



APPENDIX 4.7 -
REPTILE SURVEYS AND MITIGATION STRATEGY

HAMBLE AIRFIELD
HAMBLE LE RICE
HAMPSHIRE

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ON BEHALF OF CEMEX



The Old Squash Court,
Rempstone Hall,
Rempstone,
Corfe Castle,
Wareham,
Dorset,
BH20 5JQ
www.ecological-services.co.uk

Telephone: 01929 477115
E-mail: enquiries@ecological-services.co.uk

Authorisation

	Name	Date
Report prepared by:	ARH	22.11.2021
Report checked by:	JS	23.11.2021
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Report checked by:	LC	06.10.2022

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SUMMARY

1. LC Ecological Services Limited (LCES) were commissioned by CEMEX UK to conduct phase 2 reptile surveys on the land at the former Hamble Airfield, Hamble Lane, Hamble-le-Rice, Eastleigh, Hampshire, and to devise a mitigation strategy. This was required to support a planning application for a quarrying project.
2. The grassland and scrub mosaic, hedgerows and woodland on site all provide suitable habitat for common UK reptile species, the site is also well-connected with further suitable habitats for reptiles within the surrounding landscape. A targeted reptile survey undertaken on site by LCES in 2015 recorded an exceptional population of slow-worm and a good population of common lizard. An update reptile survey undertaken in 2020 recorded a good population of slow-worm and a low population of common lizard.
3. Although the survey results show a decline in the populations of both slow-worm and common lizard between 2015 and 2020, it is nonetheless assumed that the populations of both slow-worm and common lizard on site could potentially be exceptional. This is based on the extent and suitability of the habitats present and LCES previous experience of working on similar development sites in the same local area.
4. On the basis of the survey findings to date, it is assumed that grass snake and adder are likely absent from the site. Nevertheless, in the unlikely event that either of these species are encountered during the proposed works, the mitigation and enhancement strategies detailed in this report will also ensure that these species are safeguarded.
5. In order to avoid the risk of injuring or killing any reptiles and to maintain their conservation status on site, it will be necessary to implement a mitigation strategy with the objective of excluding reptiles from the operational quarrying works areas. It is recommended that the existing populations of slow-worm and common lizard should be retained within the site and immediate locality through the use of temporary on-site receptor areas, with connectivity to the surrounding land maintained, throughout the duration of the works. This is considered to be the optimal and most efficient solution. Full details of the mitigation strategy are provided in section 5.

1.0 INTRODUCTION

LCES were commissioned by CEMEX UK to conduct phase 2 reptile surveys on the land at the former Hamble Airfield, Hamble Lane, Hamble-le-Rice, Eastleigh, Hampshire, SO31 4NL (approximate central Grid Ref: SU 47765 07807) and to devise a mitigation strategy. This was required to support a planning application for phased aggregate extraction on the site, including the erection of a processing plant with silt lagoons and associated infrastructure, as well as post-quarrying restoration of the land.

Section 2 of the report provides some background information on legislative requirements and relevant policy. Section 3 details the methodologies adopted for the surveys conducted and section 4 provides an account of the survey results. A detailed mitigation strategy for the project is included in Section 5.

2.0 LEGISLATION AND POLICY

2.1 Legislation

The following legislation may be of relevance to the proposed works. Full details of statutory obligations with respect to biodiversity and the planning system can be found in DCLG Circular 06/2005.

- **The Wildlife and Countryside Act 1981 (and amendments):** Protected fauna and flora are listed under Schedules 1, 5 & 8 of the Act. Species include British **reptile** (in particular slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*), and adder (*Vipera berus*). It is illegal to kill or injure these species.
- **Natural Environment and Rural Communities Act (NERC) 2006:** This Act enforces a duty on the planning authority and local council to conserve biodiversity (section 40). Additionally, section 41 encourages the local councils to be aware of the species and habitats of ‘principal importance’ and to act accordingly to protect and manage these habitats and species.
- **The Countryside and Rights of Way Act 2000:** This Act strengthens nature conservation and wildlife protection. It places a duty on Government Ministers and Departments to conserve biological diversity, provides police with stronger powers relating to wildlife crimes, and improves protection and management of SSSIs.

2.2 Policy

The following policy is of relevance to the proposed works:

- **National Planning Policy Framework (NPPF):** This sets out the Government’s vision for biodiversity in England with the broad aim that planning, construction, development and regeneration should maintain and enhance, restore, or add to biodiversity and geological conservation interests. NPPF (2021) includes sections on legally protected species and sites in section 15 (2) (see section 2.1).
- **Natural England Protected Species Standing Advice:** The standing advice is used by local authorities as a fallback position when in pre-application consultation or during the determination period to define habitat and species survey efforts and mitigation proposals.
- **Biodiversity Action Plans (BAPs):** BAPs set out policy for protecting and restoring priority species and habitats as part of the UK’s response as signatories to the Convention on Biological Diversity. BAPs operate at both a national and local level with priority species and habitats identified at a national level and a series of Local BAPs that identify ecological features of particular importance to a particular area of the country. The requirement to consider and contribute towards BAP targets is derived from the NERC Act 2006 and was strengthened through the Countryside and Rights of Way Act 2000. Species Action Plans include all native British **reptiles (UK BAP)**.

3.0 METHODOLOGY

3.1 Desk study

Hampshire Biological Information Centre (HBIC) provided protected species records within two kilometres of the site boundary.

3.2. Protected species assessment

Reptiles

The habitat on the site was assessed for the potential to support reptiles, with a good range of potential foraging opportunities, basking sites, refugia, shelters, and hibernacula for the common widespread reptile species recorded on site. Reptiles are found in a range of habitats such as grasslands, scrub, woodland edges, and hedgerows. The site was assessed as having potential to support reptile species; therefore, a targeted reptile survey was undertaken. Satellite imagery was also used to assess the connectivity to other areas of scrub and grassland, and hedgerow networks.

Reptile surveys

Targeted reptile surveys were undertaken on site during April and May 2015 and May and June 2020 in order to determine the presence or absence of reptiles, the population sizes of any reptile species recorded on site, and the way in which the site is used by any reptiles. The survey involved placing artificial refugia, such as pieces of roofing felt, or corrugated metal sheets, in suitable areas. These provide ideal shelter for reptiles and the heat saturation of these refuges means that reptiles are encouraged to shelter underneath them during the early morning and early evening when they are warmer than the surrounding ground.

