Worcestershire County Council

Land at Lea Castle Farm,

Wolverley Road, Broadwaters,

Kidderminster

Habitats Regulations Assessment: Stage 1 - Screening for likely significant effects

April 2022

CONTENTS

1 EXECUTIVE SUMMARY

This document is a record of the Habitats Regulations Assessment (HRA) for Lea Castle Farm Quarry in compliance with Article 6(3)(Regulation 61) of Council Directive 92/43/EEC on the 'Conservation of natural habitats and of wild fauna and flora' 1992 (hereafter referred to as the 'Habitats Directive') and Regulation 102 of the Conservation of Habitats and Species Regulations 2017 (as amended) (hereafter referred to as the Habitats Regulations).

There is one site of European importance within 15km of the Lea Castle Farm Quarry site (15km is considered to be the 'upper limit' of dry deposition of pollutants such as dispersal of dust from a mineral extraction site, following Environment Agency Guidance under the Habitats Regulations[1]).

However functionally linked land (for example high tide roosts that support birds of SPA sites) and hydrological linkage for European Sites beyond the 15km buffer is also considered.

Following these parameters, three European Sites that lie further than 15km, but are located along rivers with potential to be hydrologically linked to the Lea Castle Farm Quarry proposal site are considered for potential impacts.

The following four European sites are therefore considered within this HRA report:

- Fens Pools SAC.
- Severn Estuary Designated Special Area of Conservation (SAC), Ramsar Site and Special Protection Area (SPA).
- Walmore Common SPA and Ramsar site.
- River Wye SAC.

The five broad categories of impact associated with mineral workings were explored during the assessment.

It is recommended that the Lea Castle Farm Quarry proposal be screened out of the HRA process as the project will not have any significant effects on Natura 2000 sites; a full Appropriate Assessment is not required.

[1] Environment Agency (2010) Horizontal Guidance Note H1- annex F "Air Emissions"

2 INTRODUCTION

2.1 Site Description

The proposal for HRA screening is located on land to the north of Wolverley Road, Wolverley, Kidderminster. The site is centred at SO840790. The site is approximately 46ha of arable farmland with semi-improved and improved grassland. A hard-standing track separates the site from south to north that is delineated by standards of beech *Fagus sylvatica* and lime *Tilia* sp. The field boundaries of the site include post and wire fencing, hedgerows containing native species, woodland edge and estate boundary brick wall.

The surrounding area includes the River Stour approximately 135m to the north-west of the site, as well as extensive arable land to the north, east and west and blocks of broadleaved woodland to the north, west and south. Wolverley lies 1km to the west of the site and Cookley lies 800m to the north.

2.2 The Proposed Development - Lea Castle Farm Quarry

Application ref: 19/000053/CM is for the extraction, processing and sale of approximately 300,000 tonnes of sand and gravel per annum, which would provide ten years of supply into local and Midlands markets. The development will also include the enhancement of the site and the local landscape setting, including: agricultural parkland; the provision of new routes of public bridleways; pocket parks; strengthening of the existing woodland planting; and diversifying habitats to promote biodiversity.

The development will involve a temporary new vehicle access onto the B4189 Wolverley Road, the establishment of a plant site for mineral processing along with progressive phased working and restoration. 0.6 million m³ of inert materials will be brought into the Site e.g. soils and clay to help create the final restoration levels.

2.3 Project Need

The landbank of mineral in Worcestershire (the permitted tonnage available) is currently at/or below the minimum 7 years reserve figure required. It is currently further depleting and there is expected to be a significant shortfall. There are a limited number of alternative sand and gravel and solid sand quarries within Worcestershire. The closest quarry supplying sand and gravel in the county is located approximately 24 miles away at Clifton Quarry (operated by Tarmac), near Severn Stock in the south of the county. The closest supplies of potential solid sand are at Wildmoor, approximately 10 miles to the east of Kidderminster. The quarry is operated by Salop Sand and Gravel (SS&G), with the majority of the sand being used internally by this company. SS&G have recently had planning approval for a new quarry at Chadwich Lane, located in proximity to, and to supply to, Wildmoor Quarry. Cemex have a quarry further south at Ryall.

Lea Castle Farm offers an ideal location to supply mineral to meet future demand, including helping to meet construction materials requirements for a number of permitted residential sites within the local area. This includes the former Lea Castle

Hospital site, and also proposed residential/commercial developments at Lea Castle Village and Kidderminster East.

In terms of a need for inert waste, there is an anticipated increase likely to be generated from large infrastructure projects in north Worcestershire and the West Midlands over the next 10 years. There is an identified inert waste capacity gap in Worcestershire, placing ever increasing need for sites, such as Lea Caste Farm, which would be appropriately engineered to meet this increasing need.

2.4 Background to HRA

Habitats Regulations Assessment (HRA) is the process that must be undertaken to consider whether a proposed development is likely to have significant effects on a site designated for its nature conservation interest. HRA must be undertaken by a 'Competent Authority', in this case Worcestershire County Council. HRA is often referred to as 'Appropriate Assessment' (AA) although the requirement for AA is first determined by an initial 'Screening' stage, undertaken by the Competent Authority as part of the full HRA.

The aim of the HRA process is to assess the potential effects arising from a proposal against the conservation objectives of any site designated for its nature conservation importance. Where effects are considered uncertain, the potential for adverse effects should be assumed.

2.5 Legislation

The Habitats Regulations transpose the requirements of the European Directive (92/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna [the Habitats Directive]. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amended the Habitat Regulations and created a national site network within the UK territory comprising the protected sites already designated under the Nature Directives, and any further sites designated under these Regulations, in order to protect habitats and species of international nature conservation importance. The network of internationally important sites designated for their ecological status established under the Directive are referred to as Natura 2000 sites or European Sites. These comprise Special Areas of Conservation (SAC) Special Protection Areas (SPA). These, together with, under Government policy Ramsar sites (which support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance (Ramsar Convention)) are included within the HRA process as required by the Regulations.

2.6 Guidance and Process

The Habitats Regulations set the requirement for HRA and guidance is available for Public Bodies in England on the government website:

https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

Reference is made within this document both to government guidance and the methodologies established in the Habitats Regulations Assessment Handbook (DTA Publications[2]); both draw, in part, on European Union guidance.

The key stages of the HRA process overall, and the specific tasks undertaken for each stage are set out in Table 1. This table is consistent with the methodologies set out within the guidance documents above.

Table 1 Habitats Regulations Assessment: Key Stages

Stages	Habitats Regulations Assessment
Stage 1: Screening for Likely significant Effects	1. Identify Natura 2000 sites in and around the proposal area.
	2. Examine the conservation objectives of each interest feature of the Natura 2000 site(s) potentially affected.
	3. Consider the extent of any effects on Natura 2000 sites arising from the proposal (magnitude, duration, location) based on best available information.
	4. Examine other proposals that could contribute (cumulatively) to identified effects.
	5. Produce screening assessment based on evidence gathered and consult statutory nature conservation body on findings.
	6. If effects are judged likely or uncertainty exists – the precautionary principle applies proceed to Stage 2.
Stage 2: Appropriate Assessment	1. Agree scope and method of Appropriate Assessment with statutory nature conservation body.
	2. Collate all relevant information and evaluate potential effects on site(s) in light of conservation objectives.
Stage 3: Mitigation Measures and Alternatives Assessment	1. Consider how effect on integrity of site(s) could be avoided by changes to the proposal and the consideration of alternatives (e.g. an alternative location). Develop mitigation measures (including timescale and mechanisms for delivery).
	2. Prepare HRA/ AA report and consult statutory body.
	3. Finalise HRA/AA report in line with statutory advice to accompany the proposal for wider consultation.

If alternative solutions or avoidance/ mitigation measures to avoid adverse effects on site integrity cannot be delivered then current guidance recommends an additional stage to consider Imperative Reasons of Overriding Public Interest (IROPI) for why the proposal should proceed. IROPI is only likely to be justified in a very limited set of circumstances and must be accompanied by agreed, deliverable compensation measures for the habitats and species affected. For this reason the IROPI stage is not detailed further in this report.

[2] www.dtapublications.co.uk/handbooks electronically accessed

Assessment is complete if, taking no account of mitigation measures, the proposal has no likely significant effect either alone or in combination with other projects.

This report is concerned with Stage 1, screening of European sites to identify and assess the likelihood and significance of impacts to these sites arising singularly from the Lea Castle Farm Quarry project, and in combination with other projects.

2.7 Approach to dealing with uncertainty

The assessment of effects can be affected by uncertainty in a number of ways; some of these are addressed below.

Regulatory and Implementation Uncertainty

Some proposals will refer to or rely upon detailed measures that will be implemented through other regulatory regimes, for example, environmental permits, or which may be determined in detail by planners at the reserved matters stage. The Local Mineral Planning Authority in this instance must require sufficient detail at the outset to be reasonably certain that these measures can be successfully implemented or permissioned, given the scope and scale of the proposal.

2.8 Likely significant effect

The proposal is assessed to determine and identify any potential for 'likely significant effect' (LSE) upon European sites. The guidance (SNH, 2015) provides the following interpretation.

"A likely effect is one that cannot be ruled out on the basis of objective information. The test is a 'likelihood' of effects rather than a 'certainty' of effects. Although some dictionary definitions define 'likely' as 'probable' or 'well might happen', in the Waddenzee case[3] the European Court of Justice ruled that a project should be subject to appropriate assessment "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site, either individually or in combination with other plans and projects". Therefore, 'likely', in this context, should not simply be interpreted as 'probable' or 'more likely than not', but rather whether a significant effect can objectively be ruled out".

[3] ECJ Case C-127/02 "Waddenzee" 7th September 2004.

3 SCANNING AND SITE SELECTION LIST

3.1 Criteria for Site Selection

When scoping the HRA, it is necessary to consider which Natura 2000 sites could potentially be affected. Proposals can have direct and indirect impacts that extend beyond their boundaries. Distance in itself is not a definitive guide to the likelihood or severity of an impact on a Natura 2000 site. When considering pollution effects for example, factors such as prevailing wind direction, river flow direction, and ground water flow direction can all result in effects on the site at distance.

