

CiNER Glass Ltd  
**Dragon Glass Bottle  
Manufacturing Facility**  
GCN Conservation Strategy

Issue 3 | 29 March 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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**ARUP**

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## Appendices

### Appendix A

### Appendix B

# 1 Introduction

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This conservation strategy has been prepared to satisfy requirements of Natural Resources Wales (NRW), received during the PAC process for the project, specifically:

*'If surveys indicate the presence of GCN or the project is progressed assuming presence of the species, a detailed great crested newt conservation plan will be required to support the application.*

*We [NRW] advise that the great crested newt mitigation strategy includes the following:*

- *An assessment of impacts during the construction and operational phases of the scheme. This to include an evaluation of the nature, extent and duration of the likely direct and indirect impacts of the development. This assessment should include:*
  - *Tabulated review of the extent, distribution and quality of GCN habitat to be removed, retained, enhanced and created, supported by drawings as appropriate;*
  - *Risks of incidental injury or killing; and*
  - *Consideration of habitat functionality and connectivity during and post construction*
- *Submission of details and associated plans concerning principles of GCN avoidance and mitigation measures including, but not limited to fence specifications and proposed locations, fence monitoring and maintenance requirements and proposed timescales.*
- *Submission of details concerning GCN habitat compensatory proposals including plans, extent, access, as well as current and proposed tenure. Details shall identify areas of terrestrial and aquatic habitat to be retained, enhanced and/or created. In respect of aquatic habitats, pond and associated infrastructure design, and fish and invasive non-native species (INNS) management requirements.*
- *Submission of the principles of a long-term site management plan for GCN habitats that includes defined aims and objectives; habitat management prescriptions; surveillance; contingency measures if fish or invasive non-native species (INNS) are detected; current and any proposed tenure of any dedicated ecology areas; persons responsible for undertaking management; and proposed dates for updating or revising the management plan.*
- *Proposed mechanism for ensuring the long-term security and management of GCN habitat areas such as a Section 106.*
- *Submission of measures designed to ensure the installation and maintenance of an amphibian friendly surface water management system that does not include gully pots (or other similar features that could trap newts).*

- *Submission to include proposed timescales and reporting requirements, and long-term financial considerations*

*We envisage that the proposed conservation plan will materially inform the provisions of any subsequent application for a derogation licence issued by NRW under Regulation 55 of the Conservation of Habitats and Species Regulations 2017 (as amended).'*

This document has been further updated following on from further comments from NRW received on 22<sup>nd</sup> October 2021 and a meeting held with Blaenau Gwent County Borough Council (BGCBC) on 2<sup>nd</sup> December 2021.

It was again updated following a further set of comments from NRW on 28<sup>th</sup> February 2022.

## 2 Legislation, policy context and guidance

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### 2.1 Legislation

Great crested newts (GCN) are a European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 (as amended) (known as the Habitats Regulations). The Habitats Regulations protects EPS against the following:

- Deliberate capturing, injuring or killing of any wild EPS;
- Deliberate disturbance of any wild EPS;
- Deliberate removal or destruction of the eggs of any EPS; and
- The damage or destruction of a breeding site or resting place of any EPS.

GCN is also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA).

The WCA protects GCN against intentional killing, injuring or taking, possession and trade, and disturbance through prohibition of actions that could affect places they use for shelter.

GCN are listed as priority species of principal importance for maintaining and enhancing biodiversity in Wales under the Section 7 of the Environment (Wales) Act 2016. This legislation places the duties on public bodies in Wales to conserve and enhance biodiversity in the exercise of their functions, including the consideration of the resilience of ecosystems in terms of their diversity, connectivity, adaptability, scale and condition.

Lastly, great crested newts are all listed as UK Biodiversity Action Plan Priority Species. Action Plans exist for each UK BAP Priority Species to demonstrate the UK's commitment to help reduce or halt the significant losses in global biodiversity.

### 3 Site Details

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The proposed development site is located within the Rassau Industrial Estate in the county borough of Blaenau Gwent, South Wales (centred on National Grid Reference SO 15891 12837). The estate is located adjacent to the A465 Heads of the Valleys dual-carriageway, approximately 700 m to the north of Rassau village and 3 km north of Ebbw Vale town centre. The site is displayed in Figure 1.