Artificial refugia, or 'reptile mats' (roofing felt measuring 0.5 m²) were distributed within suitable habitat on site, namely along boundary hedgerows, edges of scrub habitat and open grassland areas. The refugia were then left to 'settle' for a period of 1 week before the survey visits commenced. These refugia were checked for reptiles a total of seven times for each survey, during suitable weather conditions and at suitable times of the day when reptiles are most active (as per the Froglife guidance, 1999). Approximately two hundred refugia were deployed on site during the 2015 survey and approximately three hundred refugia were deployed during the 2020 update survey. The approximate placement of the refugia across the site during the 2020 update survey is depicted on the plan included as appendix I.

4.0 RESULTS

4.1 Desk study

Protected species records

The update HBIC data search returned 243 records of slow-worm (including two records from the Hamble Airfield site), 57 records of common lizard (including two records from the Hamble Airfield site), five records of grass snake and two records of adder within two kilometres of the site.

4.2 Field survey

Protected species assessment

Reptiles

The grassland and scrub mosaic, hedgerows and woodland on site all provide suitable habitat for common UK reptile species including slow-worm and common lizard. The site is also well-connected with further suitable habitats for reptiles within the immediate surrounding landscape, including grassland, scrub, hedgerows, woodland and residential gardens.

2015 Survey

A targeted reptile survey undertaken on site in 2015 recorded an exceptional population of slow-worm and a good population of common lizard, with a maximum count of 24 adult slow-worm and 7 adult common lizard recorded during any one survey visit. Juvenile slow-worm were also recorded indicating breeding on the site. Full details of the 2015 survey are presented in table 1 below.

Table 1: Reptile survey results 2015

Date	Time	Weather conditions	Temp (°C)	Reptiles	Other	Area recorded
21/04/15	15:05-17:16	Cloud 0/8 Wind 0-1	18	1 Common lizard 4 Slow-worm		Two slow worms were recorded at the top of the site along the southeast boundary, and two slow worms were recorded along the eastern and northeast site boundaries. The common lizard was recorded at the centre of the field at the north end of the site.
24/04/15	1030-1400	Cloud 7/8(AM) Wind 1/12(PM) No sun/foggy Cloud 6/8(PM) Wind 2/12(PM) Sunny/ slightly overcast	12.5-20.0	13 Slow-worm - 6 female, 5 male, 2 juvenile		All reptiles recorded were found at the edge of the site boundaries with no reptiles recorded towards the centre of the site.
29/04/15	14.00-16.00	Cloud 6/8 Wind 1-2 sunny spells and showers	10	14 Slow-worm		Reptiles were found along the site boundaries with no reptiles found towards the centre of the site. Higher numbers were recorded along the southeast and northwest site boundaries.
30/04/15	11:15-14:15	Cloud 5/8 Wind 0-1/4 Warm and sunny	13	24 slow-worm - 16 females, 8 males 7 common lizard - 2 males, 4 females, 1 unknown	1 dead male slow worm	
08/05/15	10.45-13.04	Muggy and windy	17	31 slow-worms - 9 males, 9 females, 13 juveniles 12 Common Lizard - 4 Males, 3 female, 5 juvenile		Reptiles were recorded across the site, with higher numbers recorded along the southern and northwest boundaries. Reptiles were recorded among the scrub towards the centre of the site.
11/05/15	10:00-13:00	Cloud 6/8, Wind 2/13 (AM) Cloud 4/8 Wind 2/12 (PM)	13-15	39 slow-worm - 11 Females, 12 Males, 14 Juveniles 7 common lizards		Reptiles were recorded throughout the site with high numbers of slow worms recorded along the northwest site boundary.
12/05/15	10.44-13.13	Cloud 2/8 Wind 1/12 Warm and sunny	12-15	20 Slow-worms - 8 males, 7 females, 5 juvenile females 2 common lizards		

2020 Survey

A targeted reptile survey undertaken during May and June 2020 recorded a good population of slow-worm and a low population of common lizard, with a maximum count of 10 adult slow-worm and four adult common lizard recorded during any one survey visit. The full results from the survey are presented in table 2 below and depicted on the plan included as appendix II.

Table 2: Reptile survey results 2020

Visit	Date	Time	Weather	Temp (°C)	Results		
					Slow worm	Common lizard	Other
1	07/05/2020	10:30	Warm, sunny spells. Cloud cover 5/8 (oktas), Wind 0/12 (Beaufort scale).	16	3 females, 1 juvenile	4 adults	-
2	12/05/2020	13:00	Warm, sunny spells. C/c 3/8, Wind 1/12.	14	5 females, 5 males, 1 juvenile	3 adults	-
3	14/05/2020	10:30	Warm and sunny. C/c 1/8, Wind 1/12.	14	2 females, 3 males, 1 juvenile	1 adult	-
4	18/05/2020	14:15	Warm and sunny. C/c 3/8, Wind 3/12.	16	2 females, 1 male, 2 juveniles	4 adults	-
5	26/05/2020	08:30	Warm and sunny. C/c 1/8, Wind 0/12.	14	5 females, 3 males, 4 juveniles	2 adults	-
6	02/06/2020	07:30	Warm and sunny. C/c 2/8, Wind 1/12.	14	1 female, 1 male	0	-
7	08/06/2020	10:15	Humid and overcast. C/c 8/8, Wind 1/12	12-15	3 females, 5 males, 4 juveniles	3 adults	-

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of findings

The grassland and scrub mosaic, hedgerows and woodland on site all provide suitable habitat for common UK reptile, the site is also well-connected with further suitable habitats for reptiles within the surrounding landscape. A targeted reptile survey undertaken on site in 2015 recorded an exceptional population of slow-worm and a good population of common lizard. An update reptile survey undertaken in 2020 recorded a good population of slow-worm and a low population of common lizard.

Although the survey results appear to have shown a decline in the populations of both slow-worm and common lizard between 2015 and 2020, the site does still provide a very substantial area of grassland and scrub mosaic that is highly suitable for these species, and, based on LCES previous experience of working on similar development sites in the same local area where high numbers of these species have been encountered, it is therefore assumed that the populations of both slow-worm and common lizard on site could potentially be exceptional.

