviour are deemed hazardous to air traffic.

4.2.2 The types of birds likely to be attracted to the site and that should be considered target species for control measures are:

- Feral Geese
- All Gull Species
- All waterfowl and water bird species (including geese, ducks and Swans)
- Grey Heron
- Cormorant
- Waders (such as Lapwing, Curlew and Golden Plovers)
- Starlings

4.2.3 During the life of the site, the list of target species will be refined, and species will be ranked by risk in future versions of this plan. Ranking species by risk requires a greater dataset than currently exists for the site to assess the

probability of a strike as well as the probability that the strike will cause damage. Therefore, the ranking outlined in 4.3.2 of this version of the BHMP has been developed based simply on the probability that the species involved would cause a damaging strike with an explanation found in the table.

4.3 Target Species Risk Assessment

4.3.1 All species observed will be assigned a risk rating using the following table. This will be accomplished and reviewed annually as part of the BHMP review.

Probability of Damage	Probability of a Strike: Very Low	Low	Moderate	High	Very High
Very Low					
Low					
Moderate					
High					
Very High					

Low Risk	No further action beyond current management is required
Moderate Risk	Further monitoring of frequency/numbers and efficacy of controls
High Risk	Immediate notification of all stakeholders. Review of control measures. Implementation of remedial actions

4.3.2 The following table is based on the species / groups of birds anticipated to be attracted to the proposed site restoration. In the absence of specific species or frequency data, risk has been assigned to groups/species based on the current abundance of the group/species in the local areas and the likelihood of damage occurring should an individual or flock of these birds be struck. This table will be expanded upon once data for individual species numbers becomes available.

Species/Risk	Explanation
Waterfowl (Geese, Swans and Ducks) High Risk	Waterfowl are large birds and are also often found in large flocks. They are attracted to water bodies such as those formed during mineral extraction. They often fly into and out of roosting areas shortly after dawn and before dusk. Numbers of waterfowl observed at the existing Cross Leys Site have been relatively low with individual swans and small to medium sized flocks of ducks (Mallard, Pochard, Tufted ducks etc.). However, the variety of species found, and the behaviour of these species makes them a potential strike risk as they can traverse Aircraft flight paths when travelling to and from roost / nest sites. Their size makes them very likely to cause damage if struck individually or as a
Gulls High Risk	Gulls are attracted to water bodies such as those formed during mineral extraction. They are also attracted to areas of disturbed earth by the invertebrates that are exposed by the process. Their behaviour makes them a potential strike risk as they can traverse Aircraft flight paths when travelling to and from feeding and roost / nest sites and may also visit the Airfield to feed or loaf. The flocking nature increases the potential for multiple bird strikes and such a strike would be very likely to cause damage to an Aircraft. Up to 69 individual Black Headed Gulls were observed at any one time during previous ornithological surveys and this plan seeks to implement controls to reduce the presence of these birds as such flocks pose a high risk to Aircraft.
Large Water birds (including Grey Heron and Cormorants) High Risk	Large water birds such as herons, Egrets and Cormorants are attracted to water bodies such as those left by the proposed restoration plans for this site. Their behaviour makes them a potential strike risk as they can traverse Aircraft flight paths when travelling to and from feeding and roost / nest sites. Their size makes them very likely to cause damage to an Aircraft. These birds were not seen in significant numbers during previous surveys but would be high risk for the reasons outlined above
Starlings High Risk	Starlings are small flocking birds that form large, dense flocks when disturbed. They are attracted to areas of exposed ground such as soil heaps and will roost in reed beds near open water. These birds, if struck individually are unlikely to cause damage to an aircraft but if struck as a flock are very likely to cause damage. These birds were not observed during previous ornithological surveys, but the risk rating remains high until further data can be collected to ensure that these birds are not attracted to the site

Waders including Lapwing, Curlew and Plovers Moderate Risk	Wading birds are likely to be attracted to the site by any areas of open water or boggy ground. They are also likely to be attracted to exposed ground where nesting opportunities exist. Many wading birds such as lapwings can be found in large flocks whereas others such as the Curlew are large enough to cause damage to Aircraft Individually. As these birds are less common than the species listed above, and because the numbers observed during previous surveys was low, the initial risk assessment is moderate. A large flock of these birds or a large individual bird would be likely to cause damage, but the probability of a strike is Moderate or Low.

4.4 Passive Control Measures

4.4.1 Amended restoration at the Site will involve the creation of open water bodies that could have the potential to attract bird species.

4.4.2 The restoration of waterbodies and areas of open ground has been designed to minimise attractiveness to the target species birds described in section **4.2** and section **4.3** of this BHMP

4.4.3 All waterbodies will be created or restored without Islands to reduce potential nesting sites for Feral Geese, Gulls and other waterfowl and water birds.

4.4.4 Wetland and or stock fencing will be developed / installed to completely surround all of the lakes and reduce land access to large waterfowl such as Geese and Swans.

4.4.5 The use of berry-bearing species in the planting mix will be limited and dispersed on site to reduce the total food supply for birds.

4.4.6 Northern area of the restoration will be returned to agricultural use which will reduce the attractiveness of this part of the site to wildlife to pre-development levels.

4.4.7 Dry areas in the southern part of the restoration will comprise of a mixture of species rich grassland and areas of low-level shrubs. Short grass areas, attractive to geese and waterfowl will be avoided.

4.4.8 Potential breeding sites identified through monitoring of the site will be removed or manipulated as necessary.

4.4.9 The Operator undertakes to consult with all signatories of this BHMP prior to finalisation of the restoration plans and commencement of final restoration works.

4.5 Active Control Measures

4.5.1 Even with the implementation of passive control measures, it is likely that there will still be a number of birds of a variety of species that attempt to visit the site. Active control measures shall be in place to harass, disperse and where necessary depredate birds and wildlife from the site.

4.5.2 The action of restoration works may deter birds and wildlife from some areas of the site but specific and focussed active control measures will be utilised to remove birds/wildlife from other areas of the site where they may congregate.

4.5.3 The Site Manager, or appointed Licensed and Qualified Consultants, will undertake all active control measures under this plan (as outlined in section **3 Implementation / Roles and Responsibilities**).

4.5.4 The Site Manager, or appointed Licensed and Qualified Consultants, shall be licensed qualified and equipped to provide active controls within the area of the site.

4.5.5 As a minimum, the Site manager or appointed Licensed and Qualified Consultants, shall monitor and patrol the site once per month in order to detect and disperse birds/wildlife from the area.

4.5.6 The Site Manager, or appointed Licensed and Qualified Consultants, shall, using appropriate licensed means, effectively disperse the following hazardous bird species when detected (subject to prior co-ordination with MOD / RAF Wittering):

- All Gull Species
- All waterfowl species (including All Geese, Ducks and Swans)
- All water bird species (including Grey Heron and Cormorant)
- Waders (including Lapwing, Curlew and Golden Plover)
- Starlings
- Or other bird species as may reasonably be identified by the MOD/ aerodrome operator as posing an unacceptable hazard to air traffic.

4.5.7 All control measures shall be co-ordinated with personnel at RAF Wittering to ensure that they do not cause conflict with on base bird control measures or create an increased hazard during periods of flying operations.

4.5.8 Specific Control measures are outlined below. In line with best practice standards, a multifaceted bird control program utilizing multiple control methods should be implemented to prevent habituation to any one method. The usage of different methods should be left to the Site Managers discretion and will vary according to species and numbers of birds seen, observed bird

activity/behaviour, weather conditions etc.

4.5.8..1 Bioacoustics and Audible Scares: Vehicle mounted, or hand-held Bioacoustics devices can be effective in dispersing a number of bird species including waders, starlings and gulls. Habituation can occur if misused and Site manager will ensure that all personnel are trained in the appropriate use of bioacoustics devices.

4.5.8..2 Pyrotechnics: A stock of bird scaring cartridges should be maintained. Bird scaring cartridges are commonly used for bird dispersal at UK aerodromes and are available in several effects (Bangs, Screams, and Flashes). 12guage shotgun or very pistol fired rounds are available. Pyrotechnics are effective in dispersing a wide range of bird species, including the entire target species listed above. Their use should be limited to prevent habituation and all operatives must be appropriately trained and licensed in order to ensure their safe use in the Quarry environment.

4.5.8..3 Culling / Depredation; The Natural England “License to Kill or Take Certain Birds to Preserve Air Safety” WML CL-12 permits limited depredation of certain species when required for public safety. All depredation actions must be swift and humane, and records of dates, Species and number of birds taken must be kept. Although a last resort, depredation capability must be maintained in the event that:

4.5.8..3.1 Birds and/or wildlife do not respond to other control methods.

4.5.8..3.2 Resident populations of birds and/or wildlife reach such levels that population reduction is required in the interests of flight safety.

4.5.8..3.3 Sick or injured birds and/or wildlife are present and cannot be dispersed or removed via other methods.

4.5.8..4 Visual Scares: Contractor will use vehicle patrols and other visual scare methodologies (human presence, swung lures, Lasers, etc.) to deter birds as appropriate.

4.5.8..5 Egg and Nest Treatment or removal. Where feral geese are present any eggs and/or nests will be treated (egg dipping/pricking) or removed under license WML CL-12 or specific individual license issued by Natural England

4.5.8..6 Prohibited Methods: The Wildlife Control Specialist shall not use any methods that are contrary to UK/EU legislation or site-specific regulations regarding wildlife control.

4.6 Performance Values and Thresholds

4.6.1 This BHMP is to be a results-based document and all control measures will be

closely monitored and evaluated for efficacy. The result of any underperformance in any area of this plan could be a reduction in the safety of flight for aircraft using RAF Wittering or a reduction in defence capability, both of which are unacceptable.

4.6.2 The tables below outline passive and active controls, monitoring actions and expected performance thresholds. Thresholds, monitoring procedures and inspection protocol are flexible and will form part of any review. The list of controls is not exhaustive and other legal control methods may be used as necessary. Use and efficacy of any additional methods shall be documented and assessed as part of any review.

Passive Control Measure	Monitoring Procedure	Performance Threshold
Phased excavation and restoration of the site in accordance with the proposed plans	Progress discussion in joint meetings	Proposed phasing adhered to 100% of the time
All planting to be conducted in accordance with the proposed plans	Progress discussion in joint meetings	100% of the time
Stock Fencing (once installed) in serviceable condition	Monthly inspection by Site Manager / Landowner	100% of the time
Long Grass program maintained (1 annual maintenance cut)	Monthly inspection by Site Manager / Landowner	100% of the time

Active Control Measure	Monitoring Procedure	Performance Threshold
Site Manager shall be sufficiently experienced and fully trained for the active controls used	Evidence of training and qualification given provided to The Operator, MOD and Aerodrome operator Details added to BHMP as an attachment and reviewed annually alongside the plan	100% of the time
Site Manager/ Wildlife Control Specialist registered with Natural England to use WML CL-12 license and others as required for depredation	Evidence of registration/licensing provided to The Operator, MOD and Aerodrome operator. Details added to BHMP as an attachment and reviewed annually alongside the plan	100% of the time

Communications protocol between the Site Manager and the Aerodrome established and effective.	Evidence of established protocol to be maintained by The Operator, MOD and Aerodrome operator. Details added to BHMP and reviewed annually alongside the plan	100% of the time
Site checked monthly for the presence of the target birds listed above. All counts of target birds recorded together with control actions and the results of the control (as applicable). Additional monitoring conducted in accordance with any request by the MOD (monitoring may be increased or decreased depending on bird activity, for example during breeding seasons).	Monthly Records maintained for ongoing inspection – available at the request of The Operator, the MOD or the Aerodrome operator	100% of the time
Prevention of Gull Roosts forming on the site	Regular (min. monthly) Inspection by Site Manager / Landowner. Dispersal/ Control activities summarised in monthly records	100% of the time
Feral Geese prevented from breeding on site	Regular Inspection by Site Manager. Periodic Inspection by AI, MOD and aerodrome operator. Goose nests and Goose nest removal activities summarised in monthly records	100% of the time
At the reasonable request of the MOD disperse any feral geese, gulls, waders, Grey Heron, water fowl, water birds, starlings or other bird populations considered by the MOD to pose an unacceptable hazard to air traffic.	Ongoing Inspection	100% of the time

4.6.3 Failure to meet the require performance thresholds will be the topic of discussion in any joint site progress meetings and any BHMP review/evaluation meetings. Where required, changes to the BHMP, the passive and active control measures will be made in order to bring down the hazard to an acceptable level.

5 COMMUNICATIONS

5.1 Communications information

5.1.1 Contact details for all interested parties will be maintained as part of this BHMP and will be recorded in the Contact Details table at the start of the document.

5.1.2 Contact details will be checked and updated on an ongoing basis to ensure that they are current and accurate (allowing for changes in personnel within organisations). All details must be checked as part of the annual review of this plan.

5.2 Site / Aerodrome Communications

5.2.1 The Site Manager will maintain contact with the aerodrome operator to co-ordinate **all** wildlife control actions (except for egg and nest removal/treatment) so that any actions taken do not create increased hazards to Aircraft operations.

5.2.2 The Site Manager will provide updates on bird activity at the site at the request of the Aerodrome or the MOD.

5.2.3 The Site Manager will inform the aerodrome operator (Air Traffic Control and/or Airfield Operations) and the RAF Wittering bird control unit immediately of any hazardous bird activity at the site or any failure of wildlife control actions

5.2.4 The aerodrome operator shall inform the Site Manager of any increased requirement for wildlife control or monitoring at the site as soon as it is clear that the requirement exists.

5.3 Monthly Records

5.3.1 A monthly wildlife hazard management record will be maintained by the Site Manager. This record will be available, on request to The Operator, MOD and Aerodrome operator personnel. As a minimum, the record will contain:

- Total numbers of birds observed by species
- Summary of observed bird behaviours
- Number of birds dispersed from the site by species
- Number of dispersal actions taken
- Total number of birds/wildlife killed by species
- Total number of birds breeding on site
- Total number of eggs/nests removed
- Summary of hazardous instances (bird strikes, near misses, activity that

increased the bird watch condition).

- Summary of the effectiveness of passive controls
- Recommendations for program improvements

5.3.2 The record shall be produced and available for distribution no later than the 10th day of the following month.

5.4 Meetings

5.4.1 Site Liaison Meetings will be held as necessary, to which The Operator, MOD, the Aerodrome operator the Minerals Planning Authority and the Site Manager shall be invited.

5.4.2 This meeting will cover progress of the site and all aspects of passive and active bird control management on the site. Any hazardous bird activity recorded during the preceding period shall be discussed and options for improvements explored.

5.4.3 The MOD. Aerodrome operator reserve the right to call an emergency wildlife hazard meeting should conditions at the site become a hazard to aviation or should one party be deemed to be failing in their responsibilities under this plan.

6 PROGRAM REVIEWS AND UPDATES

6.1 Program reviews

6.1.1 The wildlife control program at Cross Leys Site and the contents of this BHMP shall be under continual review as part of the actions, monitoring procedures and communications outlined in sections 4 and 5 of this plan.

6.1.2 All findings presented in records, informal communications, program monitoring and meetings will be used as the basis for an annual BHMP review.

6.1.3 As part of the review process, the MOD/aerodrome operator shall receive a copy of the BHMP and may submit suggestions to the Site Manager for inclusion into the revised plan. All reviews and amendments shall be recorded in the appropriate forms on page 6 of this document.

6.1.4 Amendments to the BHMP will then be sent to The Operator, MOD/aerodrome operator and the Minerals Planning Authority for final approval and authorisation.

6.1.5 Whilst it is planned for the BHMP review to be an annual requirement, it is recognised that the dynamic nature wildlife control and the restoration process may lead to changes that need to be implemented prior to an annual review due date. In this instance, any party may call an emergency wildlife hazard meeting (as outlined in section 5.3.4) during which they can propose an immediate review or amendment of the BHMP.

7 CONCLUSION

7.1.1 This Bird Hazard Management Plan covers Cross Leys Site to include all areas within the planned restoration area. The BHMP is required as the site is located within the 13km statutory bird strike safety zone surrounding RAF Wittering aerodrome and there is a need to protect safety of flight from any wildlife that the site may attract.

7.1.2 Restoration plans include elements of open water and grassland habitats, which have the potential to attract the undesirable bird species that can threaten safe operating procedure at RAF Wittering. To deter target species, mitigation measures have been designed into the site's Restoration Plans and it is agreed that The Operator will continue to consult the MoD and the Aerodrome operator throughout the restoration. The land will be subject to an aftercare period to ensure that the restoration scheme delivers its intended aims. If required during this period works will be undertaken to ensure that the mitigation measures designed into the site's Restoration Plans are delivering the management protocol required for the site. This BHMP establishes the monitoring processes to be implemented by the site operator as well as actions to be taken if hazards are still posed to operations at RAF Wittering.

7.1.3 The measures outlined in this plan are deemed to be feasible and provide an effective approach in reducing the risk of bird strikes to Aircraft at RAF Wittering.

Cross Leys Quarry Restoration

Jonathan Larwood

GeoPeterborough

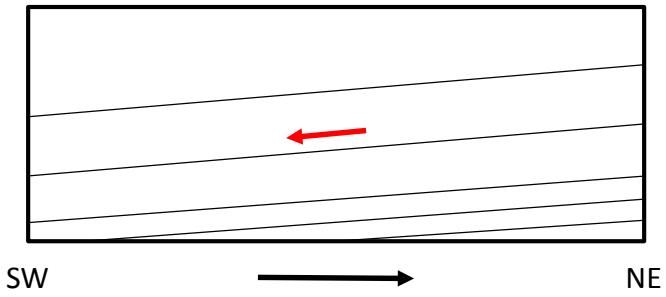
Southern corner – the inset shows a re-landscaping creating an accessible area so you can walk around the base of the face (A). Where this meets the pipeline ridge I've suggested the ground could be ramped in this corner so that you can walk up the vertical section (B). The red arrow (C) indicates the shallow dip of the beds towards the southern corner


C
C


C


A
B

Western face – this is a fairly typical profile from the western face which is an extension (northeastwards) of the face in the southern corner (separated by the pipeline). Retaining this face is important for two reasons. Firstly, as you move from the southwest corner northeastwards if the gently dip to the southwest remains then at the base of the face you are likely to encounter progressively older beds and potentially the lower most Collyweston beds which have been recorded from this site (see diagram below). Secondly, the Local Geological Site is noted for its range of sedimentary features including decalcification, dewatering structures, current crossbedding, doggers (large concretions) and more recent cryoturbation. These features are not visible in the southern corner, however, it is likely that along the length of the western face at least some of the sedimentary features will be present. This would be need to be survey in more detail to identify where they are.



beds at the base get older as you move NE

Standard Designated Sites within 2km of TF 0293 0060

Date: 20/12/2017
Site Reference: SLR_Peterborough_Cross_Leys

NNRs

Site Name	Grid Ref	Area (ha)
Bedford Purlieus	TL042996	207.797
Collyweston Great Wood & Easton Hornstocks	TF005009	149.417

SSSIs

Site Name	Grid Ref	Area (ha)	Reasons for designation
Bedford Purlieus	TL042995	214.29	This is an ancient woodland supporting a variety of woodland community types which are largely restricted nationally to lowland England. Noted for its diversity of herbaceous plants and associated fauna, and for the wide range of coppice woodland types.
Bonemills Hollow	TF032011	17.51	This area supports grassland communities of calcareous and marsh types. The calcareous grassland is of the Jurassic limestone type, which is restricted nationally.
Collyweston Great Wood & Easton Hornstocks	TF005009	151.51	The largest Northamptonshire remnant of the ancient Purlieu coppices of Rockingham Forest. A complex mosaic of vegetation occurs, closely correlated with soil characteristics. A nationally uncommon coppice type is present.

County Wildlife Sites

Site Name	Grid Ref	Area (ha)	Reasons for designation
Bedford Purlieus - Wittering Road Verge	TF044007 - TF043024	2.33	The site qualifies because it contains at least 0.05ha of NVC community CG3 Upright Brome grassland and because it supports frequent numbers of at least 6 strong calcareous grassland indicator species.
Thornhaugh Quarry	TL046999	1.45	Site containing water bodies where more than 50 individual great crested newts can be counted during the breeding season.

Local Geological Sites

Site Name	Grid Ref	Area (ha)
Cross Leys Quarry	TF029004	29.21

CROSS LEYS QUARRY

Appendix 7/3: Flood Risk Assessment & Drainage Strategy

SLR Ref: 403-00275-00233
Version No: 1
November 2018

BASIS OF REPORT

CONTENTS

DOCUMENT REFERENCES

TABLES

FIGURES

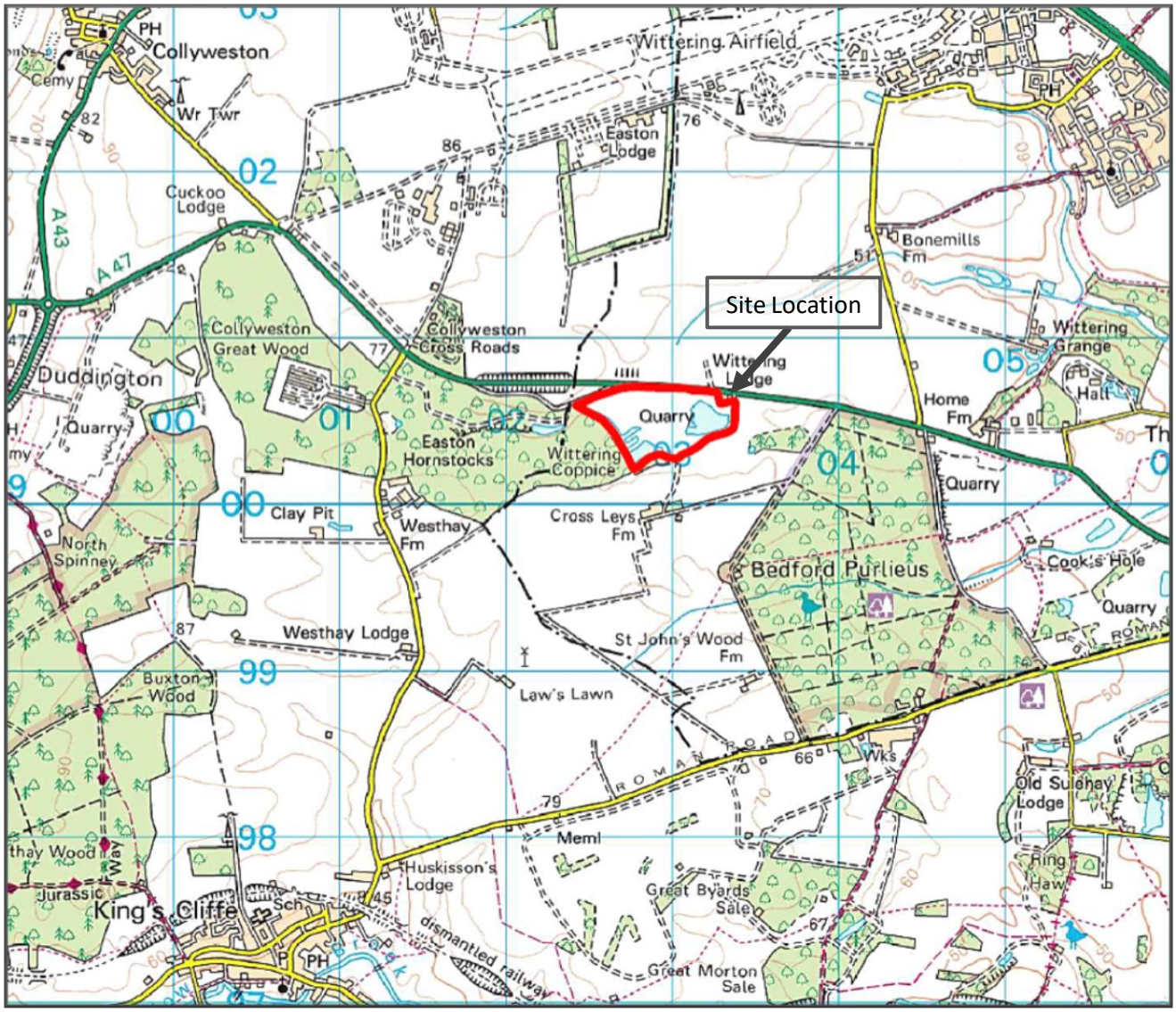
DRAWINGS

1.0 INTRODUCTION

1.1 Terms of Reference

SLR Consulting Limited (SLR) was appointed to prepare a Flood Risk Assessment (FRA) to support the planning application for a revised restoration plan at Cross Leys Quarry, Leicester Road, Peterborough, Cambridge, PE8 6NH (the Site). The Site is located at National Grid Reference (NGR) TF 02995 00591 as illustrated by Figure 1-1.

Figure 1-1
Site Location



1.2 Background and Aims

This report has been prepared to consider the risk of flooding to the proposed development and to recommend any appropriate mitigation measures, where required. In addition, the impact of the proposed development on the risk of flooding elsewhere has been considered.

This report is an appendix to a wider Planning Statement which has been prepared for this Site and development.

The provisions of National Planning Policy Framework[1] and the Planning Practice Guidance[2] have been considered in preparing the FRA.

The indicative 'flood map for planning' published on the GOV.UK website shows that the Site lies predominantly within Flood Zone 1 (Low Risk). However, as the Site covers an area greater than 1ha, with reference to footnote 50 of the NPPF, any planning application for the Site must be accompanied by a Site-specific flood risk assessment.

1.3 Best Practice

This report has been prepared in accordance with the advice provided by current best practice guidance relating to the management of flood risk in development published by the British Standards Institution (BSI) BS8533[3] and the EA's National Standing Advice on Development and Flood Risk[4].

[1] UK Government (2019) *National Planning Policy Framework*
[2] Ministry of Housing, Communities & Local Government (March 2014) *Guidance: Flood Risk and Coastal Change*
[3] BS8533: 2011, Assessing and managing flood risk in development: code of practice (1st Edition, October 2011)
[4] Environment Agency (February 2017), *Flood Risk Assessment: Standing Advice*

2.0 SITE DETAILS

2.1 Site Description

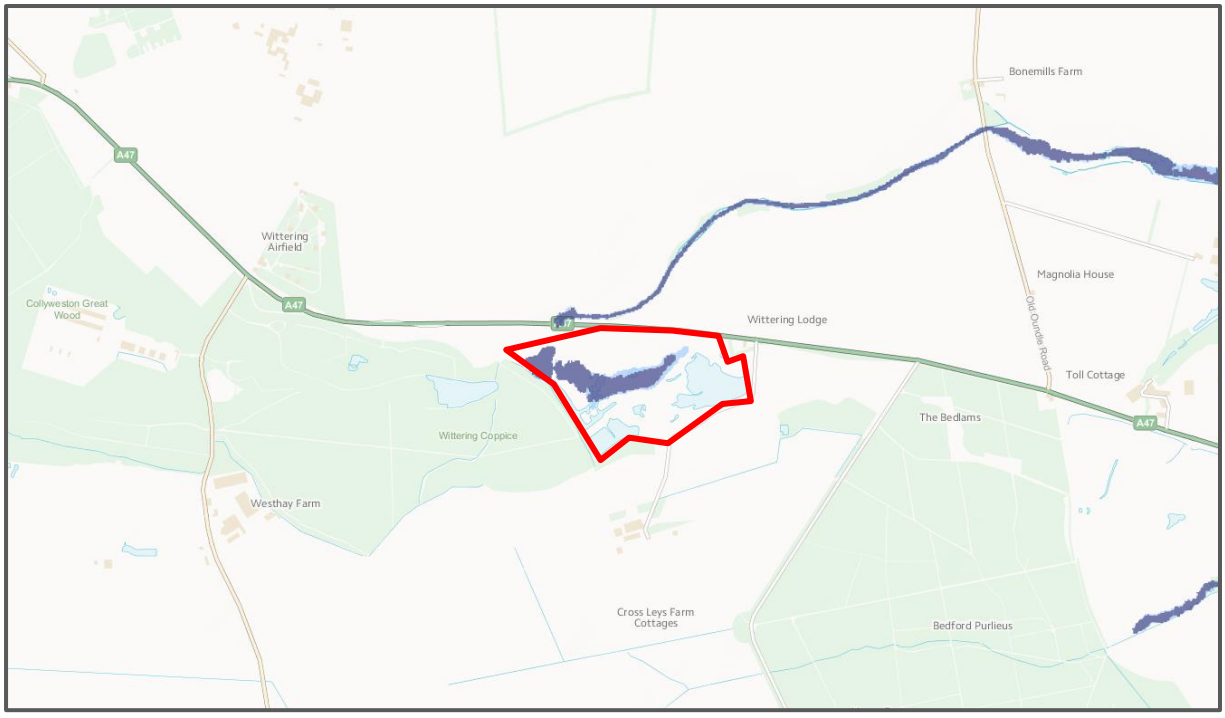
2.1.1 Site Location

The Site is currently a non-operational quarry located approximately c.4.0km to the north-east of the village of King's Cliffe and c.3.3km to the southwest of the village, Wittering. The Site is located within the administrative area of Peterborough City Council.

Land use within the surrounding area comprises agricultural land and woodland. The site is bound along the south-western boundary by Wittering Coppice, to the south and east by open farmland and immediately to the north by the A47. The air base RAF Wittering is located c.1.7km to the north. The Site is accessed via the A47.

An extract from the Environment Agency flood map is provided within **Error! Reference source not found.**, which confirms that the Site is located predominately within Flood Zone 1 (Low Probability). An isolated area of Flood Zone 3 is located within the historic operational area of the site and to the north relating to an unnamed river channel.

Figure 2-1
Extract from the EA's Flood Map for Planning



KEY

EA Main River

Flood Zone 1

Flood Zone 2

Flood Zone 3

Site Boundary

2.2 Topography

The quarry is located within flat lying land which forms part of a gently undulating landscape to the west of the Cambridgeshire Fenlands. Cross Leys Quarry lies at about 65m AOD within the limestone upland plateau of Kesteven. The quarry occupies the top of an indistinct minor plateau within the general landform. The topography within the boundary of the site takes on an irregular undulating form due to the working of the limestone. Within the northern part of the site, levels are typically within the range of 63m to 75m AOD, whilst in the southern part, the levels range from 60m to 65m AOD.

2.3 Climate

Rainfall information, obtained from the Wittering observing Station; c.3.5km north-east from the application site, indicates that the long-term average annual rainfall (1981 – 2010) for the area is 608.9mm/yr.

2.4 Hydrological Features

Cross Leys Quarry lies within the catchment of the River Nene, an EA Main River located approximately 4.5km to the south-east of the site at its closest. The Nene is fed by a series of minor tributaries which drain from the plateau area in a predominantly southerly or south-easterly direction to the river.

The closest of these watercourses rises approximately 280m to the north of the existing quarry from where it flows in an easterly direction away from the site.

A minor drain flows along the western boundary of the site, along the edge of Wittering Coppice. It is unclear if this drain connects to any other drainage ditches, however given the local topography it is likely that these drains will ultimately connect to a small stream, approximately 1km to the south which flows in a easterly direction through Bedford Purlieus National Nature Reserve and ultimately into the River Nene. The drain is located within the woodland to the west of the site and above the current excavated level of the quarry, there is therefore currently no direct run-off to this drain from the active site.

At present runoff from the quarry is routed to the quarry floor which is in continuity with surrounding groundwater, this water ultimately discharges to ground.

2.5 Geological and Hydrogeological Features

2.5.1 Geology

The soils at site have been removed by the previous quarry operations.

Review of the British Geological Survey (BGS) Onshore Geoindex[5] confirms that the Site is not underlain by superficial deposits.

The BGS mapping confirms that the south-eastern area of the site is immediately underlain by the Upper Lincolnshire Limestone Member. This strata overlies the underlying Lower Lincolnshire Limestone Member, observed in the north-western area of the quarry.

The quarry has worked the Lower Lincolnshire Limestone, which forms part of the Inferior Oolite Series of the Jurassic era.