The site is currently a vacant plot on the eastern extent of the industrial estate located on the north-east extent and has remained undeveloped since the development of the earthworks with Rassau Industrial Estate formed in the late 1970s – early 1980s. As a result of the lack of development the site currently supports grassland, scrub, broadleaved trees and coniferous woodland. Watercourses are located within the centre of the site and along the eastern boundary.

Relevant site clearance activities are scheduled to commence in 2022 following completion of ecological mitigation and landscaping creation that is required. The first phase of construction is proposed to commence in 2022, following approval of the planning application, with mobilisation and earthworks. The superstructure for the first furnace will then commence construction with the full development constructed over a period of four years with the facility being fully operational by 2026.

## 4 Relevant Surveys Undertaken

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### 4.1 Desk Study

A desk study was undertaken to identify any existing ecological information for the site (i.e. red line boundary) and surrounding area.

A search was undertaken to identify statutory designated sites within 5 km of the Site boundary. Online searches were carried out using the Multi-Agency Geographic Information for the Countryside (MAGIC)<sup>1</sup>, Natural Resources Wales website<sup>2</sup> and the Joint Nature Conservation Committee (JNCC) website<sup>3</sup>.

In addition to this, protected and notable<sup>4</sup> species, Schedule 9 invasive non-native species and non-statutory site data within 5 km of the Site were obtained from the Biodiversity Information Service for South East Wales Biodiversity Records Centre (SEWBRc)<sup>5</sup> on 6<sup>th</sup> April 2020.

### 4.2 Field Studies

An Extended Phase 1 Habitat survey<sup>6</sup> and protected species walkover was completed of the Study Area in suitable conditions by two suitably qualified ecologists. Further details are provided in the preliminary ecological appraisal report<sup>7</sup>.

Phase 1 habitat survey is a standard technique for rapidly obtaining baseline ecological information over a large area of land. It is primarily a mapping technique and uses a standard set of habitat definitions for classifying areas of land on the basis of the vegetation present.

Incidental records of flora and fauna were also made during the survey including amphibians and great crested newts.

Seven waterbodies within the Study Area were subject to a Habitat Suitability Assessment (HSI)<sup>8</sup> by a suitably qualified ecologist. Waterbodies scoring above 0.5 (equating to below average and above) were then sampled for the presence of great crested newt environmental DNA (eDNA) in accordance with the approved

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<sup>1</sup> <http://magic.defra.gov.uk/> (accessed online 12/11/2019).

<sup>2</sup> <https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/designated-sites-search/?lang=en> (accessed online 21/11/2019).

<sup>3</sup> <http://jncc.defra.gov.uk> Accessed online 12/11/2019.

<sup>4</sup> Notable' species and habitats considered in this report include species and habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales, under section 7 of the Environment (Wales) Act 2016, in addition to any species considered to be of significance for nature conservation such species listed in red data books, the Royal Society for the Protection of Birds (RSPB) 'Birds of Conservation Concern' lists and or Local Biodiversity Action Plans (LBAPs).

<sup>5</sup> <http://www.sewbrec.org.uk/home.page> (accessed 03/04/19).

<sup>6</sup> Joint Nature Conservation Council (2010) Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit (ISBN 0 86139 636 7).

<sup>7</sup> Arup (2020) Preliminary Ecological Appraisal

<sup>8</sup> Amphibian and Retile Groups of the UK (2010) Great crested Newt Habitat Suitability Index. Froglife.



methodology endorsed by the Statutory Environmental Bodies<sup>9</sup>. Four waterbodies were subject to eDNA surveys, undertaken by a suitably qualified ecologist.

Presence/absence surveys and population assessment surveys were also undertaken, by suitably qualified ecologists, on two waterbodies (4 and 1), which had a positive and inconclusive eDNA result, in addition to a waterbody (7) which held water during later survey visits.

Waterbody 1 returned an ‘inconclusive’ eDNA result but was found to be dry during a site visit on the 2nd June, prior to the commencement of the presence/absence survey and as such was scoped out of further surveys.