On the basis of the survey findings to date, it is assumed that grass snake and adder are likely absent from the site. Nevertheless, in the unlikely event that either of these species are encountered during the proposed works, the mitigation and enhancement strategies detailed below will also ensure that these species are safeguarded from harm and that suitable, good quality habitat is provided.

5.2 Mitigation

5.2.1 Overview

In order to avoid the risk of injuring or killing reptiles on site it will be necessary to implement a mitigation strategy with the objective of excluding reptiles from the operational quarrying works areas. It is recommended that the existing populations of slow-worm and common lizard should be retained within the site and immediate locality using temporary on-site receptor areas with connectivity to the surrounding land throughout the duration of the works. This is considered to be the optimal and most efficient solution as it eliminates the need to secure an external receptor site and undertake a full translocation exercise. As the phases of the quarrying project are completed the site will be progressively restored to former ground levels and natural habitats in line with the site restoration plan (refer to site restoration plan) with suitable (and enhanced) habitats provided for reptiles. As soon as completed phases are deemed to be sufficiently restored, in terms of suitably established reptile habitat, then reptiles can be allowed to re-colonise these areas. A key element of the strategy is the installation of five 'reptile access tunnels' through the perimeter bunding line which will enable free movement of reptiles between phases of the project and the surrounding land as the project progresses. The principal benefits of these access tunnels are firstly that it will prevent a situation where reptiles are just confined

within the initial internal receptor area, and secondly it will enable reptiles to discover and re-colonise completed phases as soon as they have been sufficiently restored.

The reptile mitigation strategy will function in stages alongside with the quarrying works, as detailed in section 5.2.2 below. Stage 1 of the mitigation strategy would be completed between March and October (inclusive) following the grant of planning permission, and then following commencement of the extraction at the site, all of the remaining stages of the mitigation would follow between the months of March and October (inclusive) of each year as necessary.

N.B. due to the high level of urban interface associated with the project location, with substantial areas of residential housing in close proximity to the site, it is therefore essential that the entire perimeter earth bunding line remains in place throughout the whole duration of the quarrying works to provide both visual and acoustic mitigation. The reptile mitigation strategy has therefore been specifically designed to work around the bunding line and facilitate both its construction in the initial phases of the project and its deconstruction in the final phases.

5.2.2 The detailed strategy

Exclusion and translocation of reptiles

A reptile exclusion exercise of the proposed quarrying works areas using specialist herptile fencing (herptile fencing essentially forms a barrier which prevents the movement of reptiles, refer to appendix IV) will be undertaken. It is recommended that the exclusion exercise is undertaken in seven stages as outlined below and depicted on the plans included as appendix III.

Stage 1: creation of the site access, installation of perimeter fencing and setup of first exclusion cells and receptor areas

- The initial step will be to create the main site access for the project. This will involve clearing a minor area of land adjacent to the north-west boundary of the site, comprising broadleaved woodland, scrub and semi-improved grassland, and laying down a foundation of hardstanding to provide the main vehicle accessway. These are essential works required to establish formal access to the site and will only require clearance of a minimal area of suitable reptile habitat. Therefore, trapping and translocation of reptiles from this small area is considered unnecessary and disproportionate and instead an appropriate precautionary working methodology will be followed to enable these initial works whilst safeguarding reptiles from harm (refer to section 5.2.3).
- A line of permanent herptile fencing ('Herpetosure®' – type fencing, refer to appendix IV) will be installed around the entire perimeter of the quarry site against the outer edge

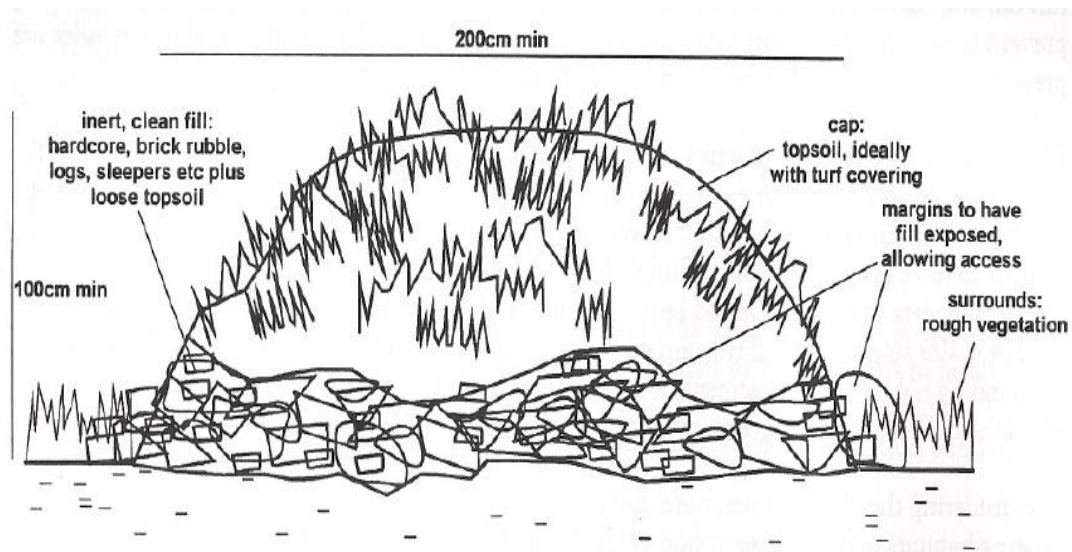
of the proposed perimeter bunding with only one gap for the main site access. This fence line will remain in place up to the final phase of the quarrying project.