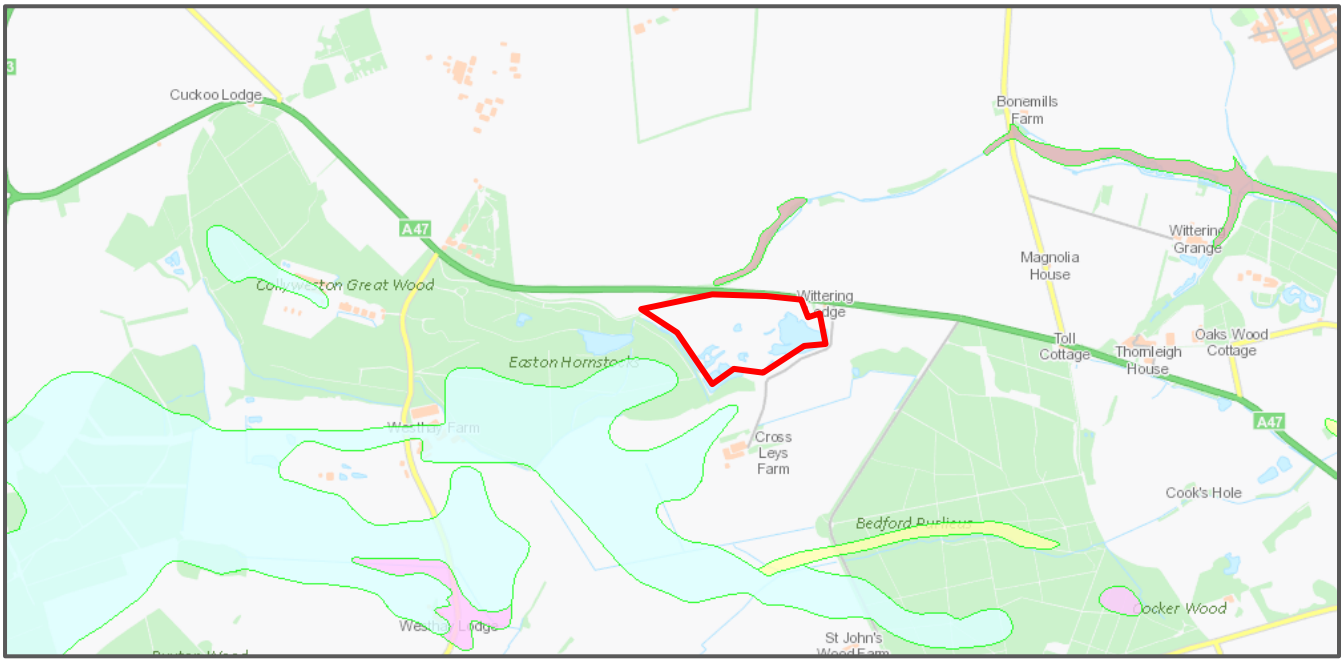
The basal beds rest quasi-conformably on the Grantham Formation which comprise of mudstones, sandy mudstone and argillaceous siltstone-sandstones, these are in turn underlain by the Northampton Sand Formation (Sandstones and Ironstones) and the Whitby Formation (Lias Clay).

[5] BGS Geoindex (Accessed 22/08/17) http://mapapps2.bgs.ac.uk/geoindex/home.html

The Rutland Formation is observed to outcrop along the southern boundary of the site. This unit comprises rhythmic grey marine and non-marine mudstones and siltstones.

Plans showing the superficial geology and bedrock geology are provided as Figure 2-2 and Figure 2-3 respectively.

Figure 2-2
BGS mapping showing Superficial Geology



KEY

Glacial Till Deposits - *Diamicton*

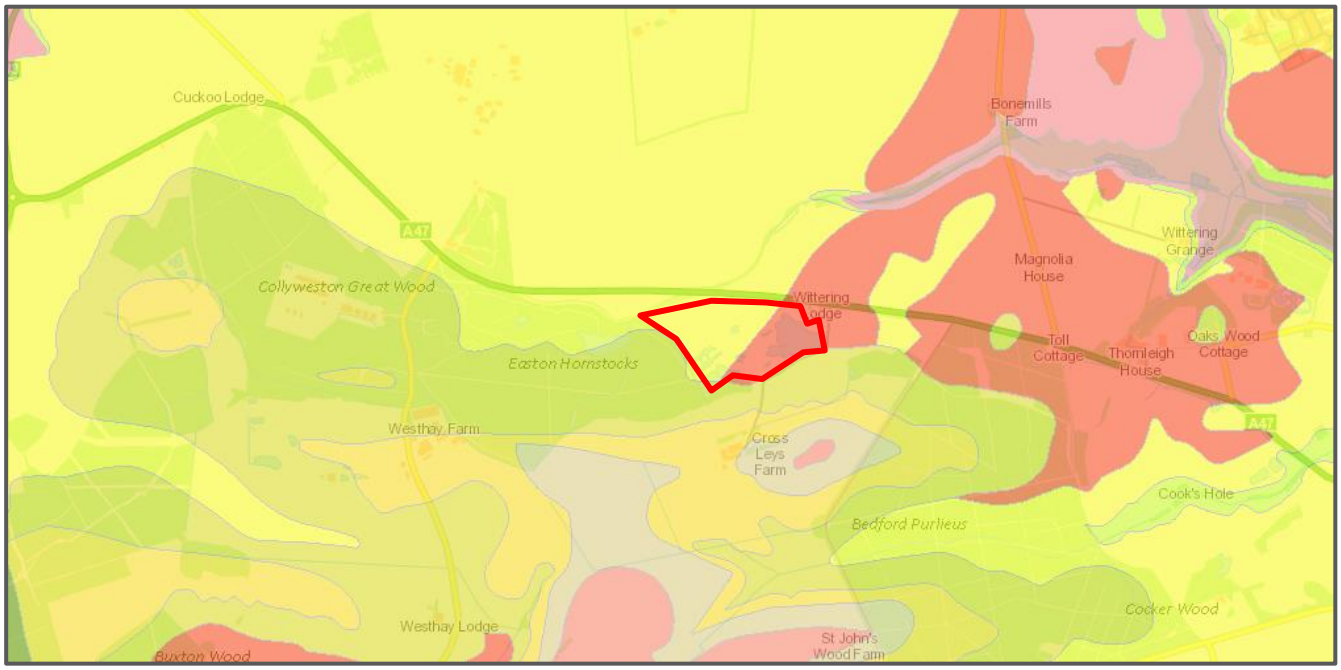
Alluvium – *Clay, Silt, Sand and Gravel*

Head – *Clay, Silt, Sand and Gravel*

Glaciofluvial Deposits – *Sand and Gravel*

Site Boundary

Figure 2-3
BGS mapping showing Bedrock Geology



KEY

Rutland Formation	Upper Lincolnshire Limestone Member
Lower Lincolnshire Limestone Member	Bilsworth Limestone Formation
Site Boundary	

2.5.2 Hydrogeology

EA mapping identifies the Lincolnshire Limestone Series as a Principal Aquifer, defined as;

> *'…layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.'*

The Lincolnshire Limestone formation is characterised by very low intergranular flow with water movement primarily through fractures which have been enlarged by solution.

The limestone is characterised by a low intergranular porosity (13% - 21%) and corresponding low bulk permeability of around $3x10^{-4}$m/d, because of this groundwater flow is primarily through fractures which have been developed by karstic weathering[6].

[6] Environment Agency (1997) *The Physical Properties of Major Aquifers in England and Wales*, Ref: WD/97/34

It is reported that the transmissivity of the limestone often exceeds 1000m^2/day and can be as high as 5000 to 10,000m^2/day. Highest transmissivities are typically found within the confined limestone (where it dips beneath the Rutland Formation) and are likely to be lower in unconfined aquifers such as at the site.

A 2001 site investigation, undertaken by Aggregate Industries prior to commencement of quarrying [7], confirmed that prior to quarrying groundwater levels ranged from c.56mAOD in the East to 64.5mAOD in the west with flow towards the east-south-east at a hydraulic gradient of c.0.01.

Previous pumping tests and rising head tests within the in-situ limestone beneath the site is likely to have a permeability of between 1.4m/day (0.06m/hr) and 10.1m/day (0.42m/day).

Groundwater vulnerability at the application site is identified by the EA as 'Major Aquifer High'. The site does not lie within a Source Protection Zone (SPZ).

[7] SLR Consulting (March 2001) Cross Leys Quarry: *Review of Mineral Permissions under the Review of Mineral Permissions under the Environment Act 1995 Application for Determination of Conditions – Environmental Statement*, Ref: 4C/275/001

3.0 DEVELOPMENT PROPOSAL

3.1 Description

The proposed development allows for the restoration of the site. The south-eastern area of the site will retain ponds and scrub which have previously developed, establishing an ecological habitat. The remainder of the site will be restored by infilling the quarry void with existing stockpiled site won overburden and interburden material and imported inert restoration material to create a gently domed profile to facilitate the creation of agricultural farmland.

3.2 Anticipated Lifetime of Development

The infilling period will take up to ten years, however the restoration operations would not be ten years in duration but would depend upon market conditions and input rates. At full capacity the void would be full in around two years, but at a low input rate it would take longer. A further twelve months after the final closure of the Site would be needed to enable the last cell to be capped and restored.

3.3 Vulnerability

With reference to Table 2: Flood risk vulnerability classification at PPG Paragraph 066, the proposed development is 'Land and buildings used for agriculture and forestry' and is classified as a Less Vulnerable development.

3.4 Appropriateness Classification

As shown by **Error! Reference source not found.**, the Site lies within Flood Zone 1 (Low Probability) and Flood Zone 3a (High Probability). Therefore, with reference to *Table 3: Flood risk vulnerability and flood zone 'compatibility'* at PPG Paragraph 067 (reproduced as Table 3-1), the proposed development would be considered an '*appropriate*' form of development.

Table 3-1
Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability Classification (PPG Table 2)		Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone (PPG Table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	Exception Test Required	✓	✓	✓
	Zone 3a	Exception Test Required	✗	Exception Test Required	✓	✓
	Zone 3b (functional floodplain)	Exception Test Required	✗	✗	✗	✓

Key: ✓ Development is appropriate
X Development should not be permitted

3.5 Sequential and Exception Test

NPPF Paragraph 101 advises that the aim the Sequential Test is to 'steer new development to areas with the lowest probability of flooding'. Furthermore it states, 'Development should not be allocated or permitted if there are reasonably available Sites appropriate for the proposed development in areas with a lower risk of flooding.'

Given that the proposed Site usage is considered appropriate for the flood zone classification, it is considered that the sequential test has been passed. It is also considered that there is no requirement to complete the Exception Test.

3.6 Planning Context

Within the administrative area of Peterborough City Council, guidance for flooding and flood risk is outlined within the Peterborough Local Plan. Whilst this document is currently under consultation with Secretary of State, it provides preliminary guidance as to council policy.

'Policy LP32: Flood and Water Management' states:

> *Development proposals should adopt a sequential approach to flood risk management, taking into account the requirements of the NPPF and the further guidance and advice set out in the council's Flood and Water Management SPD.*
>
> *Development located in areas known to be at risk from any form of flooding will only be permitted following:*
>
> *a) the successful completion of a sequential test (if necessary) and an exception test if required;*
>
> *b) the submission of a site-specific flood risk assessment, setting out appropriate flood risk management and demonstrating no increased risk of flooding to the development site or to existing properties, and where possible should seek to reduce flood risk;*
>
> *c) the consideration of any necessary ongoing maintenance, management of mitigation measures and adoption and that any relevant agreements are in place; and*
>
> *d) the incorporation of Sustainable Drainage Systems (SuDS) into the proposals.*
>
> *A site-specific Flood Risk Assessment appropriate to the scale and nature of the development and risks involved, taking into account future climate change, will be required for development proposals:*
>
> - *in Flood Zones 2 and 3; and*
> - *in Flood Zone 1 where there are critical drainage problems; and*
> - *on sites of 1 hectare or greater in Flood Zone 1; and*
> - *sites where development or change of use to a more vulnerable use may be subject to other sources of flooding; and*
> - *sites of less than 1 hectare in Flood Zone 1 where they could be affected by sources of flooding other than from rivers and the sea.*
>
> *Development proposals should also protect the water environment and must demonstrate:*
>
> *e) that water is available to support the development proposed;*
>
> *f) that development contributes positively to the water environment and its ecology where possible and does not adversely affect surface and ground water;*

g) that adequate foul water treatment and disposal already exists or can be provided in time to serve the development;

h) in areas served by combined sewers, surface and foul flows should be separated and no new combined sewers created. Connections to the existing combined sewer should only be made in exceptional circumstances where it can be demonstrated that there are no feasible alternatives (this applies to new developments and redevelopments);

i) that suitable access is safeguarded for the maintenance of water supply and drainage infrastructure.

4.0 POTENTIAL SOURCES OF FLOODING

4.1 Screening Study

Potential sources of flooding include:

- Flooding from rivers or fluvial flooding;
- Flooding from the sea or tidal flooding;
- Flooding from land;
- Flooding from groundwater;
- Flooding from sewers; and
- Flooding from reservoirs, canals, and other artificial sources.

An initial screening exercise of flood risk has been undertaken to identify the flood risk from each of these potential sources and determine which, if any, require further assessment.

4.1.1 Flooding from Rivers or Fluvial Flooding

With reference to the Flood Map for Planning, reproduced as **Error! Reference source not found.**, the Site lies predominantly within Flood Zone 1 (Low Probability), it is noted that an area of Flood Zone 3 is located within the quarry void itself, however given that the quarry is at a higher elevation than the nearest watercourse to the north-east and there is effectively no up-gradient surface water catchment it is considered that the flood extent marked is an error within the EA mapping and the entire site should be classified as Flood Zone 1.

Flooding from this source is therefore not considered significant and has not been considered further.

4.1.2 Flooding from the Coastal or Tidal Flooding

The Site is located approximately 52km inland and to the south-west of the Wash and is located at an elevation of between 60 and 65m AOD.

The site is not at risk from coastal or tidal flooding and has not been considered further.

4.1.3 Flooding from Land

Surface water modelling has been completed by the Environment Agency to establish areas at risk of surface water flooding based upon latest hydrological techniques and surface terrain data.

An extract of data from the Long-Term Flood Risk Information[8] showing areas potentially at risk of flooding from surface water has been provided as **Error! Reference source not found.** . Surface water flood risk categories are defined as:

- Very Low: less than 1 in 1,000 (0.1% AEP[9]) chance of flooding in any given year;
- Low: less than 1 in 100 (1% AEP) but greater than or equal to 1 in 1,000 (0.1% AEP) chance of flooding in any given year;

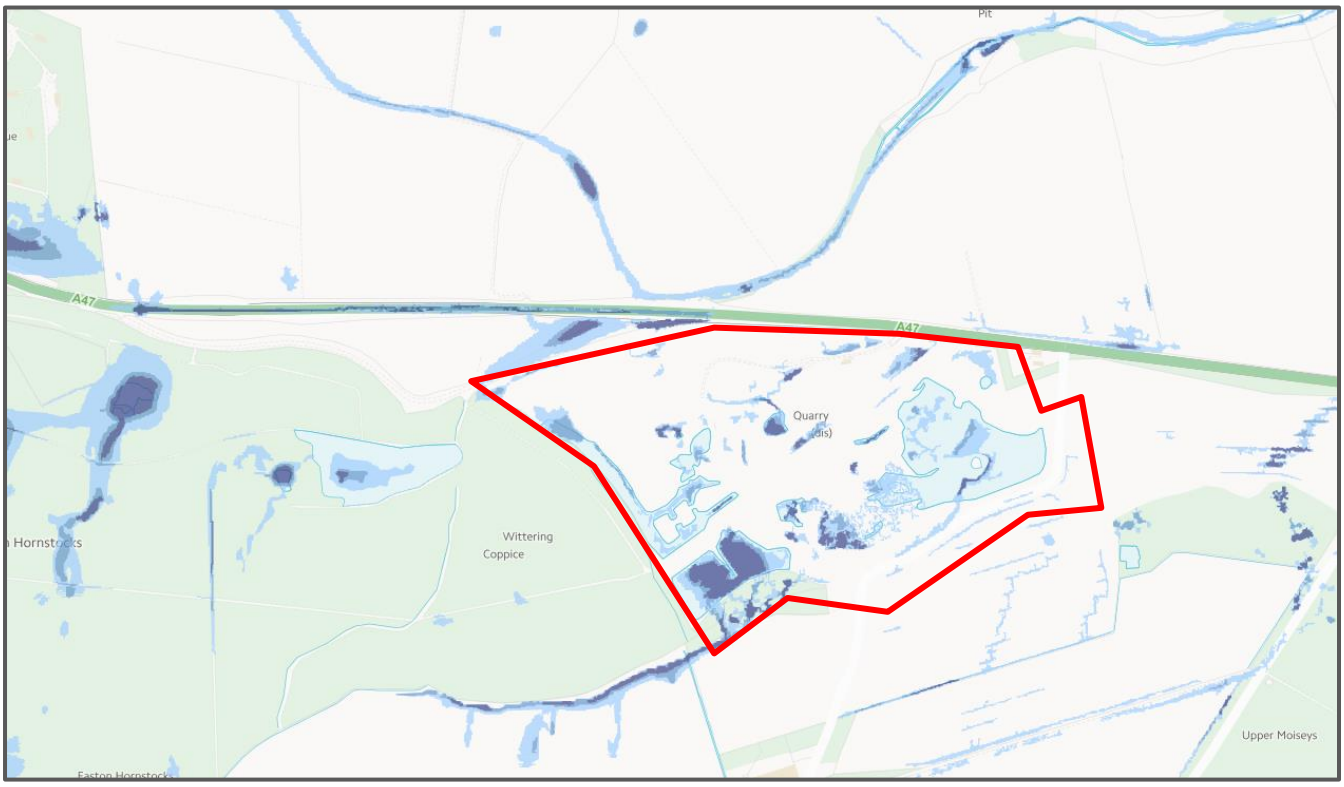
---

8 https://flood-warning-information.service.gov.uk/long-term-flood-risk/

9 AEP – Annual Exceedance Probability

- Medium: between 1 in 100 (1% AEP) and 1 in 30 (3.3% AEP) chance of flooding in any given year; and
- High: greater than 1 in 30 (3.3% AEP) chance of flooding in any given year.

Figure 4-1



EA Mapping: Flood Risk from Surface Water

KEY

High Risk

Medium Risk

Low Risk

Very Low Risk

Site Boundary

The mapping indicates that there are localised areas of surface water flooding risk within the Site boundary. This is associated with localised low-lying areas within the current site and pre-existing small ponds located within the Site.

It is therefore considered that flooding from this source is not significant and has not been considered further.

4.1.4 Flooding from Groundwater

Site investigation data has confirmed the groundwater table is at the base of the lower limestone series which was quarried at site. The monitoring data also record a small seasonal variation in groundwater level, which reflects the limited groundwater catchment to the site.

The groundwater table is slightly above the current base of the quarry, resulting in the development of localised ponds across the site. The restoration of the north-western part of the site will however raise ground levels to well above groundwater levels and beyond any groundwater flood risk.

The south-eastern part of the site will remain a low lying area with numerous ponds in continuity with groundwater, this is considered acceptable for this area of the site.

The risk from groundwater flooding is therefore considered to be low and has not been considered further.

4.1.5 Flooding from Sewers

Given the rural site setting it is considered unlikely that the Site will benefit from either surface water or foul water sewers.

Flooding from this source is not significant and has not been considered further.

4.1.6 Flooding from Reservoirs and other Artificial Sources

The 'long term flood risk' mapping published by the Environment Agency confirms that the Site is not at risk of flooding from reservoirs. There are no artificial sources within the vicinity of the Site.

Flooding from this source is not significant and has not been considered further.

4.2 Summary of Sources of Flooding

A summary of the potential sources of flooding and the flood risk arising from them is presented in Table 4-1, confirming that there is a little or no risk of flooding at the Site.

Table 4-1
Potential Sources of Flooding

Potential Sources of flooding	Flood Risk at the Site
Rivers or Fluvial Flooding	No
Sea or Tidal Flooding	No
Surface Water and Overland Flow	No
Groundwater	No
Sewers	No
Reservoirs, Canals and other Artificial Sources	No

Given the results of the screening exercise it is concluded that there are no significant flood risks to the Site. No further assessment of flood risk is required and no flood risk management measures are required.

5.0 OFF-SITE IMPACTS

The proposed development concerns the infilling the north-east of the existing the mineral void at Cross Leys Quarry until ground levels are restored to pre-existing conditions. The material that will be used to restore the site will comprise of site derived and imported inert material, overlain by restoration soils.

It is not proposed to import any materials to create the ecological habitat proposed in the south-western part of the site.

An outline drainage strategy has been prepared for the north-western area of the site to ensure that surface water run-off rates will be limited to the pre-development greenfield rates and does not impact upon down-stream flood risk. The proposed drainage strategy is outlined in Section 6.

A drainage strategy has not been prepared for the south-eastern part of the site as incident rainfall-runoff will continue to collect in discrete pools and form groundwater recharge to the underlying limestone as currently occurs at site.

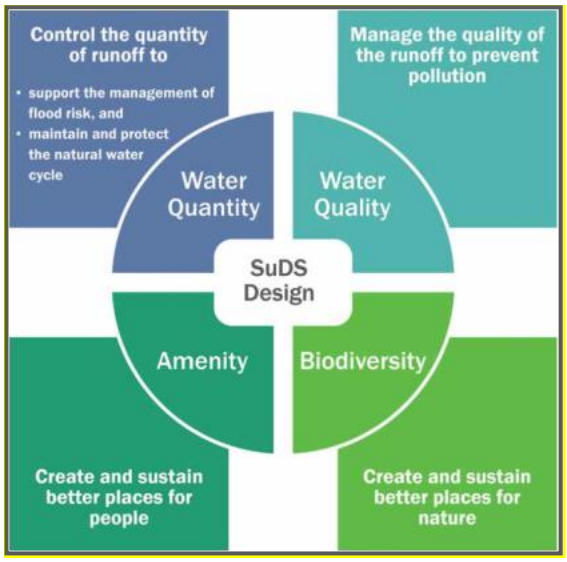
6.0 Outline Drainage Strategy

6.1 Design Principles

6.1.1 Sustainable (urban) Drainage Systems (SuDS)

Current best practice guidance document, The SuDS Manual (CIRIA Report C753)[10], promotes sustainable water management using SuDS. There are four main categories of SuDS which are referred to as the 'four pillars of SuDS' as shown in Figure 6-1.

Figure 6-1
Four Pillars of SuDS (after CIRIA Report C753)

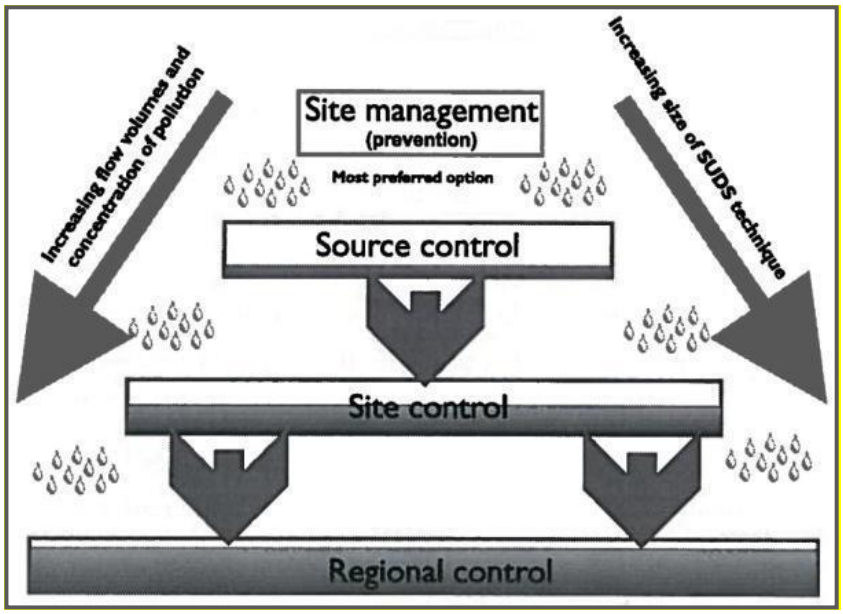


The SuDS Manual identifies a hierarchy of SuDS for managing runoff, which is commonly referred to as a 'management train' and is depicted in Figure 6-2.

- **Prevention** – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g. minimise areas of hard standing).
- **Source Control** – control of runoff at or very near its source (such as the use of rainwater harvesting).
- **Site Control** – management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).
- **Regional Control** – management of runoff from several sites, typically in a retention pond or wetland.

[10] CIRIA (2015). Report C753, The SuDS Manual

Figure 6-2
SuDS Management Train



It is generally accepted that the implementation of SuDS, as opposed to conventional drainage systems, provides several benefits by:

- reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream;
- reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed sites;
- improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources;
- reducing potable water demand through rainwater harvesting; and
- Improving amenity through the provision of public open spaces and wildlife habitat; and replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

Suitability of Surface Water Disposal Methods

With reference to the SuDS Manual, the hierarchy of preferred disposal options for surface water runoff from development sites in decreasing order of sustainability is as follows:

1. Infiltration to Ground;
2. Discharge to Surface Waters; or
3. Discharge to Sewer.

Table 6-1 summarises the suitability of disposal methods in the context of the Site and the proposed development.

Table 6-1
Suitability of Surface Water Disposal Methods

Surface Water Disposal Method (in Order of Preference)	Suitability Description	Method Suitable? (Yes / No)
Infiltration to Ground	Published mapping and proven site conditions have shown that the site is developed within high permeability limestone.	Yes
Surface Water Discharge	There is an un-named watercourse to the north-east of the site, however these is no current existing connection between the site and this watercourse. In addition, there are a number of minor drainage ditches to the south of the site, however these are separated from the proposed restoration are by the pipeline which cuts across the site	Yes (only across 3rd party land)
Sewer Discharge	There is no sewer system which would be viable for discharge within the vicinity of the site. Furthermore, in line with the SuDS hierarchy, a connection to the sewer system would not be deemed the most sustainable means of surface water disposal and has therefore been discounted.	No

6.1.2 Climate Change

The SWMP developed for the site considers an increase in rainfall intensity of 40% over the lifetime of the development in line with National Planning Policy Framework (NPPF).

6.2 Drainage Strategy

The proposed restoration comprises of two phases either side of the pipeline which crosses the site. The area to the south-east will be retained as a series of ponds with ecological and habitat enhancement, and the area to the north-west will be restored to agricultural fields using existing site overburden and imported inert materials. Given the permeability of the underlying geology it is proposed that both areas will use infiltration techniques to discharge surface water runoff and there will be no requirement for a discharge to either surface water or sewer.

6.2.1 South-eastern Area

The area to the south-east will remain as a low-lying wetland habitat with ground levels well below the surrounding ground. All incident rainfall runoff in this area will therefore be routed to the base of the former quarry area, and existing ponds, where runoff will discharge to ground as currently occurs.

It is not proposed to significantly alter exiting ground profiles or ground elevations as part of the ecological improvement works and it is not proposed, therefore, to provide a formal drainage system in this part of the site.

6.2.2 North-western area

The north-western area of the site will be restored so that all surface water run-off will flow towards one of three infiltration ponds. They will be in the north-west (sub catchment 1), north-east (sub catchment 2) and southern corner (sub catchment 3) respectively. They will be unlined ponds with the base in continuity with the limestone bedrock to maximise potential infiltration to the surrounding aquifer.

A series of perimeter drains will route runoff to the infiltration ponds.

The proposed Surface Water Management Plan (SWMP) is shown on Drawing SWMP1.

Effective Impermeable Areas

The effective impermeable areas for the three sub-catchments outlined on Drawing SWMP1 have been estimated using the National Coal Board (NCB) nomogram approach for restored tips. This is considered to be a highly conservative approach as it assumes a restoration profile with limited infiltration potential and rapid runoff. The calculated effective impermeable areas for each catchment are summarised in Table 6-2.

Table 6-2
Effective Impermeable Areas (m^2)

Catchment	Total Area (ha)	NCB Run-off Coefficient				Effective Impermeable Area (ha)
		Average slope (m/m)[1]	Restored land-use[2]	Soil [3]	Run-off Coefficient	
1	3.16ha	0.045	Cultivated Land	Loam	0.53	1.67ha
2	4.33ha	0.050			0.54	2.34ha
3	5.98ha	0.045			0.53	3.17ha

Note: [1] based on proposed restoration contours
[2] based on proposed restoration
[3] based on pre-development soil description

6.2.3 SuDS Design and Analysis

The proposed infiltration ponds have been designed to be unlined with the base and lower parts of the pond in continuity with the limestone bedrock. The higher parts of the ponds will be in continuity with the backfill material which will in all likelihood also provide some infiltration capacity, however given the uncertainty as to the exact nature of this material infiltration through the sides of the ponds has been excluded from the analysis.

A series of small open drainage ditches will be installed around the perimeter of the site which will route runoff to the ponds and ensure there is no overland flow onto adjacent land or the road along the northern boundary of the site.

The orientation and indicative design details of the infiltration ponds is shown on Drawing SWMP1.

The ponds have been sized through an analysis using the industry standard Micro Drainage Source Control for a range of events up to and including the 1% Annual Exceedance Probability plus 40% Climate Change and assuming the following values:

- Catchment Areas: As per Table 6-2;
- Infiltration through base: 0.06m/hr (as per lower end of site measured limestone permeability)

The model result files are included within Appendix 01 and calculated infiltration pond sizes summarised in Table 6-3.

Table 6-3
Infiltration Pond Design

Variable	Catchment 1	Catchment 2	Catchment 3
Basal Elevation (mAOD	65.0	65.0	65.0
Top Elevation (mAOD)	67.0	67.0	67.0
Basal Area (m^2)	457m^2	493m^2	954m^2
Top Area (m^2)	1025m^2	1,670m^2	2056m^2
Total Storage Volume (m^3)	1,650m^3	2,054m^3	2,930m^3
Infiltration Rate (m/hr)	0.060	0.060	0.060

The model results for a range of rainfall return periods are outlined in Table 6-4,

Table 6-5 and Table 6-6.

Table 6-4
Summary of Infiltration Pond Modelling Results – Catchement1

Return Period (1 in X years)	Annual Exceedance Probability (%)	Maximum Infiltration (l/s)	Maximum Water Depth (mm)	Maximum Storage Volume (m^3)	Half Drain Time (mins)
2	50%	9.4	429	217.8	205
10	10%	10.6	698	377.1	320
30	3.3%	11.7	959	550.7	434
100	1%	13.5	1304	809.7	565
100 + 40% CC	1% + 40% CC	15.8	1760	1207.6	727

Table 6-5
Summary of Infiltration Pond Modelling Results – Catchement 2

Return Period (1 in X years)	Annual Exceedance Probability (%)	Maximum Infiltration (l/s)	Maximum Water Depth (mm)	Maximum Storage Volume (m^3)	Half Drain Time (mins)
2	50%	12.7	525	321.0	231
10	10%	15.0	798	542.4	341
30	3.3%	17.2	1048	781.2	438
100	1%	20.7	1361	1133.1	526
100 + 40% CC	1% + 40% CC	25.2	1759	1673.7	660

Table 6-6
Summary of Infiltration Pond Modelling Results – Catchement 3

Return Period (1 in X years)	Annual Exceedance Probability (%)	Maximum Infiltration (l/s)	Maximum Water Depth (mm)	Maximum Storage Volume (m^3)	Half Drain Time (mins)
2	50%	13.9	456	481.6	320
10	10%	16.5	714	798.4	454
30	3.3%	19.1	963	1137.1	575
100	1%	23.0	1291	1633.4	689
100 + 40% CC	1% + 40% CC	28.4	1730	2399.0	843

The analysis confirms that the proposed surface water drainage design will allow for all site runoff to be retained on site and to drain to ground with no requirement for an off-site discharge.

In an exceedance event (i.e. greater than the 1% + CC) excess water would be retained within the site, with some localised flooding of the fields within the site.

7.0 CONCLUSION

7.1 Background

SLR Consulting Limited has been appointed to assess the flood risk to the proposed restoration of Cross Leys Quarry.

With reference to the Environment Agency's Flood Maps for Planning, the Site is located predominantly within Flood Zone 1 with an isolated area of Flood Zone 3 in the south-western corner.

