



**STEPHENSON
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Planning, Landscape & Environment
an **RSK** company

MAES Y DROLL QUARRY EXTRACTION OF INDUSTRIAL SAND

Environmental Statement
Volume II

Chapter 11: Ecology

Silica Sand Mold Limited

Prepared by SK Environmental Solutions Ltd

Chapter 11: Ecology

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11 ECOLOGY

11.1 Introduction

- 11.1.1 This Chapter presents the findings of the Ecological Impact Assessment (EclA) undertaken for the Proposed Development.
- 11.1.2 The assessment considers the potential effects of the Proposed Development on habitats, species and designated nature conservation sites during both the operational quarrying phase and the long-term restoration of the Site.
- 11.1.3 The EclA has been prepared by SK Environmental Solutions Ltd and forms part of the Environmental Statement submitted in support of the planning application. The EclA is available at **ES Volume III, Appendix 11.1: Ecological Impact Assessment (EclA)**, with associated appendices provided at **ES Volume III, Appendices 11.2 – 11.5**.
- 11.1.4 The assessment identifies the ecological baseline conditions within and surrounding the Site, evaluates the importance of ecological features potentially affected by the Proposed Development, and assesses the likely significance of effects arising from the proposals.
- 11.1.5 The EclA was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (Version 1.3, September 2024) and BS42020:2013 Biodiversity Code of Practice for Planning and Development (CIEEM, 2024; BSI, 2013).

11.2 Baseline Methodology

- 11.2.1 To inform the assessment, an Ecological Zone of Influence (EZol) was identified to determine the area within which ecological features may be affected by the Proposed Development and associated activities.
- 11.2.2 As the extent of potential effects varies between habitats and species, different study areas were applied for individual ecological receptors and survey types. The relevant EZol for each ecological feature was assessed through desk study and field survey.
- 11.2.3 The desk study was undertaken in June 2026 and reviewed information on statutory and non-statutory designated sites, protected and notable species records, historic mapping, aerial photography, habitat action plans, and environmental records obtained from Cofnod. Search areas included statutory designated sites within 5 km of the Site and protected species and habitat records within 2 km of the Site.
- 11.2.4 A UK Habitat Classification (UKHab) survey was undertaken across the Site in April 2026 to classify and map habitats and identify the potential presence of protected or notable species. Additional targeted surveys were completed where required, including assessments for Hazel Dormouse, Badger, Bats and Great Crested Newts, together with the review of previous recent ecological survey data available for the Site. Surveys followed recognised best-practice guidance relevant to each species group.
- 11.2.5 Ecological features were evaluated according to their importance at international, national, regional, county, district, local and neighbourhood levels. Ecological receptors considered

important at a local level or above were identified as Valued Ecological Receptors (VERs) and taken forward into the impact assessment.

11.3 Assessment Methodology

Scope of Assessment

- 11.3.1 In summary, the scope of this impact assessment is to consider the likely effects of the Proposed Development upon sensitive ecological features identified within the Site during the ecological survey and assessment work and associated data collection.
- 11.3.2 The EclA detailed in this ES has been undertaken in accordance with best practice guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 11.3.3 This Chapter details the analysis and assessment of likely significant effects predicted to arise from the Proposed Development on the following categories of ecological receptors:
- Statutory designated site;
 - Non-statutory designated site; and,
 - Notable habitats and species.

Assessment Criteria and Assignment of Significance

- 11.3.4 The importance and value of an ecological feature is determined on a geographical scale as follows:
- International;
 - UK;
 - National
 - Regional;
 - County;
 - District;
 - Local; and,
 - Neighbourhood (site and its vicinity, including areas of habitats contiguous with or linked to those on-site).
- 11.3.5 For the purposes of this assessment, designated sites, species and habitats are considered to be Valued Ecological Receptors (VER) if they meet the following minimum level of importance:
- **Sites** – local importance