15km is considered to be the 'upper limit' of dry deposition of pollutants such as dispersal of dust from a mineral extraction site, following Environment Agency Guidance under the Habitats Regulations[4]. Therefore sites within 15km of the Lea Castle Farm Quarry site are considered further.

In addition, functionally linked land (for example high tide roosts that support birds of SPA sites) and hydrological linkage for European Sites beyond 15km of the County borders is also considered.

3.2 Natura 2000 Sites Selected

The Fen Pools SAC lies within 15km of the Lea Castle Farm Quarry site.

The River Stour is located approximately 135 metres from the Lea Castle Farm Quarry site and is potentially hydrologically linked to the Severn Estuary SPA/SAC/Ramsar site and the River Wye SAC. There is therefore potential for the proposal to affect the interest features of these European designated sites through functional hydrological connectivity and the potential presence of migratory species within the upper River Severn catchment.

During consultation on the Worcestershire Minerals Local Plan[5], Natural England informed Worcestershire County Council that they were “evidence gathering” in relation to dispersal of wintering and passage birds constituting qualifying features of the Severn Estuary SPA, at time of flood and extreme weather. They highlighted “that SPA birds can travel across and up the Vale to the Cotswolds Scarp and as far north as Longdon Marsh”. Given the current uncertainty of location of functionally linked land, it is considered appropriate to include the Severn Estuary SAC/SPA/RAMSAR within the scanning exercise.

Walmore Common SPA and Ramsar site will be hydrologically linked when the River Severn is in flood.

These four sites are therefore considered within the scanning exercise for likely significant effects. They are listed in Table 2 below with a description of their location in relation to the land at Lea Castle Farm.

[4] Environment Agency (2010) Horizontal Guidance Note H1- annex F "Air Emissions"
[5] Minerals Local Plan Habitats Regulation Assessment: Publication Version Record of Assessment. February 2020. Worcestershire County Council.

Other sites are either not hydrologically linked or extremely unlikely to experience significant effects given their distance from the proposed Lea Castle Farm Quarry site.

Table 2: Qualifying features of the Natura 200 sites that could potentially be affected by the project

Natura 2000 site	Approximate location from Lea Castle Farm Quarry boundary	Qualifying Features
Fens Pools SAC (20.4 ha)	11.5km north-east	Great crested newt population
Walmore Common SPA (52.85ha)	40 km south-west	The SPA qualifies under Article 4.1 by regularly supporting (in winter) internationally important numbers of Bewick's swan *Cygnus bewickii*
Walmore Common Ramsar (52.85ha)	40 km south-west	The site qualifies under Ramsar criterion 6 by supporting internationally important population of overwintering (non-breeding) Bewick's swan
River Wye SAC (2234.89 ha)	40km south-west	The SAC qualifies under Article 4(4) of the habitats Directive for its Annex I habitat: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; characterised by the abundance of water-crowfoots *Ranunculus* spp.
		The SAC qualifies under Article 4(4) of the Habitats Directive by supporting the following Annex II species: White-clawed crayfish *Austropotamobius pallipes*, Sea lamprey *Petromyzon marinus*, Brook lamprey *Lampetra planeri*, River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax,* Allis shad *Alosa alosa,* Atlantic salmon *Salmo salar,* Bullhead *Cottus gobio,* Otter *Lutra lutra*
Severn Estuary SAC (73,715.4 ha)	70 km south-west	The SAC qualifies under Article 4(4) of the habitats Directive for its Annex I habitats: • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows
		The SAC qualifies under Article 4(4) of the Habitats Directive by supporting the following Annex II species: Sea lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax*.
Severn Estuary SPA (24,700.01 ha)	70 km south-west	The SPA qualifies under Article 4.1 by regularly supporting (in winter) internationally important populations of: Bewick's swan, Curlew *Numenius arquata*, Dunlin *Calidris alpina,* Pintail *Anas acuta*, Redshank *Tringa tetanus,* Shelduck *Tadorna tadorna.* Supports Ringed plover *Charadrius hiaticula* on passage
Severn Estuary Ramsar (24,662.98 ha)	70 km south-west	The site qualifies under Ramsar criteria: • 1 Immense tidal range • 3 Unusual estuarine community of reduced diversity and high productivity • 4 Important for run of migratory fish between sea and estuary • 8 diverse fish assemblage with over 110 species recorded

		• 6 supports over 1% of population of: Bewick's swan, European white-fronted goose, Dunlin, Redshank, Shelduck, Gadwall *Anas strepera* • 5 Supports an internationally important assemblage of waterfowl

3.3 Information Used for the Assessment

Conservation Objectives of International Sites are set by Natural England[6] to ensure that the obligations of the Habitats Directive are met, particularly to ensure that there should be no deterioration or significant disturbance of the qualifying features from their condition at the time the status of the site was formally identified. The conservation objectives are also essential in determining whether the effects of a plan or project are likely to have a significant effect.

Following advice obtained by Natural England, a record is presented here of both the Conservation Objectives currently available online, as well as referencing the SAC Conservation Objectives Supplementary Advice Documents (where available), SSSI Favourable Condition Tables and Site Improvement Plans to provide an additional level of detail to inform the scope and nature of the HRA.

Table 3:Conservation objectives of Natura 2000 sites selected for screening assessment

International site	Conservation objectives and supplemental evidence	Site condition[7]
Fens Pools SAC SAC SITE CODE UK0030150	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying species • the structure and function of the habitats of the qualifying species • the supporting processes on which the habitats of the qualifying species rely • the populations of qualifying species, and, • the distribution of qualifying species within the site. Qualifying Features: S1166. Triturus cristatus; Great crested newt The Conservation Objectives (COs) for Fens Pool SAC are underpinned by the objectives indicated in the Favourable Condition Tables of the SSSI units: To maintain the extent of the amphibian habitat (terrestrial and aquatics); and no loss of area or fragmentation of site (through significant	Favourable 100%

[6] Refer to: www.naturalengland.org.uk/ourwork/conservation/designatedareas/sac/conservationobjectives.aspx

[7] Summary condition of legally underpinning SSSI units have been identified using Natural England website https://designatedsites.naturalengland.org.uk/, as accessed August 2018

	barriers to amphibian dispersal) compared with status at designation. The Site's Supplemental Advice document (March 2017) describes how positive management of aquatic and terrestrial habitats for great crested newts is critical in supporting the site's Conservation Objectives as is the need to maintain and extend supporting habitats, terrestrial connectivity for great crested newts and habitat resilience to environmental change. The site has low sensitivity to climate change but is vulnerable to runoff which drains into it from surrounding development. The site is sensitive to concentrations and deposition of air pollutants. The Site Improvement Plan (v1.0, October 2014) identified that overgrazing, inappropriate scrub control, water pollution, habitat fragmentation and introduction of disease and competitive invasive species all potentially contribute in undermining the Conservation Objectives of this Site.	
Walmore Common SPA SPA SITE CODE UK9007051	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the population of each of the qualifying features; and • the distribution of the qualifying features within the site. Qualifying Features: A037 Bewick's swan (Non-breeding) • No significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline • Significant disturbance attributable to human activities can result in reduced food intake and/or increased energy expenditure. relevant attribute: disturbance in feeding or roosting areas; measure: reduction or displacement of wintering birds. The site has no Supplementary Advice document currently available, however the Site Improvement Plan (November 2014) identifies that hydrological change (flooding), changes in species distribution, changes in land management, offsite habitat availability and management and disturbance including that associated	Unfavourable – No change 100%

	with public access and energy production are all potentially undermining the delivery of the Site's Conservation Objectives.	
Walmore Common Ramsar	Internationally important bird assemblage of Bewick's swan • no significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline. • maintain no less than 43 individuals, representing an average of 0.5% of the GB population (i.e. the 5 year peak mean 1998/9- 2002/3)	
River Wye SAC SAC SITE CODE UK0012642	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • the extent and distribution of qualifying natural habitats and habitats of qualifying species; • the structure and function (including typical species) of qualifying natural habitats; • the structure and function of the habitats of qualifying species; • the supporting processes on which qualifying natural habitats and habitats of qualifying species rely ; • the populations of qualifying species; and • the distribution of qualifying species within the site. The Conservation Objectives for River Wye SAC are underpinned by the objectives indicated in the Favourable Condition Tables of the SSSI units, are to maintain, in favourable condition, the qualifying features of: floating formations of Water Crowfoot; populations of Atlantic Salmon, Allis shad, Twaite shad, Bullhead, Brook Lamprey, River Lamprey, Sea Lamprey, White-clawed Crayfish; the river and adjoining land as habitat for populations; and Otter the Site Improvement Plan (v1.0, November 2014) identifies how water pollution, physical modifications including hydrological changes, water abstraction, inappropriate forestry and woodland management, invasive species and operations associated with fisheries all potentially contribute in undermining the Conservation Objectives for this site.	Favourable 12.69% Unfavourable – Recovering 87.31%
Severn Estuary SAC SAC SITE CODE UK0013030	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The	Favourable 85.85% Unfavourable – Recovering 3.31% Unfavourable – Declining 10.84%

	supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site. The COs for the European interest are to maintain, in favourable condition, the qualifying features of: • estuaries • mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows There is no Supplemental Advice document currently available for this Site, however the Site Improvement Plan (v1.0, March 2016) identifies that developmental impacts (drainage, run-off etc), coastal squeeze, changes in land management, marine pollution events, waterbourne pollution, airbourne pollution (the site currently exceeds its Critical Load for Nitrogen), physical modifications (e.g. changing hydrodynamics of the site) changes in species distribution, adverse effects of fisheries, introduction of invasive species, marine litter and disturbance (including effects arising from public access) all potentially contribute in undermining the delivery of the Site's Conservation Objectives.	
Severn Estuary SPA SPA SITE CODE UK9015022	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features; • the supporting processes on which the habitats of the qualifying features rely; • the population of each of the qualifying features, and • the distribution of the qualifying features within the site. Qualifying Features: A037 Bewick's swan (Non-breeding) A048 Common shelduck (Non-breeding) A051 Gadwall (Non-breeding) A149 Dunlin (Non-breeding) A162 Common redshank (Non-breeding) A394; Greater white-fronted goose (Non-breeding) Waterbird assemblage • no significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline; • significant disturbance attributable to human activities can result in reduced food intake and/or increased energy expenditure; • relevant attribute: disturbance in feeding or roosting areas; measure: reduction or displacement of wintering birds.	
Severn Estuary Ramsar	No less than 68,026 individuals in the assemblage (i.e. the 5 year peak mean between 1988/9 – 1992/3). Relevant attribute which may cause deterioration: Nonphysical disturbance, noise (e.g. coastal	

	development); visual (coastal development). Non-toxic contamination: changes in nutrient loading and changes in organic loading (industrial outfalls). No significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline. Target number of Annex II species: Dunlin >41,683; Shelduck >2,892; Redshank >2,013; (i.e. the 5 year peak mean between 1988/9 – 1992/3). Maintain in a favourable condition the habitats for the internationally important assemblages of waterfowl listed, in particular: • saltmarsh - Upper and lower saltmarsh provide important feeding and roosting areas. The European white-fronted geese graze on a range of saltmarsh grasses and herbs. The birds feed on the saltmarsh and the transition to coastal grazing marsh in front of the sea defences in the upper estuary. • mudflats and sandflats; and • coastal lagoons.	