Waterbody 7 was scoped out of further survey during the HSI assessment due to being dry at the time. However, rainfall during the month of June led to a small pool of water within Waterbody 7 prior to Visit 6 on the 29th June. As such, Waterbody 7 was surveyed in addition to Waterbody 4 during Visit 6.

Presence/likely absence surveys were carried out in accordance with the methodology prescribed within the Great Crested Newt Conservation Handbook<sup>10</sup>, although a number of limitations were encountered (as described within the separate amphibian report, along with survey conditions etc).

Where possible, at least three survey methods were employed during each survey visit, including torch survey, bottle traps, egg search, refuge searches and netting, as described below:

- Torch Survey: The banks of each waterbody were walked after dark, using a high-powered torch (1 million candle power) to search for newts and other amphibians. Animals observed were identified to species, sex and life stage where possible.
- Bottle traps: Bottle traps were placed around the perimeter of the waterbodies at approximately 2 metre intervals (where suitable habitat and health and safety considerations allowed) shortly before dusk and checked the following morning to determine whether amphibians were present or absent. Each trap was made from a 2-litre plastic bottle with the top cut off and inverted, to make a funnel leading into the bottle. Bamboo canes were used to anchor the traps into the waterbody, taking care to ensure that each bottle included an air bubble. Any animals caught were immediately returned to the waterbody after identification.
- Egg searches: Submerged and peripheral vegetation was searched for the presence of newt eggs. The eggs are usually folded in the leaves of aquatic plants, dead leaves or overhanging grass leaves. It is necessary to unfold the leaf to identify the egg. The unfolding increases the risk of predation, therefore once an egg is found the use of this technique is ceased. Recommended survey effort for this method is 15 minutes searching per 50 metre of bank. The presence of eggs of other amphibians was also noted, where observed.

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<sup>9</sup> Biggs *et al.*, (2014) Using eDNA to develop a national citizen science-based monitoring programme for the great crested newt (*Triturus cristatus*), biological conservation.

<sup>10</sup> Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

- Netting: A sturdy dip-net was used to net the shoreline, for an average of fifteen minutes per 50 metres of shoreline. Care was taken not to damage larvae, and to reduce disturbance to the pond.
- Refuge searches: Searches of the artificial refuges (described below), and existing refuges such as logs, wooden planks and debris within the terrestrial habitats immediately surrounding the waterbody was undertaken. Any amphibians found were identified to species, sex and life stage where possible.

Further details are provided in the Amphibian report<sup>11</sup>.

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<sup>11</sup> Arup (2020) CiNER: Amphibian Survey Report

## 5 Ecological Baseline

### 5.1 Desk study

SEWBReC did not return any records of great crested newt from within the search area, or other notable amphibians.

### 5.2 Field Study

The Preliminary Ecological Appraisal report<sup>7</sup> showed that a number of waterbodies were present within the site (shown in Figure 2 and 3), which could support great crested newts and other amphibians (palmate newt, common frog etc). The woodland and scrub on site were assessed as being suitable terrestrial habitat for these amphibian species.

All waterbodies subject to HSI assessment were found to have ‘below average’ suitability for great crested newts (shown in Figure 4) and were subject to further survey work to confirm presence/absence of great crested newts (see the amphibian report).

eDNA surveys were undertaken on waterbodies with water at the time of the survey (1-4) (as shown in Figure 5); returning a positive result for Waterbody 4, and an inconclusive result for Waterbody 1. A population assessment was undertaken on Waterbody 4. Waterbody 1 was dry, and therefore not subject to further survey effort, and Waterbody 7, previously not subject to an eDNA survey, held water later in the season, and was therefore also subject to presence/absence surveys.

Table 1: Survey Results: eDNA

Waterbody	eDNA Result
WB1	Inconclusive
WB2	Negative
WB3	Negative
WB4	Negative

Table 2: Survey Results – presence/absence and population assessments

Waterbody	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
WB4	No great crested newts recorded	No great crested newts recorded. Palmate newt recorded.	No great crested newts recorded. Palmate newt recorded.	No great crested newts recorded. Palmate newt recorded.	No great crested newts recorded. Palmate newt recorded.	No great crested newts recorded. Palmate newt recorded.
WB1	Dry	Dry	Dry	Dry	Dry	Dry
WB7	Dry	Dry	Dry	Dry	Dry	No great crested newts

Waterbody	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
						recorded. Palmate newt recorded.