- **Species** – local importance
- **Habitats** – local importance

Identification and Magnitude of Impacts

- 11.3.6 The CIEEM guidance also sets out a methodology for the assessment of likely impacts arising from proposed developments. The method used in this assessment is based on the CIEEM guidance and the *British Standards for Biodiversity: Code of Practice for Planning and Development (BS42020:2013)* (CIEEM, 2024; BSI, 2013) is summarised below.
- 11.3.7 Based on the parameters of the Proposed Development, likely impacts have been determined with reference to aspects of the ecological structure and function on which the feature or resource depends. In this context, the nature of the impact has been characterised and considered using the following parameters set out in the CIEEM guidance:
- **Positive or negative** – will the activity lead to a beneficial or an adverse effect;
 - **Extent** – the spatial or geographical area over which the impact may occur, the area of habitat or number of individuals affected;
 - **Magnitude** – this refers to size, amount, intensity and volume, and should be expressed as quantitatively as possible;
 - **Duration** – the time for which the impact is expected to last prior to recovery or replacement, i.e. short-term or long-term, as defined in relation to ecological characteristics (such as a species' lifecycle);
 - **Frequency and Timing** – some changes may only cause an impact if they coincide with critical life-stages or seasons, whilst frequent events may cause a greater effect than a single event; and,
 - **Reversibility** – an effect may be irreversible in that recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it, i.e. permanent or temporary.
- 11.3.8 Based on the parameters outlined above, a broad scale has been produced using the terminology summarised in **Table 11-1** (below).

Table 11-1 Definition of Magnitude

Magnitude	Definition
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Medium	Loss of resource but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).

	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

11.4 Significance of Effect

- 11.4.1 In accordance with the (CIEEM) Guidelines (2024) (CIEEM, 2024) for EclAs, a matrix-based approach has not been used to determine the significance of effects; instead, significance is established through professional judgement.
- 11.4.2 The significance of an ecological effect is determined by considering the value of the ecological receptor alongside the magnitude of the predicted impact.
- 11.4.3 The effect is the term used to express the consequence of an impact (expressed as the significance of effect), which is determined by correlating the magnitude of the impact to the value of the receptor.
- 11.4.4 Significant adverse effects occur where the Proposed Development is likely to compromise the favourable conservation status of a Valued Ecological Receptor (VER). The determination of significance is based on professional judgement, informed by an assessment of the nature, extent and duration of predicted effects.
- 11.4.5 Significant beneficial effects may arise where the Proposed Development enhances ecological value, restores the favourable conservation status of habitats or species, and/or improves the integrity of a designated site that has previously been degraded.

11.5 Baseline Conditions

Existing Baseline

- 11.5.1 The ecological baseline relevant to the Proposed Development is summarised below. Further details of the findings of desk assessment and field-based studies are provided in **ES Volume III, Appendices 11.1 – 11.5**.

Statutory Designated Sites

- 11.5.2 There is one designated site of international importance located within 5 km of the Site boundary. This is the Berwyn and South Clwyd Mountains (Berwyn a Mynyddoedd De

Clwyd) Special Area of Conservation (SAC), located approximately 1.1 km south of the Site boundary at its closest point. This extensive habitat designation covers a very large area.

11.5.3 There are six Sites of Special Scientific Interest (SSSIs) located within 5 km of the Site:

- Llandegla Moor SSSI, located approximately 1.1 km south of the Site boundary at its closest point. The SSSI forms part of the Berwyn and South Clwyd Mountains SAC and predominantly comprises heathland along with areas of bog habitat. These habitats support a breeding bird assemblage which contains both locally and nationally scarce species including black grouse *Tetrao tetrix*, short-eared owl *Asio flammeus*, hen harrier *Circus cyaneus* and curlew *Numenius arquata*;
- Graig, Llanarmon-yn-Ial SSSI, located approximately 1.2 km west of the Site boundary at its closest point. The SSSI supports a mosaic of limestone and acidic grassland which support notable floral communities;
- Glaswelltiroedd Eryrys (Eryrys Grasslands) SSSI, located approximately 1.2 km northwest of the Site boundary at its closest point. The Site contains a mix of calcareous, acid, neutral and calaminarian grasslands along with basin mire. The floral assemblage supported includes species such as mountain everlasting *Antennaria dioica*, frog orchid *Coeloglossum viride* and field gentian *Gentianella campestris*. The site also supports notable assemblages of lichens and bryophytes;
- Bryn Alyn SSSI, located approximately 1.4 km northwest of the Site boundary at its closest point. The SSSI comprises a mix of calcareous, neutral and acid grassland habitats along with limestone pavement and scree which support a diverse assemblage of plant species;
- Ruabon / Llantysilio Mountains and Minera SSSI, located approximately 4.6 km south of the Site boundary at its closest point. The SSSI is comprised of a mix of limestone and acid grassland and heathland. Along with a diverse plant assemblage, the Site also supports breeding populations of bird species such as merlin *Falco columbarius*, ring ouzel *Turdus torquatus* and golden plover *Pluvialis apricaria*. Mines within the SSSI are used as hibernation roosts by bats including lesser horseshoe *Rhinolophus hipposideros*; and
- Chwarel Cambrian / Cambrian Quarry, Gwernymynydd SSSI, located approximately 4.7 km north of the Site boundary at its closest point. The SSSI is primarily designated for supporting a large hibernation colony of lesser horseshoe bats, along with several other bat species. As well as the bats, the Site also supports a population of great crested newts (GCN) *Triturus cristatus* and dingy skipper *Erynnis tages* among other species.