- The first exclusion cells will be created by installing further lines of permanent herptile fencing within the perimeter fence line so as to isolate these particular areas. The first exclusion cells will encompass the Plant Site, the Phase 1, 2 and 3 areas, the spine conveyor line and topsoil store location, and the perimeter bunding line (including a suitable working area stand-off to enable its construction). A series of non-permanent 'drift' fencing (a single-use form of herptile exclusion fencing comprising either sheet plastic or textile, refer to appendix IV) lines will also be installed within the first exclusion cells to help improve capture rates during the trapping and translocation work. The remaining area within the quarry site will form the first 'internal' receptor area. Up to three vehicle access grids (consisting of 10 to 20 metre sets of steel girders welded together with a centre gap which reptiles cannot pass over without falling through and then being redirected back) will be installed within the permanent herptile fence line which encloses the plant site (refer to appendix III) in order to facilitate works and maintenance vehicle movements throughout the project.
- The project stand-offs will provide a key receptor area throughout the duration of the works and will be significantly improved for reptiles via the habitat retention, creation and enhancement measures detailed as embedded mitigation within the ES Ecology and Biodiversity chapter (CEMEX UK, 2022) and which also form part of the site restoration plan (refer to the site restoration plan). These measures will be implemented from the outset of the project and will provide much enhanced foraging habitat, significantly improved habitat connectivity, and substantially more refuge and hibernation opportunities for reptiles across these retained stand-off zones that will surround the works site.
- The 'internal' receptor area will be enhanced for reptiles by undertaking management of existing scrub and grassland habitats and by installing refugia and hibernaculum features as detailed below:
 - Scrub management will involve reducing the size of particularly extensive scrub stands and thickets of bramble by up to 20% in order to provide more areas of open habitat. Any cut bramble will be removed from the site, but any cut woody brushwood will be stacked in discreet piles within the receptor area and these will function as additional refugia/hibernacula features for reptiles. This scrub management within the internal receptor area will be ongoing until Stage 4, at which point this receptor area will no longer be functioning as such.
 - Grassland management will aim to create a varied sward structure to provide enhanced foraging opportunities and basking sites for reptiles, this will comprise alternating patches of rough and open grassland, approximately 50% of each. Patches of rough grassland will be formed by managing these swards with a biannual cut to ground level and clearance of arisings. Patches of open grassland

will be formed by managing these swards more frequently with an annual cut to ground level and clearance of arisings. All grassland cutting will be undertaken during the winter months when reptiles are in hibernation (November to February inclusive) to avoid potential injury or killing of reptiles. It is advised that at least 80% of arisings cleared after cutting are removed from the site, although 20% could be stacked in discrete heaps to provide potential refuge sites for slow-worm and common lizard. This grassland management within the internal receptor area will be ongoing until Stage 4, at which point this receptor area will no longer be functioning as such.

- Numerous log and brushwood piles will be created in the receptor area using cut woody material generated from habitat clearance work in other areas of the site (which is considered to be an efficient re-use of cleared woody vegetation on site). These log and brushwood piles will provide additional refugia and hibernaculum features for reptiles.
- A total of four artificial reptile hibernacula will also be created within the receptor area to provide additional refugia and hibernation features for slow-worm and common lizard. The artificial hibernacula will consist of a shallow excavation, approximately 2 metres in length, 1 metre in width and 0.5 metres in depth, which will be filled with logs and clean rubble with the excavated earth laid on top as depicted in Figure 1 below.

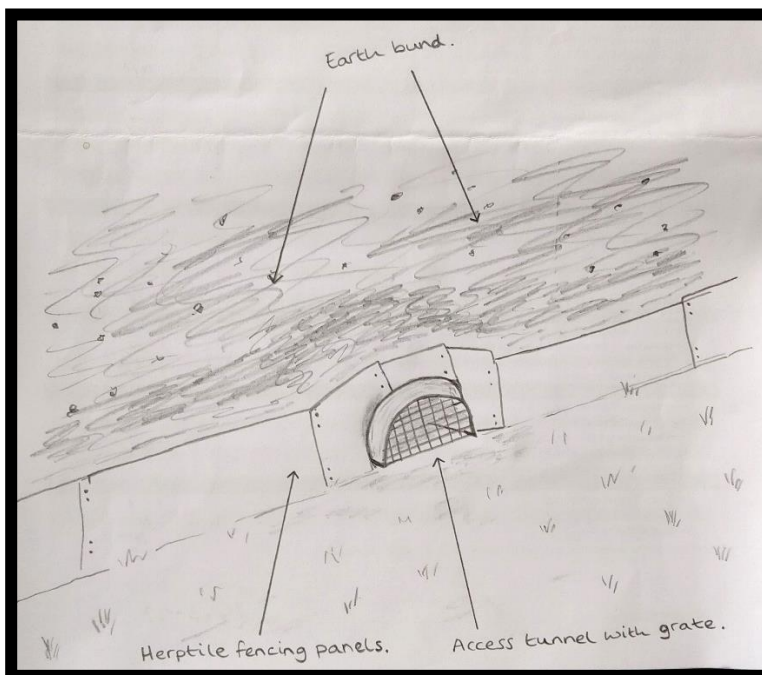
Figure 1. Reptile hibernacula design



- A reptile trapping exercise will be undertaken across all of the Stage 1 exclusion cells formed by the fencing installation. All reptiles caught during the trapping work will be relocated to both the 'internal' and 'external' (within the projects perimeter 'stand-off' zone) receptor areas. The methodology to be adopted for this work is detailed in section 5.2.3.

Stage 2: Perimeter bunding is constructed and reptile access tunnels are installed, Phases 1, 2 & 3 become operational, and exclusion of reptiles from Phase 4

- Following completion of the first trapping exercise and exclusion of reptiles from the Phase 1 exclusion cells, these areas will then be subject to a supervised destructive search (i.e. habitat clearance followed by topsoil stripping) to ensure that any remaining reptiles are safely moved and the land is rendered unsuitable habitat prior to commencement of the operational works (refer to the methodology in section 5.2.3). After completion of the destructive searches, Phase 1 will be prepared and the perimeter bunding constructed, mineral from Phase 1 will be extracted, and the Plant Site set up.
- During construction of the bunding line a total of five 'reptile access tunnels' will be installed to link phases 2, 3, 4, 5 and 6 with the surrounding land. Each tunnel will comprise a section of either steel or concrete pipe that is a minimum of 40 centimetres in diameter. The tunnels will be laid in their respective locations and then the perimeter earth bunding will be constructed over them. The herptile fencing on either side of the bunding line will be appropriately adjusted to form an impermeable seal around each end of the tunnel where it protrudes through the bunding. The ends of the tunnels will also be fitted with a steel mesh or grate to prevent access by dogs, fox (*Vulpes vulpes*) or badger (*Meles meles*). The mesh or grate will have square gaps of 3 x 3 centimetres to enable slow-worms and common lizards to easily pass through. The vegetation at either end of the access tunnels will be kept open and regularly maintained as a short sward, this will enable reptiles to more easily discover and access the tunnel entrances. Figure 2 below provides an indicative sketch diagram showing how the tunnels will appear when installed.