No evidence of great crested newts was found during further presence/absence and population surveys of waterbodies 4 and 7, despite the positive eDNA results. However, it is acknowledged that some of the survey effort was undertaken just outside of the optimal survey window and as such the presence of GCN cannot be ruled out from the site.

The site also supports populations of palmate newt, and common amphibian species, including common frog and common toad, are also considered likely to be present due to the presence of suitable habitats.

As reported in the Environmental Statement for the project, should a GCN population be present within the suitable habitats, the site would be of Local value with regard to this species due to the likely low population size.

## 6 Impact Assessment

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A positive eDNA result was returned for one of the waterbodies; although further presence/absence surveys did not detect any signs of GCN within this waterbody. The presence of GCN is assumed, taking a precautionary approach, within the site, due to the limitation of the 2020 presence/absence surveys being undertaken in June only, and therefore at a suboptimal time of year. However, if a GCN population is present it is considered likely to be a small population due to the nature of the waterbodies within the site and also lack of evidence during surveys undertaken in June 2020.

It should be noted that this species is unknown locally and during the meeting on 2<sup>nd</sup> December 2021, the BGCBC ecologist confirmed GCN have not been recorded within the Borough. None were found for surveys undertaken for the nearby A465 improvement works in recent years.

Potential effects to GCN could occur in the form of habitat loss and fragmentation, habitat disturbance/degradation, species harm/mortality and species disturbance. Effects could occur during construction and associated site clearance in addition to during the site's operation as a Glassworks factory. Any effects would be significant at a Local Level, although as noted above only small numbers of GCN are likely to be affected. Any such effects on great crested newts would also result in breaches of UK legislation.

### 6.1 Habitat loss

The mosaic of species rich acid grassland and marshy grassland will be lost from the site, in addition to standing water (ephemeral ponds), mixed plantation woodland and areas of scrub and scattered trees. This would occur as a result of site clearance activities required to facilitate construction. The extent of habitat loss of habitats which have the potential for use by GCN is detailed in Table 3 below, along with habitat creation and retention and enhancement which are discussed later under 'Site Design'. Impacts on GCN from habitat loss is discussed below in terms of aquatic (breeding) and terrestrial (foraging, shelter and hibernation). It is envisaged that these would be permanent impacts without the implementation of site landscaping which provides compensatory habitats for GCN. However proposed landscaping for GCN is discussed under 'Mitigation' and 'Site design'.

#### Aquatic Habitats

Approximately 0.16 ha of standing water will be lost from the site as a result of the proposed development. This comprises a number of small ephemeral waterbodies which occur within the grassland mosaic and plantation woodland on the site. Waterbody 4, where a positive GCN eDNA sample was recorded is located within marshy grassland in the central part of the site, and which is surrounded by the remaining waterbodies. Although presence and or breeding has not been confirmed, for the purposes of this document, it is considered that possible that a small breeding population of GCN could be present within this waterbody. At the time of the surveys, the other waterbodies were largely dry

although it is acknowledged that these could support water during the breeding season subject to levels of rainfall and therefore be suitable for GCN breeding.

### **Terrestrial Habitats**

Approximately 11.65 ha (habitat area) and 236m (linear habitat) of terrestrial habitats will be lost from the site (as detailed in Table 3 below). This comprises acid and marshy grassland, scrub, and scattered trees. These habitats are likely to support foraging habitat and shelter to GCN, in addition to lines of trees and scrub providing connectivity for GCN travelling through and around the site. The plantation woodland is considered to have limited value for GCN although a small area of broadleaved woodland within the plantation may offer foraging and hibernation opportunities.

The adjacent marshy grassland in the eastern part of the site, and scattered trees along the main watercourse running through the site, and along the southern periphery of the site, will be retained during construction; however, and will continue to provide terrestrial habitat for any GCN using the site.