11.5.4 The SSSIs are of national importance for nature conservation.

Non-Statutory Designated Sites within 2 km

11.5.5 Cofnod identified twenty-four Local Wildlife Sites (LWSs) located within 2 km of the Site boundary.

Trees and woodlands

- 11.5.6 The Natural Resources Wales (NRW) Interactive Map Viewer identified no areas of ancient woodland on, or adjacent to, the Site.

Habitats

- 11.5.7 The habitats associated with the Proposed Development are summarised below. Full results of the Phase 1 Habitat survey, including Habitat plans for the Site, are provided in the EclA Report **ES Volume III, Appendices 11.1 – 11.5**.
- 11.5.8 The Site is not a uniformly high-value semi-natural habitat complex. Its principal ecological interest is concentrated in the mire and residual heathland in the northern parcel; the ponds, reedbed and other wetland features; and the older woodland and tree belts along historic walls, banks and tracks.

Water Courses

- 11.5.9 There are no watercourses within the Site boundary. Two watercourses are located either side of the Site, one approximately 15 metres to the west and the other approximately 110 metres to the east of the Site boundary at their closest points. They flow broadly southwards to their respective confluences with the River Terrig.
- 11.5.10 Eleven ponds have been identified within the Site boundary, six within the northern part of the Site and five within the southern part of the Site. All of these are either artificially created basins or previously quarried areas which have become flooded.

Notable Species

- 11.5.11 The Site supports a range of protected and notable species associated with its mosaic of ponds, wetlands, scrub, woodland, grassland and former quarry habitats. Ecological surveys have confirmed that the most important species interest on-site relates to Great Crested Newt (GCN) and bats, both of which are considered Valued Ecological Receptors (VERs) of local importance.
- 11.5.12 A medium-sized population of GCN is present across the Site's pond network, with suitable terrestrial habitat available throughout much of the Site for foraging, shelter and hibernation. The Site is therefore considered to be of local importance for amphibians.
- 11.5.13 Bat surveys identified lesser horseshoe bat and soprano pipistrelle roosts within existing buildings on-site (which are to remain in-situ). The wider habitat mosaic, including ponds, woodland edges and scrub corridors, provides suitable commuting and foraging habitat for a range of bat species. Several trees were also identified as having potential roosting features.
- 11.5.14 No evidence of otter was recorded during surveys, although the nearby River Terrig catchment and on-site ponds are considered suitable for occasional foraging use. The Site is therefore regarded as being of local importance for otter.
- 11.5.15 No badger setts were identified within the Site, although records exist in the surrounding area and field signs indicate that badgers are likely to use the Site for foraging.

- 11.5.16 Overall, the ecological baseline indicates that the Site's principal species interest is associated with its populations of GCN and bats and the potential use of the Site by badger, otter, together with locally important reptile populations and a diverse assemblage of common breeding birds.

11.6 Future Baseline (Do Nothing Scenario)

- 11.6.1 In the absence of the Proposed Development, the Site would continue to undergo natural succession, with scrub and woodland progressively colonising much of the existing quarry and former mine land.
- 11.6.2 This scenario would result in a gradual reduction in habitat diversity and the loss of some of the Site's more valuable habitats, including mire, heathland and open mosaic habitats. Consequently, the biodiversity value of the Site is expected to decline over time without active habitat management.
- 11.6.3 Climate change may influence ecological conditions in the future, although any changes during the operational lifetime of the proposed development are expected to be limited.

11.7 Embedded Mitigation, Compensation and Enhancement Measures

Embedded Mitigation

- 11.7.1 Ecological considerations have been incorporated into the design of the Proposed Development from the outset of the scheme design through application of the mitigation hierarchy.
- 11.7.2 The quarry would be worked in four phases, with habitat creation and restoration undertaken progressively to ensure ecological connectivity and habitat availability are maintained throughout the operational life of the quarry. In particular, a continuous network of ponds, terrestrial habitats and connective woodland would be retained at all times to support the Site's GCN population and wider ecological interests.
- 11.7.3 Whilst extraction would require the eventual removal of most existing habitats within the Site, several areas would be retained throughout the development, including:
- the woodland corridor along the eastern boundary;
 - a field at the northern end of the southern parcel; and,
 - a smaller habitat area at the southern extremity of the Site.
- 11.7.4 The most valuable habitats on-site, comprising mire, ponds, wetland features and retained woodland, have informed the extraction phasing and restoration strategy.
- 11.7.5 A dedicated GCN conservation strategy would be implemented through an NRW European Protected Species Mitigation licence. This would include the phased creation of replacement terrestrial and aquatic habitats, habitat connectivity measures, long-term monitoring and

management, and the staged relocation of GCN where required. Habitat created for GCN would also provide benefits for reptiles and other wildlife species.