4 KEY POTENTIAL IMPACTS

Information in this chapter is drawn from the Worcestershire County Council Minerals Local Plan Habitats Regulation Assessment[8].

Minerals extraction and its associated infrastructure has the potential to cause severe damage to the conservation interests of Natura2000 sites through the loss, degradation and fragmentation of valuable habitat areas and a reduction in biodiversity. However, there may be potential benefits through restoration of minerals working in habitat creation and improving connectivity, Table 4 (below) provides further detail on the range of potential adverse environmental impacts known to arise from various mineral developments.

Table 5 summarises these potential impacts.

Table 4: Impacts associated with minerals extraction[9]

activity	Environmental impacts
Site operations will normally include: • Extraction of minerals by blasting or mechanical extraction etc. • Development of ancillary infrastructure. • Processing of the materials. • Transportation of materials around the site. • Transportation of minerals by road, rail, waterway, conveyor or pipeline.	Land take & habitat loss/fragmentation • From extraction of minerals and the development of ancillary infrastructure. Any land take within an International Site is likely to have an adverse impact upon site integrity. It is likely to impact on species populations and species movements. • The impact may also relate to habitat features beyond the designated site boundary. For example, any fragmentation or loss of habitat associated with a SAC woodland, or equally any significant areas of woodland or hedgerows (or other habitats valuable in the context of the SAC's conservation objectives) in the vicinity of the SAC may have an adverse effect on species through the loss of foraging or commuting habitat. Similarly, removal of a habitat adjacent to or within the vicinity of an SAC or SPA habitat may have a negative impact on the designated site through a reduction in buffering, changes to local hydrology, severance and barrier effects or edge effects • Restoring quarries for biodiversity can be positive for nature conservation. Partial and full restoration of extraction sites has the potential to improve the SACs and SPAs through increasing the robustness of sites. This could be either through enhancing buffers or improving the connectivity of sites.
	Disturbance • Noise and light pollution from extraction, ancillary facilities, transportation and some types of restoration may impact upon fauna such as bats and birds. For example, restoration for amenity (dog-walking/water sports) or primarily for agriculture or afforestation can have a detrimental effect on the conservation value of local sites (e.g. modification of foraging value, or may promote the deterioration of nearby botanically rich grasslands). • Biological disturbance can also include factors such as: o

[8] Minerals Local Plan Habitats Regulation Assessment: Publication Version Record of Assessment. February 2020. Worcestershire County Council.
[9] Minerals Local Plan Habitat Regulations Assessment. Worcestershire County Council. February 2020.

	Direct mortality (increased vehicular activity on and nearby sites), o Out competition by non-native species (introduced via after-use such as the introduction of Dikerogammarus villosus through boating on amenity lakes, but an equal risk through forestry or development end-uses), o Selective extraction of species (e.g. through fishing) o Introduction of new species or habitats (e.g. through inappropriate restoration landscaping proposals) o Changes in predator/prey numbers (e.g. restoration to woodland/heathland), o Introduction of disease, o Rapid fluctuations in populations, o Natural succession, o Loss/damage of plant species (e.g. by operational activities such as dredging, and inappropriate restoration after uses)
	Water pollution • Contamination of habitats may occur from a number of sources. 30 • Impacts may include reductions in prey species with subsequent impacts on the food chain, bioaccumulation of toxins in the food chain or eutrophication. • Contaminants can be transported large distances with surface or ground water. Impacts may depend on the strength of the pathway between the source and the site. • Wetland habitats are particularly vulnerable to pollution from surface or ground water sources.
	Air pollution • From on-site operations and transportation may result in reduced condition and integrity of International Sites. • The impacts of nitrogen and nitrogen oxides deposition on vegetation growth are of particular concern. • Other pollutants including sulphur dioxide, ozone and particulates. • Air pollution has been linked to ill health amongst trees, particularly over-mature specimens, and also a failure to regenerate, either from coppice, pollard or seed. • Air pollution may also cause changes in species assemblages, for example in lichens.
	Dust • Dust from extraction and on site operations may have an impact on habitats and species. • Potential for affecting the growth of plants. • Dust could also get into water sources
	Soil compaction • Damaging ability of soil to support vegetation, modifying hydrological processes or pathways. Potential for impact to be generated either during extraction or through inappropriate restoration operations
	Soil pollution 31 • Pollution or contamination of watercourses during initial ground investigation works (e.g. boreholes may provide pathways for contaminated water). • Operational activities: previously contaminated aggregates, transport of aggregates, industrial processes on site (especially processing of fuels, oils and solvents), dewatering may bring in contaminated water from off-site. • After-use such as industrial, commercial or residential development may cause soil pollution, as may future use as landfills through leachate or extractant pollution.

	Hydrology • Decreased (for example as a result of extraction) or increased water quantity (for example due to impeded water flow or restoration) ground or surface water levels may impact upon designated habitats. • This could impact on the integrity of the site by causing alterations in the species composition or reducing the extent of target habitats. • Reduced water levels in water courses and water bodies could have direct impacts on wetland habitats and designated wildfowl populations. • Reduced volumes of water would increase the concentration of contaminants. • Any significant or long term changes in ground water levels may also affect woodland sites, either having a direct effect on species (canopy, basal flora or epiphytes) or indirectly by increasing stress and vulnerability to other factors.
• Site restoration (either during and/or after workings) and aftercare	Introduced/invasive species Restoration and mitigation could potentially lead to the introduction or increased abundance of potential invasive species which could comprise an adverse impact on integrity of Natura2000 sites.
	Other non-toxic contaminants • Nutrient enrichment (of water and soils) through processes such as dredging, dewatering, agricultural and infilling end-uses. • Changes in salinity (e.g. ground works/boreholes causing pathways for contaminated water). • Changes in turbidity (e.g. through stockpiling finings escaping to watercourse, through industrial processes including sand pumped as slurry to processing plants and water returned to lakes, through production and inappropriate storage of secondary aggregates, by transport of aggregates (via road or conveyor), and by agricultural after-use (e.g. effects of fertiliser) or development (industrial, commercial or residential). • Creation and manipulation of waste materials, particularly through operations such as blasting and crushing. Waste materials pose multiple potential impacts from inappropriate storage resulting in soil compaction (and potentially contamination) through to additional movements of heavy vehicles and a cumulative increase in dust and other airborne pollutants.
Sand and gravel (land won) Extracted by hydraulic elevators following the stripping of soil. Crushed, screened and washed. Silt is disposed of. While transport by barge using watercourses such as the River Severn Local Wildlife Site are viable routes from extraction to processing points, transport is often by road because of the small amounts being transported and cost of infrastructure such as wharfs.	• In comparison to crushed rock, sand and gravel developments pose greater land take when also considering ancillary infrastructure. Likely to impact on species populations and species movements. Noise levels relatively low (compared to hard rock quarries). • Silt disposal capacity is important – water impacts. • Soil stripping in summer can cause dust problems. • Road/waterway transport impacts. • Working can be below the water table and may involve dewatering, therefore potential for hydrological modifications of adjacent land influenced through cone of depression during extraction phases.

However, the fact that the material is relatively low value, bulk materials, for which transport costs make up a large proportion of the market price, can make water transport more attractive.	

Table 5: Broad category summary of potential impacts arising from mineral working

Impact Category
1. Physical Modification (including direct land take, functional and linked habitat loss/fragmentation, soil pollution, subsidence, settlement, compaction)
2. Disturbance (including noise, light, vehicle movement, invasive species, anthropogenic)
3. Hydrological modification (including water pollution, contamination, littering)
4. Air pollution (specifically NOx and heavy metals, but also potentially including NO2, NH3, 03, SO2,)
5. Dust and other non-toxic contaminants (including dust/particulate matter and littering)

5 SCREENING FOR LIKELY SIGNIFICANT EFFECTS

5.1 Interpretation of 'likely significant effect'

Relevant case law helps to interpret when effects should be considered as a likely significant effect, when carrying out HRA of a proposal.

In the Waddenzee case, the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive (translated into Reg. 102 in the Habitats Regulations), including that:

"any plan or project … is to be subject to an appropriate assessment … if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects" (para 45)

"Where plan or project has an effect on that site but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on that site" (para 47)

"In assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project" (para 48)

An opinion delivered to the Court of Justice of the European Union commented that:

"The requirement that an effect in question be 'significant' exists in order to lay down a de minimus threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."

This opinion (the 'Sweetman' case) therefore allows for the authorisation of plans and projects whose possible effects, alone or in combination, can be considered 'trivial' or de minimus; referring to such cases as those "that have no appreciable effect on the site". In practice, such effects could be screened out as having no likely significant effect; they would be 'insignificant'.