Figure 2. Sketch diagram of installed reptile access tunnel

At this stage of the project only the two installed tunnels linking phases 5 and 6 to the surrounding land will be open and functioning in order to enable free movement of reptiles between the internal receptor cell and the outside land. The other installed tunnels (linking phases 2 to 4 to the surrounding land) will be temporarily blocked and not functioning whilst the operational quarry works proceed through Phases 2 to 4.

- After construction of the bunding line is complete, the internal fencing will be adjusted so that it tightly abuts the internal edge of the bunding line. This is necessary to enable full mineral extraction from each phase of the works. However, this adjustment will also increase the size of the internal receptor cell. A new exclusion cell will then be setup in the Phase 4 area.
- Once the works site is fully set up, mineral extraction will proceed through Phases 2 and 3 followed by gradual backfilling of the extraction voids and restoration to previous ground levels. During this time, a reptile trapping exercise will be undertaken across the Phase 4 exclusion cell formed by the fencing installation/adjustments. All reptiles caught during the trapping work will be relocated to both the 'internal' and 'external' receptor areas. The methodology to be adopted is detailed in section 5.2.3. When the trapping and relocating work is complete, this area will then be subject to a supervised destructive search to ensure that any remaining reptiles are safely moved and the land is rendered unsuitable habitat prior to commencement of the operational works (refer to the methodology in section 5.2.3).

Stage 3: Phase 2 is restored, mineral extraction and restoration is ongoing through Phases 3 & 4, exclusion of reptiles from Phase 5

- By Stage 3 the Phase 2 area will have been restored to previous ground levels and habitat creation and management works forming part of the site restoration plan will be implemented. At this stage, when ground levels have been restored in Phase 2, the fencing line abutting the internal edge of the bunding will be adjusted to create sufficient space to facilitate deconstruction of the bunding in the final stages of the project. This will avoid having to undertake any further unnecessary reptile trapping and relocating work at a later stage.
- It is expected that at some point during Stage 3 the habitats within the restored Phase 2 area will be sufficiently established to allow reptiles to colonise this area and it will thereby function as another receptor area during works. The installed access tunnel within the adjacent bunding line will be unblocked and connected up to the restored Phase 2 area (this will require a small extension to the tunnel so that it links up to the adjusted fence line) in order to enable the free movement of reptiles between Phase 2 and the surrounding land.
- Mineral extraction will continue through Phases 3 and 4 followed by gradual backfilling of the extraction voids and restoration to previous ground levels. During

this time, a new exclusion cell will be setup in the Phase 5 area and then a reptile trapping exercise will be undertaken here. All reptiles caught during the trapping work will be relocated to both the 'internal' and 'external' receptor areas. The methodology to be adopted is detailed in section 5.2.3. When the trapping and relocating work is complete, this area will then be subject to a supervised destructive search to ensure that any remaining reptiles are safely moved and the land is rendered unsuitable habitat prior to commencement of the operational works (refer to the methodology in section 5.2.3).

Stage 4: Phase 3 is restored, mineral extraction and restoration is ongoing through Phases 4 & 5, exclusion of reptiles from Phase 6

- By Stage 4 the Phase 3 area will have been restored to previous ground levels and habitat creation and management works forming part of the site restoration plan will be implemented. At this stage, when ground levels have been restored in Phase 3, the fencing line abutting the internal edge of the bunding will be adjusted to create a sufficient space to facilitate deconstruction of the bunding in the final stages of the project. This will avoid having to undertake any further unnecessary reptile trapping and relocating work at a later stage.
- It is expected that at some point during Stage 4 the habitats within the restored Phase 3 area will be sufficiently established to allow reptiles to colonise this area and it will thereby function as another receptor area. The herptile fence line separating the Phase 2 and 3 areas will be removed to allow reptiles already present within Phase 2 to begin colonising Phase 3. As in Stage 2, the installed access tunnel within the adjacent bunding line will be unblocked and connected up to the restored Phase 3 area (this will require a small extension to the tunnel so that it links up to the adjusted fence line) in order to facilitate the free movement of reptiles between the restored phases and the surrounding land.
- Mineral extraction will continue through Phases 4 and 5 followed by gradual backfilling of the extraction voids and restoration to previous ground levels. During this time, a new exclusion cell will be setup in the Phase 6 area and the link tunnel through the east bunding line here will be blocked up. A reptile trapping exercise will then be undertaken in Phase 6. All reptiles caught during the trapping work will be relocated to both the 'internal' (restored Phases 2 and 3) and 'external' (stand-off zones) receptor areas. The methodology to be adopted is detailed in section 5.2.3. When the trapping and relocating work is complete in Phase 6, this area will then be subject to a supervised destructive search to ensure that any remaining reptiles are safely moved and the land is rendered unsuitable habitat prior to commencement of the operational works (refer to the methodology in section 5.2.3).

Stage 5: Phase 4 is restored, mineral extraction and restoration is ongoing through Phases 5 & 6

- By Stage 5 the Phase 4 area will have been restored to previous ground levels and habitat creation and management works forming part of the site restoration plan will be implemented. At this stage, when ground levels have been restored in Phase 4, the fencing line abutting the internal edge of the bunding will be adjusted to create sufficient space to facilitate deconstruction of the bunding in the final stages of the project. This will avoid having to undertake any further unnecessary reptile trapping and relocating work at a later stage.
- It is expected that at some point during Stage 5 the habitats within the restored Phase 4 area will be sufficiently established to allow reptiles to be introduced into this area and it will thereby extend the internal receptor area comprising the restored Phases 2 and 3. The herptile fence line separating the Phase 3 and 4 areas will be removed to allow reptiles already present within Phases 2 and 3 to begin colonising Phase 4. As in Stages 2 and 3, the installed access tunnel within the adjacent bunding line will be unblocked and connected up to the restored Phase 4 area (this will require a small extension to the tunnel so that it links up to the adjusted fence line) in order to facilitate the free movement of reptiles between the restored phases and the surrounding land.
- Mineral extraction will continue through Phases 5 and 6 followed by gradual backfilling of the extraction voids and restoration to previous ground levels.