7.2 Vulnerability Classification

With reference to *Table 2: Flood risk vulnerability classification* at PPG Paragraph 066, the proposed development is classified as *Less Vulnerable*.

Therefore, with reference to NPPG TG Table 3: Flood risk vulnerability and flood zone 'compatibility', the proposed development would be considered an 'appropriate' form of development.

7.3 Flood Risk

An assessment of the potential flood risk from fluvial, tidal, surface water, groundwater, sewers and other artificial sources has been undertaken and confirms that there is no significant flood risk posed to either the current Site or proposed development.

There is no requirement for any flood risk management.

7.4 Off Site Impacts

With adoption of the proposed drainage strategy the proposed development will have no impact on the flood risk.

N

LEGEND

- APPLICATION BOUNDARY
- CATCHMENT DIVIDE
- SURFACE WATER DRAINAGE DITCH
- INFILTRATION POND

CATCHMENT 1

CATCHMENT 2

CATCHMENT 3

NATURAL REGENERATION
NO FORMAL DRAINAGE
PROPOSED

FW

Def

MP

Drain

Track

502500E

502600E

502700E

502800E

502900E

503000E

300500N

300400N

AGGREGATE INDUSTRIES

SLR
ASPECT HOUSE
ASPECT BUSINESS PARK
BENNERLEY ROAD
NOTTINGHAM. NG6 8WR
T: 01159 647280
F: 01159 751576
www.slrconsulting.com

CROSS LEYS QUARRY

PLANNING STATEMENT

SURFACE WATER DRAINAGE PROPOSALS

SWMP 1

Scale: 1:2000 @ A3

Date: NOV 2018

181101-421.00275.00220.18.001.0_SWMP_1.dwg

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 727 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	66.021	1.021	12.0	594.5	O K
30 min Summer	66.154	1.154	12.7	692.9	O K
60 min Summer	66.292	1.292	13.4	800.1	O K
120 min Summer	66.426	1.426	14.1	909.3	O K
180 min Summer	66.495	1.495	14.4	968.0	O K
240 min Summer	66.536	1.536	14.7	1003.6	O K
360 min Summer	66.576	1.576	14.9	1038.8	O K
480 min Summer	66.586	1.586	14.9	1047.6	O K
600 min Summer	66.580	1.580	14.9	1042.1	O K
720 min Summer	66.570	1.570	14.8	1033.5	O K
960 min Summer	66.522	1.522	14.6	991.2	O K
1440 min Summer	66.429	1.429	14.1	912.6	O K
2160 min Summer	66.314	1.314	13.5	817.9	O K
2880 min Summer	66.215	1.215	13.0	739.8	O K
4320 min Summer	66.011	1.011	11.9	587.4	O K
5760 min Summer	65.835	0.835	11.2	465.9	O K
7200 min Summer	65.683	0.683	10.5	368.2	O K
8640 min Summer	65.553	0.553	10.0	288.8	O K
10080 min Summer	65.440	0.440	9.5	223.8	O K
15 min Winter	66.123	1.123	12.5	669.4	O K
30 min Winter	66.267	1.267	13.3	780.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	203.373	0.0	72
30 min Summer	118.733	0.0	85
60 min Summer	69.319	0.0	110
120 min Summer	40.470	0.0	164
180 min Summer	29.540	0.0	216
240 min Summer	23.627	0.0	270
360 min Summer	17.246	0.0	378
480 min Summer	13.794	0.0	486
600 min Summer	11.600	0.0	570
720 min Summer	10.069	0.0	628
960 min Summer	7.922	0.0	752
1440 min Summer	5.651	0.0	1020
2160 min Summer	4.030	0.0	1432
2880 min Summer	3.171	0.0	1840
4320 min Summer	2.214	0.0	2640
5760 min Summer	1.715	0.0	3400
7200 min Summer	1.408	0.0	4144
8640 min Summer	1.198	0.0	4864
10080 min Summer	1.045	0.0	5576
15 min Winter	203.373	0.0	72
30 min Winter	118.733	0.0	85

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
60 min Winter	66.417	1.417	14.0	901.9	O K
120 min Winter	66.563	1.563	14.8	1027.9	O K
180 min Winter	66.641	1.641	15.2	1097.5	O K
240 min Winter	66.689	1.689	15.5	1141.4	O K
360 min Winter	66.741	1.741	15.7	1189.0	O K
480 min Winter	66.759	1.759	15.8	1206.8	O K
600 min Winter	66.760	1.760	15.8	1207.6	O K
720 min Winter	66.750	1.750	15.8	1198.1	O K
960 min Winter	66.697	1.697	15.5	1148.2	O K
1440 min Winter	66.592	1.592	15.0	1053.3	O K
2160 min Winter	66.438	1.438	14.2	919.4	O K
2880 min Winter	66.302	1.302	13.4	808.2	O K
4320 min Winter	66.025	1.025	12.0	598.0	O K
5760 min Winter	65.786	0.786	11.0	434.1	O K
7200 min Winter	65.584	0.584	10.1	307.3	O K
8640 min Winter	65.412	0.412	9.4	208.4	O K
10080 min Winter	65.269	0.269	8.8	131.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60 min Winter	69.319	0.0	112
120 min Winter	40.470	0.0	164
180 min Winter	29.540	0.0	216
240 min Winter	23.627	0.0	270
360 min Winter	17.246	0.0	376
480 min Winter	13.794	0.0	484
600 min Winter	11.600	0.0	592
720 min Winter	10.069	0.0	692
960 min Winter	7.922	0.0	790
1440 min Winter	5.651	0.0	1094
2160 min Winter	4.030	0.0	1548
2880 min Winter	3.171	0.0	1984
4320 min Winter	2.214	0.0	2812
5760 min Winter	1.715	0.0	3592
7200 min Winter	1.408	0.0	4336
8640 min Winter	1.198	0.0	5048
10080 min Winter	1.045	0.0	5712

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 503100 300550 TF 03100 00550
C (1km)	-0.024
D1 (1km)	0.334
D2 (1km)	0.277
D3 (1km)	0.224
E (1km)	0.307
F (1km)	2.490
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 1.665

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.111	16	20	0.111	32	36	0.111	48	52	0.111
4	8	0.111	20	24	0.111	36	40	0.111	52	56	0.111
8	12	0.111	24	28	0.111	40	44	0.111	56	60	0.111
12	16	0.111	28	32	0.111	44	48	0.111			

Model Details

Storage is Online Cover Level (m) 67.000

Infiltration Basin Structure

Invert Level (m) 65.000 Safety Factor 1.0
Infiltration Coefficient Base (m/hr) 0.06000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	457.0	1.000	712.0	2.000	1025.0

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 660 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	66.101	1.101	17.8	836.7	O K
30 min Summer	66.226	1.226	19.2	973.8	O K
60 min Summer	66.352	1.352	20.6	1123.1	O K
120 min Summer	66.473	1.473	22.0	1274.4	O K
180 min Summer	66.534	1.534	22.6	1355.0	O K
240 min Summer	66.569	1.569	23.0	1403.0	O K
360 min Summer	66.603	1.603	23.4	1448.6	O K
480 min Summer	66.609	1.609	23.5	1457.0	O K
600 min Summer	66.605	1.605	23.4	1451.6	O K
720 min Summer	66.599	1.599	23.4	1443.3	O K
960 min Summer	66.561	1.561	22.9	1391.8	O K
1440 min Summer	66.485	1.485	22.1	1290.2	O K
2160 min Summer	66.379	1.379	20.9	1155.4	O K
2880 min Summer	66.288	1.288	19.9	1046.5	O K
4320 min Summer	66.108	1.108	17.9	844.5	O K
5760 min Summer	65.956	0.956	16.3	688.9	O K
7200 min Summer	65.822	0.822	15.2	563.9	O K
8640 min Summer	65.707	0.707	14.2	463.6	O K
10080 min Summer	65.605	0.605	13.4	381.8	O K
15 min Winter	66.197	1.197	18.9	941.3	O K
30 min Winter	66.330	1.330	20.4	1095.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	203.373	0.0	72
30 min Summer	118.733	0.0	85
60 min Summer	69.319	0.0	110
120 min Summer	40.470	0.0	162
180 min Summer	29.540	0.0	214
240 min Summer	23.627	0.0	266
360 min Summer	17.246	0.0	372
480 min Summer	13.794	0.0	480
600 min Summer	11.600	0.0	536
720 min Summer	10.069	0.0	598
960 min Summer	7.922	0.0	724
1440 min Summer	5.651	0.0	998
2160 min Summer	4.030	0.0	1412
2880 min Summer	3.171	0.0	1816
4320 min Summer	2.214	0.0	2608
5760 min Summer	1.715	0.0	3376
7200 min Summer	1.408	0.0	4120
8640 min Summer	1.198	0.0	4856
10080 min Summer	1.045	0.0	5576
15 min Winter	203.373	0.0	72
30 min Winter	118.733	0.0	85

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
60 min Winter	66.465	1.465	21.9	1265.0	O K
120 min Winter	66.596	1.596	23.3	1439.2	O K
180 min Winter	66.664	1.664	24.1	1534.3	O K
240 min Winter	66.705	1.705	24.5	1593.2	O K
360 min Winter	66.746	1.746	25.0	1654.3	O K
480 min Winter	66.759	1.759	25.2	1673.7	O K
600 min Winter	66.757	1.757	25.1	1669.8	O K
720 min Winter	66.747	1.747	25.0	1655.3	O K
960 min Winter	66.706	1.706	24.6	1595.5	O K
1440 min Winter	66.617	1.617	23.6	1468.2	O K
2160 min Winter	66.480	1.480	22.0	1283.4	O K
2880 min Winter	66.356	1.356	20.7	1127.1	O K
4320 min Winter	66.118	1.118	18.0	855.3	O K
5760 min Winter	65.916	0.916	16.0	650.6	O K
7200 min Winter	65.741	0.741	14.5	493.0	O K
8640 min Winter	65.593	0.593	13.2	372.2	O K
10080 min Winter	65.466	0.466	12.2	278.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60 min Winter	69.319	0.0	110
120 min Winter	40.470	0.0	162
180 min Winter	29.540	0.0	214
240 min Winter	23.627	0.0	266
360 min Winter	17.246	0.0	372
480 min Winter	13.794	0.0	480
600 min Winter	11.600	0.0	582
720 min Winter	10.069	0.0	630
960 min Winter	7.922	0.0	768
1440 min Winter	5.651	0.0	1072
2160 min Winter	4.030	0.0	1520
2880 min Winter	3.171	0.0	1948
4320 min Winter	2.214	0.0	2772
5760 min Winter	1.715	0.0	3560
7200 min Winter	1.408	0.0	4304
8640 min Winter	1.198	0.0	5040
10080 min Winter	1.045	0.0	5760

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 503100 300550 TF 03100 00550
C (1km)	-0.024
D1 (1km)	0.334
D2 (1km)	0.277
D3 (1km)	0.224
E (1km)	0.307
F (1km)	2.490
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 2.340

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.156	16	20	0.156	32	36	0.156	48	52	0.156
4	8	0.156	20	24	0.156	36	40	0.156	52	56	0.156
8	12	0.156	24	28	0.156	40	44	0.156	56	60	0.156
12	16	0.156	28	32	0.156	44	48	0.156			

Time Area Diagram

Total Area (ha) 0.000

Time From:	(mins) To:	Area (ha)
0	4	0.000

Model Details

Storage is Online Cover Level (m) 67.000

Infiltration Basin Structure

Invert Level (m) 65.000 Safety Factor 1.0
Infiltration Coefficient Base (m/hr) 0.06000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	493.0	1.000	1002.0	2.000	1670.0

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 843 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	65.970	0.970	19.1	1146.9	O K
30 min Summer	66.099	1.099	20.6	1335.7	O K
60 min Summer	66.235	1.235	22.3	1544.2	O K
120 min Summer	66.369	1.369	23.9	1761.5	O K
180 min Summer	66.442	1.442	24.8	1883.2	O K
240 min Summer	66.487	1.487	25.4	1960.9	O K
360 min Summer	66.537	1.537	26.0	2047.7	O K
480 min Summer	66.557	1.557	26.3	2083.6	O K
600 min Summer	66.561	1.561	26.3	2090.2	O K
720 min Summer	66.558	1.558	26.3	2085.3	O K
960 min Summer	66.526	1.526	25.9	2028.6	O K
1440 min Summer	66.462	1.462	25.1	1916.7	O K
2160 min Summer	66.365	1.365	23.9	1754.7	O K
2880 min Summer	66.281	1.281	22.8	1616.7	O K
4320 min Summer	66.111	1.111	20.8	1353.1	O K
5760 min Summer	65.971	0.971	19.2	1148.1	O K
7200 min Summer	65.850	0.850	17.9	979.6	O K
8640 min Summer	65.745	0.745	16.8	838.9	O K
10080 min Summer	65.652	0.652	15.9	719.7	O K
15 min Winter	66.068	1.068	20.3	1289.1	O K
30 min Winter	66.208	1.208	21.9	1501.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	203.373	0.0	73
30 min Summer	118.733	0.0	86
60 min Summer	69.319	0.0	112
120 min Summer	40.470	0.0	164
180 min Summer	29.540	0.0	218
240 min Summer	23.627	0.0	272
360 min Summer	17.246	0.0	380
480 min Summer	13.794	0.0	490
600 min Summer	11.600	0.0	600
720 min Summer	10.069	0.0	652
960 min Summer	7.922	0.0	772
1440 min Summer	5.651	0.0	1034
2160 min Summer	4.030	0.0	1448
2880 min Summer	3.171	0.0	1864
4320 min Summer	2.214	0.0	2672
5760 min Summer	1.715	0.0	3456
7200 min Summer	1.408	0.0	4224
8640 min Summer	1.198	0.0	4968
10080 min Summer	1.045	0.0	5696
15 min Winter	203.373	0.0	73
30 min Winter	118.733	0.0	86

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
60 min Winter	66.355	1.355	23.7	1737.1	O K
120 min Winter	66.502	1.502	25.6	1985.8	O K
180 min Winter	66.582	1.582	26.6	2127.6	O K
240 min Winter	66.634	1.634	27.2	2220.3	O K
360 min Winter	66.693	1.693	28.0	2328.9	O K
480 min Winter	66.720	1.720	28.3	2380.4	O K
600 min Winter	66.730	1.730	28.4	2399.0	O K
720 min Winter	66.729	1.729	28.4	2396.9	O K
960 min Winter	66.690	1.690	27.9	2323.7	O K
1440 min Winter	66.618	1.618	27.0	2191.3	O K
2160 min Winter	66.500	1.500	25.5	1982.1	O K
2880 min Winter	66.384	1.384	24.1	1785.8	O K
4320 min Winter	66.160	1.160	21.4	1428.2	O K
5760 min Winter	65.975	0.975	19.2	1154.0	O K
7200 min Winter	65.816	0.816	17.5	933.1	O K
8640 min Winter	65.679	0.679	16.2	754.2	O K
10080 min Winter	65.561	0.561	15.0	607.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60 min Winter	69.319	0.0	112
120 min Winter	40.470	0.0	164
180 min Winter	29.540	0.0	218
240 min Winter	23.627	0.0	272
360 min Winter	17.246	0.0	378
480 min Winter	13.794	0.0	486
600 min Winter	11.600	0.0	596
720 min Winter	10.069	0.0	700
960 min Winter	7.922	0.0	804
1440 min Winter	5.651	0.0	1104
2160 min Winter	4.030	0.0	1560
2880 min Winter	3.171	0.0	2004
4320 min Winter	2.214	0.0	2856
5760 min Winter	1.715	0.0	3672
7200 min Winter	1.408	0.0	4448
8640 min Winter	1.198	0.0	5216
10080 min Winter	1.045	0.0	5968

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 503100 300550 TF 03100 00550
C (1km)	-0.024
D1 (1km)	0.334
D2 (1km)	0.277
D3 (1km)	0.224
E (1km)	0.307
F (1km)	2.490
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 3.165

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.211	16	20	0.211	32	36	0.211	48	52	0.211
4	8	0.211	20	24	0.211	36	40	0.211	52	56	0.211
8	12	0.211	24	28	0.211	40	44	0.211	56	60	0.211
12	16	0.211	28	32	0.211	44	48	0.211			

Model Details

Storage is Online Cover Level (m) 67.000

Infiltration Basin Structure

Invert Level (m) 65.000 Safety Factor 1.0
Infiltration Coefficient Base (m/hr) 0.03600 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.03600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	954.0	1.000	1442.0	2.000	2056.0

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Comments for Planning Application 19/01365/MMFUL

Planning Application comments have been made. A summary of the comments is provided below.

Comments were submitted at 21/10/2019 13:49

Application Summary

Address:	Cross Leys Quarry Leicester Road Wansford Peterborough
Proposal:	Restoration of quarry workings to agriculture and woodland through the importation and deposit of inert restoration materials and quarry waste
Case Officer:	A O Jones

Customer Details

Address:	Forestry Commission Santon Downham Office Brandon IP27 0TJ

Comments Details

Commenter Type:	Public
Stance:	Customer make comments
Comments:	Dear Mr. Jones, Re: Consultation on application for planning permission - 19/01365/MMFL Thank you for seeking the Forestry Commission's advice about the impacts that this application may have. As a non-statutory consultee, the Forestry Commission is pleased to provide you with the attached information that may be helpful when you consider the application: - Details of Government Policy relating to ancient woodland - Information on the importance and designation of ancient woodland Ancient woodlands are irreplaceable. They have great value because they have a long history of woodland cover, with many features remaining undisturbed. This applies equally to Ancient Semi Natural Woodland (ASNW) and Plantations on Ancient Woodland Sites (PAWS). It is Government policy to refuse development that will result in the loss or deterioration of irreplaceable habitats including ancient woodland, unless "there are wholly exceptional reasons and a suitable compensation strategy exists" (National Planning Policy Framework paragraph 175). We welcome the Phase 3 Important final restoration CL 3/5 proposes to plant a tree belt to protect Wittering Coppice, which is ancient woodland. Our aerial photograph of the site shows that there are existing trees between Wittering Coppice and the quarry site and would recommend that the trees to be planted creates an buffer strip of at least 15 metres in addition to the existing trees. The importance of buffer strips is given in the Governments Standing Advice on Ancient Woodland and is as follows;

Use of buffer zones
A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development.
For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic.
A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter.
Where possible, a buffer zone should:
- contribute to wider ecological networks
- be part of the green infrastructure of the area
It should consist of semi-natural habitats such as:
- woodland
- a mix of scrub, grassland, heathland and wetland planting
You should plant buffer zones with local and appropriate native species.
You should consider if access is appropriate and can allow access to buffer zones if the habitat is not harmed by trampling.
You should avoid including gardens in buffer zones.
You should avoid sustainable drainage schemes unless:
- they respect root protection areas
- any change to the water table does not adversely affect ancient woodland or ancient and veteran trees

These comments are based upon information available to us through a desk study of the case, including the Ancient Woodland Inventory (maintained by Natural England), which can be viewed on the MAGIC Map Browser, and our general local knowledge of the area.

If the planning authority takes the decision to approve this application, we may be able to give further support in developing appropriate conditions in relation to woodland management mitigation or compensation measures. Please note however that the Standing Advice states that
"Ancient woodland, ancient trees and veteran trees are irreplaceable. Consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal."

We suggest that you take regard of any points provided by Natural England about the biodiversity of the woodland.

We also assume that as part of the planning process, the local authority has given a screening opinion as to whether or not an Environmental Impact Assessment is needed under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. If not, it is worth advising the applicant to approach the Forestry Commission to provide an opinion as to whether or not an Environmental Impact Assessment is needed under the Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999, as amended.

We hope these comments are helpful to you. If you have any further queries please do not hesitate to contact me.

Yours sincerely

Neil Jarvis

Local Partnership Advisor.

Updated September 13th 2017

PRELIMINARY ASSESSMENT OF HABITATS AT CROSS LEYS QUARRY

Introduction

SLR Consulting Ltd (SLR) was commissioned by Aggregate Industries to undertake an ecological walkover of Cross Leys Quarry, a now dormant site, where sand and gravel extraction took place until quite recently, and for which a restoration plan is being produced which incorporates a return to previous use as arable cultivation but also including, at the same time, a large area earmarked for ecological restoration and enhancement.

Site description

The quarry (from here on referred to as the 'Site') is located on the south side of the A47 between the villages of Duddington and Wansford within the county of Cambridgeshire (central OS grid reference TF 029 005). The Site still contains some large stockpiles of sand, fresh water lagoons (with marginal emergent swamp) as well as a complex mix of open habitat (including stands of ruderal herbs), 'restored' grassland and scrub vegetation. The surrounding landscape is a mix of large woodland blocks and arable fields. Bedford Purlieus National Nature Reserve is only 110m to the east and Collyweston Great Woods and Easton Hornstocks National Nature Reserve runs adjacent to the western boundary of the Site.

Methodology

The site was visited on June 12th 2017. The walkover was undertaken by Jim Flanagan who is an experienced ecologist with SLR who is a competent botanist and who holds nature conservation licences for great crested newt, white-clawed crayfish and barn owl. Habitats were mapped according to methodology contained in Handbook for Phase I Habitat Survey (JNCC, 2010). Invertebrate species encountered were noted during the gathering of data for the mapping exercise.

A second visit was undertaken by Jim on September 12th 2017 to further investigate the invertebrate and plant interest of the Site situated north of a strip of restored grassland (marking the route of a fuel pipeline) and which is to be impacted from plans for clearance and levelling and restoration to arable cultivation. Invertebrate survey was undertaken by use of calico sweep net and use of a McCulloch GBV 345 25cc 2-stroke petrol blower and vacuum. This was supplemented by the grubbing and physical hand collection of select habitat features. The main target taxa comprised true flies (Diptera), beetles (Coleoptera) and bugs (Hemiptera).

Habitat descriptions

Hard standing

This is located in the northern half of the site where a road has been constructed from the main entrance on the north boundary with the A47 (Plate 1). It includes the area of a nearby wheel wash facility.

Bare ground (including sand and rock/rubble stockpiles)

There are several large mounds of mostly un-vegetated stock piles of sand the largest of which are to be found in the northern half of the Site (Plate 2). Bare ground consists of a variety of substrates from fine mud and silt to ground made up of crushed rubble (Plate 3).

Sparely vegetated bare ground with short ephemerals and perennials

This was widely scattered throughout the site with the largest part located in the north-western corner of the Site. Typical plants include cudweeds, including small cudweed, autumn hawkbit, scentless mayweed and parsley-piert (Plate 4).

Tall ruderals over sparsely vegetated bare ground

The vegetation of this was characterised by a more or less sparse cover of vegetation featuring a range of low-growing ephemerals and perennials including yellow-wort and common centaury and in some areas abundant silverweed (Plate 5). The main ruderal species in this vegetation was teasel. Some areas showed early signs of willow scrub development.

Tall ruderal dominant vegetation

Ruderal vegetation was one of the most extensive vegetation types and widely distributed throughout the Site. Typically ranging from dense creeping thistle and common nettle dominated stands to wild parsnip-rich areas (Plate 6) and bastard cabbage. Teasel, hemlock and great willowherb were very widespread also.

Restored grassland

This was characterised by a variety of swards in four main areas of the Site. One area was located at the south-west end of the Site, another at the southern end (Plate 7), a third at the north-eastern end and the fourth main area comprised a 15m wide strip of false oat-grass dominant grassland, this dissecting the Site into two parts, in length approximately 600m from the north-east boundary to

the south-west boundary (Target Note 19). These grasslands varied greatly in characteristics. The grassland at the southern end in Plate 7 was largely a grass-rich mix of Yorkshire fog, soft brome and smooth-stalked meadow-grass with common couch locally frequent and occasional cock's-foot. The cover of forbs was variable across the sward, mostly comprising of white clover, ribwort plantain, creeping cinquefoil, common vetch, cut-leaved crane's-bill and creeping buttercup. The grasslands to the east were a mix of tall ruderal-rich swards and very open short swards with many short ephemerals present.


Plate 7

Exposed lagoon margins (fine sand/mud)

These were present on the two main lagoons (Plate 8) but most extensively seen on the eastern-most (Plate 7). They provide some marginal feeding areas for waders and wildfowl (see Target Note 22).


Plate 8

Swamp communities

Swamp was located within or on the margins of permanent, semi-permanent and some seasonal water bodies. Most of the swamp habitat was formed either of reedmace and/or common reed and

common club rush-dominant stands (Plate 9). Associated species included gypsywort, water mint, common spike-rush (and other rushes) and purple loosestrife.


Plate 9

Open standing water

A number of water bodies were present within the Site. The two largest of these were lagoons both of which were located within the southern half of the Site (Plate 10). These were seen to be permanent features making up a little more than 10% of the Site area.


Plate 10

A total of ten other smaller permanent and seasonal water bodies were also located within the Site. The vegetation of these included mixed stands of jointed and hard rush, spike-rush, reedmace and common reed and also some sedge and wood small-reed. Six of these were found in the northern half of the Site. The largest of these was a linear-shaped body located adjacent to the south-west Site boundary for 225m (Plate 11). Much of the surface of this appeared to contain an extensive cover of broad-leaved pondweed and some marginal common club-rush.

Plate 11

Scattered scrub and dense/continuous scrub

There were several areas of dense/continuous scrub habitat with the northern half of the Site containing the larger proportion. This scrub was frequently located on the older spoil heaps (Plate 12) and consisted largely of Italian alder, silver birch, willow (mostly a mix of grey and some goat with a range of hybrids of the two) and butterfly bush.

Plate 12

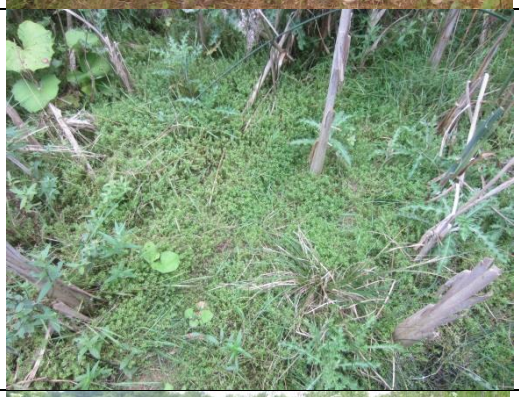
Updated September 13th 2017

TARGET NOTES TO DRAWING 1

Target Note No.	Photograph	Description
1		Location of a seasonal pool supporting stands of rushes and reedmace.
2		Location of badger latrine pits on a largely bare sandy bank within rabbit diggings and also at some of the entrances to rabbit burrows (observed on 12 September visit).
3		Permanent/semi-permanent pond with steep vertical sides containing, in the centre, a stand of common reed. Some willow scrub and other tall vegetation is located around the margins.
4		Semi-permanent pond within a former quarry track.

5			Location of a badger latrine with several recent depositions of dung, place in shallow pits on a sand bund.
6			Location of a tree of heaven plant on the edge of a scrub-dominated spoil heap. On GB Non-Native Species Secretariat's Register of Invasive Non-Native Species but not a notified Schedule 9 Wildlife and Countryside Act (1981 and subsequent amendments) species.
7			Mosaic of dry and wet habitats within a small area including scrub, tall ruderals and coarse grasses and some swamp. A single flowering Macedonian scabious (*Knautia macedonica*) reported here on 12 September visit.
8			Location of a small stand of Japanese knotweed near to the base of a vegetated slope supporting mostly tall ruderal species such as hemlock, teasel and bindweed

9		Location of a small clump of Japanese knotweed within the margins of tall ruderal herbs.
10		Location of a semi-permanent/ permanent pond with a wide variety of wetland plants present including Reedmace and locally dominant spike-rush.
11		Semi-permanent wetland with scattered rushes and exposed bare sand/mud
12		Location of discovery of a single glow worm larva resulting from the vacuum sampling of rough grassland habitat on 12 September visit (the grassland also including stands of wood small-reed and rush on moist ground)

13		Location of a small pond (2m x 1m) with marginal pepperwort and gypsywort. A single common lizard was observed on the north side of pond on 12 September visit.
14		Location of small areas of locally abundant to locally dominant New Zealand pigmyweed (*Crassula helmsii*) along the east margin of seasonal lagoon.
15		Location of a large patch of wild clary on the southern slope of a vegetated mound supporting mostly tall ruderal vegetation and considered to originate from introduction.
16		On 12 September 2017 sweep-netting of an area of restored grassland comprising mostly of a rather tall rough sward resulted in the finding of two specimens of the turtle bug Eurygaster testudinaria. This is one of the most northerly of stations in the country and other recent reports of this bug have come from the nearby Bedford Purlieus Nature Reserve (located as near as 120m from the quarry boundary).

17		Area of vegetation cover formed of a wide variety of tall ruderal species including wild parsnip, teasel and creeping thistle, hemlock, common/hoary ragwort and purple toadflax in addition to colt's-foot, hoary cress, creeping cinquefoil and ox-eye daisy. Scattered to locally frequent scrub and coarse grasses complete the range of vegetation present in this area and features typical species such as cock's-foot, butterfly bush and bramble
18		Location of an irregular-sized water body with much marginal vegetation including Reedmace, common club-rush and willow scrub.
19		This strip of restored grassland roughly dissects the site into two more or less equal parts. It comprises of a tall sward of largely poor semi-improved grassland mostly dominated by false oat-grass. A variety of herbaceous species are also present but the cover they form is largely sparse and uneven.
20		Location of a linear waterbody wetland within a ditch-like depression. There are several stands of reedmace and other wetland emergent plants present.

21		Sparsely vegetated land located in the centre of this photograph was identified as a possible male territory and potential breeding and nesting site.
22		A large area of exposed mud and sand where 2-3 little ringed plovers were noted to be foraging.
23		An area of restored grassland on uneven ground with great structural variety in the vegetation cover. Coarse grasses form a locally significant amount of cover but within this open sward there was a wide variety of ruderal species and other herbaceous vegetation. Scattered scrub contributed to this mix. Many herbaceous species formed only a small proportion of the cover such as hedge woundwort, hemlock, black horehound and great mullein of which there were some notably tall examples of the latter.
24		Location of a circular-shaped pond mostly dominated by reedmace along with great willowherb, common club-rush and hard rush Standing water still present. On the margins of this pond a rather locally distributed robberfly was collected and identified as the female of *Leptarthrus brevicaud*a. A somewhat anomalous location for it as it is mainly a species of chalk and limestone grassland (in the greater part of south-east England).

Updated September 13th 2017

CROSS LEYS QUARRY

Invertebrate and Habitats Baseline Survey Report

Prepared for: Aggregate Industries (UK) Ltd

SLR Ref: 421.00275.00220
Version No: 1
March 2018

BASIS OF REPORT

This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Aggregate Industries (UK) Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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CONTENTS

DRAWINGS

Drawing 1 – Phase 1 Habitat Plan

Drawing 2 – Terrestrial Invertebrate Survey – Sub-site locations

1.0 Introduction

This report has been prepared by SLR Consulting Limited (SLR) on behalf of Aggregate Industries (UK) Ltd and summarises the findings of invertebrate and habitat surveys undertaken in summer 2017 at Cross Leys Quarry in Peterborough (hereafter referred to as the "site").

This report describes the survey methodology and evaluates the results.

1.1 Planning Policy and Legislative Background

A number of invertebrate and plant species and habitats are listed as "species of principal importance" under Section 41 of the Natural Environment and Rural Communities Act 2006.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

1.2 Study Aims and Objectives

Ecological appraisal of Cross Leys Quarry during initial habitat surveys in May 2017 identified the potential for invertebrate species of nature conservation interest within the study area which would be disturbed as a result of the proposed restoration. More detailed habitat surveys were also recommended to identify the presence of flora or habitats of conservation interest.

The aims of the survey and assessment were to:

- sampling open mosaic habitats specifically searching for uncommon plants that may occur and mapping the distribution where they occur;
- mapping the location of stands of Japanese Knotweed and any other controlled species observed on site;
- terrestrial invertebrate sampling is proposed for a single day, targeting groups likely to support SOCC; and
- evaluate the population(s) in the local, regional and national context.