- 11.7.6 The Proposed Development has been designed to utilise the existing site access, minimising additional habitat loss. Trees requiring removal to facilitate the visibility splay would be subject to further bat surveys where potential roost features have been identified, while future tree removals would be assessed in accordance with the extraction phasing programme.
- 11.7.7 A retained woodland corridor along the eastern site boundary and retained habitat areas within the north-eastern parts of both site parcels would maintain ecological connectivity and provide refugia throughout the extraction period. These retained habitats would form part of a wider ecological network supporting GCN, reptiles and other fauna during the operational phase.

Environmental Management Measures

- 11.7.8 An Environmental Management Plan (EMP) (sometimes referred to as a Construction and Environmental Management Plan) would be implemented throughout site preparation, extraction and restoration activities. The EMP would control potential effects associated with dust, noise, vibration, lighting, pollution and construction activities, and would include pollution prevention measures, ecological toolbox talks and contractor awareness training. Work compounds, access tracks and temporary infrastructure would be carefully located to avoid areas of ecological value wherever practicable.
- 11.7.9 Vegetation clearance would be undertaken outside the bird nesting season where possible. Where works are required during the nesting season, pre-commencement checks would be undertaken by a suitably qualified ecologist and active nests safeguarded until nesting activity has concluded.
- 11.7.10 Measures to protect mammals would include fencing or covering excavations overnight, provision of escape ramps where necessary and routine inspection of excavations to prevent entrapment of badgers, hedgehogs and other species. Pre-commencement badger surveys would be undertaken before each extraction phase to identify any newly established setts.
- 11.7.11 Perimeter fencing installed around operational areas would incorporate continuous mammal gaps to maintain wildlife movement across the Site and avoid habitat fragmentation. Artificial lighting would be minimised and quarrying operations restricted to daylight hours, reducing potential effects on bats, amphibians and other nocturnal species.

Compensation and Restoration

- 11.7.12 The restoration strategy forms a key component of the ecological mitigation package. Progressive restoration would be undertaken throughout the operational life of the Proposed Development, ensuring that replacement habitats are created in advance of, or alongside, habitat loss associated with extraction. At any one-time, substantial areas of retained or restored habitat would remain available across the Site.
- 11.7.13 Following extraction, the Site would be restored to a diverse mosaic of habitats, including woodland, grassland, wetland and pond habitats. Restoration would be followed by a statutory aftercare period, during which habitats would be actively managed and monitored to ensure successful establishment and delivery of biodiversity objectives. Long-term

management arrangements would be secured through planning conditions, associated agreements and habitat management plans.

- 11.7.14 The progressive restoration proposals are intended to provide a more favourable ecological outcome than the future baseline "do nothing" scenario, under which continued ecological succession would eventually result in widespread scrub and woodland development and the gradual loss of habitat diversity.

Ecological Enhancements

- 11.7.15 The Proposed Development incorporates a range of biodiversity enhancement measures designed to deliver long-term ecological benefits beyond mitigation requirements. These include:
- Installation of bat and bird boxes across the Site, including provision for species such as owl and pied flycatcher;
 - Creation of GCN and reptile hibernacula and refugia;
 - Provision of a Cathedine-type night roost for lesser horseshoe bats;
 - Installation of pine marten boxes; and,
 - Long-term management and monitoring of created habitats, including management of GCN mitigation habitats for a likely minimum of 25 years aligned to protected species licencing regimes.

11.8 Assessment of Effects

- 11.8.1 The following section presents a summary of effects. **Table 11-2 Summary Impact Assessment Matrix** provides an overview under the following headings:

- Receptor;
- Phase;
- Impact Source(s);
- Magnitude and extent of impacts; and,
- Summary of Mitigation or Enhancement.

Designated Sites

- 11.8.2 The assessment identifies one SAC, six SSSIs and one Local Nature Reserve within the study area. None are located within the Site, are hydrologically connected to the Site or support species populations directly dependent upon habitats within the Site.