The implications of 'Waddenzee' and 'Sweetman' on screening scanned sites within a HRA are therefore that, if there are no causal connections or links between proposals and a site's qualifying features, there cannot be an effect. If there is a 'theoretical' pathway, or 'hypothetical' cause, but in practice there is no credible evidence of a real (rather than a hypothetical) link to the site, it cannot be regarded as being potentially significant, either alone or in combination with other plans or projects. There would be no point including that supposition in further assessment.

5.2 Physical Damage to and Loss of Habitat, Including Effects of Land-Take and Habitat Fragmentation

For direct loss of habitat it is assumed that effects from minerals extraction or other associated development (aggregate processing plants, conveyors, wharves and so forth) would not be significant unless the minerals site extends within the boundary of

the Natura 2000 Site. Increased pressure leading to habitat loss and/or habitat degradation might be anticipated through mineral extraction activities in the locality of a Natura 2000 Site.

Likely Significant Effects of Lea Castle Farm Quarry proposal.

As the Lea Castle Farm Quarry site does not lie within the boundary of, or in proximity to, any European sites, there will be no effects from direct physical damage to any European Sites.

5.3 Functional Linkage

Natural England Report NECR207[10] defines Functionally Linked Land as

"the role or 'function' that land or sea beyond the boundary of European site might fulfil in terms of supporting the populations for which the site was designated or classified. Such an area of land or sea is therefore 'linked' to the main site in question because it provides a (potentially important) role in maintaining or restoring a protected population at favourable conservation status".

The Natural England commissioned report RP02966[11] identifies high tide roosts on the Severn Estuary SSSI/SPA and considered 30 of these to be Primary Roost sites for the SPA as they hold more than 1% of the SPA population of one or more of the interest species under consideration.

In their consultation response to the Fourth Consultation draft of the Worcestershire Minerals Local Plan, Natural England advised that:

"Natural England would like to draw your attention to the emerging evidence base in relation to the Severn Estuary SPA…. We are aware that SPA birds can travel across and up the Vale to the Cotswolds Scarp and as far north as Longdon Marsh. Such land is likely to form 'functionally linked land' (FLL) and as such influences planning with respect to the Habitats Regulations"

In addition to the wintering/passage bird species which constitute qualifying features of the SPA, both sea and river lamprey and twaite shad (qualifying features of the Severn Estuary SAC) are also considered to be highly mobile species. Functional Linkage may therefore exist both terrestrially and within the hydrological environments for qualifying features of downstream Natura 2000 sites.

Likely Significant Effects of Lea Castle Farm Quarry proposal.

Longdon Marsh forms part of the Hill Court Farm and The Blacklands Worcester Wildlife Trust reserve. It is located near Upton on Severn which is approximately 38km south of the Lea Castle Farm Quarry proposal. No functionally linked land has been identified at a closer distance to the Lea Castle Farm Quarry proposal. It is therefore concluded that the proposal would not have any Likely Significant Effects on the Severn Estuary SPA/SAC/Ramsar site and cannot undermine the conservation objectives.

[10] Chapman, C. & Tyldesley, D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Reports, Number207.
[11] Identification of Wintering Waterfowl High Tide Roosts on the Severn Estuary SSSI/SPA Phase 4 (Gloucestershire, With Part Of South Gloucestershire), Link Ecology Ltd, 2018

As described in Table 2, qualifying features of the Severn Estuary SAC include the migratory fish species twaite shad, river lamprey and sea lamprey.

The Severn estuary and Bristol Channel are an important habitat for juvenile and adult twaite shad. Prior to the mid-19th Century, twaite shad was an economically important species in the Severn river basin. Within three years of the installation of navigation weirs fishing ceased. Currently the species is unable to migrate further upriver than Worcester on both rivers Severn and Teme.[12]

In the River Severn sea lamprey and river lamprey struggle to migrate over the man-made weirs.[13] River lampreys are known to spawn in gravelly sections of the River Severn below Tewkesbury weir near Gloucestershire and sea lamprey are found 10km above Gloucester just above the tidal limit of the Severn.[14]

Given the above, these three migratory fish species are not known to migrate as far as the Lea Castle Farm Quarry proposal site and therefore any effects of the proposal cannot undermine the conservation objectives of the Severn Estuary SAC/SPA/Ramsar site.

5.4 Hydrological change

Potential impacts on hydrology are also relevant and could impact on sites at distance from the proposal if there is a hydrological connection.

Focusing initially on water level alone, the River Severn is a major source of water for the West Midlands region. The Stratford-on-Avon District Consultation Core Strategy HRA (March 2010) states the following:

"There are currently five major abstraction points. Water levels in the Severn Estuary cSAC/SPA/Ramsar site and Lyppard Grange SAC could be affected if water from the River Severn is over-abstracted, and the River Wye SAC could be affected if water from the River Wye is over-abstracted. There are already significant in-combination impacts on the Severn Estuary sites and the other SACs due to water abstraction, and further impacts are expected in the future. Increased abstraction from the River Severn at Ombersley was proposed in Severn [Trent] Water's draft Water Resources Management Plan but was withdrawn because of its potential to affect the Severn Estuary sites (Treweek Environmental Consultants, 2009)".

However, it is noted that abstraction operations are regulated by the Environment Agency and, as an 'expert' competent authority, the Environment Agency would undertake (or lead on) a HRA with regards to implications which abstraction associated with a mineral development might pose upon a European Site. In undertaking a project-level HRA of mineral development applications proposing such abstraction impacts, Worcestershire County Council would, in line with requirements

[12] European Commission LIFE Public Database. Shad Severn: Conservation and restoration of twaite shad in the Severn Estuary Special Area of Conservation. Available at: https://webgate.ec.europa.eu/life/publicWebsite/index.cfm?fuseaction=search.dspPage&n_proj_id=5866. (accessed 06/04/2021)

13 Unlocking the Severn website. Canal and rivers trust. Available at: https://www.unlockingthesevern.co.uk/our-river/lamprey/ (Accessed 06/04/2022).

14 The Biology and Conservation of the Fish Assemblage of the Severn Estuary (cSAC). D J Bird. CCW Regional Report No. CCW/SEW/08/1 February 2008

of Regulation 67, consider issue of authorisation which takes into account the reasoning, conclusions or assessment of another competent authority[15], ensuring such interlinked work is co-ordinated wherever possible to do so.

Within the Worcestershire Mineral Local Plan, mineral 'strategic corridors' have been identified as hydrologically linked and upstream of the Severn Estuary SAC and RAMSAR via the River Severn. The plan states:

“However, the physical distance exceeds 20km between the closest downstream receptor (Severn Estuary SPA) and the county boundary. This figure will be much greater where continuity is measured via hydrological pathways (rather than direct physical distance), for example for dispersal of pollutants downstream through the catchment.”

In a consultation response to the Gloucestershire Minerals Local Plan HRA Assessment, commenting on the Severn Estuary SAC/SPA, Natural England identified that:

"This site is unlikely to be affected directly by on land mineral extraction but there could be significant indirect effects from changes to water flow patterns into the site"

Consequently, in the HRA Main report for Gloucestershire's MLP[16], mineral sites within the River Severn catchment but in excess of 30km distance from the River Severn Estuary SAC/SPA/RAMSAR were deemed to be 'very distant' with 'no pathway' present which could result in 'any conceivable effect' on the conservation objectives of the estuary. It is therefore a logical extension that similar mineral extraction proposals in Worcestershire, greater than 30km from the closest point of the Upper Severn Estuary, should also pose no conceivable abiotic effect, for example on water quality or patterns of flow to the sandbanks, mudflats and reefs within that site, and therefore no adverse abiotic impacts to the Conservation Objectives of the Severn Estuary SAC/SPA/RAMSAR with regards hydrological change are foreseen. In the HRA of the Fourth Stage MLP consultation, and with no objections raised by Natural England, risk of hydrological impact upon this site was screened out of further consideration. However, it is noted that biotic interactions (i.e. hydrological and hydro-geomorphological effects upon mobile species such as migratory fish and passage/wintering birds listed as interest features of International Sites) cannot be treated in the same manner.

According to the Wye Catchment Partnership Plan[17] the Lea Castle Farm Quarry proposal site is not within the catchment area for the River Wye; it is 30km north of the catchment boundary.

Likely Significant Effects of Lea Castle Farm Quarry proposal.

[15] Defra, July 2012, Habitats Directive Guidance on competent authority coordination under the Habitats Regulations

[16] Habitat Regulations Assessment Main Report for the Gloucestershire Minerals Local plan, March 2018. V.1.4

[17] https://catchmentbasedapproach.org/wp-content/uploads/2020/04/Wye-Catchment-Partnership-Plan_2019.pdf

Given the above, any effects of the proposal cannot be considered to have potential to undermine the conservation objectives of the Severn Estuary SAC/SPA/Ramsar site.

5.5 Non-Physical Disturbance

From a review of former minerals policy statements [18] (in particular MPS2), Environment Agency internal guidance on HRA and various websites (e.g. www.goodquarry.com), it was considered that effects of vibration and noise are more likely to be significant if a minerals site is within 500m of a Natura 2000 Site with qualifying features sensitive to non-physical disturbance.

For biological disturbance, the 5km 'buffer' suggested in Environment Agency internal guidance on HRA was applied around Natura 2000 Sites where bird species have been identified as a Qualifying Feature (SPA/Ramsar). This approach will also assist in gauging biological disturbance when considering restoration to mixed, amenity or recreational uses for minerals sites, where such use will increase pressures such as human disturbance on the conservation objectives of a Natura 2000 Site.

Likely Significant Effects of Lea Castle Farm Quarry proposal.

Appendix 1 shows the locations of the Natura 2000 sites considered, relative to the Lea Castle Farm Quarry proposal site; the closest is Fen Pools SAC at 14km distance. Given this, in relation to the suggested buffer above, any effects of the proposal cannot be considered to have potential to undermine the conservation objectives of any of the European sites.