## **6.2 Habitat Disturbance / Deterioration**

Suitable GCN habitats, which are retained on the site during construction namely marshy grassland east of the site and scattered trees along the watercourse and along the southern periphery of the site, could also be disturbed or degraded during construction for example as a result of pollution events or surface run-off with high sediment load. There is also the potential for GCN habitats adjacent to the proposed development to be adversely affected by changes in air quality during construction through dust and vehicle emissions, and that retained habitats could be physically disturbed for example by machinery.

During operation there are also potential effects to newly created and enhanced GCN habitats within the site, which could be damaged by pollution or sedimentation, and habitats could be affected by disturbance by site staff using the site.

## **6.3 Mortality / Harm**

Construction and associated site clearance activities could result in harm / mortality to GCN largely during any vegetation clearance, which will be required. Clearance will be required across the site with the exception of the retained marshy grassland east of the site, and scattered trees along the watercourse and along the southern periphery of the site. Waterbodies, where supporting water, will need to be drained down to facilitate clearance which could also harm any breeding GCN present.

Where open excavations are present during construction, there is the risk of GCN being harmed through entrapment.

There is also a risk of GCN harm / mortality as a result of collision with vehicles during construction and operation. Highest mortality rates are generally associated with peaks of activity such as migration (particularly in spring). It is likely that

high rates of amphibian mortality on roads would be associated with periods of high rainfall<sup>12</sup>.

## 6.4 Habitat Severance / Fragmentation

There is the potential for habitats to be fragmented during construction and operation should sections of the site be cleared which provide foraging / commuting habitat for GCN such as scrub and tree lines, and if the landscaping does not incorporate suitable habitats within the site which will facilitate GCN movement to and from ponds to areas used for foraging, shelter and hibernation.

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<sup>12</sup> Heske, E. J. (2015). Blood on the tracks: Track mortality and scavenging rate in urban nature preserves. *Urban Naturalist*, 4, 1–13.

Table 3: Details of suitable habitat within the site for GCN, which will be lost, retained, created and or enhanced.

<b>GCN habitat</b>	<b>Suitability for GCN</b>	<b>Summary of habitat quality</b>	<b>Area / length within planning boundary</b>	<b>Area / length to be lost to proposed development</b>	<b>Habitat as defined in the Masterplan</b>	<b>Habitats to be retained</b>	<b>Area / length created</b>	<b>Net habitat gain (and percentage change)</b>	<b>Retained habitats to be enhanced through management</b>
Standing water – ditches and ephemeral waterbodies	Potential breeding habitat. Waterbody 4 is likely to be the main waterbody used by breeding GCN since other waterbodies support lower volumes of water, or fish.	Waterbody 4 – moderate – low Remaining waterbodies – low to negligible	812 m (c. 0.16 ha)	812 m (c. 0.16 ha)	SuDS ponds	0 ha	0.30 ha	+0.14 ha (87.5% increase)	
Semi-improved acid grassland	Potential foraging habitat. Surrounds majority of waterbodies and is ungrazed.	Low - moderate	2.99 ha	2.99 ha	Species rich grassland	0 ha	3.22 ha	+0.23 ha (7.70% decrease)	0 ha
Marshy grassland - species poor	Potential foraging habitat. A proportion of the grassland surrounds majority of waterbodies and is ungrazed. The remaining proportion is located east of the	Low - moderate	8.18	4.73	Species rich marshy grassland	3.45	0 ha	- 4.75ha (42.18% decrease)	3.45 ha (to species rich marshy grassland)



	site and is grazed – therefore likely to be less suitable due to disturbance levels.								
Line of mixed scattered trees	Potential foraging habitat. Could also offer linear feature for commuting GCN around the site. Tree roots may offer hibernation habitat.	Low - moderate	1.37 ha	0	NA – no replacement proposed	1.37 ha	0 ha	0 ha (none lost, retained in site)	1.37 ha
Scattered scrub	Occurs in mosaic with grassland, therefore likely to offer shelter opportunities for GCN.	Low - moderate	1.17 ha <sup>13</sup>	1.17 ha	NA – no replacement proposed	0 ha	0 ha	-1.17 ha (100% decrease)	0 ha
Line of scattered scrub and earth bank	Potential foraging habitat. Could also offer linear feature for commuting GCN around the site.	Low - moderate	236 m	236 m	NA – no replacement proposed		0 ha	-236 m (100% decrease)	0 ha
Dense/continuous scrub	Potential foraging habitat. Could also offer linear feature for	Low - moderate	1.3 ha	1.3 ha	NA – no replacement proposed	0 ha	0 ha	-1.3 ha (100% decrease)	0 ha