- 11.8.3 Following implementation of the embedded mitigation measures and EMP, no direct or indirect effects on these designated sites are predicted. Effects on statutory designated sites are assessed as negligible and not significant.
- 11.8.4 Twenty-four Local Wildlife Sites were identified within 2 km of the Site, including several that are wholly or partially located within the application boundary. Although areas of Local Wildlife Site habitat would be lost as part of the extraction proposals, restoration and habitat creation measures would offset these losses. Effects on Local Wildlife Sites are assessed as negligible and not significant following mitigation.

Habitats

- 11.8.5 Extraction activities would result in temporary habitat loss and modification across much of the Site. However, these effects would be mitigated through phased habitat creation, habitat retention during phases and long-term restoration. Impacts on habitats are assessed as moderate adverse during extraction, becoming moderate beneficial following restoration.
- 11.8.6 Overall, the long-term residual effect on habitats is assessed as low beneficial and not significant.

Great Crested Newts

- 11.8.7 A medium-sized population of GCN is present within the Site. Through phased habitat creation, habitat retention, translocation under licence and long-term habitat management, the development would maintain suitable habitat throughout extraction and restoration. The assessment concludes that the long-term effect on GCN would be beneficial and not significant.

Reptiles

- 11.8.8 Small populations of common lizard and potentially grass snake occur on the Site. Habitat creation associated with the GCN mitigation strategy, together with retained habitat corridors and provision of reptile hibernacula, would maintain ecological function throughout the life of the quarry. Effects on reptiles are assessed as negligible and not significant.

Bats

- 11.8.9 The Site supports bat foraging habitat and confirms roosts within an existing building that would be retained. While some trees with bat roost potential may require removal, further surveys would be undertaken and appropriate mitigation implemented where necessary. The retained woodland corridor, continued availability of waterbodies and habitat restoration would maintain foraging and commuting opportunities. Effects on bats are assessed as negligible adverse but not significant.

Otter and Badger

- 11.8.10 No otter resting sites or badger setts were identified within the Site, although both species are considered likely to utilise the area for foraging. Retention of waterbodies, implementation of pollution prevention measures, mammal protection measures and habitat restoration would minimise effects on these species. Effects on otter and badger are assessed as negligible and not significant.

11.9 Residual Effects and Conclusions

- 11.9.1 The EclA concludes that, following implementation of the proposed mitigation, compensation and enhancement measures, there would be no significant residual effects on designated sites, habitats or protected species as a result of the Proposed Development.
- 11.9.2 Temporary adverse effects would occur during extraction; these effects would be mitigated through progressive restoration, habitat creation and long-term management.
- 11.9.3 The phased restoration strategy would deliver long-term ecological benefits and maintain habitat diversity, resulting in a restored landscape of greater ecological resilience than would arise under the future baseline scenario. Ongoing habitat management, ecological monitoring and species-specific conservation measures, including a likely 25-year management period for GCN habitats aligned to the relevant protected species permitting regime, would secure the long-term ecological objectives of the scheme.

Table 11-2 Summary Impact Assessment Matrix

Receptor	Phase	Impact Sources	Magnitude and extent of impacts	Summary of Mitigation/Enhancement	Significance of Residual Effects
SSSIs / LNR	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution	Negligible (adverse)	CEMP Control of dust emissions SuDS	Not significant
Local Wildlife Sites (LWSs)	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution	Negligible (adverse)	CEMP Control of dust emissions SuDS	Not significant
Site Habitats	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution		CEMP Control of dust emissions SuDS	Not significant
Amphibians	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution	Negligible (beneficial)	CEMP and environmental best practice (noise and vibration) Create mitigation ponds, improving retained and created habitat in phases in line with the restoration scheme; Relocate GCN (under licence) and reptiles under an agreed strategy, where individuals are being moved once only, with a secured, funded long term management strategy underpinning the EPSM licence;	Not significant
Reptiles	Operational phase, including	Habitat loss/ creation/ enhancement /	Negligible (adverse)	Relocate under an agreed strategy, where individuals are being moved once only, with a secured, funded long term management strategy underpinning the EPSM licence;	Not significant

Receptor	Phase	Impact Sources	Magnitude and extent of impacts	Summary of Mitigation/Enhancement	Significance of Residual Effects
	quarrying and restoration	Disturbance/ Pollution			
Bats	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution	Negligible (adverse)	Retain and safeguard roost in existing building;	Not significant
Otters	Operational phase, including quarrying and restoration	Habitat loss/ creation/ enhancement / Disturbance/ Pollution	Negligible (adverse)	CEMP and environmental best practice (noise and vibration) Control of dust emissions SuDS Pollution response measures	Not significant