5.6 Air Pollution

The Air Pollution Information System [19] (APIS) identifies that the most significant pollutant releases arising from mineral activities are production of Nitrogen Oxides ('NOx'), Particulates ('PM') and heavy metals ('HM').

APIS identifies that the significant pollutants arising from road transport are also NOx, PM and HM but other significant pollutants generated are ammonia (NH3), volatile organic compounds ('VOCs' and Polycyclic Aromatic Hydrocarbons (PAH).

With regard to the dispersal distance and deposition concentrations of air pollutants which are associated with transport, Natural England's Internal Advice Note NEA001[20] (which in turn refers to evidence collated in the Natural England Commissioned Report [21] NECR199) indicates that the effects of road traffic emissions occur at distances of 'up to' 200m, with potential for this distance to be greater in some circumstances. This 200m dispersal figure is also used within Highways Agency guidance on predicting deposition of pollutants from road traffic[22]. NEA001 goes on to state that: "If none of the site's sensitive qualifying features known to be present within

[18] Extant government policy and guidance is contained within the National Planning Policy Framework and Planning Practice Guidance. However, the former policy statements and guidance documents contain useful technical information

[19] www.apis.ac.uk/starters-guide-air-pollution-and-pollution-sources Accessed August 2018

[20] NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018

[21] The ecological effects of air pollution from road transport: an updated review, Ricardo-AEA, 2016

[22] DMRB, Volume 11 Section 3, Air Quality, February 2003.

200m are considered to be at risk because of their distance from the road, there is no credible risk of a significant effect which might undermine a site's conservation objectives".

Likely Significant Effects of Lea Castle Farm Quarry proposal.

Appendix 1 shows the locations of the Natura 2000 sites considered, relative to the Lea Castle Farm Quarry proposal site; the closest is Fen Pools SAC at 14km distance. Given this, in relation to the air pollution information above, any effects of the proposal cannot be considered to have potential to undermine the conservation objectives of any of the European sites.

5.7 Non-Toxic Contamination

Mineral extraction could contribute cumulatively to an overall deterioration in background air quality across an entire region. In July 2006, when this issue was raised by Runnymede District Council, Natural England advised that their Local Development Framework

"can only be concerned with locally emitted and short range locally acting pollutants"[23]

as this is the only scale which falls within a local authority remit. In the light of this it is considered reasonable to conclude that diffuse pan-authority air quality impacts are the responsibility of national government, both since they relate to the overall quantum of development within a region or England as a whole (over which individual authorities have little control), and since this issue is best addressed at the highest pan-authority level. Diffuse air quality issues will not therefore be considered further within this HRA.

Effects of dust on European wildlife sites and vegetation will depend on the prevailing wind direction and the transport distance is related to particle size; large particles (>30µm) will mostly deposit within 100m of the source, intermediate particles (10-30µm) are likely to travel up to 200 - 500m. Smaller particles (<10µm) can travel up to 1km from the source[24].

With regard to the interest features of Natura 2000 Sites, it is likely to be the large and intermediate size particles (i.e. those typically deposited up to 500m from source) which are of most interest since if present in sufficient quantities they can smother vegetation, preventing light penetration to the chloroplasts and blocking stomata thus interrupting photosynthesis and transpiration. In prolonged cases, death can result.

The Institute of Air Quality Management Guidance on the Assessment of Mineral Dust Impacts for Planning[25] states that:

"From the experience of the Working Group, adverse dust impacts from sand and gravel sites are uncommon beyond 250 m and beyond 400 m from hard rock quarries measured from the nearest dust generating activities.

[23] Natural England (16 May 2006) letter to Runnymede Borough Council, 'Conservation (Natural Habitats &c.) Regulations 1994, Runnymede Borough Council Local Development Framework'.
[24] Scottish Environment Protection Agency. 2003. Technical Guidance Note - Habitats Regulations & The Landfill Regulations Guidance:
http://www.sepa.org.uk/pdf/guidance/landfill_directive/habitats_landfill_regulations_guidan ce.pdf
[25] Guidance on the Assessment of Mineral Dust Impacts for Planning, Institute of Air Quality Management, May 2016 (v1.1)

In the absence of other information it is commonly accepted that the greatest impacts will be within 100 m of a source and this can include both large (>30 µm) and small dust particles. The greatest potential for high rates of dust deposition and elevated PM10 concentrations occurs within this distance. Intermediate-sized particles (10 to 30 µm) may travel up to 400 m, with occasional elevated levels of dust deposition and PM10 possible. Particles less than 10µm have the potential to persist beyond 400 m but with minimal significance due to dispersion".

In relation to potential impact on Natura 2000 sites, the level of dust deposition likely to lead to a change in vegetation is considered very high (over 1g/m2/day[26]) and current guidance indicates that the likelihood of a significant effect is therefore "very low except on the sites with the highest dust release close to sensitive habitats"[27].

With due consideration of dust impacts on Natura 2000 Sites a proximity buffer of 400m has therefore been selected

Likely Significant Effects of Lea Castle Farm Quarry proposal.

Appendix 1 shows the locations of the Natura 2000 sites considered, relative to the Lea Castle Farm Quarry proposal site; the closest is Fen Pools SAC at 14km distance. Given this, in relation to the suggested proximity buffer above, any effects of the proposal cannot be considered to have potential to undermine the conservation objectives of any of the European sites.

Table 6: Summary of screening distances used for each source of impact

Mineral Working Impact Category	Method of Assessing Interaction with Scanned Site	Rationale
Physical Modification: Land Take, Habitat Loss, Fragmentation, Soil Pollution	Analysis of proximity using GIS boundaries and use of pathway mode	Proposals which abut, overlap or are located on a Natura 2000 Site.
Disturbance	500m for non-physical disturbance	Good practice guidance
	5km where bird species are a site's qualifying feature (i.e. Severn Estuary SPA and Walmore Common SPA)	EA Guidance
Hydrological modification including water pollution	No set distance appropriate. Use pathway model.	
Air pollution	200m	HA Guidance NEA001
Dust and other non-toxic contaminants	400m	IAQM Guidance

[26] Farmer, A M, (1993) The effects of dust on vegetation – a review. Environmental Pollution 79, 63-75 (cited in Guidance on the Assessment of Mineral Dust Impacts for Planning, IAQM, 2016

[27] Holman *et al* (2014). IAQM Guidance on the assessment of dust from demolition and construction. Institute of Air Quality Management, London.

6 SCOPING OF NATURA 2000 SITES

The following tables apply the potential impacts of mineral workings to each Natura 2000 Site identified for screening because of the potential to be impacted by the Lea Castle Farm Quarry proposal.

Table 7: Fen Pools SAC, approximately 14 km from proposed Lea Castle Farm Quarry

Mineral Working Impact Category	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Great crested newt	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC therefore there are no direct impacts given the distance from the proposals.
Disturbance	Great crested newt	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Great crested newt	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.
Air pollution	Great crested newt	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Great crested newt	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 8: Walmore Common SPA and Ramsar site, approximately 65km south-west of proposal. The SPA and Ramsar are considered together because they have the same qualifying features

Mineral Working Impact Category	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Bewick's swan	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC or Ramsar therefore there are no direct impacts given the distance from the proposals.
Disturbance	Bewick's swan	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Bewick's swan	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Air pollution	Bewick's swan	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Bewick's swan	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 9: River Wye SAC, approximately 50km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Annex I habitat Annex II species	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC therefore there are no direct impacts given the distance from the proposals.
Disturbance	Annex I habitat Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Annex I habitat Annex II species	Screened out	The Lea Castle Farm Quarry proposal is not in the catchment for the River Wye SAC and therefore no pathways through which impacts might arise are foreseen.
Air pollution	Annex I habitat Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Annex I habitat Annex II species	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 10: Severn Estuary SAC, approximately 70km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Annex I habitats Annex II species	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.

Disturbance	Annex I habitats Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Annex I habitats Annex II species: Sea lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax*.	Screened out	As described in Section 5, the migratory fish that are qualifying features of the SAC, do not migrate further than just above Gloucester in the case of sea lamprey (50km), Tewkesbury in the case of river lamprey (45km) and Worcester in the case of twaite shad (24km). Given the distance there is unlikely to be a credible risk of water pollution effects on these qualifying features.
Air pollution	Annex I habitats Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Annex I habitats Annex II species	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 11: Severn Estuary SPA, approximately 70km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	internationally important populations of: Bewick's swan, Curlew *Numenius arquata*, Dunlin *Calidris alpina,* Pintail *Anas acuta*, Redshank *Tringa tetanus,* Shelduck *Tadorna tadorna.* Supports Ringed plover *Charadrius hiaticula* on passage	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.
Disturbance		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution		Screened out	Functionally linked land (with potential to support birds of the SPA) has not been identified further north than Gloucester, approximately 50km from the Lea Castle Farm Quarry site. Given this distance it is highly unlikely that there is a credible risk of water pollution on these qualifying features.
Air pollution		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.

Dust and other non-toxic contaminants		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.

Table 12: Severn Estuary Ramsar, approximately 70km south-west of proposed Lea Castle Farm Quarry site. Ramsar criteria are considered together where appropriate

Mineral Working Impact Category	Qualifying Feature Ramsar criterion	Screening conclusion	Justification / notes
All 5 categories	1 Immense tidal range	Screened out	Not possible for any of the mineral working impacts to affect the tidal range.
All 5 categories	3 Unusual estuarine community of reduced diversity and high productivity		Given the physical distance it is highly unlikely that there is potential for impacts capable of altering the diversity or productivity.
Physical Modification including via functional linkage	4 Important for run of migratory fish between sea and estuary 8 diverse fish assemblage with over 110 species recorded	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.
Disturbance		Screened out	Given the physical distance there is no potential for a negative impact of noise or vibration on the qualifying features.
Hydrological modification including water pollution			As described in Section 5, the migratory fish that are qualifying features of the SAC, do not migrate further than just above Gloucester in the case of sea lamprey (50km), Tewkesbury in the case of river lamprey (45km) and Worcester in the case of twaite shad (24km). Given the distance there is unlikely to be a credible risk of water pollution effects on these qualifying features.
Air pollution		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying features.
Dust and other non-toxic contaminants		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature.