2.0 Survey Methodology

2.1 Study Area

Cross Leys Quarry is a former quarry which has been partially restored to grassland. A fuel pipeline splits the site running north-east – south-west. The southern smaller section of the site is dominated by two large waterbodies as well as numerous small ephemeral ponds and ditches, and species poor restored grassland and ruderal habitat. The northern larger section of the site is more topographically varied in comparison to the southern section, stockpiles of aggregate and waste material, ruderals and predominately scattered willow scrub, bare and partially vegetated ground, with a large dense scrub located on the northern boundary.

2.2 Desk Study

The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) performed a 2km radial search of the site, the data of which was reviewed to provide context for the survey results.

2.3 Field Survey – Habitats

Habitat surveys were undertaken between April 2017 and June 2017. Habitat surveys were undertaken by Mr Robert Edmonds MCIEEM CEnv (26th April 2017) and Mr Jim Flanagan MCIEEM (12th June 2017). Surveys followed the approach described by JNCC (2001) Phase 1 Survey.

2.4 Field Survey – Invertebrates

The field survey undertaken during 2017 comprised of two visits made on the 12th June and 12th September by Mr Jim Flanagan MCIEEM. Sub-sites A-J (See Drawing 2) were all sampled on the first visit. Survey effort carried out during the second visit was confined to Sub-sites A-E as much of this part of the site is planned for restoration of its former intensive agricultural status. A total of 10 hours of invertebrate recording and sampling work was spent on the site.

The survey aimed to sample a particular range of habitats which involved the use of the following equipment and methods:

- fine-meshed and calico sweep nets to sample flower-rich and other grassland and tall herb/ruderal vegetation;
- suction sampler to sample areas of flower-rich grassland and short perennial/ephemeral vegetation;
- hand collection of specimens on the ground, in horse dung and under discarded debris and from various types of vegetation as the opportunity arose; and
- beating of small amounts of scrub present in the larger survey area, climbers and young trees at various points along the margins of the site.

Pitfall traps were not used as the site is not entirely secure and there was the risk of potential interference from rabbits, deer and badger. Malaise traps were not considered suitable as they have the potential, in suitable habitats, to indiscriminately capture large numbers of insects, in particular bees and wasps, which might result in local populations of these species being adversely affected. Such large samples would also pose logistical problems to sort and identify. Targeted hand searching, sweep-netting and suction sampling were considered to be suitable alternatives to the use of pitfall and malaise traps

A wide range of species were targeted for the survey effort, including those which would assist in determining the importance of the survey area for its invertebrate assemblages. Effort was mainly concentrated on beetles

(Coleoptera), true bugs, planthoppers and leafhoppers (Hemiptera). The Hemiptera contains groups particularly suited for assessing the quality of early successional habitats (such as brownfield and mineral sites), grasslands and scrubland, a group which the surveyor has particular field skills in recording. All identifications in the field and in the lab were made by the surveyor, with the exception of the majority of the beetles which were identified by Eric J. Smith, who is currently Coleoptera Recorder of the Sorby Natural History Society with over thirty years field and laboratory experience.

Notable/key species have been flagged up in this assessment using British conservation designations (i.e. where these have not yet undergone assessment using IUCN criteria) and those species designated into the relevant threat categories under IUCN criteria. IUCN conservation reviews are currently in progress for many groups (including plantbugs and allied families and weevils). Appendices 2 and 3 give details of the criteria for each designation/threat category under these two systems.

2.4.1 Assessment Methodology

The assessment of the potential value of each section within the study area for invertebrates was based on:

- consideration of the conservation status (i.e. those with British conservation designations and those designated according to the relevant threat categories under IUCN criteria) of species recorded or likely to be present in each Sub-site, and in part follows the example of that produced by Colin Plant Associates and published on the website of the Chartered Institute of Ecological and Environmental Management (CIEEM); and
- a broader assessment of the potential of the habitats present to support invertebrate assemblages of value, using the surveyor's experience and judgment.

2.4.2 Limitations

The field survey involved two visits which employed a range of methods to record and collect invertebrates for identification. Suction sampling was employed in a range of typical habitats present within the site in order to offset the absence of pitfall trapping in the survey programme. However, it is accepted that active methods of finding invertebrate species during the day may not necessarily result in the detection of invertebrates that are known to be particularly active during hours of darkness such as ground beetles.

2.5 Personnel

Study design, field survey and reported were conducted by suitably experienced SLR Consulting Ltd ecologists. Reporting was drafted by Mr Jim Flanagan and reviewed by Mr Robert Edmonds.

3.0 Results

3.1 Habitat Survey

The site is a former quarry that has been partially restored to grassland. The site is split by a fuel pipeline running north-east – south-west. The southern and smaller part is dominated by two large waterbodies and a number of smaller and ephemeral ponds and ditches, restored species poor grassland and ruderal habitat. The northern part is more topographically varied, with stockpiles of aggregate and waste materials; bare and partially vegetated ground; ruderals and predominately scattered willow scrub, with larger dense scrub occurring on the northern boundary.

Habitat survey target notes are provided in Appendix 1.

3.1.1 Woodland and Scrub

Collyweston Great Wood SSSI and NNR are immediately adjacent to the western boundary of the site. Collyweston Great Wood is an ancient native mixed broadleaved woodland, dominated by lime. Adjacent to the site, the woodland is long-rotation field maple coppice with a ground flora of bluebell. Ponds previously recorded within the wood were subject to a walkover survey in May 2017 and found to be dry. No further surveys within Collyweston Great Wood were undertaken.

Figure 1 - Collyweston Great Wood SSSI NNR, adjacent to western boundary, field maple (*Acer campestre*) and bluebell (*Hyacinthoides non-scripta*)

Figure 2 - Birch scrub growing in the northern part of the site

Scrubby woodland within the site is dominated by self-seeded silver birch, typically 3-5m in height, indicating an approximate age of c.5-10 years. The largest and most dense area of birch scrub occurs within stockpiled materials on the northern boundary. Smaller patches and scattered scrub occur throughout the site. Beyond the northern site boundary are areas of tree planting, dominated by Italian alder (*Alnus cordata*), which has self-seeded into the site. Other species recorded within the site include willow and butterfly bush (*Buddleja americana*).

3.1.2 Ruderal, Bare Ground and Man-modified Habitats

Much of the site is dominated by a mosaic of ruderal, short-perennial and ephemeral plants occurring on heavily disturbed substrates associated with the former quarry. Large areas of bare ground occur, principally in the northern part of the site. These habitats support a rich diversity of plants, including "weedy" vegetation, such as cudweed. Many of these plants are uncommon or rare. Japanese knotweed (*Fallopia japonica*) is present, with at least three discrete patches recorded on sandy bunds.

Sparsely vegetated ground supported typical plants include cudweeds, including small cudweed (*Filago minima*), autumn hawkbit (*Scorzoneroides autumnalis*), scentless mayweed (*Tripleurospermum inodorum*) and parsley-piert (*Aphanes arvensis*). (Figure 3).

Ruderal vegetation over bare ground was characterised by a more or less sparse cover of vegetation featuring a range of low-growing ephemerals and perennials including yellow-wort (*Blackstonia perfoliata*) and common centaury (*Centaurium erythraea*) and in some areas abundant silverweed (*Argentina anserina*). The main ruderal species in this vegetation was teasel (Dipsacus). Some areas showed early signs of willow scrub development.

Ruderal vegetation was one of the most extensive vegetation types and widely distributed throughout the site. Typically ranging from dense creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) dominated stands to wild parsnip (*Pastinaca sativa*)-rich areas and bastard cabbage (*Rapistrum rugosum*). Teasel, hemlock (Apiaceae) and great willowherb (*Epilobium hirsutum*) were very widespread also.

Figure 3 – Plants of Sparsely Vegetated Ground

Figure 4 - Bare ground, scattered butterfly bush scrub and ephemeral habitats across the northern part of the former quarry

Figure 5 – Tall ruderal over bare ground

3.1.3 Lakes, Ponds and Swamp

The site supports a large (approximately 4ha) recently created waterbody in the south-east, with a smaller (approx. 1ha) longer-established waterbody in the south-west. Both waterbodies appear relatively shallow, but are sparsely vegetated with little evidence of aquatic plants recorded. Smaller ponds, including ephemeral waterbodies, are found throughout the site.

Swamp was located within or on the margins of permanent, semi-permanent and some seasonal water bodies. Most of the swamp habitat was formed either of reed mace (Typha) and/or common reed (*Phragmites australis*) and common club rush-dominant stands (*Schoenoplectus lacustris*). Associated species included gypsywort (*Lycopus europaeus*), water mint (*Mentha aquatica*), common spike-rush (*Eleocharis palustris*) (and other rushes) and purple loosestrife (*Lythrum salicaria*).

Figure 6 - Smaller pond (CL12.08), with abundant marginal vegetation of reed mace and soft rush (*Juncus effusus*) with scattered willow scrub

Figure 7 - Large lake (CL17.10), with bare sandy shoreline, supports high numbers of water fowl

3.1.4 Hard standing

This is located in the northern half of the site where a road has been constructed from the main entrance on the north boundary with the A47 (Plate 1). It includes the area of a nearby wheel wash facility.

Figure 8 –Sealed surface hardstanding

3.1.5 Restored grassland

This was characterised by a variety of swards in four main areas of the site. One area was located at the south-west end of the site, another at the southern end (Plate 7), a third at the north-eastern end and the fourth main area comprised a 15m wide strip of false oat-grass (*Arrhenatherum elatius*) dominant grassland, this dissecting the site into two parts, in length approximately 600m from the north-east boundary to the south-west boundary (Target Note 19). These grasslands varied greatly in characteristics.

The grassland at the southern end in Plate 7 was largely a grass-rich mix of Yorkshire fog (*Holcus lanatus*), soft brome (*Bromus hordeaceus*) and smooth-stalked meadow-grass (*Poa pratensis*) with common couch (*Cynodon dactylon*) locally frequent and occasional cock's-foot (*Dactylis glomerata*). The cover of forbs was variable across the sward, mostly comprising of white clover (*Trifolium repens*), ribwort plantain (*Plantago lanceolata*), creeping cinquefoil (*Potentilla reptans*), common vetch (*Vicia sativa*), cut-leaved crane's-bill (*Geranium dissectum L.*) and creeping buttercup (*Ranunculus repens*). The grasslands to the east were a mix of tall ruderal-rich swards and very open short swards with many short ephemerals present.

Figure 9 – Restored grassland in the south of the site

3.2 Great Crested Newt

Field surveys confirmed that great crested newts occur in all existing waterbodies within the site, although distribution is variable, with significantly larger numbers of individuals recorded from those ponds considered to be more suitable for amphibian breeding.

Overall, the site supports a 'Large' population of great crested newts, with breeding confirmed in three ponds (CL12.02b, CL12.04, CL12.08[1]). In 2017, the late spring-early summer weather was exceptionally dry across the UK and the smaller ponds dried out significantly by mid-June. During the Phase 1 habitat survey in June 2017, only ponds CL12.07, CL12.08, and CL17.10 continued to hold sufficient water to sustain amphibian breeding.

Further information relating to surveys for great crested newts is provided in the draft European Protected Species Licence application Method Statement.

3.3 Reptiles

A population of common lizard is present on the site. Further details with respect to the findings of reptile surveys are presented in the separate reptile report.

3.4 Birds – Wintering and Breeding

The site supports an interesting bird fauna, including at least one pair of little-ringed plover observed in both April and June and these are probably breeding within the site. Other Birds of Conservation Concern recorded incidentally within the site were linnet, common tern, song thrush, red kite and sand martin. No evidence of sand martin burrow nests were observed, but stockpiles appear broadly suitable to support this species and colonisation in future years cannot be discounted.

The larger waterbodies and open habitats in the south of the site have potential to provide a resting area for overwintering birds. However, wintering bird surveys undertaken in 2017-2018 did not identify large or important numbers of birds over-wintering at the site. Further details relating to the wintering bird surveys are provided in a separate report.

[1] Pond reference numbers include the year the pond was first subject to survey, i.e. '12' indicates ponds were surveyed and are largely unmodified since the 2012 surveys. '17' ponds were first observed in 2017 and have been created between 2012 and 2017.

3.5 Other Fauna

Notes and observations of fauna, or field signs of fauna, were made during various habitat surveys.

A small number of excavations, approximately the size suitable for badger were observed within the site. A well-used badger latrine is located near to the northern boundary of the site, situated on a sandy bund. Although some evidence was observed, the site is largely unsuitable for badger foraging and levels of badger activity were considered relatively low. The presence of active badger setts being excavated in the future at the site cannot be discounted.

3.6 Invertebrates

The site supports a mosaic of open habitats and flower-rich ruderal flora that is considered to be suitable for a wide range of invertebrate species of conservation value.

A total of 141 species of invertebrate were recorded in 2017. A total of 51 species of beetle (Coleoptera) were identified mostly comprising weevils (Apionidae and Curculionidae) and leaf beetles (Chrysomelidae). A total of 47 species of Hemiptera was identified from the samples of which 13 species were plant and leafhoppers (Auchenorrhyncha) and 34 species true bug (Heteroptera). A total of 13 species of true fly (Diptera) were recorded with eight for butterflies and moths and seven for bees, wasps and ants (Hymenoptera).

Two Species of Principal Importance in England (designated under Section 41 of the NERC Act of 2006) were found on the site – small heath and cinnabar moth (*Tyria jacobaeae*)[2]. Both were recorded in scattered locations in low numbers.

One Red Data Book species was recorded – the plantbug *Lygus pratensis*. A small number of adults were swept from ruderal habitat in Sub-site E. This bug was formerly a rarity usually associated with the margins of heaths with woodland in southern latitudes. However, over the last decade or more this bug has been found very widely (only lately reliably confirmed as present in Yorkshire) and is not infrequent on flower-rich brownfield-type sites. The status of the species is to be down-graded on the soon to be published next status review to cover plantbugs.

Three nationally scarce species were also recorded. Two were Curculionid weevils, namely *Pseudostyphlus pillumus* and *Trichosirocalus horridus*, the former found in Sub-site D and the latter in Sub-site A. *Rhopalus parumpunctatus* is a true bug which has a very sparse distribution in the wider region and was found by sweeping open coarse grassland in Sub-site C.

In addition, a number of 'Local' species[3] were recorded including five species of *Stenus* rove-beetle, all of which were recorded from the suction sampling of Sub-site C during the second visit. Other species included mother shipton moth (*Euclidia mi*), the Cicadellid hopper *Mocydiopsis parvicauda*, the groundbug *Scolopostethus puberulus*, the picture-wing fly *Sphenella marginata* and glow worm (*Lampyris noctiluca*). A robberfly – *Leptarthrus brevicornis* – a 'local' species and mostly associated with base-rich was collected from the margins of a pond.

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[2] Cinnabar features in a list of 69 moth species that have declined in population strength by a significant amount in the past 25 years. These were defined as "not yet rare" and were flagged as UK Biodiversity Action Plan species "**for research only**". This list has been incorporated into the current priority listing process and these species are now therefore of statutory interest.

[3] 'Local' is a designation derived from the development of Recorder software by JNCC in the early 1980s to the 1990s. The software is current (Recorder 6) and the designation is still valid as an indication of those species that are not commonly encountered but maybe widespread in distribution.

4.0 Discussion and Evaluation

Invertebrate survey data provides a good indication of the level of invertebrate interest that is present within the site. The invertebrates recorded appear to be broadly indicative of a mix of assemblages including those indicative of wetlands of varying quality, as well as field layer and arboreal assemblages.

The wetland assemblages are best represented in the southern half of the site but suction and other sampling in Sub-section C showed this area to potentially support a rich diversity of associated beetles and flies (particularly snail-killing flies and soldierflies). Further survey is likely to provide more evidence of the great diversity of these groups on the site.

Species of open sandy habitats were also of some prominence and the finding of the nationally scarce weevil *Pseudostyphlus pillumus* is quite representative of the type of assemblage on this habitat. It is primarily a species of sandy habitats and occurs in dunes, coastal cliffs and sandy field margins and paths. These are all habitats subject to a degree of disturbance and the host plant is thought to be exclusively scentless mayweed (*Tripleurospermum inodorum*), a plant perfectly adapted for such habitats. Although the sample of Hymenoptera collected was poor it is thought that the site will also have some importance for ground nesting bees and wasps.

A mention of the presence of glow worm is merited. Although not currently having a national conservation status, this widespread species is thought to have declined in distribution and abundance (Gardiner, 2009). The larvae and adults are predacious on a range of terrestrial molluscs including slugs. A single larva was suction sampled from Sub-site 3 during the second visit. A report was also received of a maximum of five bio-luminescing females/males at locations within the site south of the pipeline earlier in the season from surveyors undertaking great crested newt surveys in the area. This is indicative of the presence of a small population within the site. There are existing records nearby to the east at Bedford Purlieus National Nature Reserve (NNR) and there is also a record from adjacent Collyweston Great Wood and Easton Hornstocks NNR but it is not known how recent these are. Glow worm seems widespread in the county but it is not currently a species of interest in terms of local biodiversity priorities.

One species invertebrate recorded on the site features in the Priority Species List (last updated in 2015) of Cambridgeshire and Peterborough Biodiversity Partnership, namely small heath. The Species of Additional Interest List also includes common green grasshopper (*Omocestus viridula*) due to an observed recent decline in the region.

The invertebrate interest of the site, based on the results of the 2017 survey, suggests that the site is at least of Peterborough, i.e. within the context of the planning boundary of Peterborough City Council Importance.

4.1 Recommendations

Recommendations are given below dealing with maintenance of the quality of habitat and appropriate management to benefit notable invertebrates but also including glow worm.

In the areas south of the pipeline, management work should be undertaken to maintain mosaics of early successional habitat to include occasionally disturbed dry, well-drained areas that can support short ephemeral and perennial vegetation such as cudweeds (*Filago* and *Gnaphalium* spp.) and scentless mayweed), ruderal stands and scattered scrub, as well as wetland vegetation and inundation zones around shallow pools and the larger lagoons. Additional management effort is recommended to ensure maintenance of the population of glow worms and species associated with tall rough grassland and freshwater margins. Such long-term management would enable a wide range of specialist invertebrates to potentially maintain or colonise the site in the future.

5.0 Summary and Conclusions

This report sets out the results of invertebrate and habitat surveys conducted in 2017 at Cross Leys Quarry.

The surveys identified a range of habitats present and a number of notable flora species have been identified on site.

Invertebrate surveys have concluded that the invertebrate assemblage supported by the site is of at least City importance and recommendations have been made to ensure that the habitats retained, enhanced and re-created through the restoration of the site are able to maintain and enhance the invertebrate assemblage present.

6.0 Closure

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Aggregate Industries (UK) Ltd; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

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APPENDIX 1

TARGET NOTES (Illustrated on DRAWING 1		
Target Note No.	Photograph	Description
1		Location of a seasonal pool supporting stands of rushes and reedmace.
2		Location of badger latrine pits on a largely bare sandy bank within rabbit diggings and also at some of the entrances to rabbit burrows (observed on 12 September visit).
3		Permanent/semi-permanent pond with steep vertical sides containing, in the centre, a stand of common reed. Some willow scrub and other tall vegetation is located around the margins.

4		Semi-permanent pond within a former quarry track.
5		Location of a badger latrine with several recent depositions of dung, place in shallow pits on a sand bund.
6		Location of a tree of heaven plant (*Ailanthus altissima*) on the edge of a scrub-dominated spoil heap. On GB Non-Native Species Secretariat's Register of Invasive Non-Native Species but not a notified Schedule 9 Wildlife and Countryside Act (1981 and subsequent amendments) species.
7		Mosaic of dry and wet habitats within a small area including scrub, tall ruderals and coarse grasses and some swamp. A single flowering Macedonian scabious (*Knautia macedonica*) reported here on 12 September visit.

8		Location of a small stand of Japanese knotweed near to the base of a vegetated slope supporting mostly tall ruderal species such as hemlock, teasel and bindweed (*Calystegia sepium*).
9		Location of a small clump of Japanese knotweed within the margins of tall ruderal herbs.
10		Location of a semi-permanent/ permanent pond with a wide variety of wetland plants present including Reedmace and locally dominant spike-rush (Eleocharis).
11		Semi-permanent wetland with scattered rushes and exposed bare sand/mud

12		Location of discovery of a single glow worm larva resulting from the vacuum sampling of rough grassland habitat on 12 September visit (the grassland also including stands of wood small-reed (*Calamagrostis epigejos*) and rush on moist ground).
13		Location of a small pond (2m x 1m) with marginal pepperwort (Lepidium) and gypsywort. A single common lizard was observed on the north side of pond on 12 September visit.
14		Location of small areas of locally abundant to locally dominant New Zealand pigmyweed (*Crassula helmsii*) along the east margin of seasonal lagoon.
15		Location of a large patch of wild clary on the southern slope of a vegetated mound supporting mostly tall ruderal vegetation and considered to originate from introduction.
16		On 12 September 2017 sweep-netting of an area of restored

		grassland comprising mostly of a rather tall rough sward resulted in the finding of two specimens of the turtle bug Eurygaster testudinaria. This is one of the most northerly of stations in the country and other recent reports of this bug have come from the nearby Bedford Purlieus Nature Reserve (located as near as 120m from the quarry boundary).
17		Area of vegetation cover formed of a wide variety of tall ruderal species including wild parsnip, teasel and creeping thistle, hemlock, common/hoary ragwort (*Jacobaea erucifolia*) and purple toadflax (*Linaria purpurea*) in addition to colt's-foot (*Tussilago farfara*), hoary cress (*Lepidium draba*), creeping cinquefoil and ox-eye daisy (*Leucanthemum vulgare*). Scattered to locally frequent scrub and coarse grasses complete the range of vegetation present in this area and features typical species such as cock's-foot, butterfly bush and bramble.
18		Location of an irregular-sized water body with much marginal vegetation including reedmace, common club-rush and willow scrub.

19		This strip of restored grassland roughly dissects the site into two more or less equal parts. It comprises of a tall sward of largely poor semi-improved grassland mostly dominated by false oat-grass. A variety of herbaceous species are also present but the cover they form is largely sparse and uneven.
20		Location of a linear waterbody wetland within a ditch-like depression. There are several stands of reedmace and other wetland emergent plants present.
21		Sparsely vegetated land located in the centre of this photograph was identified as a possible male territory and potential breeding and nesting site.
22		A large area of exposed mud and sand where 2-3 little ringed plovers were noted to be foraging.

23		An area of restored grassland on uneven ground with great structural variety in the vegetation cover. Coarse grasses form a locally significant amount of cover but within this open sward there was a wide variety of ruderal species and other herbaceous vegetation. Scattered scrub contributed to this mix. Many herbaceous species formed only a small proportion of the cover such as hedge woundwort (*Stachys sylvatica*), hemlock, black horehound (*Ballota nigra*) and great mullein (*Verbascum thapsus*) of which there were some notably tall examples of the latter.
24		Location of a circular-shaped pond mostly dominated by reedmace along with great willowherb, common club-rush and hard rush Standing water still present. On the margins of this pond a rather locally distributed robberfly was collected and identified as the female of *Leptarthrus brevicaud*a. A somewhat anomalous location for it as it is mainly a species of chalk and limestone grassland (in the greater part of south-east England).

DRAWINGS

N

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- DENSE SCRUB
- SCATTERED SCRUB
- TALL RUDERAL
- OPEN WATER
- SWAMP (REED / REEDMACE)
- SHORT EPHEMERAL / PERENNIAL
- TALL RUDERAL OVER SHORT EPHEMERAL / PERENNIAL
- BARE GROUND
- BARE SAND (STOCKPILES)
- GRAVEL / RUBBLE - CRUSHED AND UNCRUSHED STOCKPILES
- R — RESTORED GRASSLAND
- EXPOSED LAGOON MUD / SAND
- HARDSTANDING
- 1 — TARGET NOTE

0 20 40 60 80m 120 160 200

Metres 1:2000

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CROSS LEYS QUARRY

ECOLOGY SURVEY

PHASE 1 HABITAT PLAN

DRAWING 1

Scale 1:2000 @ A2

Date JUNE 2017

421.00275.00220.27.001.1 Phase 1 Habitat Plan.dwg

N

A

B

C

D

E

F

G

H

I

J

0 20 40 60 80m 120 160 200

Metres 1:2000

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

SURVEY AREA

INVERTEBRATE SUB-SITE BOUNDARIES AND REFERENCE

AREA NOT SURVEYED DUE TO SAFETY REASONS

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CROSS LEYS QUARRY

TERRESTRIAL INVERTEBRATE SURVEY

EXTENT AND LOCATION OF SUB-SITES

DRAWING 2

Scale 1:2000 @ A2

Date MARCH 2018

421.00275.00220.27.001.0 Terrestrial Invertebrate Survey.dwg

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CROSS LEYS QUARRY

Reptile Survey Report

Prepared for: Aggregate Industries (UK) Ltd

SLR Ref: 421.00275.00220
Version No: 1
March 2018

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This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Aggregate Industries (UK) Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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CONTENTS

DRAWINGS

1.0 Introduction

This report has been prepared by SLR Consulting Limited (SLR) on behalf of Aggregate Industries (UK) Ltd and summarises the findings of reptile surveys undertaken in summer 2017 at Cross Leys Quarry in Peterborough (hereafter referred to as the "site").

This report describes the reptile survey methodology, presence and evaluates the results and describes proposed mitigation measures.

1.1 Planning Policy and Legislative Background

The species of native reptile that are regarded as being widespread include adder (*Vipera berus*), grass snake (*Natrix natrix*), slow worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*). These species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of part of sub-section 9(1) and all of sub-section 9(5) only. As such, it is an offence to intentionally kill, injure or trade these species.

In addition, all native reptile species are listed as priority species under the UK Biodiversity Action Plan and are listed as "species of principal importance" under Section 41 of the Natural Environment and Rural Communities Act 2006.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

1.2 Consultation and Scoping

Ecological appraisal of Cross Leys Quarry during a Phase 1 Habitat survey in May 2017 identified the potential for the occurrence of reptile species within the study area which would be disturbed. The report recommended reptile surveys be carried out to determine the species present and their population sizes.

Specific surveys for reptiles were agreed to be carried out in accordance with recognised guidance.

1.3 Study Aims and Objectives

The aims of the reptile survey and assessment were to:

- confirm the presence/absence of reptile species within the site and describe their distribution and abundance;
- estimate the quality, distribution and likely uses of reptile habitats;
- evaluate the population(s) in the local, regional and national context;
- describe the avoidance and mitigation commitments for these species; and
- assess the chances of success for the mitigation and describe the residual impacts to the populations affected.

2.0 Survey Methodology

2.1 Good Practice Guidance

Reptile field surveys were undertaken in accordance with guidance presented in Natural England's Standing Advice and following the methodology described by Froglife (1999) Advice Sheet 10: An Introduction to Planning, conducting and interpreting surveys for snake and lizard conservation[1].

2.2 Study Area

Cross Leys Quarry is a former quarry which has been partially restored to grassland. A fuel pipeline splits the site running north-east – south-west. The southern smaller section of the site is dominated by two large waterbodies as well as numerous small ephemeral ponds and ditches, and species poor restored grassland and ruderal habitat. The northern larger section of the site is more topographically varied in comparison to the southern section, stockpiles of aggregate and waste material, ruderals and predominately scattered willow scrub, bare and partially vegetated ground, with a large dense scrub located on the northern boundary.

2.3 Desk Study

The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) performed a 2km radial search of the site, the data of which was reviewed to provide context for the survey results.

2.4 Field Survey

A total of seven reptile field surveys in suitable conditions were undertaken from 18.09.2017 to 10.10.2017, using a combination of direct observation of the search area and monitoring artificial refugia. Direct observation is looking for reptiles in suitable locations of the survey area, such as basking spots, by either walking slowly through suitable habitat, using binoculars and lifting rocks/dead wood and other refugia (including man made waste such as wood and plastic). Artificial refugia were deployed, a total of 145 squares of roofing felt/carpet mats were placed in five different locations across the study area in early September 2017 and are as follows: Zone A 30 mats, Zone B 45 mats, Zone C 40 mats, Zone D 15 mats and Zone E 15 mats. Refuges were left to settle into the vegetation for six days, which were then checked for basking reptiles above or sheltering below the tiles.

The surveys were carried out during suitable weather conditions, temperatures were between 14°C and 20°C with little to no wind.

2.5 Survey Personnel

Study design, field survey and reported were conducted by suitably experienced SLR Consulting Ltd ecologists. Mr Richard Coppins conducted all field survey checks. Reporting was drafted by Phillippa Dean and reviewed by Mr Robert Edmonds, MCIEEM, Technical Director - Ecology at SLR.

2.6 Limitations to Survey

No limiting factors were experienced during the reptile survey, surveys undertaken were sufficient to achieve the aims listed in Section 1 of this report.

[1] http://www.froglife.org/documents/FroglifeAdviceSheet10.pdf

3.0 Results

3.1 Contextual Information and Background Records

The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) identified no reptile records in the data search area.

3.2 Field Survey Results, Timing and Climatic Data

A population of common lizards were confirmed to be present within the site surveyed, with a maximum of 11 individuals being recorded in a single visit. No other species of reptile were recorded during the surveys. The results gathered are presented in the table below, artificial refugia locations are displayed on Drawing 1. Approximate locations of all sightings are provided on Drawing 2.

Table 3-1
Survey Results, Timing and Weather Conditions

Survey Date	Survey Start Time	Weather Conditions	Results
18th September 2017	11:00	14ºC, cloud cover 3/8, light breeze (Beaufort scale 2).	2 adult and 2 juvenile common lizards in Zone A, 3 adult and 1 juvenile common lizards in Zone B, 2 adult and 1 juvenile common lizards in Zone C.
25th September 2017	11:50	20ºC, cloud cover 4/8, No wind (Beaufort scale 0).	1 adult and 2 juvenile common lizards in Zone A, 1 adult and 1 juvenile common lizards in Zone B, 1 adult and 1 juvenile common lizards in Zone C.
2nd October 2017	10:30	16ºC, cloud cover 7/8, Light breeze (Beaufort scale 1).	1 juvenile common lizard in Zone B, 2 juvenile common lizards in Zone C.
5th October 2017	13:50	16ºC, cloud cover 3/8, light breeze (Beaufort scale 1).	1 juvenile common lizard in Zone B, 1 adult and 2 juvenile common lizards in Zone C.
6th October 2017	11:20	14ºC, cloud cover 4/8, light wind (Beaufort scale 2).	1 adult common lizard in Zone D.
9th October 2017	12:45	12ºC, cloud cover 7/8, Light breeze (Beaufort scale 1).	No reptiles.
10th October 2017	10:00	16ºC, cloud cover 3/8, light breeze (Beaufort scale 1).	No Reptiles.

4.0 Discussion and Evaluation

Reptile survey at Cross Leys Quarry has confirmed the presence of a common lizard population. With reference to the Key Reptile Site assessment guide from Froglife (1999), the population present is considered to be “Good”. However, the site does not meet the criteria that describe “Key Reptile Sites”.

The surveys detected the majority of the common lizards in 3 main areas of the site (Zone A, Zone B and Zone C) with Zone D only recording 1 adult. The first day of survey gave the peak count of the survey period of 11 individuals in Zones A, B and C. The habitats within these Zones offer habitat connectivity and patchy habitat mosaics, which provide ample basking and sheltering opportunities. Zone A comprises of tall ruderals, dense scrub with bare ground. Zone B is a narrow strip of retained grassland habitat along a fuel pipeline. Zone C is the south-western section of the pipeline and unmanaged restored grassland topsoil storage mounds. It is considered likely that the pipeline represents an important habitat corridor for this species to migrate through the site.

5.0 Summary and Conclusions

This report sets out the approach and results of reptile surveys conducted over seven days at Cross Leys Quarry in autumn 2017.

The data collected from the surveys identified a good population of common lizard within the study area, a maximum of seven adults and four juveniles were recorded in a single survey visit.

In the absence of mitigation, the proposed development of the site has the potential to impact directly upon common lizards, causing injury or death, and would lead to the loss of habitat used by the population present. Avoidance and mitigation measures are therefore required to substantially reduce the risk of having these effects on this species and protect their key habitat within the study area.