Stage 6: Phases 5 & 6 are restored, mineral extraction and restoration is ongoing through Phase 7

- By Stage 6 the Phase 5 and 6 areas will have been restored to previous ground levels and habitat creation and management works forming part of the site restoration plan will be implemented. At this stage, when ground levels have been restored in Phases 5 and 6, the fencing line abutting the internal edge of the bunding will be adjusted to allow sufficient space to deconstruct the bunding in the final stages of the project. This will avoid having to undertake any further unnecessary reptile trapping and relocating work at a later stage.
- It is expected that at some point during Stage 6 the habitats within the restored Phases 5 and 6 will be sufficiently established to allow reptiles to colonise these areas in turn and this will thereby extend the internal receptor area further. The herptile fence line separating Phases 5 and 6 from the restored Phase 2 to 4 areas will be removed in order to allow reptiles to begin colonising Phases 5 and 6. As in Stages 2, 3 and 4, the installed access tunnel within the adjacent bunding line will be unblocked and connected up to the restored Phase 4 area (this will require a small extension to the tunnel so that it links up to the adjusted fence line) in order to facilitate the free movement of reptiles between the restored phases and the surrounding land.

- Mineral extraction will continue through the Phase 7 (plant site) area followed by gradual backfilling of the extraction voids and restoration to previous ground levels.

Stage 7: Phase 1 is restored, restoration is ongoing through the Plant Site (Phase 7), perimeter bunding is dismantled and earth used to restore the Plant Site, all herptile fencing and access tunnels are removed

- During Stage 7 the Phase 1 area will be restored to previous ground levels and habitat creation and management works forming part of the site restoration plan will be implemented. At this stage, when ground levels have been restored in Phase 1, the fencing line abutting the internal edge of the bunding will be adjusted to allow sufficient space to facilitate deconstruction of the bunding in the final stages of the project. This will avoid having to undertake any further unnecessary reptile trapping and relocating work.
- Restoration will continue through the Plant Site. At this stage the perimeter bunding will be dismantled and the earth used to backfill and restore the Plant Site. When the extraction of the Plant Site is complete and former ground levels restored and all perimeter bunding dismantled, then the relevant habitat creation and management works forming part of the site restoration plan will be implemented across the Plant site and all herptile fencing and the access tunnels will be removed.

5.2.3 Methods

Herptile fencing (refer to appendix IV)

- All installation, adjustment and removal of herptile fencing on site will be conducted during the reptile active season between March and October (inclusive) in suitable, dry weather conditions, with temperatures above 10°C. This will ensure that no hibernating reptiles are harmed during any fencing works. All herptile fencing works will also be supervised by a suitably experienced ecologist at all times to ensure that these are being executed correctly and that reptiles are safeguarded from harm.
- All fencing installed on site will be inspected on a regular basis throughout the duration of the proposed works to ensure that it is intact and functional. Any minor damage to fencing will be repaired immediately during inspection by an ecologist, any more substantial damage may require the services of a sub-contractor to repair.

Trapping and relocation of reptiles

All trapping of reptiles within exclusion cells and relocation to receptor areas will be conducted in line with the following methodology:

- Artificial refugia comprising sections of bitumen roofing felt, measuring approximately 0.5 metres², will be distributed throughout the exclusion areas with a suitable number deployed to ensure appropriate coverage of the area and to help maximise capture rates.
- The refugia will then be left to ‘settle’ for a period of 1 week before the trapping visits commence. During trapping visits a suitably experienced ecologist will check all of the deployed refugia for presence of reptiles during suitable weather conditions and at suitable times of the day when reptiles are most active (as per the Froglife guidance, 1999). An attempt will be made by the ecologist to capture by hand any reptiles encountered. Any reptiles successfully caught will be transferred to a plastic bucket and then relocated to one of the on-site receptor areas.
- Due to the anticipated high numbers of reptiles that could be encountered on site during trapping work (refer to section 5.1), a minimum of 60 trapping visits will be made to exclusion cells. If reptiles are still being encountered within exclusion cells after 60 visits, then the minimum number of visits will be increased to 90 (HGBI, 2016). Five consecutive trapping visits without encountering any reptiles is required before the exclusion cell can be assumed to be cleared of all reptiles (and no more can be caught) and then subsequent habitat clearance and destructive searches can commence.
- During the trapping and relocation exercises habitat degradation works will be undertaken within exclusion cells to help increase capture rates. This will involve clearance and removal of the majority of scrub and strimming of grass to reduce the sward height, together with removal of arisings.
- If any adders are encountered during the trapping work, then all subsequent trapping visits to site by an ecologist will also require a health and safety assistant to be present. This measure is part of LCES’ health and safety policy for working with reptiles.

Habitat clearance / destructive searches

Habitat clearance works and destructive searches will be undertaken in line with the following methodologies:

- Clearance of above ground woody vegetation (trees and shrubs) to a height of 15 centimetres can be undertaken at any time of the year.
- Clearance of field layer vegetation and destructive searches can only be conducted during the reptile active season between March and October (inclusive) in suitable, dry weather conditions, with temperatures above 10°C. A suitably experienced ecologist must also be present to supervise these works at all time to ensure the correct methodologies are being adhered to and that any reptiles encountered are safeguarded from harm.

- Field layer vegetation, including grassland, ruderal vegetation and woodland ground flora, will be cut in two phases using handheld strimmers and/or brush cutters. The vegetation will be cut to a minimum length of 10 centimetres on the initial cut. This will encourage reptiles to disperse into adjacent suitable habitat or scrub cover. Subsequent cutting to ground level can be undertaken no sooner than one hour after the initial cut to give reptiles a reasonable chance to disperse. This approach will minimise the risk of any reptiles being harmed. All arisings will be cleared from the area and removed from site to ensure that reptiles do not colonise the cut vegetation.
- In regards to the initial clearance of the site access area, all cutting of field layer vegetation will be undertaken in an easterly direction to disperse reptile into suitable adjacent habitat.
- The final stage of habitat clearance will involve a destructive search with the use of excavators and stump grinding equipment to strip away the topsoil layers and either dig out or grind away any woody stumps and root balls. When the initial 'internal' receptor areas are being cleared during the later operational phases, any remaining hibernaculum will be carefully dug out by hand using hand tools (spades and shovels) and the materials either re-used on site to create artificial reptile hibernaculum elsewhere or will be removed.
- All cut woody vegetation (trees and shrubs) will be re-used on site as far as possible to create log and brushwood piles in receptor areas and areas undergoing habitat restoration.