Physical Modification including via functional linkage	6 supports over 1% of population of: Bewick's swan, European white-fronted goose, Dunlin, Redshank, Shelduck, Gadwall Anas strepera 5 Supports an internationally important assemblage of waterfowl	Screened out	The proposed quarry site does not support the qualifying species of the SPA/Ramsar and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts given the distance from the proposals.
Disturbance		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.
Hydrological modification including water pollution		Screened out	Functionally linked land (with potential to support birds of the SPA) has not been identified further north than Gloucester, approximately 50km from the Lea Castle Farm Quarry site. Given this distance it is highly unlikely that there is a credible risk of water pollution on these qualifying features.
Air pollution		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.
Dust and other non-toxic contaminants		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.

7 THE IN-COMBINATION ASSESSMENT

The Habitats Directive requires Local Authorities to assess ‘in-combination’ effects alongside direct effects. ‘In-combination’ effects occur when otherwise non-significant proposals combine, and can cumulatively lead to a significant effect. This interaction can occur from proposals within the Development Plan or between the Development Plan and other projects and plans.

It is a requirement of the Habitat Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the Natura 2000 Site(s) in question.

The HRA Handbook (DTA, February 2019 update) states (at Section C.8.6.2) that:

"…If, on assessment alone, it is ascertained that the subject plan or project will in fact have no effect at all on the European site, an adverse effect in combination is ruled out and no further assessment is required. Adding the effects of other plans or projects could not make the effects of the subject plan or project more significant or more likely because it has no effect at all; the plan or project may be authorised"

It is therefore evident that where a plan has no effect on a Natura 2000 Site, no 'in combination' test is necessary because it cannot contribute to any cumulative effects.

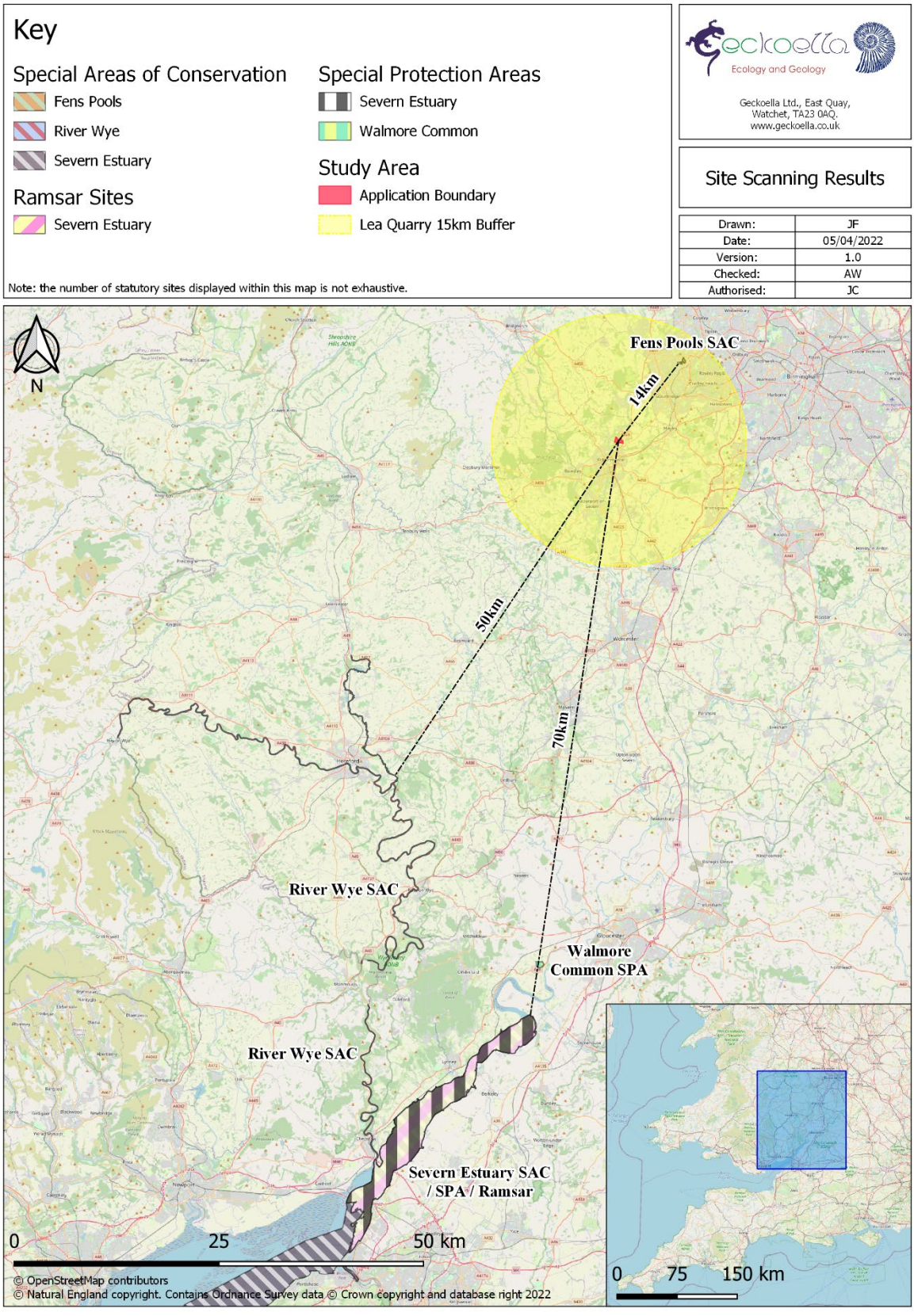
8 CONCLUSION

This Stage 1 screening HRA report has identified no Likely Significant Effects on any European Sites.

The HRA report must be sent to Natural England, and should be sent to the Environment Agency for consultation and comment.

Following consultation, and provided recommendations in this report are followed and consultees (in the main Natural England) are in agreement that no LSE are anticipated either alone or in-combination, the project can be authorised and the final HRA report produced and the template within Appendix 2 of this report completed.

Appendix 1: Map of Site Scanning Results



Appendix 2: Template Screening Form

RECORD FOR A PROJECT WHICH WOULD NOT BE LIKELY TO HAVE A SIGNIFICANT EFFECT ON ANY EUROPEAN SITE, EITHER ALONE OR IN COMBINATION WITH ANY OTHER PROJECT

Introduction and conclusion of the assessment

Lea Castle Farm Quarry was considered in light of the assessment requirements of regulation 63 / 105 of the Conservation of Habitats and Species Regulations 2017 by Worcestershire County Council which is the competent authority responsible for permitting the project and any assessment of it required by the Regulations.

Having carried out a 'screening' assessment of the plan, the competent authority has concluded that the plan would not be likely to have a significant effect on any European site, either alone or in combination with any other plans or projects (in light of the definition of these terms in the 'Waddenzee' ruling of the European Court of Justice Case C – 127/02) and an appropriate assessment is not therefore required.

Natural England was consulted on this conclusion and has provided comments as provided in Appendix 4, along with the WCC response.

Information used for the assessment

A copy of the list used to scan for and select European sites potentially affected by the plan is given below.

Natura 2000 site	Approximate location from Lea Castle Farm Quarry boundary
Fens Pools SAC (20.4 ha)	11.5km north-east
Walmore Common SPA (52.85ha)	40 km south-west
Walmore Common Ramsar (52.85ha)	40 km south-west
River Wye SAC (2234.89 ha)	40km south-west
Severn Estuary SAC (73,715.4 ha)	70 km south-west
Severn Estuary SPA (24,700.01 ha)	70 km south-west
Severn Estuary Ramsar (24,662.98 ha)	70 km south-west

A summary of the information gathered for the assessment is presented in the Information Required for Assessment table below.

International site	Qualifying Features	Conservation objectives	Threats
Fens Pools SAC SAC SITE CODE UK0030150	Qualifying Features: S1166. Triturus cristatus; Great crested newt	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying species • the structure and function of the habitats of the qualifying species • the supporting processes on which the habitats of the qualifying species rely • the populations of qualifying species, and, • the distribution of qualifying species within the site.	The site has low sensitivity to climate change but is vulnerable to runoff which drains into it from surrounding development. The site is sensitive to concentrations and deposition of air pollutants.
Walmore Common SPA SPA SITE CODE UK9007051	Qualifying Features: A037 Bewick's swan (Non-breeding)	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the population of each of the qualifying features; and • the distribution of the qualifying features within the site.	Site Improvement Plan (November 2014) identifies that hydrological change (flooding), changes in species distribution, changes in land management, offsite habitat availability and management and disturbance including that associated with public access and energy production are all potentially undermining the Conservation Objectives.