6.0 Closure

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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DRAWINGS

N

NOTES

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LEGEND

- SURVEY AREA
- DENSE SCRUB
- SCATTERED SCRUB
- TALL RUDERAL
- OPEN WATER
- SWAMP (REED / REEDMACE)
- SHORT EPHEMERAL / PERENNIAL
- TALL RUDERAL OVER SHORT EPHEMERAL / PERENNIAL
- BARE GROUND
- BARE SAND (STOCKPILES)
- GRAVEL / RUBBLE - CRUSHED AND UNCRUSHED STOCKPILES
- R — RESTORED GRASSLAND
- EXPOSED LAGOON MUD / SAND
- HARDSTANDING

REPTILE SURVEY

- A — REPTILE MAT LOCATIONS

0 20 40 60 80m 120 160 200

Metres 1:2000

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CROSS LEYS QUARRY

ECOLOGY SURVEY

REPTILE MAT LOCATIONS

DRAWING 1

Scale 1:2000 @ A2

Date DECEMBER 2017

421.00275.00220.27.001.0 Reptile Mat Locations.dwg

N

1 adult and 2 juvenile common lizards

2 adult and 2 juvenile common lizards

1 adult and 1 juvenile common lizards

1 adult common lizard

3 adult and 1 juvenile common lizards

2 adult and 1 juvenile common lizards

1 juvenile common lizard

1 juvenile common lizard

1 adult and 2 juvenile common lizards

1 adult and 1 juvenile common lizards

2 juvenile common lizards

0 20 40 60 80m 120 160 200

Metres 1:2000

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

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- R RESTORED GRASSLAND
- EXPOSED LAGOON MUD / SAND
- HARDSTANDING
- 1 TARGET NOTE
- SUITABLE REPTILE HABITAT ZONES / AREAS
- REPTILES FOUND

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CROSS LEYS QUARRY

ECOLOGY SURVEY

REPTILE SUITABLE HABITAT PLAN

DRAWING 2

Scale 1:2000 @ A2

Date MARCH 2018

421.00275.00220.27.001.0 Suitable Reptile Habitat Plan.dwg

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File 1142/1

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FACSIMILE TRANSMISSION COVER SHEET

To:	Aggregate Industries	Attention:	John Penny
Date:	15 March 2001	Fax Number:	01455 288643
From:	Nigel Weir	Subject:	Cross Leys

YOU SHOULD RECEIVE __3__ PAGE(S) INCLUDING THIS COVER SHEET, IF YOU DO NOT RECEIVE ALL THE PAGES PLEASE CALL 0115 9061354

John

CROSS LEYS – SOILS/ALC .

Thank you for the FRCA soils/ALC report, we have not received this previously, presumably it was lost in the post.

I have amended the text to reflect the findings of the FRCA without reproducing their findings word for word. The drawing has been changed to reflect the changes as per the ALC plan produced by the FRCA. It is unlikely that the higher ALC grades would constitute a problem given that the majority of the site is to be reinstated to agriculture.

A copy of the amended text, with changes highlighted is attched.

Regards

Nigel

0115 906 1347

SOILS & AGRICULTURE 12

12.1 INTRODUCTION

This section of the Environmental Statement considers the soil resources and Agricultural Land Classification of the Cross Leys Quarry site, near Wittering, Cambridgeshire. It describes the whole site, based solely on published information. No site-specific survey has been undertaken. As part of this Environmental Statement however the findings of a report published by the Farming and Rural Conservation Agency (FRCA), in March 1999, on behalf of the Ministry of Agriculture Fisheries and Food (MAFF) have been consulted and incorporated in the document.

12.2 GEOLOGY

The site is shown on the 1:63,360 drift geological map for the area (Sheet 157 Stamford) as mostly Lower Lincolnshire Limestone (Jurassic), with some Upper Lincolnshire Limestone in a strip near the eastern boundary. The south-eastern corner is shown as the outcrop of an ironstone band within the Upper Lincolnshire Limestone.

12.3 SOILS

There is no detailed soil map for the area and so the only published source of information is Sheet 4 (Eastern England) of the 1:250,000 National Soil Map. This shows geographic groupings of soils called Soil Associations, usually related to specific parent materials.

This map shows the Jurassic Limestones in the area, including both the Lower and Upper Lincolnshire Limestones, which are likely to have similar soils, as Association 343a ELMTON 1. This is described as a collection of:

"shallow, well drained brashy calcareous fine loamy soils over limestone; some similar deeper soils and some non-calcareous and calcareous clayey soils".

The main feature of the dominant soils over the limestone is their variable stoniness and depth to limestone. A typical Elmton soil has around 15-20% limestone fragments and has limestone within about 40cm depth, but sometimes at much less than this. The type profile described in the Bulletin accompanying the National Soil Map is, for example, described as being only 25cm deep over limestone. These shallow soils tend to occur on the crests of small rises and on the nearby slopes, with deeper soils (Aberford series) in the valley bottoms. Clayey bands in the limestone give less stony soils but these, too, often pass down into limestone at a relatively shallow depth (typically 60cm).

The ironstone band at the south-east corner would be expected to give rise to different soils and the FRCA report confirms that they are of the Evesham 1 Association. These are slowly permeable calcareous clayey soils associated with shallow well drained brashy calcareous soils over limestone.

12.4 AGRICULTURAL LAND CLASSIFICATION (ALC)

The published ALC map (Sheet 123, Spalding) shows the whole site as undifferentiated Grade 3. The accompanying report describes the soils over limestone in broadly similar terms as the descriptions given above, again noting the variation in depth to limestone. It suggests typical depths as being in the 25-45cm range, with stoniness an accompanying problem. At that time Grade 3 was subdivided into three subdivisions, and the report suggests that all three subdivisions are likely depending on soil depth, texture and stoniness.

Since the published ALC map was produced there has been a fairly drastic revision to the criteria and guidelines for allocating land to particular grades. Also the two lowest division of Grade 3 (Subgrades 3b and 3c) have been amalgamated into a single subgrade, Subgrade 3b.

Three main problems are likely to influence the grading on the limestone soils. These are depth, stoniness and droughtiness. All three are related, since the shallowest soils are also the stoniest and the combination of high stone content and restricted depth also produce the droughtiest profiles.

In many of the limestone areas in the Midlands and Eastern England there is a close relationship between the gradings produced by applying the soil depth criteria and the gradings produced by carrying out calculations of the degree of any droughtiness limitation. Here, however, the climate is relatively dry and droughtiness is more of a limitation.

Calculations have been carried out for typical profiles, with fairly generous assumptions as to stoniness and the extent to which roots can penetrate into brashy limestone at depth. These indicate that profiles less than 45cm deep, although qualifying for Subgrade 3a on depth, can be graded no higher than Subgrade 3b because of an over-riding droughtiness limitation. A shallower soil, e.g. a "typical" 25cm deep Elmton profile, while qualifying for 3b on depth, gives only Grade 4 land because of droughtiness.

Thus the conclusion from the published information is that the most of the limestone land on the site is probably no better than Subgrade 3b, with any Subgrade 3a restricted to small areas where the soils are 60cm deep or more and Grade 2 being limited to the Evesham 1 Association. The FRCA site survey of March 1999 broadly confirms this and identifies the following percentage ALC distribution across the site.

ALC Grade	Area (hectares)	% Site Area
2	2.2	11
3a	5.2	27
3b	12.0	62
Total Site Area	19.4	100

Droughtiness on the soils over the ironstone, assuming that these are like a typical Evesham series profile, is slightly less of a limitation since these soils are generally deeper.

12.5 SOIL RESOURCES FOR RESTORATION

It is recommended that the two types of soils noted above i.e. those over limestone and those over ironstone be stripped separately. The main problem with the soils over limestone is that it

is anticipated that any subsoil present between the topsoil and the brashy limestone would be too thin for it to be feasible to strip it as a separate layer. There is also the danger that trying to strip it would increase its stone content by incorporating some of the underlying brashy limestone. Thus, even where thin subsoil does exist, it would be preferable to incorporate it into the topsoil i.e. to strip the entire thin profile over the limestone *en masse* as topsoil, rather than trying to strip separately what would be very small pockets of subsoil.

Accordingly the only restoration material worth conserving on the limestone areas is likely to be topsoil and stripping of this should include any lighter coloured subsoil which is likely to be encountered only in small pockets. Incorporation of any very stony material from near the interface with the underlying limestone should be avoided.

Over the ironstone, and again assuming a "typical" Evesham series soil, there would be separate topsoil and subsoil, but the latter is likely to become so stony at depth that it is doubtful if such material is worth conserving. A reasonable assumption would be an average of 30cm thickness of topsoil and 30cm of moderately subsoil i.e. down to an overall depth of 60cm from the surface, before unacceptably stony material is encountered.

12.6 CONCLUSIONS

It is concluded that, overall, the limestone areas on the site are generally Subgrade 3b. Profiles deep enough to give Subgrade 3a are likely to be rare and restricted only to thin bands in valley bottoms.(The FRCA survey identifies that these conditions and grade is found on site). The soil resources are restricted to topsoil. Any paler coloured subsoil encountered, which is likely to be thin if it is present at all, should be stripped along with the topsoil. Incorporation of any of the underlying brashy limestone should be avoided.

The situation on the ironstone in the south-east corner is different, but assuming soils like those over Northamptonshire ironstone elsewhere in the Midlands, Grade 2 land is indicated, with soil resources consisting of around 30cm topsoil and 30cm of subsoil overlying material.

The restoration proposals are based on the reinstatement of 16.4 ha of agricultural land using the soils found on site. The loss of approximately 3 hectares of land of ALC Subgrade 3b is not considered to be a significant constraint to the development which represents a diversification of land use to incorporate habitat creation in accordance with current government guidance given in MPG 6.

CROSS LEYS QUARRY

Winter Bird Survey

Prepared for: Aggregate Industries

SLR Ref: 421.00275.00220
Version No: 1
March 2018

BASIS OF REPORT

This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Aggregate Industries (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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CONTENTS

DOCUMENT REFERENCES

DRAWINGS

Drawing 1: Cross Leys Quarry Pond Locations

1.0 Introduction

In October 2017, SLR Consulting Limited was commissioned by Aggregate Industries to undertake an ornithological survey at the disused Cross Leys Quarry, Cambridgeshire (approximate central OS grid reference TF 029 005).

This report presents the findings of surveys for wintering birds. Six survey visits were undertaken across the whole site between October 2017 and March 2018.

The aim of the survey work was to record the species assemblage and the numbers of individuals of a given species using the site, and to evaluate the nature conservation interest of the site in relation to wintering birds.

The findings are intended to inform the proposed restoration works at the quarry, which it is understood to involve restoring the northern section of the Site back into agricultural land.

2.0 Relevant Legislation and Information Regarding Conservation Status

2.1 Legislative Background

Section 1, Part I of the Wildlife and Countryside Act 1981 (as amended) (WCA 1981) makes it an offence (with certain limited exceptions and in the absence of a licence) to **intentionally**:

- kill, injure or take any wild bird;
- damage, take or destroy its nest while that nest is in use or being built; or
- take or destroy its eggs.

A person shall also be guilty of an offence if they possess or control any live or dead wild bird or any part of, or anything derived, from such a bird, or an egg of a wild bird or any part of such an egg.

Further, the Act affords additional protection to specific species of birds listed in Schedule 1 of the Act. It is an offence **intentionally or recklessly** to:

- disturb a bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young; or
- disturb the dependent young of such a bird.

2.2 Information Regarding Conservation Status

2.2.1 Birds of Conservation Concern (BoCC) (Eaton et al., 2015)

The UK's birds are split into three categories of conservation concern - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green. The criteria are shown below.

Red list criteria

- Globally threatened;
- Historical population decline in UK during 1800–1995;
- Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969); and
- Severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period.

Amber list criteria

- Species with unfavorable conservation status in Europe (SPEC = Species of European Conservation Concern);
- Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years;
- Moderate (25-49%) decline in UK breeding population over last 25 years, or the longer-term period;
- Moderate (25-49%) contraction of UK breeding range over last 25 years, or the longer-term period;

- Moderate (25-49%) decline in UK non-breeding population over last 25 years, or the longer-term period;
- Rare breeder; 1–300 breeding pairs in UK;
- Rare non-breeders; less than 900 individuals;
- Localised; at least 50% of UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders; and
- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively).

Green list criteria

- Species that occur regularly in the UK but do not qualify under any or the above criteria.

2.2.2 The Natural Environment and Rural Communities (NERC) Act 2006

The NERC Act came into force on 1st Oct 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the purpose of conserving biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Species of Principal Importance

There are 943 species of principal importance included on the S41 list, including a number of bird species. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier (*Circus cyaneus*) has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.

In accordance with Section 41(4) the Secretary of State will, in consultation with Natural England, keep this list under review and will publish a revised list if necessary.

3.0 Methodology

3.1 Winter Bird Survey

The winter bird surveys were undertaken by Andrew Hill ACIEEM, an experienced ornithologist with SLR Consulting, on the 12th October 2017, 20th November 2017, 18th December 2017, 17th January 2018, 14th February 2018 and 20th March 2018.

The surveys had different start times, with two morning, two midday and two evening surveys to establish the site's use at different times of the day.

Initially, the surveyor observed the water bodies CL.12.04 (approximate central OS grid ref TF 02671 00414), CL.12.07 (approximate central OS grid ref TF 02842 00313), CL.12.08 (approximate central OS grid ref TF 02940 00411); and CL.17.10 (approximate central OS grid ref TF 03208 00493) in the quarry and counted the peak number of water birds present on each water body (for locations, see Drawing 1).

The surveyor then walked around the site to record birds, noting in particular the species that were actively using the site for shelter, feeding or hunting, rather than simply flying over.

On completion of the walkover, the numbers of water birds on the water bodies were counted again, in the event that more water birds flew onto the site during the walkover. Bird registrations were recorded on field maps using British Trust for Ornithology (BTO) activity recording codes and one or two-letter species codes.

A summary of the survey metadata for the six survey sessions can be found in table 3-1 below.

Table 3-1
Winter Bird Survey Metadata

Survey Date	Survey Period	Weather Conditions
12/10/2017	16:13 – 18:13	Dry, west wind force 3[1], 7/8 cloud, 9°C
20/11/2017	12:00 – 14:00	Dry, west wind force 2, 2/8 cloud, 7°C
18/12/2017	08:10 – 10:10	Dry, north wind force 2, 3/8 cloud, 1°C
17/01/2018	14:21 – 16:21	Dry, east wind force 3, 7/8 cloud, 3°C
14/02/2018	12:00 – 14:00	Dry, west wind force 3, 3/8 cloud, 4°C
20/03/2018	07:10 – 09:10	Dry, east wind force 4, 4/8 cloud, 3°C

[1] Wind force measured using the Beaufort scale.

3.2 Incidental Records from Previous Baseline Surveys

In addition to the winter bird survey, any incidental BoCC from previous baseline surveys will be summarised.

3.3 Importance of Bird Assemblage

Local guidance on the selection of Wildlife Sites[2] was used to determine the importance of the species assemblage found on the Site in a local context[3]. The criteria specifically relating to wintering birds are;

- A site which regularly contains 0.5% or more of the total British non-breeding population of any species during any period (e.g. wintering, non-breeding summer, moulting, passage).
- Localities with 60 wintering species recorded in the past five years.

3.4 Nomenclature

The sequence and nomenclature follows the British List 8th Edition[4], as updated by recommendations of the British Ornithologists' Union Records Committee (BOURC) Taxonomic Sub-Committee[5].

English names broadly follow Birds of the Western Palearctic[6] (BWP) and generally concur with those in common usage.

---

[2] Anon (2014) *Cambridgeshire and Peterborough County Wildlife Sites: Selection Guidelines Version 6.2*. Cambridgeshire & Peterborough Wildlife Sites Panel.
[3] The remaining criteria relate to breeding birds.
[4] Harrop, A. H. L., Collinson, J. M., Dudley, S. P., Kehoe, C. & The British Ornithologists' Union Records Committee (BOURC) (2006) The British List: A Checklist of Birds of Britain (8th edition). Ibis 155: pp 635-676
[5] Knox, A. G., Collinson, M., Parkin, D. T., Sangster, G. & Svensson, L. (2008) *Taxonomic recommendations for British birds: Fifth report*. Ibis 150: pp 833-835
[6] Cramp, S., Simmonds, K. E. M. & Perrins, C. M. [Eds] (1977-1994) *The Birds of the Western Palearctic*. Volume 1-9. Oxford University Press, Oxford

4.0 Results

4.1 Winter Bird Survey

A full list of bird species recorded, the bird's conservation status, and the peak number of birds recorded is provided in Table 4-1 below.

Table 4-1
Winter Bird Survey Results

Species	BoCC - Status	Summary of Records
Mute Swan (*Cygnus olor*)	Amber	A single bird on pond CL.17.10 recorded on all survey visits.
Mallard (*Anas platyrhynchos*)	Amber	Recorded on all survey visits on pond CL.17.10, with a maximum count of 38 during the January survey.
Teal (*Anas crecca*)	Amber	Recorded during the October and November surveys on pond CL.12.07, with a max count of three during the October survey.
Tufted Duck (*Aythya fuligula*)	Green	Recorded on all survey visits on pond CL.17.10, with a maximum count of 6 during the October survey.
Pochard (*Aythya farina*)	Red	Recorded during the November and January surveys on ponds CL.12.07 and CL.17.10, with a maximum count of 20 during the January survey.
Little Grebe (*Tachybaptus ruficollis*)	Green	Recorded on all survey visits on pond CL.17.10, with a maximum count of 4 during the March survey.
Coot (*Fulica atra*)	Green	Recorded on all survey visits on pond CL.17.10, with a maximum count of 4 during the March survey.
Curlew (*Numenius arquata*)	Red	A single bird on the edge of lake CL.17.10 during the March survey, which subsequently took off to the north.
Snipe (*Gallinago gallinago*)	Amber	Three birds flushed from edge of lake CL.17.10 during the November survey.

Species	BoCC - Status	Summary of Records
Black Headed Gull (*Chroicocephalus ridibundus*)	Amber	Birds seen on all survey sessions on pond CL.17.10, with a maximum count of 69 during the November survey.
Common Gull (*Larus canus*)	Amber	Birds seen on all survey sessions except the March survey on pond CL.17.10, with a maximum count of 9 during the October survey.
Robin (*Erithacus rubecula*)	Green	Single birds in scrub to the north of the Site during the October and November surveys.
Meadow Pipit (*Anthus pratensis*)	Amber	A single bird flushed from grass to the south of pond CL.17.10 during the February survey.
Dunnock (*Prunella modularis*)	Amber, S41	A single bird recorded in scrub to the north of the Site during the March survey.
Blue Tit (*Cyanistes caeruleus*)	Green	Two birds recorded in scrub to the north of the Site during the November survey.
Blackbird (*Turdus merula*)	Green	Three recorded in scrub to the north west of the Site during the October survey and a single bird in the same area during the March survey.
Goldfinch (*Carduelis carduelis*)	Green	Five birds recorded feeding on the ground to the north of the site during the October survey.

4.2 Incidental Records from Previous Baseline Surveys

During a site walkover undertaken on 12th June 2017, a little ringed plover (*Charadrius dubius*) was recorded along the shore of pond CL.17.10.

5.0 Summary and Conclusions

Of the ponds located on the Site, CL.17.10 consistently held the highest numbers of water birds, with fewer numbers on CL.12.07. No water birds were recorded on the other ponds located within the Site. The maximum count for each species fluctuated in the different survey sessions, with no one month having the highest total for all water birds.

Two red list species were recorded in the vicinity of the ponds during the surveys, namely pochard and curlew. Pochard was present during the November and January surveys (with peak numbers reaching 20 during the January survey) but was not subsequently recorded again. This suggests that these birds move around to other local waterbodies, and do not spend a significant amount of time on the Site. The curlew recorded during the March survey is thought to relate to a passage bird. The counts for both pochard and curlew are considered to be no more than locally significant.

Six amber list species were recorded around the water bodies during the survey visits, including mute swan, mallard, teal, snipe, black-headed gull and common gull. The numbers of these species recorded were considered to be of no more than local significance.

Many of the other species recorded away from the water bodies are commonly occurring species, of low conservation concern. However, two Section 41 and or BoCC species were recorded on single occasions; dunnock, and meadow pipit. The numbers of other birds recorded were low, suggesting the Site is of less than local significance for non-water birds.

The incidental little ringed plover record for the Site in June suggests that the Site could likely be used by this species for breeding, but as no breeding bird survey occurred for the site, this cannot be confirmed.

In conclusion, the bird species recorded on the sites water bodies represent a reasonably typical assemblage for wetland habitats in this part of Cambridgeshire. The site does not meet any of the local wildlife site criteria, as only 17 species were recorded, and not in significant numbers. Given that the ponds CL.12.07 and CL.17.10 will be retained, and the low numbers of other birds recorded away from the ponds, the potential impacts of restoration works to wintering birds are considered to be low.

DRAWING 1

Cross Leys Quarry Pond Locations

N

CL. 12.02A

CL. 12.02B

CL. 12.04

CL. 12.07

CL. 12.08

CL. 17.20

CL. 17.10

CL. 17.21

R

0 20 40 60 80m 120 160 200

Metres 1:2000

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- DENSE SCRUB
- SCATTERED SCRUB
- TALL RUDERAL
- OPEN WATER
- SWAMP (REED / REEDMACE)
- SHORT EPHEMERAL / PERENNIAL
- TALL RUDERAL OVER SHORT EPHEMERAL / PERENNIAL
- BARE GROUND
- BARE SAND (STOCKPILES)
- GRAVEL / RUBBLE - CRUSHED AND UNCRUSHED STOCKPILES
- R — RESTORED GRASSLAND
- EXPOSED LAGOON MUD / SAND
- HARDSTANDING
- TARGET NOTE

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CROSS LEYS QUARRY

ECOLOGY SURVEY

POND LOCATIONS

DRAWING 1

Scale 1:2000 @ A2

Date MARCH 2018

421.00275.00220.27.001.0 Pond Locations.dwg

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498000 500000 502000 504000 506000

304000 302000 300000 298000

00275.00233.18.CL7-3.0 Bedrock Geology

N

LEGEND

APPLICATION BOUNDARY

FAULT

BEDROCK GEOLOGY

- KELLAWAYS FORMATION AND OXFORD CLAY FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE
- CORNBRASH FORMATION - LIMESTONE
- BLISWORTH CLAY FORMATION - MUDSTONE
- BLISWORTH LIMESTONE FORMATION - LIMESTONE
- RUTLAND FORMATION - ARGILLACEOUS ROCKS WITH SUBORDINATE SANDSTONE AND LIMESTONE
- UPPER LINCOLNSHIRE LIMESTONE MEMBER - LIMESTONE
- LOWER LINCOLNSHIRE LIMESTONE MEMBER - LIMESTONE
- GRANTHAM FORMATION - SANDSTONE, SILTSTONE AND MUDSTONE
- NORTHAMPTON SAND FORMATION - IRONSTONE, OOIDAL
- WHITBY MUDSTONE FORMATION - MUDSTONE

0 0.5 1 1.5 2 Kilometres

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CROSS LEYS QUARRY

PLANNING STATEMENT

BEDROCK GEOLOGY

CL7/3

Scale 1:30,000 @ A3

Date NOVEMBER 2018

502500
503000
503500
301000
300500

N

TF/00SW/24
62.39
60.81
62.49
TF/00SW/98
64.16
TF/00SW/30
BH1
Wittering Lodge
60.59
02411/8702
55.99
BH3
57.76
59.48
WS1
Quarry
62.5
60.0
57.5
TF/00NW/80
59.64
Wittering Coppice
56.33
BH2
52.64
TF/00SW/78
60.48
TF/00SW/122
Upp
Cross Leys Farm

0 100 200 300 400 500
Metres

LEGEND

- APPLICATION BOUNDARY
- BOREHOLE
- 60.81 — BASE OF LIMESTONE (mAOD)
- 59.48 — GROUNDWATER LEVEL (FEB 2000)
- INDICATIVE GROUNDWATER CONTOUR (FEB 2000)
- INDICATIVE GROUNDWATER FLOW DIRECTION

AGGREGATE INDUSTRIES

SLR
4/5 LOCHSIDE VIEW
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EDINBURGH
EH12 9DH
T: +44 (0)131 335 6830
www.slrconsulting.com

CROSS LEYS QUARRY

PLANNING STATEMENT

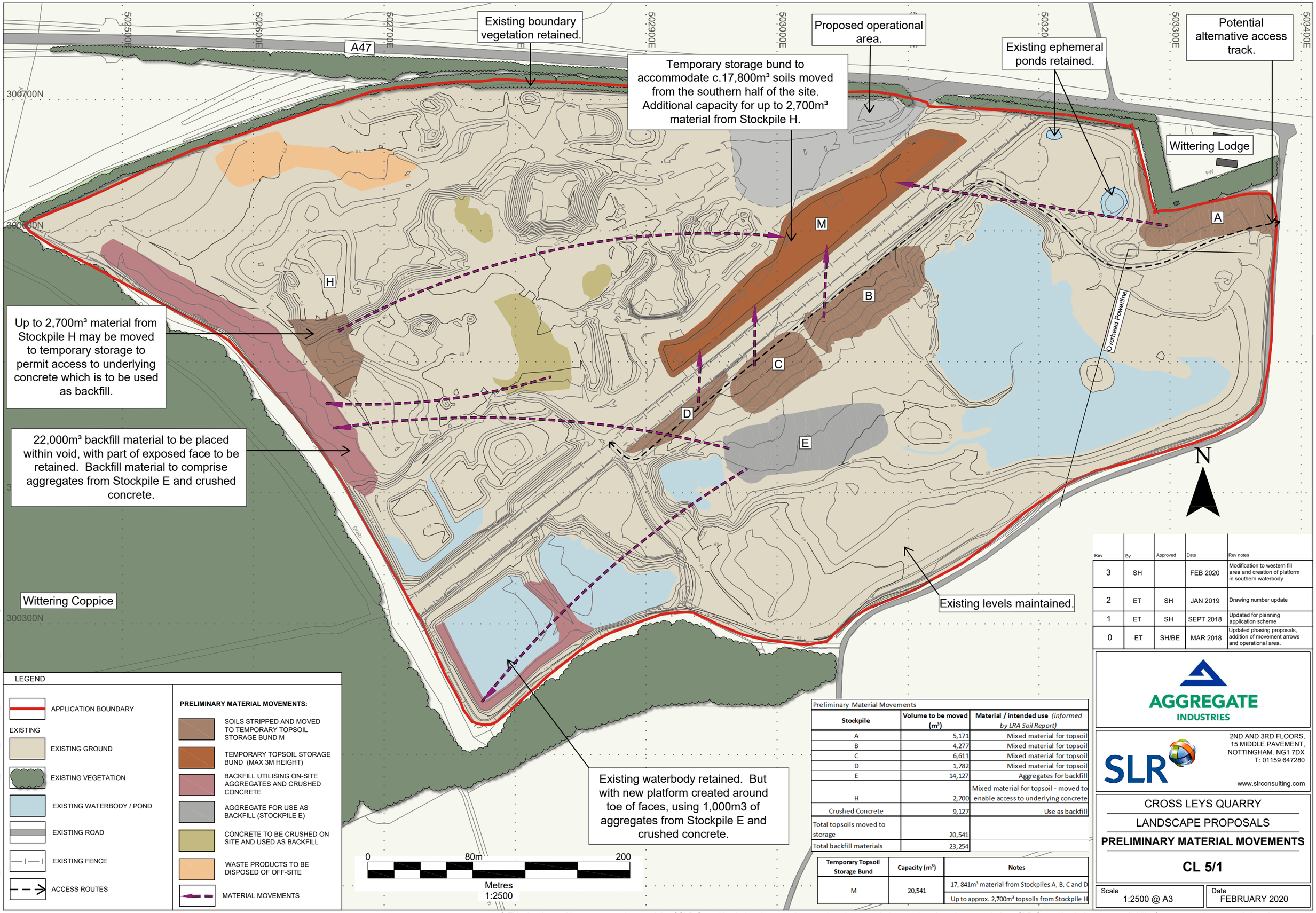
BOREHOLE LOCATIONS AND GROUNDWATER CONTOURS

CL7/5

Scale 1:5,000 @ A3

Date NOVEMBER 2018

00275.00233.18.CL7-5.0 Boreholes and GW Contours



LEGEND

- APPLICATION BOUNDARY
- EXISTING
- EXISTING GROUND
- EXISTING VEGETATION
- EXISTING WATERBODY / POND
- EXISTING ROAD
- EXISTING FENCE
- ACCESS ROUTES

PRELIMINARY MATERIAL MOVEMENTS:

- SOILS STRIPPED AND MOVED TO TEMPORARY TOPSOIL STORAGE BUND M
- TEMPORARY TOPSOIL STORAGE BUND (MAX 3M HEIGHT)
- BACKFILL UTILISING ON-SITE AGGREGATES AND CRUSHED CONCRETE
- AGGREGATE FOR USE AS BACKFILL (STOCKPILE E)
- CONCRETE TO BE CRUSHED ON SITE AND USED AS BACKFILL
- WASTE PRODUCTS TO BE DISPOSED OF OFF-SITE
- MATERIAL MOVEMENTS

Preliminary Material Movements

Stockpile	Volume to be moved (m³)	Material / intended use *(informed by LRA Soil Report)*
A	5,171	Mixed material for topsoil
B	4,277	Mixed material for topsoil
C	6,611	Mixed material for topsoil
D	1,782	Mixed material for topsoil
E	14,127	Aggregates for backfill
H	2,700	Mixed material for topsoil - moved to enable access to underlying concrete
Crushed Concrete	9,127	Use as backfill
Total topsoils moved to storage	20,541	
Total backfill materials	23,254	

Temporary Topsoil Storage Bund	Capacity (m³)	Notes
M	20,541	17, 841m³ material from Stockpiles A, B, C and D
		Up to approx. 2,700m³ topsoils from Stockpile H

Rev	By	Approved	Date	Rev notes
3	SH		FEB 2020	Modification to western fill area and creation of platform in southern waterbody
2	ET	SH	JAN 2019	Drawing number update
1	ET	SH	SEPT 2018	Updated for planning application scheme
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

PRELIMINARY MATERIAL MOVEMENTS

CL 5/1

Scale 1:2500 @ A3

Date FEBRUARY 2020

200225_00275.00233.29.001.0_Prelim_Material_Movements_Feb20.dwg

Existing boundary vegetation retained

Proposed operational area.

Existing ephemeral ponds retained

Potential alternative access track

A47

Wittering Lodge

Overhead Powerline

Existing levels maintained

Imported inert waste to form restoration landform with slopes to enable proposed agricultural end use (no steeper than 1:8 and no flatter than 1:25) Restoration contours shown include 0.7m depth of soils (0.3m topsoil and 0.4m subsoil).

Exposed face retained along western boundary. Fence moved back by 2m.

Wittering Coppice

Drain

Creation of 6no. GCN ponds and terrestrial habitat enhancements. (See Drawing CL 5/7 for additional pond details)

Arising to be used as earth mounds and spread over adjacent areas or into northern landfill area (4,600m3)

Existing waterbody retained

N

0 80m 200

Metres

1:2500

Phase 1 Inert Wastes Import Volume (m^3):	144,000
On-site soil resources to be placed on top as follows:	

Stockpile	Volume used during phase (m^3)	Material / intended use *(informed by LRA Soil Report)*
F	24,376	Aggregates for subsoil
G	1,358	Mixed material for topsoil
H	3,958	Mixed material for topsoil (including the volume moved to temporary storage bund M)
J	4,521	Mixed material for topsoil
L	6,985	High quality topsoil
Total Topsoil	16,822	
Total Subsoil	24,376	

Rev	By	Approved	Date	Rev notes
4	SH		FEB 2020	Modification to western fill area and creation of platform in southern waterbody
3	ET	SH	JAN 2019	Drawing number update. Drainage details added.
2	ET	SH	NOV 2018	Addition of habitat details for birds & drainage details
1	ET	SH	SEPT 2018	Updated for planning application. Max import scheme.
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

LEGEND

EXISTING

- EXISTING GROUND
- EXISTING VEGETATION
- EXISTING WATERBODY / POND
- EXISTING ROAD
- EXISTING FENCE
- ACCESS ROUTES
- APPLICATION BOUNDARY

PHASE 1 RESTORATION (NORTHERN AREA):

- LAND RESTORED TO AGRICULTURE
- STOCKPILES USED AS TOPSOIL (APPLIED TO 0.3M DEPTH)
- STOCKPILES USED AS SUBSOIL (APPLIED TO 0.4M DEPTH)
- TEMPORARY TOPSOIL STORAGE BUND
- MATERIAL MOVEMENTS
- PROPOSED DRAINAGE
- PROPOSED ATTENUATION POND

SOUTHERN AREA RESTORATION (GCN RECEPTOR SITE)

- SOILS RIPPED AND AREA RE-SEEDED WITH SPECIES RICH GRASSLAND
- PROPOSED WETLAND
- EARTH MOUND HIBERNACULA. (To be seeded with Species Rich Grassland)
- PROPOSED GCN POND
- PROPOSED DRAINAGE

REFER TO PHASE 2a FOR ADDITIONAL PLANTING PROPOSALS IN GCN AREA

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

PHASE 1 IMPORT / RESTORATION

CL 5/2

Scale 1:2500 @ A3

Date FEBRUARY 2020

200225_00275.00233.29.002.0.Import_Phase_1_Feb20.dwg

Existing boundary vegetation retained

Remaining aggregates recovered from Stockpile F and used as subsoil in restoration of Phase 2a.