6.0 REFERENCES

CEMEX UK (2022) *Environmental Statement for the Former Hamble Airfield - Chapter10 Ecology and Biodiversity*.

Froglife (1999). *Reptile surveys: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. (Advice Sheet 10)*.

Hampshire Biodiversity Information Centre (2021). *Data search reference - HBIC Ref 10193, The former Hamble Airfield site*.

Herpetofauna Groups of Britain and Ireland (2016) *Evaluating local mitigation/translocation programmes: maintaining best practice and lawful standards*. Published in 2010, updated in 2016.

APPENDIX I: Location of reptile survey refugia (2020)



APPENDIX II: Reptile survey results 2020



Legend  Site boundary Reptiles  Common lizard  Slow worm Google Satellite Map data ©2020 Google	0 50 100 150 m  
Notes Reptile results 2020 Project Hamble Airfield Date 03.11.2021 Draft v.1 Drawn by Stuart Woodley QGIS 	
	

APPENDIX III: Reptile mitigation plan¹

Stage 1



First trapping cells for Phases 1, 2 & 3 (including spine conveyor line and temporary soil store) and bund construction using a combination of permanent herpetosure fencing and internal temporary drift fencing lines to improve reptile capture rates.

First receptor cell for relocation of captured reptiles, habitat management and enhancement undertaken here to improve quality for reptiles.

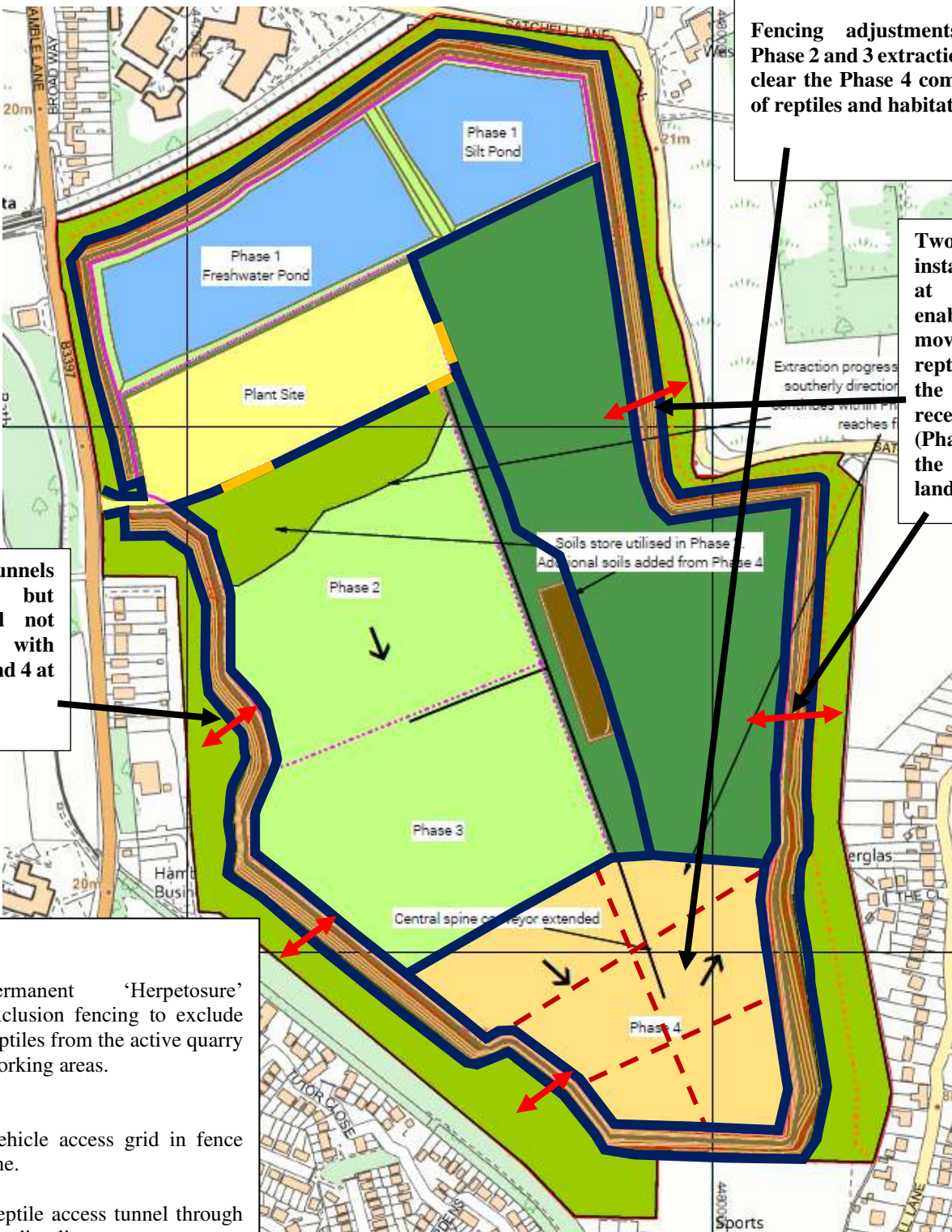
Retained, enhanced and created habitats within stand-off zones also to be used as reptile receptor land

Key

- Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
- Vehicle access grid in fence line.
- Indicative non-permanent 'drift' fencing lines.

¹ Background map colours indicating progress of the operation and restoration phases should be ignored.

Stage 2







Fencing adjustments during Phase 2 and 3 extraction, to then clear the Phase 4 compartment of reptiles and habitat

Two access tunnels installed and open at this stage to enable free movement of reptiles between the internal receptor cell (Phases 5 & 6) and the surrounding land.

Access tunnels installed but blocked and not connected with Phases 2, 3 and 4 at this stage.

Key

-  Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
-  Vehicle access grid in fence line.
-  Reptile access tunnel through bunding line.
-  Indicative non-permanent 'drift' fencing lines.

Stage 3







Fencing adjustments during Phase 3 & 4 extraction, to then clear the Phase 5 compartment of reptiles and habitat, access tunnel to Phase 5 is blocked.