International site	Qualifying Features	Conservation objectives	Threats
Walmore Common Ramsar	Internationally important bird assemblage of Bewick's swan	• no significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline. • maintain no less than 43 individuals, representing an average of 0.5% of the GB population (5 year peak mean 1998/9- 2002/3)	
River Wye SAC SAC SITE CODE UK0012642	Floating formations of Water Crowfoot; populations of Atlantic Salmon, Allis shad, Twaite shad, Bullhead, Brook Lamprey, River Lamprey, Sea Lamprey, White-clawed Crayfish; the river and adjoining land as habitat for populations; and Otter	Ensure site integrity is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • the extent and distribution of qualifying natural habitats and habitats of qualifying species; • the structure and function (including typical species) of qualifying natural habitats; • the structure and function of the habitats of qualifying species; • the supporting processes on which qualifying natural habitats and habitats of qualifying species rely; • the populations of qualifying species; and • the distribution of qualifying species.	Site Improvement Plan (v1.0, November 2014) identifies how water pollution, physical modifications including hydrological changes, water abstraction, inappropriate forestry and woodland management, invasive species and operations associated with fisheries all potentially contribute in undermining the Conservation Objectives
Severn Estuary SAC SAC SITE CODE UK0013030	Habitats: Sandbanks which are slightly covered by seawater all the time (subtidal sandbanks) Estuaries; Mudflats and sandflats not covered by seawater at low tide	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring: • the extent and distribution of qualifying natural habitats and habitats of qualifying species	Developmental impacts (urbanisation, industrial activities) • Outdoor sports and leisure • human induced changes in hydraulic conditions • changes in abiotic conditions • barriers to migratory fish • Coastal squeeze

International site	Qualifying Features	Conservation objectives	Threats
	Reefs Atlantic salt meadows. Species: Sea lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax*.	• the structure and function (including typical species) of qualifying natural habitats • the structure and function of the habitats of qualifying species • the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • the populations of qualifying species; and • the distribution of qualifying species within the site.	• Inappropriate grazing and management of saltmarsh • Climate change induced changes in species distributions • Declines in water and sediment quality • Impact of atmospheric nitrogen deposition • aggregate extraction, maintenance dredging, etc • Recreational bait digging, fishing • Commercial fisheries • invasive non-native species • Marine litter • Marine pollution incidents
Severn Estuary SPA SPA SITE CODE UK9015022	Qualifying Features: Waterbird assemblage Bewick's swan (Non-breeding) Common shelduck (Non-breeding), Gadwall (Non-breeding) Dunlin (Non-breeding) Common redshank (Non-breeding) Greater white-fronted goose (Non-breeding)	Conservation Objectives: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring: • the extent and distribution of the habitats of the qualifying features; • the structure and function of the habitats of the qualifying features; • the supporting processes on which the habitats of the qualifying features rely; • the population of each of the qualifying features, and • the distribution of the qualifying features within the site.	• Urbanisation, industrial activities • Outdoor sports and leisure • Coastal squeeze • Inappropriate grazing and management of saltmarsh • Climate change induced changes in species distributions • Declines in water and sediment quality • Impact of atmospheric nitrogen deposition • Recreational bait digging, fishing • Commercial fisheries • Marine litter • Marine pollution incidents

International site	Qualifying Features	Conservation objectives	Threats
Severn Estuary Ramsar	Ramsar criteria: • 1 Immense tidal range • 3 Unusual estuarine community of reduced diversity and high productivity • 4 Important for run of migratory fish • 8 diverse fish assemblage • 6 over 1% of population of: Bewick's swan, European white-fronted goose, Dunlin, Redshank, Shelduck, Gadwall • 5 Internationally important assemblage of waterfowl	No significant reduction in numbers or displacement of wintering birds attributable to disturbance from an established baseline. Maintain in a favourable condition the habitats for the internationally important assemblages of waterfowl listed, in particular: • saltmarsh - Upper and lower saltmarsh provide important feeding and roosting areas. The European white-fronted geese graze on a range of saltmarsh grasses and herbs. The birds feed on the saltmarsh and the transition to coastal grazing marsh in front of the sea defences in the upper estuary. • mudflats and sandflats; and • coastal lagoons.	Nonphysical disturbance, noise (e.g. coastal development); visual (coastal development). Non-toxic contamination: changes in nutrient loading and changes in organic loading (industrial outfalls).

The formal screening decision

This Stage 1 screening HRA report has identified no Likely Significant Effects on any European Sites, either alone or in combination with other projects.

In reaching the conclusion of the screening assessment, the competent authority took no account of the effects of any measures intended to avoid or reduce the harmful effects on any European site.

The pre-screening schedules, tables or matrices

The pre-screening outputs of the work which resulted from the pre-screening process are below, as supporting evidence to the formal screening decision and record.

Table 13: Fen Pools SAC, approximately 14 km from proposed Lea Castle Farm Quarry

Mineral Working Impact Category which could present a risk to conservation ofjectives	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Great crested newt	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC therefore there are no direct impacts given the distance from the proposals.
Disturbance	Great crested newt	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Great crested newt	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.
Air pollution	Great crested newt	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Great crested newt	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 14: Walmore Common SPA and Ramsar site, approximately 65km south-west of proposal. The SPA and Ramsar are considered together because they have the same qualifying features

Mineral Working Impact Category which could present a risk to	Qualifying Feature	Screening conclusion	Justification / notes

conservation ofjectives			
Physical Modification including via functional linkage	Bewick's swan	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC or Ramsar therefore there are no direct impacts given the distance from the proposals.
Disturbance	Bewick's swan	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Bewick's swan	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.
Air pollution	Bewick's swan	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Bewick's swan	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 15: River Wye SAC, approximately 50km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category which could present a risk to conservation ofjectives	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Annex I habitat Annex II species	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC therefore there are no direct impacts given the distance from the proposals.
Disturbance	Annex I habitat Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Annex I habitat Annex II species	Screened out	The Lea Castle Farm Quarry proposal is not in the catchment for the River Wye SAC and therefore no pathways through which impacts might arise are foreseen.
Air pollution	Annex I habitat Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature

Dust and other non-toxic contaminants	Annex I habitat Annex II species	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 16: Severn Estuary SAC, approximately 70km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category which could present a risk to conservation ofjectives	Qualifying Feature	Screening conclusion	Justification / notes
Physical Modification including via functional linkage	Annex I habitats Annex II species	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.
Disturbance	Annex I habitats Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution	Annex I habitats Annex II species: Sea lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax*.	Screened out	As described in Section 5, the migratory fish that are qualifying features of the SAC, do not migrate further than just above Gloucester in the case of sea lamprey (50km), Tewkesbury in the case of river lamprey (45km) and Worcester in the case of twaite shad (24km). Given the distance there is unlikely to be a credible risk of water pollution effects on these qualifying features.
Air pollution	Annex I habitats Annex II species	Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Dust and other non-toxic contaminants	Annex I habitats Annex II species	Screened out	Given the physical distance there is no credible risk of adverse impacts on the qualifying feature. No pathways through which impacts might arise are foreseen.

Table 17: Severn Estuary SPA, approximately 70km south-west of proposed Lea Castle Farm Quarry site.

Mineral Working Impact Category which could present a risk to	Qualifying Feature	Screening conclusion	Justification / notes

conservation ofjectives			
Physical Modification including via functional linkage	internationally important populations of: Bewick's swan, Curlew *Numenius arquata*, Dunlin *Calidris alpina,* Pintail *Anas acuta*, Redshank *Tringa tetanus,* Shelduck *Tadorna tadorna.* Supports Ringed plover *Charadrius hiaticula* on passage	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.
Disturbance		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature
Hydrological modification including water pollution		Screened out	Functionally linked land (with potential to support birds of the SPA) has not been identified further north than Gloucester, approximately 50km from the Lea Castle Farm Quarry site. Given this distance it is highly unlikely that there is a credible risk of water pollution on these qualifying features.
Air pollution		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.
Dust and other non-toxic contaminants		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.

Table 18: Severn Estuary Ramsar, approximately 70km south-west of proposed Lea Castle Farm Quarry site. Ramsar criteria are considered together where appropriate

Mineral Working Impact Category which could present a risk to conservation ofjectives	Qualifying Feature Ramsar criterion	Screening conclusion	Justification / notes
All 5 categories	1 Immense tidal range	Screened out	Not possible for any of the mineral working impacts to affect the tidal range.
All 5 categories	3 Unusual estuarine community of reduced diversity and high productivity		Given the physical distance it is highly unlikely that there is potential for impacts capable of altering the diversity or productivity.

Physical Modification including via functional linkage	4 Important for run of migratory fish between sea and estuary 8 diverse fish assemblage with over 110 species recorded	Screened out	Habitats within proposed quarry site do not support the qualifying species or habitat of the SAC and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts on the SAC or functionally linked land from the proposal.
Disturbance		Screened out	Given the physical distance there is no potential for a negative impact of noise or vibration on the qualifying features.
Hydrological modification including water pollution			As described in Section 5, the migratory fish that are qualifying features of the SAC, do not migrate further than just above Gloucester in the case of sea lamprey (50km), Tewkesbury in the case of river lamprey (45km) and Worcester in the case of twaite shad (24km). Given the distance there is unlikely to be a credible risk of water pollution effects on these qualifying features.
Air pollution		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying features.
Dust and other non-toxic contaminants		Screened out	Given the physical distance there is no potential for a negative impact on the qualifying feature.
Physical Modification including via functional linkage	6 supports over 1% of population of: Bewick's swan, European white-fronted goose, Dunlin, Redshank, Shelduck, Gadwall Anas strepera 5 Supports an internationally important assemblage of waterfowl	Screened out	The proposed quarry site does not support the qualifying species of the SPA/Ramsar and the Lea Castle Farm quarry site has not been identified as functionally linked land. Therefore there are no direct impacts given the distance from the proposals.
Disturbance		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.
Hydrological modification including water pollution		Screened out	Functionally linked land (with potential to support birds of the SPA) has not been identified further north than Gloucester, approximately 50km from the Lea Castle Farm Quarry site. Given this distance it is highly unlikely that there is a credible risk of water pollution on these qualifying features.

Air pollution		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.
Dust and other non-toxic contaminants		Screened out	Given the physical distance from any identified high tide roosts or functionally linked land, there is no potential for a negative impact of noise or vibration on the qualifying features.

Assumptions and limitations

This HRA screening conclusion is based on the latest available information of the European Sites selected. It is likely that in future, the conservation status, objectives and conditions of European Sites may change.