Proposed operational area.

Existing ephemeral ponds retained

Potential alternative access track

Wittering Lodge

Wittering Coppice

Stockpile I to provide resource of subsoil and topsoil

Existing waterbody retained

Existing levels maintained

Establishment of new planting to further enhance GCN terrestrial habitat

A47

F

J

M

I

Overhead Powerline

Drain

502500E 502600E 502900E 503100E 50320 503300E 503400E

300700N 300600N 300500N 300400N 300300N

N

0 80m 200

Metres
1:2500

LEGEND

EXISTING

- APPLICATION BOUNDARY
- EXISTING GROUND
- EXISTING VEGETATION
- EXISTING WATERBODY / POND
- EXISTING ROAD
- EXISTING FENCE
- ACCESS ROUTES

PHASE 2 RESTORATION (NORTHERN AREA):

- LAND RESTORED TO AGRICULTURE
- STOCKPILE USED AS TOPSOIL (APPLIED TO 0.3M DEPTH)
- STOCKPILE USED AS SUBSOIL (APPLIED TO 0.4M DEPTH)
- TEMPORARY TOPSOIL STORAGE BUND
- MATERIAL MOVEMENTS
- PROPOSED DRAINAGE
- PROPOSED ATTENUATION POND

REFER TO TABLE FOR PHASE 2a IMPORTATION / SOIL RESOURCE VOLUMES

SOUTHERN AREA RESTORATION

- PROPOSED WOODLAND
- PROPOSED SHRUBS
- PROPOSED HEDGEROW
- SOILS RIPPED AND AREA RE-SEEDED WITH SPECIES RICH GRASSLAND
- PROPOSED WETLAND
- EARTH MOUND HIBERNACULA. (To be seeded with Species Rich Grassland)
- PROPOSED GCN POND
- PROPOSED DRAINAGE

Phase 2a Inert Wastes Import Volume (m³):	60,146	
On-site soil resources to be placed on top as follows:		
Stockpile	**Volume used during phase (m³)**	**Material / intended use** *(informed by LRA Soil Report)*
F	840	Aggregates for subsoil
I	12,975	Mixed material used as subsoil (10,000m³) and topsoil (2,975m³)
J	4,828	Mixed material for topsoil
Temporary Storage Bund M	740	Mixed material for topsoil (recovered from temporary storage bund)
Total Topsoil	8,543	
Total Subsoil	10,840	

Rev	By	Approved	Date	Rev notes
4	SH		FEB 2020	Modification to western fill area and creation of platform in southern waterbody
3	ET	SH	JAN 2019	Drawing number update. Drainage details added.
2	ET	SH	NOV 2018	Addition of habitat details for birds & drainage details
1	ET	SH	SEPT 2018	Updated for planning application. Max import scheme.
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

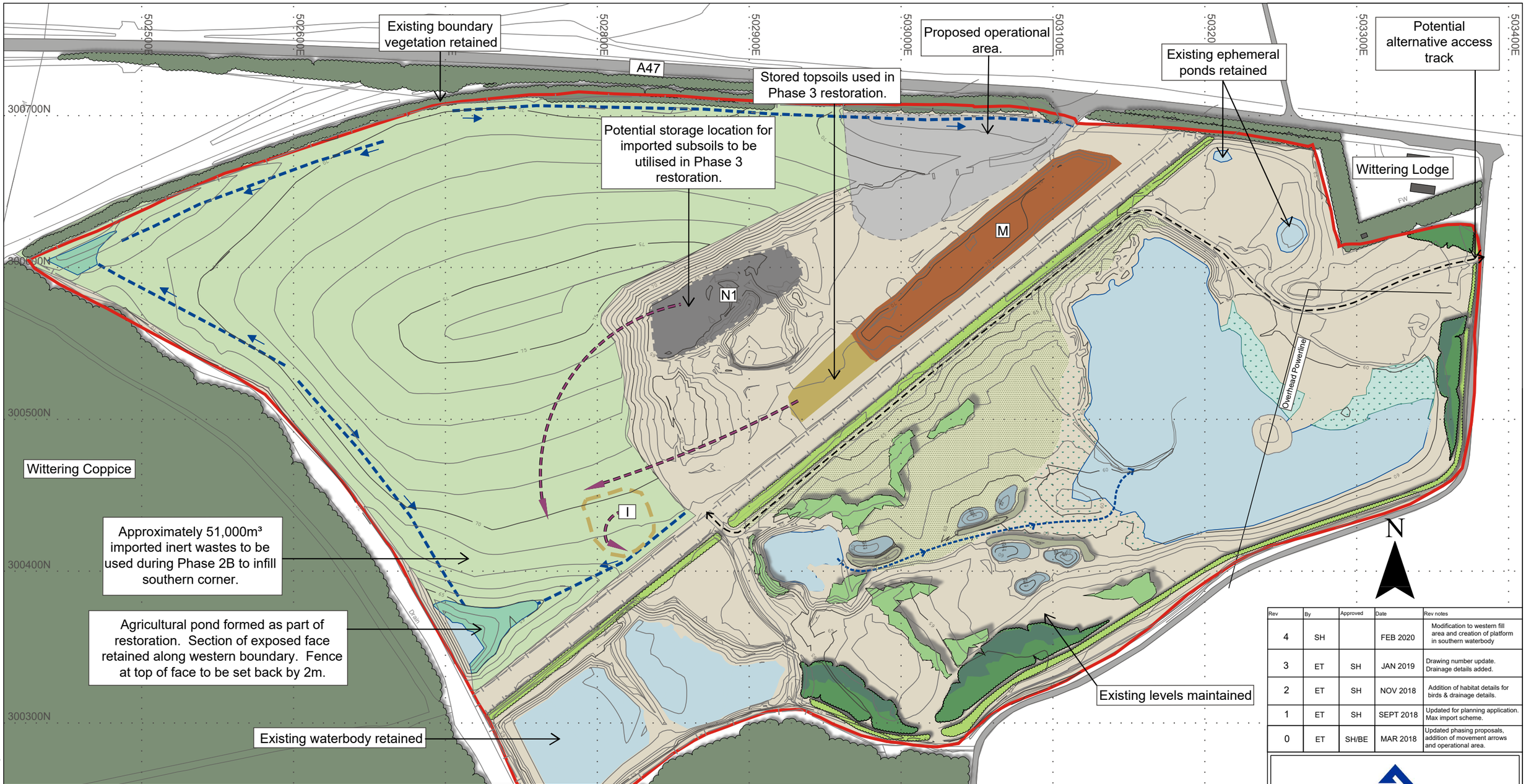
PHASE 2A IMPORT / RESTORATION

CL 5/3

Scale 1:2500 @ A3

Date FEBRUARY 2020

200225_00275.00233.29.003.0 Import_Phase_2A_Feb20.dwg



LEGEND

EXISTING

- APPLICATION BOUNDARY
- EXISTING GROUND
- EXISTING VEGETATION
- EXISTING WATERBODY / POND
- EXISTING ROAD
- EXISTING FENCE
- ACCESS ROUTES

PHASE 3 RESTORATION (NORTHERN AREA):

- LAND RESTORED TO AGRICULTURE
- TOPSOILS USED FROM STORE (APPLIED TO 0.3M DEPTH)
- IMPORTED SUBSOIL - TEMPORARY STORAGE LOCATION (APPLIED TO 0.4M DEPTH)
- TEMPORARY TOPSOIL STORAGE BUND
- AGRICULTURAL POND
- MATERIAL MOVEMENTS
- PROPOSED DRAINAGE
- PROPOSED ATTENUATION POND

SOUTHERN AREA RESTORATION

- PROPOSED WOODLAND
- PROPOSED SHRUBS
- PROPOSED HEDGEROW
- SOILS RIPPED AND AREA RE-SEEDED WITH SPECIES RICH GRASSLAND
- PROPOSED WETLAND
- EARTH MOUND HIBERNACULA. (To be seeded with Species Rich Grassland)
- PROPOSED GCN POND
- PROPOSED DRAINAGE

0 80m 200

Metres
1:2500

Phase 2b Inert Wastes Import Volume (m³):		51,300
Soil resources to be placed on top as follows:		
Stockpile	**Volume used during phase (m³)**	**Soils in Storage**
I	1,922	Mixed material used as subsoil
Temporary Storage Bund M	3,600	Mixed material for topsoil (recovered from temporary storage bund)
Temporary Storage Bund N1	3,158	Imported subsoils
Total Topsoil	3,600	
Total Subsoil	5,080	

Rev	By	Approved	Date	Rev notes
4	SH		FEB 2020	Modification to western fill area and creation of platform in southern waterbody
3	ET	SH	JAN 2019	Drawing number update. Drainage details added.
2	ET	SH	NOV 2018	Addition of habitat details for birds & drainage details.
1	ET	SH	SEPT 2018	Updated for planning application. Max import scheme.
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

PHASE 2B IMPORT / RESTORATION

CL 5/4

Scale: 1:2500 @ A3

Date: FEBRUARY 2020

200225_00275.00233.29.004.0.Import_Phase_2B_Feb20.dwg

Proposed hedgerow and trees to fill gaps in existing boundary vegetation providing a 5m wide habitat corridor

Existing boundary vegetation retained

Operational area restored.

Agricultural access

Infiltration soakaway areas in field edge as part of drainage scheme

Potential alternative access / maintenance track

Infiltration soakaway areas in field edge as part of drainage scheme

Existing ephemeral ponds retained

Wittering Lodge

Additional access gate

Exposed face retained along western boundary. Fence at top of face to be set back by 2m

Wittering Coppice

Proposed pond to provide water for agriculture. The pond would also improve habitat connectivity being beneficial for a range of birds, invertebrates, amphibians and reptiles. Land drain adjacent.

Proposed wet grassland introduced at margins of existing waterbody

Existing restored levels maintained

Habitat creation for Great Crested Newts (GCN) to include 6no. new ponds. Earth-mound hibernacula constructed from material excavated from ponds.

See Drawing CL 5/6 for Cross Section A-A'

Existing waterbody retained. New platform at toe of face. No public access.

A47

A

A'

J

K

M

N2

Gate

Overhead Powerline

300400N

N

0 80m 200

Metres
1:2500

LEGEND

- APPLICATION BOUNDARY
- EXISTING
  - EXISTING GROUND RETAINED - NATURAL REGENERATION PROMOTED
  - EXISTING VEGETATION
  - EXISTING WATERBODY / PONDS RETAINED
  - EXISTING ROAD
  - EXISTING FENCE
- PROPOSED
  - RESTORATION CONTOURS
  - LAND RESTORED TO AGRICULTURE
  - STOCK FENCE / GATE
- ACCESS ROUTES
- PROPOSED WOODLAND
- PROPOSED SHRUBS
- PROPOSED HEDGEROW
- PROPOSED HEDGEROW TREE
- SOILS RIPPED AND AREA RE-SEEDED WITH SPECIES RICH GRASSLAND
- PROPOSED WETLAND
- EARTH MOUND HIBERNACULA. (To be seeded with Species Rich Grassland)
- PROPOSED GCN POND (Typical design to be developed)
- PROPOSED DRAINAGE

PHASE 3 RESTORATION (NORTHERN AREA)

- TOPSOILS USED FROM STORE (APPLIED TO 0.3M DEPTH)
- IMPORTED SUBSOIL - TEMPORARY STORAGE LOCATION (APPLIED TO 0.4M DEPTH)
- MATERIAL MOVEMENTS

Phase 3 Inert Wastes Import Volume (m^3):		112,000
Soil resources to be placed on top as follows:		
Stockpile	**Volume used during phase (m^3)**	**Soils in Storage**
J	475	Mixed material for topsoil
K	543	Mixed material for topsoil
Temporary Storage Bund M	11,940	Mixed material for topsoil
Temporary Storage Bund N2	15,606	Imported subsoils
Total Topsoil	12,958	
Total Subsoil	15,606	

Rev	By	Approved	Date	Rev notes
4	SH		FEB 2020	Amend to woodland and face on western boundary and additional access gate shown
3	ET	SH	JAN 2019	Drawing number update. Drainage details added.
2	ET	SH	NOV 2018	Addition of habitat details for birds & drainage details
1	ET	SH	SEPT 2018	Updated for planning application. Max import scheme.
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

PHASE 3 IMPORT FINAL RESTORATION

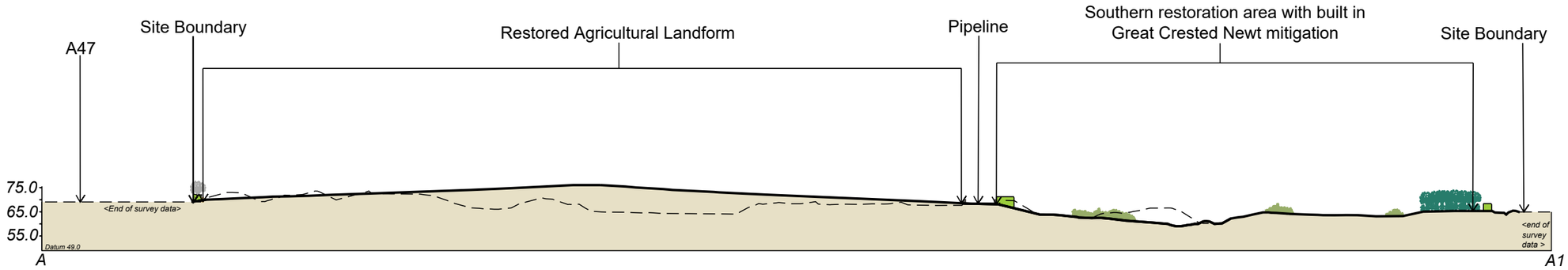
CL 5/5

Scale 1:2500 @ A3

Date FEBRUARY 2020

200225_00275.00233.29.005.0.Import_Phase_3_FinalRest_Feb20.dwg

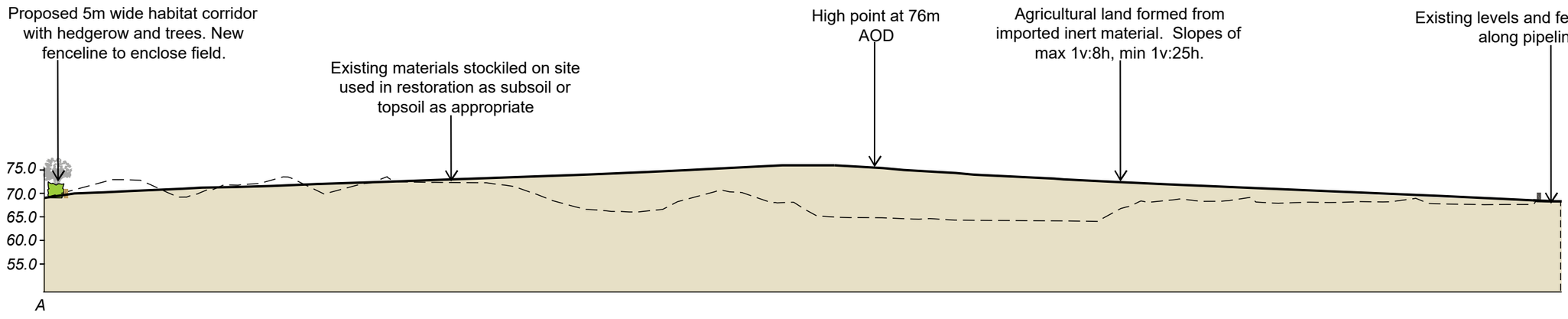
CROSS SECTION A-A1: FULL SITE EXTENTS (1:2,000 @ A3)



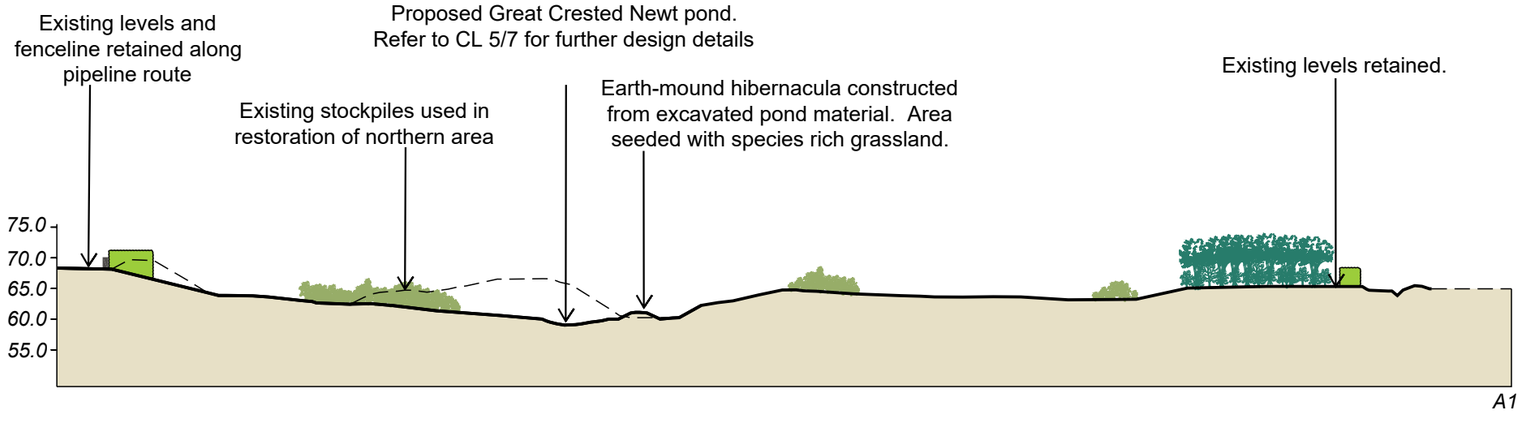
LEGEND

- EXISTING LANDFORM (NOV 2016 AI SURVEY)
- PROPOSED RESTORATION LANDFORM
- PROPOSED HEDGEROW
- PROPOSED SCRUB
- PROPOSED WOODLAND
- PROPOSED FENCE
- EXISTING FENCE

CROSS SECTION A-A1: RESTORED AGRICULTURAL LANDFORM (1:1,000 @ A3)



CROSS SECTION A-A1: SOUTHERN RESTORATION AREA (1:1,000 @ A3)



0	ET	SH	JAN 2019	Updated drawing number

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

CROSS SECTION A-A1 THROUGH RESTORED LANDFORM

CL 3/6

Scale	Date
AS SHOWN @ A3	JANUARY 2019

403.00275.00233.29.006.0_Cross_Sect_A-A1_Jan19.dwg

Designated Sites Map

for SLR

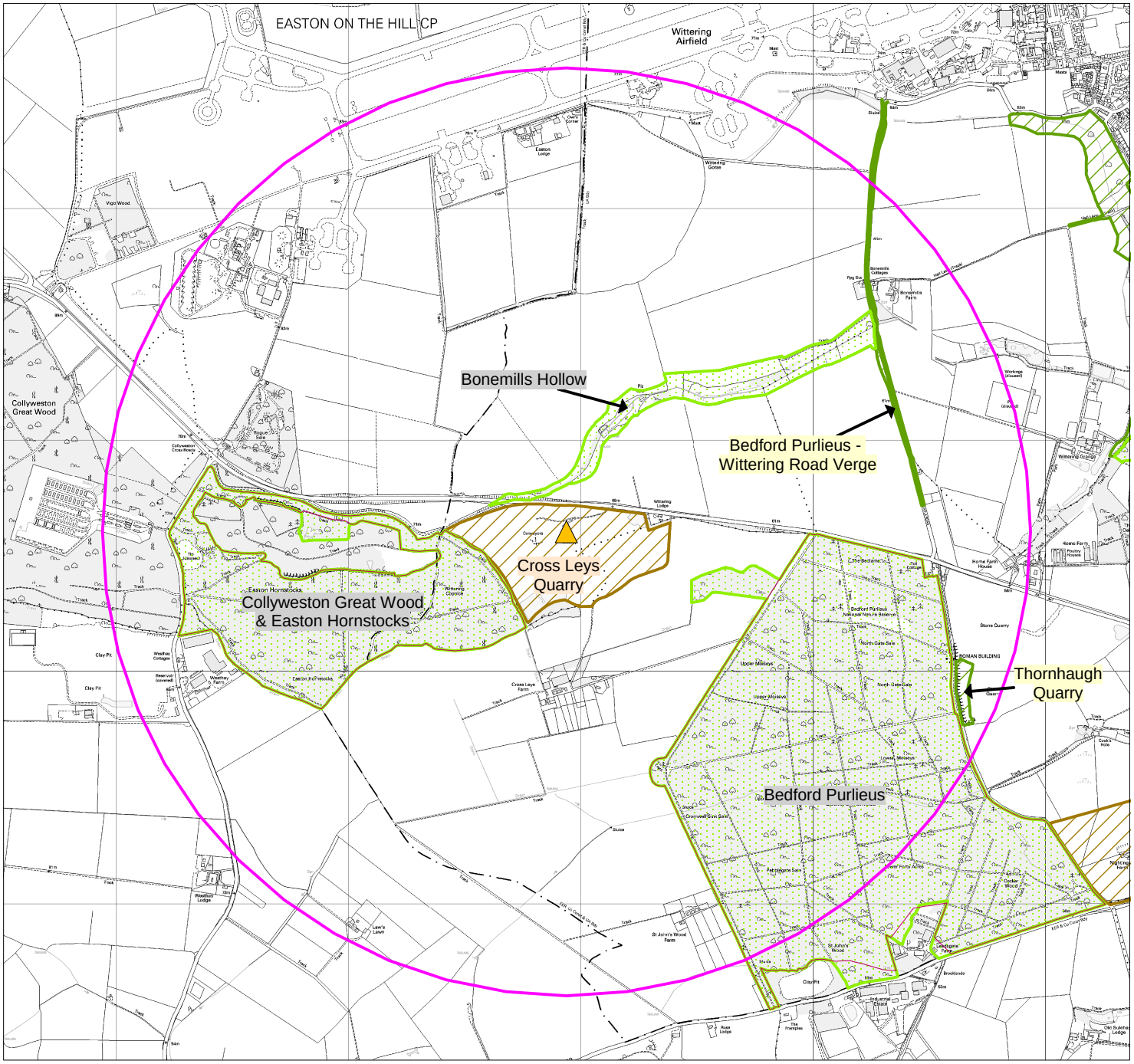
Cross Leys Quarry

1:25000

20th December 2017

CPERC
The Manor House
Broad Street
Cambourne
Cambridgeshire
CB23 6DH

CPERC
CAMBRIDGESHIRE & PETERBOROUGH
ENVIRONMENTAL RECORDS CENTRE



Search Area

Supplied Grid Reference

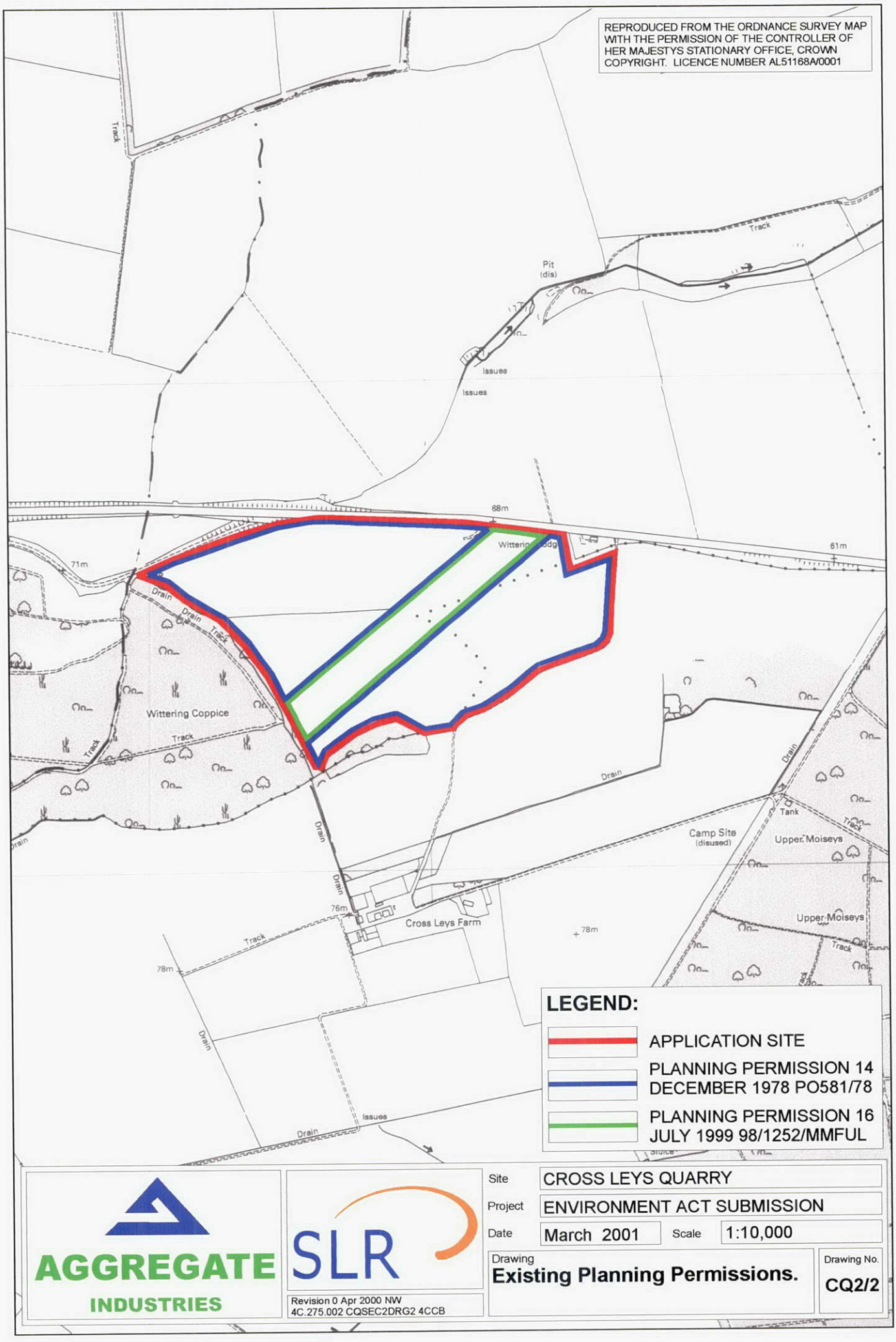
NNR

SSSI

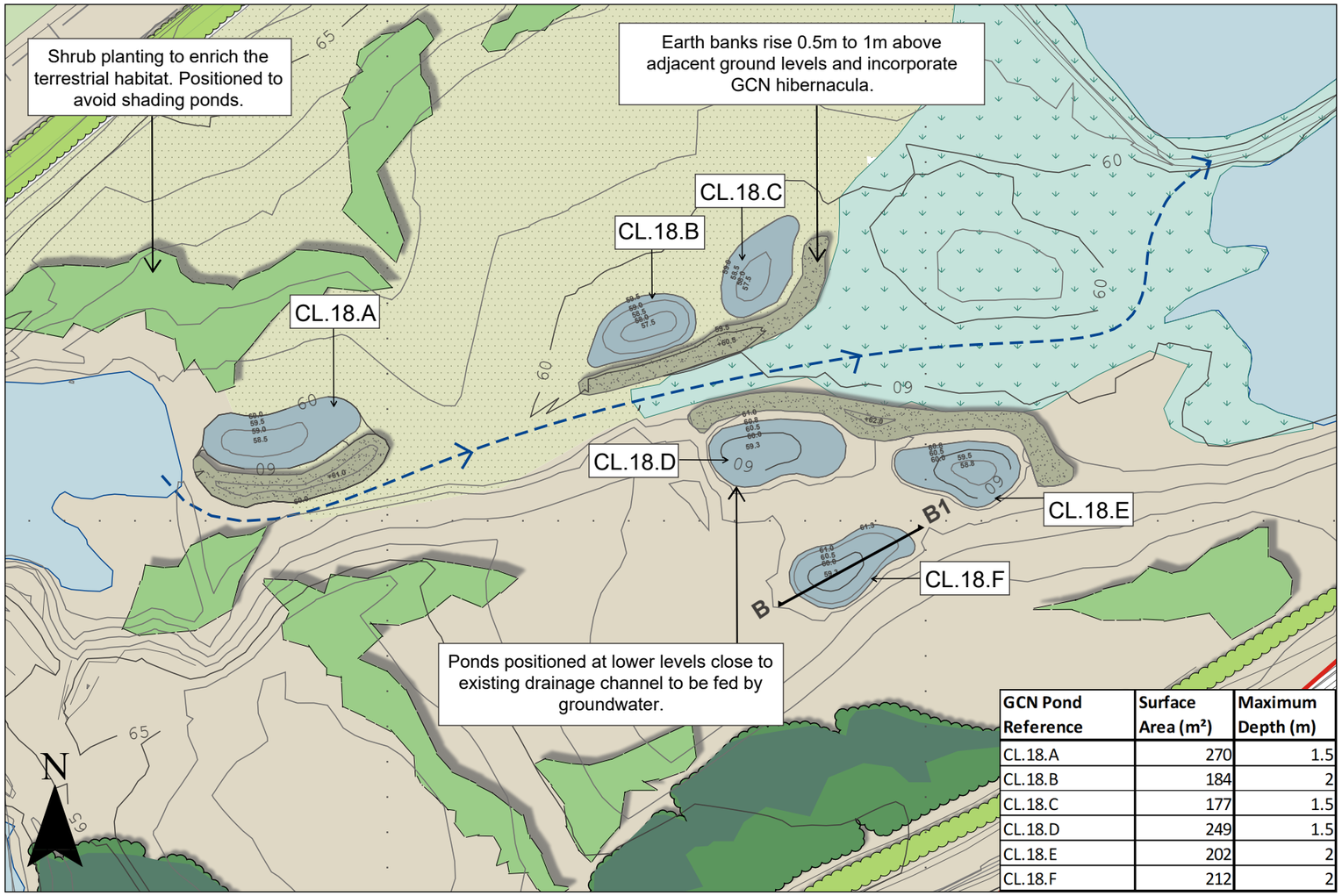
County Wildlife Site

Local Geological Site

N
W E
S

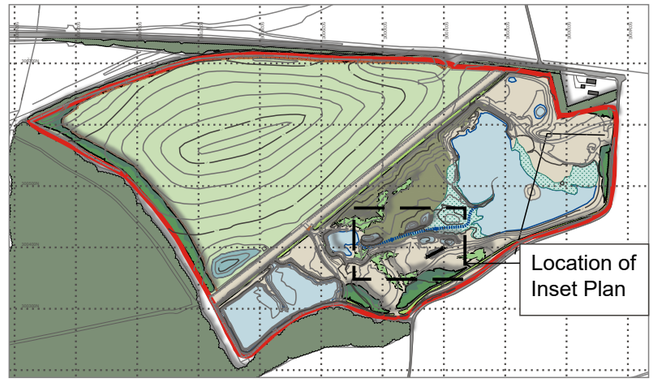

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTYS STATIONARY OFFICE, CROWN COPYRIGHT. LICENCE NUMBER AL51168A/0001
Track
Pit (dis)
Issues
Issues
68m
71m
61m
Drain
Drain
Track
Wittering Coppice
Track
Track
Drain
Drain
Drain
Drain
Tank
Track
Camp Site (disused)
Upper Moiseys
Upper Moiseys
Track
76m
Cross Leys Farm
78m
78m
Track
Drain
Drain
Issues
LEGEND:
APPLICATION SITE
PLANNING PERMISSION 14 DECEMBER 1978 PO581/78
PLANNING PERMISSION 16 JULY 1999 98/1252/MMFUL
AGGREGATE INDUSTRIES
SLR
Revision 0 Apr 2000 NW
4C.275.002 CQSEC2DRG2 4CCB
Site CROSS LEYS QUARRY
Project ENVIRONMENT ACT SUBMISSION
Date March 2001
Scale 1:10,000
Drawing Existing Planning Permissions.
Drawing No. CQ2/2