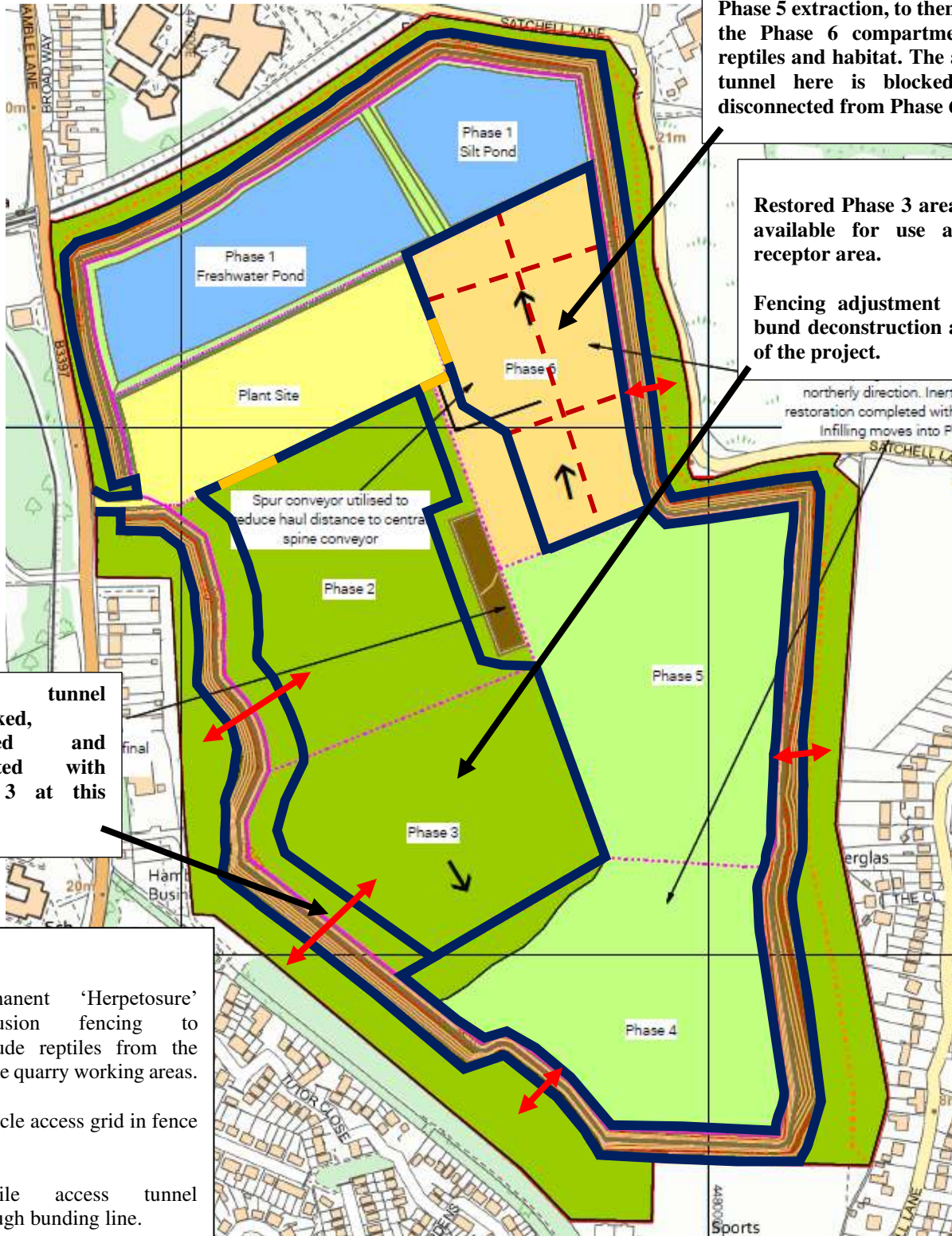
Restored Phase 2 area becomes available for use as a new receptor area with access tunnel through the bunding line.
 Fencing adjustment to enable bund deconstruction at the end of the project.

Access tunnel unblocked, extended and connected with Phase 2 at this stage.

Key

-  Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
-  Vehicle access grid in fence line.
-  Reptile access tunnel through bunding line.
-  Indicative non-permanent 'drift' fencing lines.

Stage 4







Fencing adjustments during Phase 5 extraction, to then clear the Phase 6 compartment of reptiles and habitat. The access tunnel here is blocked and disconnected from Phase 6.

Restored Phase 3 area becomes available for use as a new receptor area.

Fencing adjustment to enable bund deconstruction at the end of the project.

Access tunnel unblocked, extended, and connected with Phase 3 at this stage.

Key

-  Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
-  Vehicle access grid in fence line.
-  Reptile access tunnel through bunding line.
-  Indicative non-permanent 'drift' fencing lines.

Stage 5



Key

- Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
- Vehicle access grid in fence line.
- Reptile access tunnel through bunding line.

Access tunnel unblocked, extended and connected with Phase 3 at this stage.

Restored Phase 4 area becomes available for use as a new receptor area.
 Fencing adjustment to enable bund deconstruction at the end of the project.

Main extraction area complete. Site restoration now progressing with inert infilling.

Stage 6



Stage 7



Phase 1 areas and the Plant Site are restored and the bunding line is dismantled.

When this is complete, all herptile fencing and access tunnels are then removed.

Key

- Permanent 'Herpetosure' exclusion fencing to exclude reptiles from the active quarry working areas.
- Vehicle access grid in fence line.
- Reptile access tunnel through bunding line.

APPENDIX IV: Herptile exclusion fencing



Figure 1: example image of permanent herptile fencing ('Herpetosure®' – type fencing)

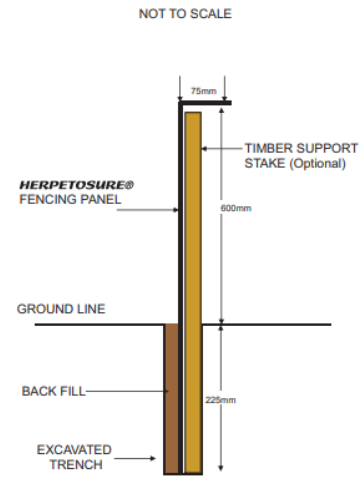


Figure 2: example diagram of permanent herptile fencing ('Herpetosure®' – type fencing) specifications and installation method



Figure 3: example image of non-permanent 'drift' herptile fencing



Figure 4: example diagram of non-permanent 'drift' herptile fencing specifications and installation method