References and reports

In reaching the conclusion of the assessment the competent authority took the following documents into account:

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Dated ……. 29/04/2022

Copy sent to Natural England date 29/04/2022

Response received from Natural England date 03/05/2022

Appendix 3: Abbreviations and Glossary

Table 19: Abbreviations

AA	Appropriate Assessment
DEFRA	Department for Environment, Food and Rural Affairs
EcIA	Ecological Impact Assessment
GIS	Geographic Information Systems
HRA	Habitats Regulations Assessment / Appraisal
IPENS	Improvement Programme for England's Natura 2000 Sites
JNCC	Joint Nature Conservation Committee
LPA	Local Planning Authority
LSE	Likely Significant Effect
km	Kilometre
m	Metre
NE	Natural England
NPPF	National Planning Policy Framework
PRoW	Public Rights of Way
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WFD	Water Framework Directive

Table 20: Glossary

Baseline	A description of the present state of the environment with the consideration of how the environment would change in the future in the absence of the plan/programme/project as a result of natural events and other human activities.
Baseline studies/ survey	Collection of information about the environment which is likely to be affected by the project
Catchment	A surface water catchment is the total area that drains into a river. A groundwater catchment is the total area that supplies the groundwater part of the river flow.
Countryside and Rights of Way (CRoW) Act 2000	This Act applies to England and Wales and has five parts: - Access to the countryside Public rights of way and road traffic Nature conservation and wildlife protection Areas of outstanding natural beauty Miscellaneous and Supplementary This act increases the protection of SSSIs. Environment Agency plans/programmes/projects must gain consent for works in or near SSSIs using a CRoW form.
Cumulative Impacts	The combined impacts of several projects within an area, which individually are not significant, but together amount to a significant impact.
Department for Environment, Food	The government department responsible for flood management policy in England

and Rural Affairs (DEFRA)	
Environmental Action Plan (EAP)	A standalone report or section within another environmental impact assessment document which ensures that constraints, objectives and targets set in the main Environmental Report/Statement are actually carried out on the ground. Actions are separated into those to be carried out before, during and after construction.
Environmental Impact Assessment (EIA)	"EIA is an assessment process applied to both new development proposals and changes or extensions to existing developments that are likely to have significant effects on the environment. The EIA process ensures that potential effects on the environment are considered, including natural resources such as water, air and soil; conservation of species and habitats; and community issues such as visual effects and impacts on the population. EIA provides a mechanism by which the interaction of environmental effects resulting from development can be predicted, allowing them to be avoided or reduced through the development of mitigation measures. As such, it is a critical part of the decision-making process." www.iema.net/eiareport
Environmental Report (ER)	(1) The document produced for projects that do not require statutory environmental impact assessment, but where environmental impact has been carried out. This includes projects that require planning permission from the local authority but the effects of the proposal will not be significant. An ER usually follows the same template as an Environmental Statement, but is less detailed. (2) The document produced to describe the strategic environmental assessment process carried out for strategies. This report can be standalone or contained as an appendix to a strategy.
Environmental Statement (ES)	The document produced to describe the environmental impact assessment process where statutory environmental impact assessment is required.
Habitats Directive	EC Directive (92/43/EEC) on the Conservation of natural habitats and of wild flora and fauna. Implemented (with the Birds Directive (79/409/EEC)) in the UK as the Conservation (Natural habitats and wild flora and fauna) Regulations (1994). This establishes a system of protection of certain flora, fauna and habitats considered to be of International or European conservation importance. Sites are designated as Special areas of conservation (SACs), special protection areas (SPAs) and/or Ramsar sites. Any developments in or close to these designated areas are subject to the Habitat Regulations for approval of English Nature. Together these

	sites are referred to as the Natura 2000 network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amended the Conservation of Habitats and Species Regulations 2017 following the UK leaving the EU, transferring functions from the European Commission to the appropriate authorities in England and Wales.
Local Nature Reserve (LNR)	Nature reserves designated under the National Parks and Countryside Act (1949) for locally important wildlife or geological features. They are controlled by local authorities in liaison with English Nature.
Mitigation measures	Actions that are taken to minimise, prevent or compensate for adverse effects of the development.
Natural England	Natural England is an Executive Non-departmental Public Body responsible to the Secretary of State for Environment, Food and Rural Affairs. Their purpose is to protect and improve England's natural environment and encourage people to enjoy and get involved in their surroundings. Their aim is to create a better natural environment that covers all of our urban, country and coastal landscapes, along with all of the animals, plants and other organisms that live with us.
Ramsar site	Wetland site of international importance listed under the Convention on Wetlands of International Importance under the Conservation of Waterfowl Habitat (Ramsar) Convention 1973.
Riparian	Area of land or habitat adjacent to rivers and streams
Site of Special Scientific Interest (SSSI)	Nationally important sites designated for their flora, fauna, geological or physiographical features under the Wildlife and Countryside Act (1981) (as amended) and the Countryside Rights of Way (CRoW) Act (2000).
Special Area for Conservation (SAC)	Sites of European importance for habitats and non bird species. Above mean low water mark they are also SSSIs.
Special Protection Area (SPA) and proposed Special Protection Area (pSPA)	An area designated for rare or vulnerable birds, or migratory birds and their habitats, classified under Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC). They are also SSSIs. Proposed sites receive the same protection as fully protected sites
Water Framework Directive (WFD)	EC Directive (2000/60/EC) on integrated river basin management. The WFD sets out environmental objectives for water status based on ecological and chemical parameters, common monitoring and assessment strategies, arrangements for river basin administration and planning and a programme of measures in order to meet the objectives.

Appendix 4: Natural England consultation response

Natural England have been consulted on Lea Castle Farm Quarry Habitat Regulations Assessment (HRA) Screening and have made the following comments:

- *"Functionally linked land - Severn estuary SPA birds*
    - *Update – the final publication version of the relevant report references Upton Warren as the northernmost site subject to assessment. I doubt this alters your HRA narrative and conclusions on this theme but it represents a factual correction you may want to consider.*
    - *Publication version of the report – Attached in final PDF form for reference.*
- *Functionally linked watercourses – Severn Estuary SAC/Ramsar Site migratory fish*
    - *The HRA screening does not appear to consider the Ramsar Site species. I have checked the Environment Agency's Ecology and Fish Data explorer website and attach a screenshot showing locations (blue dots) for these species in the Kidderminster area (2017-22). Species recorded include Atlantic salmon, sea/brown trout, lamprey sp. larvae and European eel (elvers and glass eels).*
- *Key consideration is water quality. Two strands of thought here to consider:*
    - *Conscious of sand and gravel quarry design and normal practice regarding use settlement lagoons and associated water pollution prevention arrangements. For HRA purposes you will need to reach a view on whether this approach (if it applies at Lea Castle) can be treated as embedded mitigation.*
    - *To help further in establishing the HRA related mitigation 'goalposts' we offer the following advice on the use of Water Framework Directive status:*

Outside of the protected site's boundary, Natural England generally deems Water Framework Directive (WFD) 'good ecological status' (GES) to be of a sufficient quality to maintain habitat suitable for fish species forming part of the notification of the Severn Estuary SAC and Ramsar Site. This is because WFD site standards are calculated on the basis of the environmental attributes of watercourses which will similarly tend to govern which species of fish are present. Consistent with this, the standard for WFD GES may be regarded as adequately stringent to protect the natural fish assemblage and ecological community in general. As a result, ensuring that any plan or project will not cause the deterioration of the site from GES, or otherwise prevent the site from reaching GES, is deemed to be an acceptable approach for maintaining and restoring populations of notified fish species outside of the SAC/Ramsar Site's boundary."

Worcestershire County Council addresses these comments as follows.

Functionally linked Land - Severn Estuary SPA birds

The most recent version of *Identification of wintering and passage roosts on functionally linked land of the Severn Estuary - Gloucestershire and Worcestershire (Phase 5): Natural England Research Report NECR401*[28], as provided by Natural England, identifies additional sites with potential to be of importance to SPA interest species. Sites have been identified throughout Worcestershire, particularly at gravel pits and reservoirs, where SPA Interest species numbers reached or exceeded the equivalent of 1% of the SPA population number. This is taken as a criterion for importance within Gloucestershire and Worcestershire and referred to as the '1% threshold'.

The most northerly site of potential importance was recorded at Upton Warren, approx. 10miles south-east of the Lea Castle Quarry Farm at Kidderminster.

The discussion section of the report notes the following:

"Pochard - There are 36 counts of this species that meet or exceed the 1% threshold at Bittell Reservoirs and two at Hewell Lake. As described in the Species account for this diving duck, there is a large gap between locations on and near to the SPA that are host to Pochard and those in the Severn and Avon Vales upstream of it, so it seems unlikely that wintering populations further north would spend much or any time on the SPA, particularly given the number of gravel pits and reservoirs there are in the area around Birmingham that probably provide better habitat"

"Golden Plover - There are five records for this species exceeding the 1% threshold at Upper Bittell Reservoir, with a further two at a site just south of there called Frankley Beeches. Birds occurring in these areas are probably mobile enough to move frequently to surrounding areas, including the northern-most of the main locations considered in this report. Functional Linkage with the SPA, at over 75km to the south, seems unlikely."

Although this is just two of the species considered, the conclusions indicate that it is unlikely that the Lea Castle Quarry Farm site provides any functional linkage to the Severn Estuary SPA given the distance between them.

Functionally linked watercourses - Severn Estuary SAC/Ramsar Site migratory fish

The Planning and Design Consultants (Alder Mill, Atherstone), have confirmed that there is no proposed outfall or discharge of used water from the processing plant for Lea Castle Farm Quarry. The water used in the process is to be recirculated through the processing plant, which will be served by a purpose-built recirculatory water supply system involving above-ground storage and settlement tanks. There would be no "traditional" settlement lagoons.

[28] Palmer, E. and Smart, M. (2021). *Identification of wintering and passage roosts on functionally linked land of the Severn Estuary - Gloucestershire and Worcestershire (Phase 5).* Natural England Commissioned Reports. NECR401.

The Assessment considers these proposals to be embedded mitigation as they are contained within the design of the project and additional mitigation measures are not necessary.

With no proposed outfall or discharge to watercourses, there will be no change to the environmental attributes of any watercourse because of the proposed works. Therefore the project will not cause the deterioration of the site from, or prevent the site from reaching, ‘good ecological status’, as measured under the Water Framework Directive (WFD).

As Natural England generally deems Water Framework Directive ‘good ecological status’ to be of a sufficient quality to maintain habitat suitable for fish species forming part of the notification of the Severn Estuary SAC and Ramsar Site, this standard may also be regarded as adequately stringent to protect the natural fish assemblage and ecological community in general.

The Lea Farm Quarry proposal will therefore not have any impacts on the populations of notified fish species of the Severn Estuary SAC and Ramsar Site.

Conclusions

The conclusions of the HRA report therefore remain the same.