INSET PLAN: GCN POND AND TERRESTRIAL HABITAT DETAILS SCALE 1:1000



GCN Pond Reference	Surface Area (m²)	Maximum Depth (m)
CL.18.A	270	1.5
CL.18.B	184	2
CL.18.C	177	1.5
CL.18.D	249	1.5
CL.18.E	202	2
CL.18.F	212	2

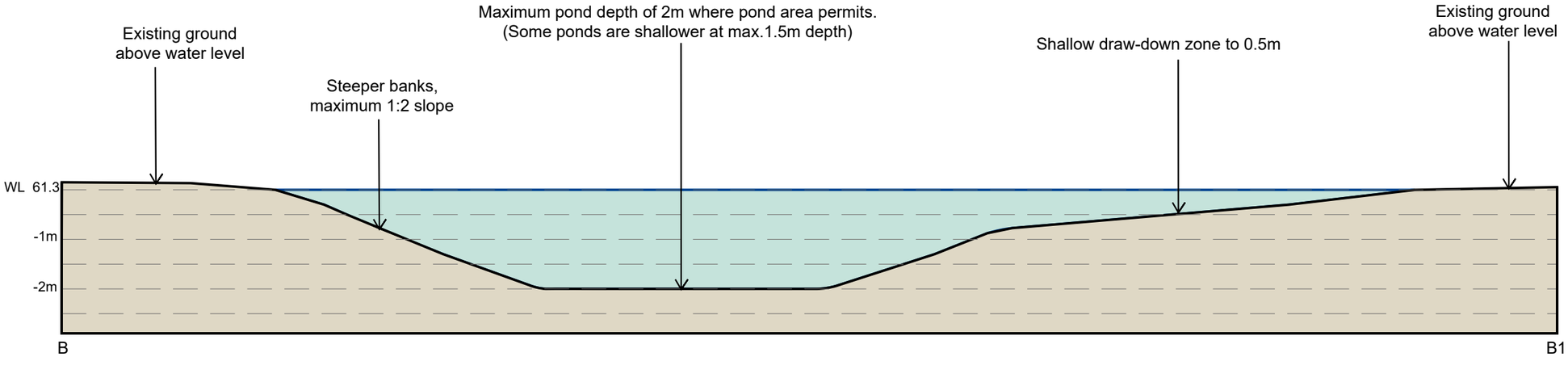
GCN POND LOCATION PLAN - SCALE 1:5000



LEGEND (GCN HABITAT AREA)

- EXISTING GROUND RETAINED - NATURAL REGENERATION PROMOTED
- EXISTING WATERBODY / PONDS RETAINED
- PROPOSED WOODLAND
- PROPOSED SHRUBS
- PROPOSED HEDGEROW
- SOILS RIPPED AND AREA RE-SEEDED WITH SPECIES RICH GRASSLAND
- PROPOSED WETLAND
- EARTH MOUND HIBERNACULA. (To be seeded with Species Rich Grassland)
- PROPOSED GCN POND
- PROPOSED DRAINAGE

CROSS SECTION B-B1 THROUGH POND CL.18.F TO ILLUSTRATE TYPICAL DESIGN FEATURES OF PROPOSED GCN PONDS



Rev	By	Approved	Date	Rev notes
2	ET	SH	JAN 2019	Updated drawing number
1	ET	SH	SEPT 2018	Updated for planning application. Max import scheme.
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

GREAT CRESTED NEWT HABITAT TYPICAL POND DETAILS

CL 3/7

Scale 1:2500 @ A3

Date JANUARY 2019

403.00275.00233.29.007.0_GCN Details_Jan19.dwg

502600 502800 503000 503200 503400

300600

300400

300200

N

CL.12.02a

CL.12.02b

CL.12.04

50m

250m

CL.12.07

CL.12.08

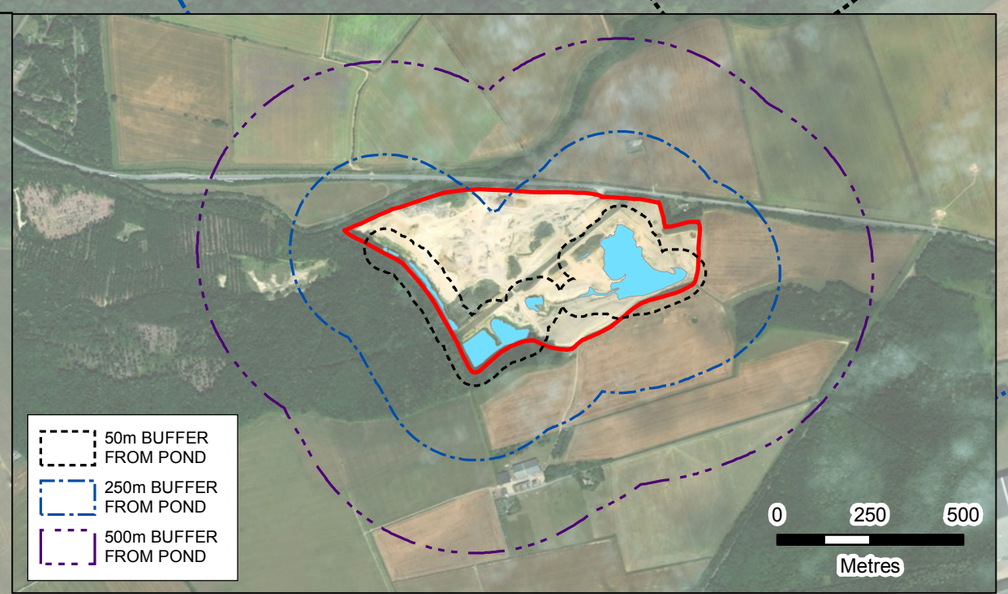
CL.17.10

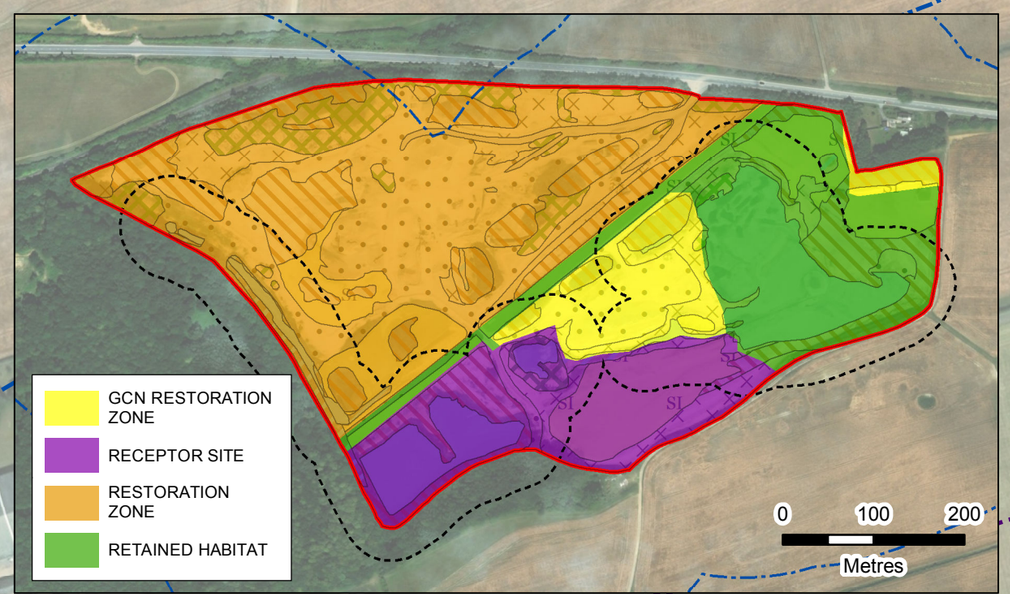
CL.17.20

CL.17.21

0 50 100 150 200

Metres





NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'CROSS LEYS BASE PLAN - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- TARGET NOTE
- SCATTERED SCRUB
- TALL RUDERAL
- DENSE SCRUB
- SEMI IMPROVED GRASSLAND
- OPEN MOSAIC
- OPEN WATER
- SWAMP (REED/REEDMACE)
- HARDSTANDING
- BARE GROUND
- 50m BUFFER FROM POND
- 250m BUFFER FROM POND
- 500m BUFFER FROM POND

AGGREGATE INDUSTRIES

SLR global environmental solutions
8 PARKER COURT
STAFFORDSHIRE TECHNOLOGY PARK, BEACONSIDE,
STAFFORD ST18 0WP
T: 0178 524 1755
www.slrconsulting.com

CROSS LEYS QUARRY

ECOLOGY PROPOSAL

GREAT CRESTED NEWT IMPACTS MAP

CL 6/3

Scale 1:3,000 @ A3

Date JANUARY 2019

00275.00220.27.CL6.3.0 Great Crested Newt Impacts Map

502600 502800 503000 503200 503400

300800

300600

300400

N

0 50 100 150 200

Metres

Aerial image: DigitalGlobe 05/07/2011

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'CROSS LEYS BASE PLAN - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

SURVEY AREA

TERRESTRIAL HABITAT SUITABILITY

LOW SUITABILITY

MODERATE HABITAT SUITABILITY

N/A

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

GREAT CRESTED NEWT TERRESTRIAL HABITAT SUITABILITY

CL 6/4

Scale 1:3,000 @ A3

Date JANUARY 2019

00275.00220.27.CL6.4.0 Great Crested Newt Terrestrial Habitat Suitability

498000 500000 502000 504000 506000

304000 302000 300000

WITTERING BROOK

RIVER NENE

SW1

SW2

Aldgate

Easton on the Hill

Macmillan Way

Hereward Way

Collyweston Br

Kilthorpe Grange

Collyweston

Fish Ponds

Cemy

Wks

Wr Twr

White Water Lake

Chalk Pit Hollow

Wittering Airfield

Mill Fm

Wittering

Easton Lodge

Cuckoo Lodge

Tixover Grange

A43

A47

Bonemills Fm

Elms Fm

Lound Wood

Collyweston Great Wood

Collyweston Cross Roads

Wittering Grange

Halt

Hall

Sluice

Duddington

Quarry

Wittering Lodge

Home Fm

Thornhaugh

Easton Hornstocks

Wittering Coppice

Clay Pit

Westhay Fm

Cross Leys Fm

Bedford Purlieus

Cook's Hole

Sibberton Lodge

Wansford

North Spinney

Westhay Lodge

St John's Wood Fm

Law's Lawn

ROMAN ROAD

Buxton Wood

Top Lodge

Sulehay Forest

Old Sulehay Lodge

Westhay Wood

Jurassic

King's Cliffe

Sch

Huskisson's Lodge

Great Byards Sale

Great Morton Sale

dismantled railway

Meml

Ring Haw

Yarwell

Mill

Alders Fm

Clay Pit

Bluefield Fm

New Sulehay

Kilometres 0 0.5 1 1.5 2

LEGEND

- APPLICATION BOUNDARY
- SURFACE WATER DISCHARGE LOCATION
- ACTIVE LANDFILL
- HISTORIC LANDFILL
- ENVIRONMENTAL AGENCY MAIN RIVER
- FLOOD ZONE 3
- FLOOD ZONE 2
- ZONE II - GROUNDWATER OUTER PROTECTION ZONE
- ZONE III - GROUNDWATER TOTAL CATCHMENT

AGGREGATE INDUSTRIES

SLR
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CROSS LEYS QUARRY

PLANNING STATEMENT

HYDROLOGICAL SETTING

CL7/1

Scale 1:30,000 @ A3

Date NOVEMBER 2018

00275.00233.18.CL7-1.0 Hydrological Setting

502600 502800 503000 503200 503400

300800

300600

300400

N

CL.12.02a

CL.12.02b

CL.12.04

CL.12.07

CL.12.08

CL.17.10

CL.17.20

CL.17.21

0 50 100 150 200

Metres

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'CROSS LEYS BASE PLAN - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- TARGET NOTE
- SCATTERED SCRUB
- TALL RUDERAL
- DENSE SCRUB
- SEMI IMPROVED GRASSLAND
- OPEN MOSAIC
- OPEN WATER
- SWAMP (REED/REEDMACE)
- HARDSTANDING
- BARE GROUND

AGGREGATE INDUSTRIES

SLR global environmental solutions
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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

PHASE 1 HABITAT PLAN

CL 6/1

Scale 1:3,000 @ A3

Date JANUARY 2019

00275.00220.27.CL6.1.0 Phase 1 Habitat Plan

502600 502800 503000 503200 503400

300800

300600

300400

CL.12.02a

CL.12.02b

CL.12.04

CL.12.07

CL.12.08

CL.17.20

CL.17.10

CL.17.21

N

0 50 100 150 200

Metres

NOTES

1. PONDS AND CONTOURS DATA PROVIDED BY AGGREGATE INDUSTRIES (WP_NOV16_REV01)

2. AERIAL IMAGERY DATED 05/07/2011 SOURCED VIA ESRI - VIVID-UK / DIGITALGLOBE

LEGEND

SURVEY AREA

POND

CONTOUR

AGGREGATE INDUSTRIES

SLR global environmental solutions

8 PARKER COURT
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PARK, BEACONSIDE,
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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

POND LOCATIONS

CL 6/2

Scale 1:3,000 @ A3

Date JANUARY 2019

00275.00220.27.CL6.2.0 Pond Locations

N

A47

Existing boundary vegetation retained.

Temporary storage bund to accommodate c.17,800m³ soils moved from the southern half of the site. Additional capacity for up to 2,700m³ material from Stockpile H.

Proposed operational area.

Existing ephemeral ponds retained.

Potential alternative access track.

Wittering Lodge

Overhead Powerline

Up to 2,700m³ material from Stockpile H may be moved to temporary storage to permit access to underlying concrete which is to be used as backfill.

29,000m³ backfill material to be placed within void against exposed face to stabilise. (Gradient to be 1:4 maximum slope). Backfill material to comprise aggregates from Stockpile E and crushed concrete.

Wittering Coppice

Existing levels maintained.

Existing waterbody retained.

0 80m 200

Metres 1:2500

LEGEND

EXISTING

- APPLICATION BOUNDARY
- EXISTING GROUND
- EXISTING VEGETATION
- EXISTING WATERBODY / POND
- EXISTING ROAD
- EXISTING FENCE
- ACCESS ROUTES

PRELIMINARY MATERIAL MOVEMENTS:

- SOILS STRIPPED AND MOVED TO TEMPORARY TOPSOIL STORAGE BUND M
- TEMPORARY TOPSOIL STORAGE BUND (MAX 3M HEIGHT)
- BACKFILL UTILISING ON-SITE AGGREGATES AND CRUSHED CONCRETE
- AGGREGATE FOR USE AS BACKFILL (STOCKPILE E)
- CONCRETE TO BE CRUSHED ON SITE AND USED AS BACKFILL
- WASTE PRODUCTS TO BE DISPOSED OF OFF-SITE
- MATERIAL MOVEMENTS

Preliminary Material Movements

Stockpile	Volume to be moved (m³)	Material / intended use *(informed by LRA Soil Report)*
A	5,171	Mixed material for topsoil
B	4,277	Mixed material for topsoil
C	6,611	Mixed material for topsoil
D	1,782	Mixed material for topsoil
E	14,127	Aggregates for backfill
H	2,700	Mixed material for topsoil - moved to enable access to underlying concrete
Crushed Concrete	15,000	Use as backfill
Total topsoils moved to storage	20,541	
Total backfill materials	29,127	

Temporary Topsoil Storage Bund	Capacity (m³)	Notes
M	20,541	17, 841m³ material from Stockpiles A, B, C and D
		Up to approx. 2,700m³ topsoils from Stockpile H

Rev	By	Approved	Date	Rev notes
2	ET	SH	JAN 2019	Drawing number update
1	ET	SH	SEPT 2018	Updated for planning application scheme
0	ET	SH/BE	MAR 2018	Updated phasing proposals, addition of movement arrows and operational area.

AGGREGATE INDUSTRIES

SLR
ASPECT HOUSE
ASPECT BUSINESS PARK
BENNERLEY ROAD
NOTTINGHAM. NG6 8WR
T: 01159 647280
F: 01159 751576
www.slrconsulting.com

CROSS LEYS QUARRY

LANDSCAPE PROPOSALS

PRELIMINARY MATERIAL MOVEMENTS

CL 3/1

Scale 1:2500 @ A3

Date JANUARY 2019

403.00275.00233.29.001.0_Prelim_Material_Movements_Jan19.dwg

502400 502600 502800 503000 503200 503400

300800

300600

300400

N

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'CROSS LEYS BASE PLAN - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- SCATTERED SCRUB
- TALL RUDERAL
- DENSE SCRUB
- SEMI IMPROVED GRASSLAND
- OPEN MOSAIC
- OPEN WATER
- SWAMP (REED/REEDMACE)
- HARDSTANDING
- BARE GROUND
- INNER FENCING
- OUTER FENCING
- RECEPTOR SITE FENCING

0 50 100 150 200

Metres

AGGREGATE INDUSTRIES

SLR global environmental solutions
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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

PROPOSED CAPTURE AND EXCLUSION FENCING

CL 6/5

Scale 1:3,329 @ A3

Date JANUARY 2019

00275.00220.27.CL6.5.0 Proposed Capture And Exclusion Fencing

498000 500000 502000 504000 506000

304000 302000 300000 298000

LEGEND

APPLICATION BOUNDARY

PRIVATE WATER SUPPLY

AQUIFER POTENTIAL

HIGHLY PRODUCTIVE AQUIFER

MODERATELY PRODUCTIVE AQUIFER

ROCKS WITH ESSENTIALLY NO GROUNDWATER

PWS004

PWS008

0 0.5 1 1.5 2 Kilometres

AGGREGATE INDUSTRIES

SLR

4/5 LOCHSIDE VIEW
EDINBURGH PARK
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EH12 9DH

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CROSS LEYS QUARRY

PLANNING STATEMENT

REGIONAL HYDROGEOLOGY

CL7/4

Scale 1:30,000 @ A3

Date NOVEMBER 2018

00275.00233.18.CL7-4.0 Regional Hydrogeology

N

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- TARGET NOTE
- SCATTERED SCRUB
- TALL RUDERAL
- DENSE SCRUB
- SEMI IMPROVED GRASSLAND
- OPEN MOSAIC
- OPEN WATER
- SWAMP (REED/REEDMACE)
- HARDSTANDING
- BARE GROUND

REPTILE SURVEY

- REPTILE MAT LOCATIONS

0 20 40 60 80m 120 160 200

Metres 1:2000

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

REPTILE MAT LOCATIONS

CL 6/6

Scale 1:2000 @ A2

Date JANUARY 2019

00275.00220.27.CL6-6.0 Reptile Mat Locations.dwg

N

2 adult and 2 juvenile common lizards

1 adult and 2 juvenile common lizards

1 adult and 1 juvenile common lizards

1 adult common lizard

3 adult and 1 juvenile common lizards

1 juvenile common lizard

1 juvenile common lizard

2 adult and 1 juvenile common lizards

1 adult and 2 juvenile common lizards

1 adult and 1 juvenile common lizards

2 juvenile common lizards

NOTES

1. SURVEY SUPPLIED BY AGGREGATE INDUSTRIES. FILE REF 'Cross Leys Base Plan - TCHHH_011216' DATE SURVEY CARRIED OUT NOVEMBER 2016.

LEGEND

- SURVEY AREA
- TARGET NOTE
- SCATTERED SCRUB
- TALL RUDERAL
- DENSE SCRUB
- SEMI IMPROVED GRASSLAND
- OPEN MOSAIC
- OPEN WATER
- SWAMP (REED/REEDMACE)
- HARDSTANDING
- BARE GROUND
- SUITABLE REPTILE HABITAT ZONES / AREAS
- REPTILES FOUND

0 20 40 60 80m 120 160 200

Metres 1:2000

AGGREGATE INDUSTRIES

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CROSS LEYS QUARRY

ECOLOGY PROPOSAL

REPTILE SUITABLE HABITAT PLAN

CL 6/7

Scale 1:2000 @ A2

Date JANUARY 2019

00275.00220.27.CL6-7.1 Suitable Reptile Habitat Plan.dwg

498000 500000 502000 504000 506000

304000 302000 300000

N

LEGEND

APPLICATION BOUNDARY

SUPERFICIAL GEOLOGY

ALLUVIUM - CLAY, SILT, SAND AND GRAVEL

GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL

TILL, MID PLEISTOCENE - DIAMICTON

HEAD - CLAY, SILT, SAND AND GRAVEL

RIVER TERRACE DEPOSITS - SAND AND GRAVEL

TUFA - TUFA, CALCAREOUS

BEDROCK AT OR NEAR SURFACE

0 0.5 1 1.5 2

Kilometres

AGGREGATE INDUSTRIES

SLR

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CROSS LEYS QUARRY

PLANNING STATEMENT

SUPERFICIAL GEOLOGY

CL7/2

Scale 1:30,000 @ A3

Date NOVEMBER 2018

00275.00233.18.CL7-2.0 Superficial Geology

APPENDIX ESSD7

Planning Consents

Telephone: 01733 453410 (open 9am - 1pm)
Email: planningcontrol@peterborough.gov.uk
Case Officer: Mr A O Jones
Our Ref: 19/01365/MMFUL
Your Ref:

PETERBOROUGH CITY COUNCIL

Planning Services
Sand Martin House
Bittern Way
Fletton Quays
Peterborough
PE2 8TY

DX 12310 Peterborough 1
01733 747474

Mr Chris Lowden
SLR Consulting Ltd
Aspect House
Aspect Business Park
Bennerley Road
Nottingham
NG6 8WR

10 December 2020

Dear Mr Lowden

Application for Planning Permission

Proposal: Restoration of quarry workings to agriculture and woodland through the importation and deposit of inert restoration materials and quarry waste

Site address: Cross Leys Quarry Leicester Road Wansford Peterborough

Your client: Mr John Gough

Further in the above matter, please find enclosed our formal decision notice relating to your client's application for planning permission. Please be sure to remind your client that the scheme should be carried out in line with the approved plans. This will avoid the need for any enforcement action.

Making changes to the approved plans
In the event that you wish to change your proposal, please contact your case officer who will advise you on whether the change can be dealt with as a "non-material" or "material" amendment. In either case you will have to complete a form and provide fresh drawings.

Complying with the approved plans
We would like to draw your attention to 'precedent conditions':- these are conditions which require you to either do certain works or submit something for approval prior to starting any work. These conditions must be complied with. Please check your Decision Notice carefully and familiarise yourself with its requirements, allowing plenty of time for the conditions to be complied with before work commences. If these conditions are overlooked you may invalidate your consent, risk enforcement action being taken and may need to submit a further application.

In addition you should be aware that failing to build in accordance with the approved plans or properly discharging conditions often causes problems and delays if selling the property.

Complying with conditions
Please read the conditions attached to this permission carefully. Some conditions may require you to submit more information to us before you can start work.

If further information is required you will need to submit a separate application together with the required supporting documentation. The relevant application form (PF27) for discharge of conditions can be downloaded from our application One Stop Shop at www.peterborough.gov.uk/planningoss

Please ensure that the required details are submitted in duplicate and if you are applying to discharge more than one condition that the supporting information is clearly separated and referenced to each individual condition.

There is a fee required with an application to discharge planning conditions, however this is chargeable per application rather than per condition, please ensure that this is enclosed as part of your application. For further information please visit our application One Stop Shop or contact Planning Services on 01733 453410.

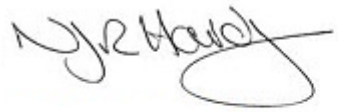
Appeals against conditions

You should also be aware that the applicant has the right to appeal against any conditions attached to this Notice, please see https://www.gov.uk/government/organisations/planning-inspectorate for details. If you are concerned about any condition you should contact the case officer in the first instance for advice.

Your feedback on our service is welcomed

We are interested in finding out what you thought of our service and how we might make it better. To give us feedback please go to http://consult.peterborough.gov.uk/portal/pscss.

Yours sincerely



Nicholas Harding
Head of Planning

PETERBOROUGH CITY COUNCIL

Planning Services
Sand Martin House
Bittern Way
Fletton Quays
Peterborough
PE2 8TY

DX 12310 Peterborough 1
01733 747474

NOTICE OF PLANNING PERMISSION

Town and Country Planning Act 1990

Reference	19/01365/MMFUL
Proposal	Restoration of quarry workings to agriculture and woodland through the importation and deposit of inert restoration materials and quarry waste
At	Cross Leys Quarry Leicester Road Wansford Peterborough
Applicant	Mr John Gough Mick George Ltd
Date valid	3 September 2019

Conditions

Permission is granted subject to the following conditions and reasons:

C 1 The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

Reason: In accordance with Section 91 of the Town and Country Planning Act 1990 (as amended).

C 2 This permission relates to the importation of inert materials and restoration of the site edged red, on the "Application Site" plan referenced CL2/3, dated March 2019.

The importation of inert restoration materials shall cease not later than 7 years from the date of this permission. Landscaping and restoration works shall be completed no later than 12 months after the final importation of restoration materials, or 7 years from the date of this permission, whichever is the sooner.

Reason: To ensure that the site is restored in a timely manner in accordance with Cambridgeshire and Peterborough Core Strategy policy CS25.

C 3 Vehicular access to the site shall only be via the existing quarry access from the A47 Trunk Road as shown on approved plan "Phase 1 Import / Restoration", ref. CL5/2, rev. 4 dated Feb 2020.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 4 A wheel cleaning facility for Large Goods Vehicles (LGV's), in the 'operational area' as depicted on the phasing drawings CL5/2, CL5/3 and CL4/4, shall be retained and maintained in a good working order for the duration of the importation of restoration materials. Internal site traffic arrangements must ensure that all LGVs leaving the site shall pass through the wheel cleaning facility. No materials shall be deposited on the public highway.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 5 All LGVs leaving the site with any loose materials must be securely sheeted.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 6 Restoration, landscaping and habitat provision at the site, including the ordering of soil movements, must be carried out in accordance with the approved plans;

Preliminary Material Movements, ref. CL 5/1, rev. 3, dated February 2020
Phase 1 Import / Restoration, ref. CL 5/2, rev. 4, dated February 2020
Phase 2A Import / Restoration, ref. CL 5/3, rev. 4, dated February 2020
Phase 2B Import / Restoration, ref. CL 5/4, rev. 4, dated February 2020
Phase 3 Import Final Restoration, ref. CL 5/5, rev. 4, dated February 2020
Illustrative Section on Western Boundary, ref. CL 5/7, dated August 2020

With the exception that the land identified as "land restored to agriculture on "Phase 3 Import / Final Restoration" is to be specifically restored as 'species rich pasture'.

Reason: To clarify what is hereby approved.

C 7 Other than water pumping, servicing, and testing of plant and equipment, environmental monitoring and emergency / safety work, the development hereby permitted shall be carried out on the site only between the following times:

0600 and 1900 hours Mondays to Fridays
0600 and 1300 hours on Saturdays

and at no other times on Sundays, Bank or Public Holidays.

Reason: In the interests of the amenity of the nearest residential occupiers in accordance with Cambridgeshire and Peterborough Minerals and Waste Core strategy policy CS34.

C 8 Prior to commencement of the importation of restoration materials, a Dust Management Scheme shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall take into consideration the ecological sensitivities of the site. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate dust management scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse air quality impacts.

C 9 a) No mobile plant will operate using intrusive audible reversing alarms. Plant requiring reversing alarms will be fitted with "white noise" type alarms throughout the period of the development.
b) All plant and machinery shall be silenced at all times in accordance with the manufacturer's recommendations.
c) No hydraulic breakers shall be operated at the site except in accordance with details of their location and noise suppression measures to be submitted to and, approved in writing by the Mineral Planning Authority, no less than 3 months in advance of them being required to be used on site.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C10 The volume of noise received at the properties specified below shall not exceed:

42dB (LAeq 1 hour Free Field) between the hours of 0600 and 0700 Mondays to Saturdays at Wittering Lodge or Cross Leys Farm, or

Wittering Lodge - 53 dB (LAeq) One Hour Free Field
Cross Leys Farm - 45 dB (LAeq) One Hour Free Field

at any other time during the permitted operating hours.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C11 Temporary operations shall not be carried out over a period exceeding a total of 8 weeks in any continuous 12 month period, and relate to work carried out within 200m of the boundary of the noise sensitive properties cited in a). The free field noise level received at noise sensitive properties shall not exceed 70 dB (LAeq) one hour free field during these temporary operations. Five days written notice shall be given to the Mineral Planning Authority in advance of the commencement of any temporary operations as may be agreed, in advance of works taking place.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C12 Prior to commencement of the importation of restoration materials, a Noise Monitoring Scheme shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall take into consideration the ecological sensitivities of the site, and the noise control measures specified in the Bird Hazard Management Plan. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate noise monitoring scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate

control needs to be exercised on activities which from the outset may give rise to adverse noise impacts.

C13 Prior to commencement of the importation of restoration materials, a Biodiversity & Landscape Management Plan, based on the measures outlined in Chapter 6 pf the 'Cross Leys Quarry: Planning application for revisions to the restoration scheme' planning statement dated April 2019, and the accompanying appendices and plan, and including, but not necessarily limited to full details of all protected species avoidance and mitigation measures, including a reptile mitigation strategy, full details and specifications of ponds to be created, non-native species eradication programme and updated species surveys, shall be submitted to, and approved in writing by the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the Biodiversity & Landscape Management Plan.

Reason: To secure appropriate management and mitigation of ecological impacts and protect features of nature conservation importance in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS35. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse ecological impacts.

C14 Topsoil and Subsoil movements and re-spreading shall only be carried out when the full depth of soil is in a dry and friable condition (soils to be assessed by the method set out in Appendix 2 of the Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture to DoE 1996). Soils shall not be stripped, handled or re-spread between the months of October to March inclusive.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS34 and CS38.

C15 Plant or vehicle movements shall be confined to clearly defined haul routes approved beforehand in writing by the Mineral Planning Authority and shall not cross areas of topsoil and subsoil except for the express purpose of soil stripping or replacement operations. No stored topsoil and subsoil shall be removed from the site.

C16 All storage bunds intended to remain in situ for more than 6 months or over the winter period shall be grassed over and weed control and other necessary maintenance undertaken. The seed mixture and the application rates and subsequent maintenance shall be submitted to and approved in writing by the Minerals Planning Authority prior to the construction of the soil storage bunds.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS38.

C17 All fuel, oil or chemical storage tanks, building, ancillary handling facilities and equipment, including pumps and valves, shall be contained within an impervious bund of at least 110% of the tank capacity.

Reason: To protect the water environment in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS39.

C18 Prior to the replacement of topsoil or subsoil or any subsoil substitute, a scheme of soil placement shall be submitted to and approved in writing by the Mineral Planning Authority. Such a scheme shall include:

a)How the restored quarry floor will be prepared prior to soil placement, including levelling and ripping.
b)The proposed soil profile.
c)Method of soil spreading and the machinery to be sued.

d)Subsoiling of any compacted layers.
e)Removal of any material capable of impeding agriculture and land drainage operations; including the removal of stones and other objects greater than 75mm in any dimension rising to the topsoil surface following subsoiling operations.
f)A timetable for the implementation of the scheme.

The restoration of the site shall be carried out in accordance with the approved scheme.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS38.

C19 Within 12 months of the date on this decision, an Aftercare Management Plan shall be submitted to, and approved in writing by the Mineral Planning Authority. Such a plan shall be based on Chapter 3 of the Planning Statement (SLR Ref: 403.00275.00233, dated April / 2019) and 'Phase 3 Import / Final Restoration (drawing CL 5/5, dated February 2020) and amended as required by the requirements of the requisite European Protected Species License (ESPL) (and potentially the Biodiversity and Landscape Management Plan required under C13). The plan shall include, but is not necessarily limited to;

-Aftercare provision for a period of 5 years for agriculture.
-Aftercare provision for a period of 15 years for the ponds and wetland conservation area.
-Details of the grass seed to be used to provide a species rich pasture area marked as 'land to be restored to agriculture' on the Phase 3 Final Import Restoration drawing.
-Provision for ongoing maintenance of the exposed rockfaces for the purposes of geological conservation.

The development shall thereafter be carried out in complete accordance with the approved Aftercare Management Plan.

Reason: To secure the sustainable use of soils and to provide long term biodiversity enhancements in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS25, CS33 and CS34.

C20 No less than 12 months after the date on this decision notice, a detailed layout / arrangement for the operational area for the final phase of works, as depicted on the 'Phase 2B Import / Restoration' drawing, and based on Chris Lowden's email of 28 August 2020, shall be submitted to, and approved in writing by, the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the approved scheme.

Reason: In order to secure appropriate access to the site post restoration, and in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS32.

C21 No less than 12 months after the date on this decision notice, a Drainage Maintenance and Management schedule shall be submitted to, and approved in writing by the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the approved schedule.

Reason: To protect the water environment in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy.

C22 The development hereby approved, including the aftercare period, and beyond as required by the provisions of the Statutory Birdstrike Safeguarding Zone, shall be carried out in complete accordance with the "Bird Hazard Management Plan" (Pre-Consent Draft Copy, Version No.1 Rev A, dated Dec 2018).

Reason: To minimise the hazard to air traffic in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS40.

C23 The developer, shall make allowance for Temporary Section Recording / inspection of the exposed rockfaces on an annual basis and / or at the request of the Minerals Planning Authority. Notification of visits will be provided no less than 4 weeks in advance. Visits by groups of more than 6 will require the agreement of the developer and / or landowner.

Reason: To secure the benefits of the exposed rockface within a Local Geological Site in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS35.

C24 No less than 12 months after the date on this decision notice, a scheme for the provision of a safe and suitable post restoration access to the public Highway shall be submitted to, and approved in writing by the Mineral Planning Authority. Upon completion of the restoration and landscaping works the site access as approved shall be implemented and retained thereafter.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

Statement of compliance

The proposal as submitted was not in accordance with local and national planning policy. The local planning authority have worked with the applicant in a positive and proactive manner based on seeking solutions to problems arising in relation to dealing with the planning application. Amendments were discussed and agreed with the applicant to bring the proposal into compliance with policy, and the application can therefore be approved in accordance with Paragraph 38 of the National Planning Policy Framework (2019).

Authorisation

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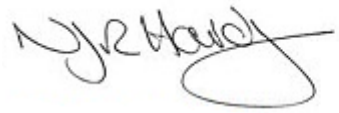

Nicholas Harding
Head of Planning

Date the decision was made: 10 December 2020

Informatives

1 It is an offence to take, damage or destroy the nest of any wild bird while it is being built or in use. Trees, scrub and/or structures likely to contain nesting birds between 1st March and 31st August are present on the application site. You should assume that they contain nesting birds between the above dates unless survey has shown it is absolutely certain that nesting birds are not present. Planning consent for a development does not provide a defence against prosecution. The protection of nesting wild birds remains unchanged even when planning permission is granted. For further information on surveys contact Peterborough City Council's Wildlife Officer (wildlife@peterborough.gov.uk)

2 The applicant is reminded that under the Wildlife and Countryside Act 1981(Section 1) (as amended) it is an offence to take, damage or destroy the nest of any wild bird while that nest is in use or being built. Trees and scrub are likely to contain nesting birds between 1 March and 31 August. Trees within the application should be assumed to contain nesting birds between the above dates unless a survey has shown it is absolutely certain that nesting birds are not present.

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If anything is so deposited on a highway as to constitute a nuisance, the Local Planning Authority may by notice require the person who deposited it there to remove it forthwith and if he fails to comply the Local Planning Authority may make a complaint to a Magistrates Court for a Removal and Disposal Order under this Section. In the event that the deposit is considered to constitute a danger, the Local Planning Authority may remove the deposit forthwith and recover reasonable expenses from the person who made the deposit. It is the responsibility of the developer and contractor(s) to ensure that no building materials or debris are placed on or remain within the highway during or after the construction period.

Informatives

General Notes

1.1 Planning permission does not constitute approval under the Building Regulations or Bye-law approval relating to new streets and buildings.

1.2 It is an offence under Section 171 of the Highways Act 1980 to temporarily deposit building materials, rubbish or other things on the public highway or make a temporary excavation on it without the written consent of the Highway Authority. The Highway Authority may give its consent subject to such conditions as it thinks fit.

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Appeals to the Secretary of State

1 The applicant has a right to appeal to the Secretary of State against any conditions of this planning permission, under Section 78 of the Town & Country Planning Act 1990.

2 If you want to appeal against your local planning authority's decision then you must do so within **6 months** of the date of this notice.

3 Appeals can be made online at: https://www.gov.uk/planning-inspectorate.
If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on
tel: 0303 444 5000.

4 The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

5 The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

6 If you intend to submit an appeal that you would like examined by inquiry then you must notify the Local Planning Authority and Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are on GOV.UK.

Purchase Notices

If the Local Planning Authority or the Secretary of State grants permission subject to conditions the owner may claim that he/she can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted. In these circumstances the owner may serve a purchase notice on the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

Starting Work too soon

If you start work on this development before complying with conditions that require to be met before work starts, your action has made this planning permission invalid. A fresh planning application will then be required, with the associated cost and delay.

Third Party Rights to challenge a planning decision

Currently there are no third party rights of appeal through the planning system against a decision of a Local Planning Authority. Therefore, if you have concerns about a planning application and permission is granted, you cannot appeal that decision.

Any challenge under current legislation would have to be made outside the planning system through a process called Judicial Review.

A 'claim for judicial review' includes a claim to review the lawfulness of a decision, action or failure to act in relation to the exercise of a public function, in this case, a planning decision. The court's permission to proceed is required in a claim for Judicial Review. A claim for Judicial Review is dealt with by the Administrative Court and if leave to judicially review a planning decision is granted, the Judicial Review will be decided by a judge at the High Court.

An application to Judicial Review a decision must be made within **6 weeks** of the decision about which you have a grievance being made. For further information on judicial review and the contact details for the Administrative Courts, please go to http://www.justice.gov.uk/

Telephone: 01733 453410 (open 9am - 1pm)
Email: planningcontrol@peterborough.gov.uk
Case Officer: Mr A O Jones
Our Ref: 19/01370/WCMM
Your Ref:

PETERBOROUGH CITY COUNCIL

Planning Services
Sand Martin House
Bittern Way
Fletton Quays
Peterborough
PE2 8TY

DX 12310 Peterborough 1
01733 747474

Mr Chris Lowden
SLR Consulting Ltd
Aspect House
Aspect Business Park
Bennerley Road
Nottingham
NG6 8WR

10 December 2020

Dear Mr Lowden

Application for Amendment to an existing Planning Permission

Proposal: Variation of conditions C1 and C5 of planning permission 99/01273/RMP with regards to restoration

Site address: Cross Leys Quarry Leicester Road Wansford Peterborough

Your client: Mr John Gough

Further in the above matter, please find enclosed our formal decision notice relating to your client's application for planning permission. Please be sure to remind your client that the scheme should be carried out in line with the approved plans. This will avoid the need for any enforcement action.

Complying with the approved plans
We would like to draw your attention to 'precedent conditions':- these are conditions which require you to either do certain works or submit something for approval prior to starting any work. These conditions must be complied with. Please check your Decision Notice carefully and familiarise yourself with its requirements, allowing plenty of time for the conditions to be complied with before work commences. If these conditions are overlooked you may invalidate your consent, risk enforcement action being taken and may need to submit a further application.

In addition you should be aware that failing to build in accordance with the approved plans or properly discharging conditions often causes problems and delays if selling the property.

Complying with conditions
Please read the conditions attached to this permission carefully. Some conditions may require you to submit more information to us before you can start work.

If further information is required you will need to submit a separate application together with the required supporting documentation. The relevant application form (PF27) for discharge of conditions can be downloaded from our application One Stop Shop at www.peterborough.gov.uk/planningoss

Please ensure that the required details are submitted in duplicate and if you are applying to discharge more than one condition that the supporting information is clearly separated and referenced to each individual condition.

There is a fee required with an application to discharge planning conditions, however this is chargeable per application rather than per condition, please ensure that this is enclosed as part of your application. For further information please visit our application One Stop Shop or contact Planning Services on 01733 453410.

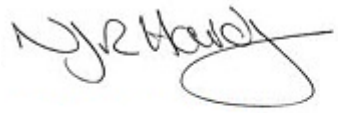
Appeals against conditions

You should also be aware that the applicant has the right to appeal against any conditions attached to this Notice, please see https://www.gov.uk/government/organisations/planning-inspectorate for details. If you are concerned about any condition you should contact the case officer in the first instance for advice.

Your feedback on our service is welcomed

We are interested in finding out what you thought of our service and how we might make it better. To give us feedback please go to http://consult.peterborough.gov.uk/portal/pscss.

Yours sincerely



Nicholas Harding
Head of Planning

PETERBOROUGH CITY COUNCIL

Planning Services
Sand Martin House
Bittern Way
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DX 12310 Peterborough 1
01733 747474

NOTICE OF PERMISSION TO DEVELOP LAND WITHOUT COMPLIANCE WITH CONDITIONS PREVIOUSLY ATTACHED TO A GRANT OF PLANNING PERMISSION

Town and Country Planning Act 1990: Section 73

GRANTED

Reference	19/01370/WCMM
Proposal	Variation of conditions C1 and C5 of planning permission 99/01273/RMP with regards to restoration
At	Cross Leys Quarry Leicester Road Wansford Peterborough
Applicant	Mr John Gough Mick George Ltd
Date valid	3 September 2019

Conditions

Permission is granted subject to the following conditions and reasons:

C 1 The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

Reason: In accordance with Section 91 of the Town and Country Planning Act 1990 (as amended).

C 2 This permission relates to the restoration of the site edged blue, on the "Existing Planning Permissions", Drawing number CQ2/2, dated March 2001.

Landscaping and restoration works shall be completed no later than 12 months after the final importation of inert materials associated with permission 19/001365/MMFUL, or 7 years from the date this permission is granted, whichever is the sooner.

Reason: To ensure that the site is restored in a timely manner in accordance with Cambridgeshire and Peterborough Core Strategy policy CS25.

C 3 Vehicular access to the site shall only be via the existing quarry access from the A47 Trunk Road as shown on approved plan "Phase 1 Import / Restoration", ref. CL5/2, rev. 4 dated Feb 2020.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 4 A wheel cleaning facility for Large Goods Vehicles (LGV's), in the 'operational area' as depicted on the phasing drawings CL5/2, CL5/3 and CL4/4, shall be retained and maintained in a good working order for the duration of the importation of restoration materials. Internal site traffic arrangements must ensure that all LGVs leaving the site shall pass through the wheel cleaning facility. No materials shall be deposited on the public highway.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 5 All LGVs leaving the site with any loose materials must be securely sheeted.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 6 Restoration, landscaping and habitat provision at the site, including the ordering of soil movements, must be carried out in accordance with the approved plans;

Preliminary Material Movements, ref. CL 5/1, rev. 3, dated February 2020
Phase 1 Import / Restoration, ref. CL 5/2, rev. 4, dated February 2020
Phase 2A Import / Restoration, ref. CL 5/3, rev. 4, dated February 2020
Phase 2B Import / Restoration, ref. CL 5/4, rev. 4, dated February 2020
Phase 3 Import Final Restoration, ref. CL 5/5, rev. 4, dated February 2020
Illustrative Section on Western Boundary, ref. CL 5/7, dated August 2020

With the exception that the land identified as "land restored to agriculture on "Phase 3 Import / Final Restoration" is to be specifically restored as 'species rich pasture'.

Reason: To clarify what is hereby approved.

C 7 Other than water pumping, servicing, and testing of plant and equipment, environmental monitoring and emergency / safety work, the development hereby permitted shall be carried out on the site only between the following times:

0600 and 1900 hours Mondays to Fridays
0600 and 1300 hours on Saturdays

and at no other times on Sundays, Bank or Public Holidays.

Reason: In the interests of the amenity of the nearest residential occupiers in accordance with Cambridgeshire and Peterborough Minerals and Waste Core strategy policy CS34.

C 8 Prior to commencement of the importation of restoration materials, a Dust Management Scheme shall be submitted to and approved in writing by the Mineral Planning Authority.

The scheme shall take into consideration the ecological sensitivities of the site. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate dust management scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse air quality impacts.

C 9 a) No mobile plant will operate using intrusive audible reversing alarms. Plant requiring reversing alarms will be fitted with "white noise" type alarms throughout the period of the development.

b) All plant and machinery shall be silenced at all times in accordance with the manufacturer's recommendations.

c) No hydraulic breakers shall be operated at the site except in accordance with details of their location and noise suppression measures to be submitted to and, approved in writing by the Mineral Planning Authority, no less than 3 months in advance of them being required to be used on site.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C10 The volume of noise received at the properties specified below shall not exceed:

42dB (LAeq 1 hour Free Field) between the hours of 0600 and 0700 Mondays to Saturdays at Wittering Lodge pr Cross Leys Farm, or

Wittering Lodge - 53 dB (LAeq) One Hour Free Field
Cross Leys Farm - 45 dB (LAeq) One Hour Free Field

at any other time during the permitted operating hours.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C11 Temporary operations shall not be carried out over a period exceeding a total of 8 weeks in any continuous 12 month period, and relate to work carried out within 200m of the boundary of the noise sensitive properties cited in a). The free field noise level received at noise sensitive properties shall not exceed 70 dB (LAeq) one hour free field during these temporary operations. Five days written notice shall be given to the Mineral Planning Authority in advance of the commencement of any temporary operations as may be agreed, in advance of works taking place.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C12 Prior to commencement of the importation of restoration materials, a Noise Monitoring Scheme shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall take into consideration the noise control measures specified in the Bird Hazard Management Plan. The scheme shall take into consideration the ecological sensitivities of the site, and the noise control measures specified in the Bird Hazard

Management Plan. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate noise monitoring scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse noise impacts.

C13 Prior to commencement of the importation of restoration materials, a Biodiversity & Landscape Management Plan, based on the measures outlined in Chapter 6 pf the 'Cross Leys Quarry: Planning application for revisions to the restoration scheme' planning statement dated April 2019, and the accompanying appendices and plan, and including, but not necessarily limited to full details of all protected species avoidance and mitigation measures, including a reptile mitigation strategy, full details and specifications of ponds to be created, non-native species eradication programme and updated species surveys, shall be submitted to, and approved in writing by the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the Biodiversity & Landscape Management Plan.

Reason: To secure appropriate management and mitigation of ecological impacts and protect features of nature conservation importance in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS35. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse ecological impacts.

C14 Topsoil and Subsoil movements and re-spreading shall only be carried out when the full depth of soil is in a dry and friable condition (soils to be assessed by the method set out in Appendix 2 of the Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture to DoE 1996). Soils shall not be stripped, handled or re-spread between the months of October to March inclusive.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS34 and CS38.

C15 Plant or vehicle movements shall be confined to clearly defined haul routes approved beforehand in writing by the Mineral Planning Authority and shall not cross areas of topsoil and subsoil except for the express purpose of soil stripping or replacement operations. No stored topsoil and subsoil shall be removed from the site.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS34 and CS38.

C16 All storage bunds intended to remain in situ for more than 6 months or over the winter period shall be grassed over and weed control and other necessary maintenance undertaken. The seed mixture and the application rates and subsequent maintenance shall be submitted to and approved in writing by the Minerals Planning Authority prior to the construction of the soil storage bunds.

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e)Removal of any material capable of impeding agriculture and land drainage operations; including the removal of stones and other objects greater than 75mm in any dimension rising to the topsoil surface following subsoiling operations.
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-Aftercare provision for a period of 5 years for agriculture.
-Aftercare provision for a period of 15 years for the ponds and wetland conservation area.
-Details of the grass seed to be used to provide a species rich pasture area marked as 'land to be restored to agriculture' on the Phase 3 Final Import Restoration drawing.
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Reason: To minimise the hazard to air traffic in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS40.

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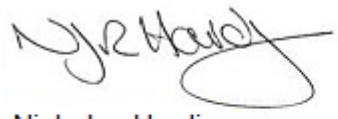

Nicholas Harding
Head of Planning

Date the decision was made: 10 December 2020

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Telephone: 01733 453410 (open 9am - 1pm)
Email: planningcontrol@peterborough.gov.uk
Case Officer: Mr A O Jones
Our Ref: 19/01530/WCMM
Your Ref:

PETERBOROUGH CITY COUNCIL

Planning Services
Sand Martin House
Bittern Way
Fletton Quays
Peterborough
PE2 8TY

DX 12310 Peterborough 1
01733 747474

Mr Chris Lowden
SLR Consulting Ltd
Aspect House
Aspect Business Park
Bennerley Road
Nottingham
NG6 8WR

10 December 2020

Dear Mr Lowden

Application for Amendment to an existing Planning Permission

Proposal: Removal of conditions C1, C3 and C27 of planning permission 98/01252/MMFUL with regards to restoration

Site address: Cross Leys Quarry Leicester Road Wansford Peterborough

Your client: Mr John Gough

Further in the above matter, please find enclosed our formal decision notice relating to your client's application for planning permission. Please be sure to remind your client that the scheme should be carried out in line with the approved plans. This will avoid the need for any enforcement action.

Complying with the approved plans
We would like to draw your attention to 'precedent conditions':- these are conditions which require you to either do certain works or submit something for approval prior to starting any work. These conditions must be complied with. Please check your Decision Notice carefully and familiarise yourself with its requirements, allowing plenty of time for the conditions to be complied with before work commences. If these conditions are overlooked you may invalidate your consent, risk enforcement action being taken and may need to submit a further application.

In addition you should be aware that failing to build in accordance with the approved plans or properly discharging conditions often causes problems and delays if selling the property.

Complying with conditions
Please read the conditions attached to this permission carefully. Some conditions may require you to submit more information to us before you can start work.

If further information is required you will need to submit a separate application together with the required supporting documentation. The relevant application form (PF27) for discharge of conditions can be downloaded from our application One Stop Shop at www.peterborough.gov.uk/planningoss

Please ensure that the required details are submitted in duplicate and if you are applying to discharge more than one condition that the supporting information is clearly separated and referenced to each individual condition.

There is a fee required with an application to discharge planning conditions, however this is chargeable per application rather than per condition, please ensure that this is enclosed as part of your application. For further information please visit our application One Stop Shop or contact Planning Services on 01733 453410.

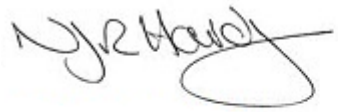
Appeals against conditions

You should also be aware that the applicant has the right to appeal against any conditions attached to this Notice, please see https://www.gov.uk/government/organisations/planning-inspectorate for details. If you are concerned about any condition you should contact the case officer in the first instance for advice.

Your feedback on our service is welcomed

We are interested in finding out what you thought of our service and how we might make it better. To give us feedback please go to http://consult.peterborough.gov.uk/portal/pscss.

Yours sincerely



Nicholas Harding
Head of Planning

PETERBOROUGH CITY COUNCIL

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NOTICE OF PERMISSION TO DEVELOP LAND WITHOUT COMPLIANCE WITH CONDITIONS PREVIOUSLY ATTACHED TO A GRANT OF PLANNING PERMISSION

Town and Country Planning Act 1990: Section 73

GRANTED

Reference	19/01530/WCMM
Proposal	Removal of conditions C1, C3 and C27 of planning permission 98/01252/MMFUL with regards to restoration
At	Cross Leys Quarry Leicester Road Wansford Peterborough
Applicant	Mr John Gough Mick George Ltd
Date valid	1 October 2019

Conditions

Permission is granted subject to the following conditions and reasons:

C 1 The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

Reason: In accordance with Section 91 of the Town and Country Planning Act 1990 (as amended).

C 2 This permission relates to the restoration of the site edged green, on the "Existing Planning Permissions", Drawing number CQ2/2, dated March 2001.

Landscaping and restoration works shall be completed no later than 12 months after the final importation of inert materials associated with permission 19/001365/MMFUL, or 7 years from the date this permission is granted, whichever is the sooner.

Reason: To ensure that the site is restored in a timely manner in accordance with Cambridgeshire and Peterborough Core Strategy policy CS25.

C 3 Vehicular access to the site shall only be via the existing quarry access from the A47 Trunk Road as shown on approved plan "Phase 1 Import / Restoration", ref. CL5/2, rev. 4 dated Feb 2020.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 4 A wheel cleaning facility for Large Goods Vehicles (LGV's), in the 'operational area' as depicted on the phasing drawings CL5/2, CL5/3 and CL4/4, shall be retained and maintained in a good working order for the duration of the importation of restoration materials. Internal site traffic arrangements must ensure that all LGVs leaving the site shall pass through the wheel cleaning facility. No materials shall be deposited on the public highway.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 5 All LGVs leaving the site with any loose materials must be securely sheeted.

Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

C 6 Restoration, landscaping and habitat provision at the site, including the ordering of soil movements, must be carried out in accordance with the approved plans;

Preliminary Material Movements, ref. CL 5/1, rev. 3, dated February 2020
Phase 1 Import / Restoration, ref. CL 5/2, rev. 4, dated February 2020
Phase 2A Import / Restoration, ref. CL 5/3, rev. 4, dated February 2020
Phase 2B Import / Restoration, ref. CL 5/4, rev. 4, dated February 2020
Phase 3 Import Final Restoration, ref. CL 5/5, rev. 4, dated February 2020
Illustrative Section on Western Boundary, ref. CL 5/7, dated August 2020

With the exception that the land identified as "land restored to agriculture on "Phase 3 Import / Final Restoration" is to be specifically restored as 'species rich pasture'.

Reason: To clarify what is hereby approved.

C 7 Other than water pumping, servicing, and testing of plant and equipment, environmental monitoring and emergency / safety work, the development hereby permitted shall be carried out on the site only between the following times:

0600 and 1900 hours Mondays to Fridays
0600 and 1300 hours on Saturdays

and at no other times on Sundays, Bank or Public Holidays.

Reason: In the interests of the amenity of the nearest residential occupiers in accordance with Cambridgeshire and Peterborough Minerals and Waste Core strategy policy CS34.

C 8 Prior to commencement of the importation of restoration materials, a Dust Management Scheme shall be submitted to and approved in writing by the Mineral Planning Authority.

The scheme shall take into consideration the ecological sensitivities of the site. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate dust management scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse air quality impacts.

C 9 a) No mobile plant will operate using intrusive audible reversing alarms. Plant requiring reversing alarms will be fitted with "white noise" type alarms throughout the period of the development.
b) All plant and machinery shall be silenced at all times in accordance with the manufacturer's recommendations.
c) No hydraulic breakers shall be operated at the site except in accordance with details of their location and noise suppression measures to be submitted to and, approved in writing by the Mineral Planning Authority, no less than 3 months in advance of them being required to be used on site.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C10 The volume of noise received at the properties specified below shall not exceed:

42dB (LAeq 1 hour Free Field) between the hours of 0600 and 0700 Mondays to Saturdays at Wittering Lodge pr Cross Leys Farm, or

Wittering Lodge - 53 dB (LAeq) One Hour Free Field
Cross Leys Farm - 45 dB (LAeq) One Hour Free Field

at any other time during the permitted operating hours.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C11 Temporary operations shall not be carried out over a period exceeding a total of 8 weeks in any continuous 12 month period, and relate to work carried out within 200m of the boundary of the noise sensitive properties cited in a). The free field noise level received at noise sensitive properties shall not exceed 70 dB (LAeq) one hour free field during these temporary operations. Five days written notice shall be given to the Mineral Planning Authority in advance of the commencement of any temporary operations as may be agreed, in advance of works taking place.

Reason: In the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34.

C12 Prior to commencement of the importation of restoration materials, a Noise Monitoring Scheme shall be submitted to and approved in writing by the Mineral Planning Authority. The scheme shall take into consideration the noise control measures specified in the Bird Hazard Management Plan. The scheme shall take into consideration the ecological sensitivities of the site, and the noise control measures specified in the Bird Hazard Management Plan. The approved scheme should be implemented throughout the period of development.

Reason: To secure an appropriate noise monitoring scheme in the interests of the amenity of the nearest residential occupiers, and the ecological sensitivities of the site and surroundings, in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS34. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse noise impacts.

C13 Prior to commencement of the importation of restoration materials, a Biodiversity & Landscape Management Plan, based on the measures outlined in Chapter 6 pf the 'Cross Leys Quarry: Planning application for revisions to the restoration scheme' planning statement dated April 2019, and the accompanying appendices and plan, and including, but not necessarily limited to full details of all protected species avoidance and mitigation measures, including a reptile mitigation strategy, full details and specifications of ponds to be created, non-native species eradication programme and updated species surveys, shall be submitted to, and approved in writing by the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the Biodiversity & Landscape Management Plan.

Reason: To secure appropriate management and mitigation of ecological impacts and protect features of nature conservation importance in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS35. This is a pre-commencement condition because appropriate control needs to be exercised on activities which from the outset may give rise to adverse ecological impacts.

C14 Topsoil and Subsoil movements and re-spreading shall only be carried out when the full depth of soil is in a dry and friable condition (soils to be assessed by the method set out in Appendix 2 of the Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture to DoE 1996). Soils shall not be stripped, handled or re-spread between the months of October to March inclusive.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS34 and CS38.

C15 Plant or vehicle movements shall be confined to clearly defined haul routes approved beforehand in writing by the Mineral Planning Authority and shall not cross areas of topsoil and subsoil except for the express purpose of soil stripping or replacement operations. No stored topsoil and subsoil shall be removed from the site.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS34 and CS38.

C16 All storage bunds intended to remain in situ for more than 6 months or over the winter period shall be grassed over and weed control and other necessary maintenance undertaken. The seed mixture and the application rates and subsequent maintenance shall be submitted to and approved in writing by the Minerals Planning Authority prior to the construction of the soil storage bunds.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS38.

C17 All fuel, oil or chemical storage tanks, building, ancillary handling facilities and equipment, including pumps and valves, shall be contained within an impervious bund of at least 110% of the tank capacity.

Reason: To protect the water environment in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS39.

C18 Prior to the replacement of topsoil or subsoil or any subsoil substitute, a scheme of soil placement shall be submitted to and approved in writing by the Mineral Planning Authority. Such a scheme shall include:

a)How the restored quarry floor will be prepared prior to soil placement, including levelling and ripping.
b)The proposed soil profile.
c)Method of soil spreading and the machinery to be sued.
d)Subsoiling of any compacted layers.
e)Removal of any material capable of impeding agriculture and land drainage operations; including the removal of stones and other objects greater than 75mm in any dimension rising to the topsoil surface following subsoiling operations.
f)A timetable for the implementation of the scheme.

The restoration of the site shall be carried out in accordance with the approved scheme.

Reason: To ensure the sustainable use of soils in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS38.

C19 Within 12 months of the date on this decision, an Aftercare Management Plan shall be submitted to, and approved in writing by the Mineral Planning Authority. Such a plan shall be based on Chapter 3 of the Planning Statement (SLR Ref: 403.00275.00233, dated April / 2019) and 'Phase 3 Import / Final Restoration (drawing CL 5/5, dated February 2020) and amended as required by the requirements of the requisite European Protected Species License (ESPL) (and potentially the Biodiversity and Landscape Management Plan required under C13). The plan shall include, but is not necessarily limited to;

-Aftercare provision for a period of 5 years for agriculture.
-Aftercare provision for a period of 15 years for the ponds and wetland conservation area.
-Details of the grass seed to be used to provide a species rich pasture area marked as 'land to be restored to agriculture' on the Phase 3 Final Import Restoration drawing.
-Provision for ongoing maintenance of the exposed rockfaces for the purposes of geological conservation.

The development shall thereafter be carried out in complete accordance with the approved Aftercare Management Plan.

Reason: To secure the sustainable use of soils and to provide long term biodiversity enhancements in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policies CS25, CS33 and CS34

C20 No less than 12 months after the date on this decision notice, a detailed layout / arrangement for the operational area for the final phase of works, as depicted on the 'Phase 2B Import / Restoration' drawing, and based on Chris Lowden's email of 28 August 2020, shall be submitted to, and approved in writing by, the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the approved scheme.

Reason: In order to secure appropriate access to the site post restoration, and in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS32.

C21 No less than 12 months after the date on this decision notice, a Drainage Maintenance and Management schedule shall be submitted to, and approved in writing by the Mineral Planning Authority. The development shall thereafter be carried out in complete accordance with the approved schedule.

Reason: To protect the water environment in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy.

C22 The development hereby approved, including the aftercare period, and beyond as required by the provisions of the Statutory Birdstrike Safeguarding Zone, shall be carried out in complete accordance with the "Bird Hazard Management Plan" (Pre-Consent Draft Copy, Version No.1 Rev A, dated Dec 2018).

Reason: To minimise the hazard to air traffic in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS40.

C23 The developer, shall make allowance for Temporary Section Recording / inspection of the exposed rockfaces on an annual basis and / or at the request of the Minerals Planning Authority. Notification of visits will be provided no less than 4 weeks in advance. Visits by groups of more than 6 will require the agreement of the developer and / or landowner.

Reason: To secure the benefits of the exposed rockface within a Local Geological Site in accordance with Cambridgeshire and Peterborough Minerals and Waste Core Strategy policy CS35.

C24 No less than 12 months after the date on this decision notice, a scheme for the provision of a safe and suitable post restoration access to the public Highway shall be submitted to, and approved in writing by the Mineral Planning Authority. Upon completion of the restoration and landscaping works the site access as approved shall be implemented and retained thereafter.

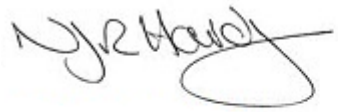
Reason: In the interest of highway safety and in accordance with Cambridgeshire and Peterborough Minerals and Waste policy CS32.

Statement of compliance

The proposal as submitted was not in accordance with local and national planning policy. The local planning authority have worked with the applicant in a positive and proactive manner based on seeking solutions to problems arising in relation to dealing with the planning application. Amendments were discussed and agreed with the applicant to bring the proposal into compliance with policy, and the application can therefore be approved in accordance with Paragraph 38 of the National Planning Policy Framework (2019).

Authorisation

Authorised by:



Nicholas Harding
Head of Planning

Date the decision was made: 10 December 2020

Informatives

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3 The wheel cleansing equipment shall be capable of cleaning the wheels, underside and chassis of the vehicles. The road between the cleaning equipment and the public highway shall be surfaced either in concrete or blacktop and be maintained free of mud, slurry and any other form of contamination whilst in use.

4 Highways Act 1980 - Section 148, Sub-Section C
It is an offence to deposit anything including building materials or debris on a highway which may cause interruption to any user of the highway (including footways). In the event that a person is found guilty of this offence, a penalty may be imposed in the form of a fine. It is the responsibility of the developer and contractor(s) to ensure that no building materials or debris are placed on or remain within the highway during or after the construction period.

5 Highways Act 1980 - Section 149
If anything is so deposited on a highway as to constitute a nuisance, the Local Planning Authority may by notice require the person who deposited it there to remove it forthwith and if he fails to comply the Local Planning Authority may make a complaint to a Magistrates Court for a Removal and Disposal Order under this Section. In the event that the deposit is considered to constitute a danger, the Local Planning Authority may remove the deposit forthwith and recover reasonable expenses from the person who made the deposit. It is the responsibility of the developer and contractor(s) to ensure that no building materials or debris are placed on or remain within the highway during or after the construction period.

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