<sup>13</sup> Habitat areas and lengths have generally been calculated using data from the Extended Phase 1 Habitat survey (Figure 3), and Habitat gains have been calculated from the landscaping plans as shown in the site’s Landscaping Figure (see DRAGON-ARUP-XXX-XX-DR-A-001201)

	commuting GCN around the site.								
Plantation woodland (broadleaved only)	Foraging likely to be limited to areas of broadleaved woodland, however tree roots may offer hibernation opportunities.	Low to negligible	1.46 ha	1.46 ha – less if some trees retained during construction	New broadleaved woodland and wet woodland planting. These will supplement retained scattered trees along the stream and site’s southern periphery	0 ha	1.66 ha (woodland) and 0.12 ha (wet woodland) = 1.78 ha	+0.32 ha (22 % increase)	0 ha
<b>Total</b>			<b>16.46 plus 0.16 ha / 236 m</b>	<b>11.65 plus 0.16 ha / 236 m</b>	-	<b>4.82 ha</b>	<b>5.3</b>	-	<b>4.82</b>

## 7 Mitigation

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### 7.1 Licensing and Further Surveys

Further surveys will be undertaken in spring 2022 on all waterbodies to confirm the presence of GCN. These will initially, comprise four survey visits, which will be completed between mid-March and mid-June, with at least two survey visits between mid-April and mid-May.

This will be undertaken using traditional methods i.e. at least three of the following during each visit: bottle-trapping, egg searching, lamping, netting and refuge searches. If a population of GCN is found to be present a further two separate nights of surveys would be carried out in order to assist in assessing population sizes. Where six survey visits are required at least three visits will be between mid-April and mid-May.

If GCN are found, a development licence would be sought from NRW following planning consent being obtained.

This GCN Conservation Strategy will be refined and submitted with the development licence application, and mitigation (as detailed below in Sections 7.2 – 7.5) will be implemented accordingly. Mitigation will comprise species protection measures, habitat protection measures and landscaping for GCN. In addition, landscaped habitats will be subject to long term management to ensure habitats remain favourable to GCN in the future.

### 7.2 Species Protection

The site will be cleared of GCN during the period immediately prior to the commencement of construction by means of the following methods:

- 1) Species deterrence measures
- 2) Passive exclusion by means of herptile-proof fencing
- 3) Active collection for removal off-site
- 4) Destructive searching

The layout of the herptile fences will be as shown at Figure 6. Sloping ‘one-way’ fences will be erected around the eastern perimeter of the site where it abuts other suitable GCN habitats which will be unaffected by the development. These fences will allow herptiles to leave the development area of their own volition to disperse into the surrounding habitats, but will not allow them to enter the site from the surrounding areas. Elsewhere, vertical ‘no-pass’ fences will be used (all remaining areas of the site), which do not allow herptile movement in either direction. The area within the peripheral fences will be subdivided by internal ‘no-pass’ fences in order to create manageable trapping compartments.

Installation corridors will be cleared through the vegetation along the lines of the fences, prior to installation. These corridors will be approximately 2m wide and

the vegetation will be cleared to a minimum height of 100mm. The vegetation will be hand-cleared using trimmers and brush-cutters etc, and the arisings will be raked to the edge of the installation corridor outside of the fence. There will be no other clearance to ground level until the planned further GCN surveys have been completed.

The installation of the herptile fences may involve the use of a mini-digger, but there will otherwise be only the minimum vehicle movement on the site necessary to achieve the task, and this will be confined to the minimum necessary number of pre-defined routes.

The specification for the herptile fences will be in accordance with the advice provided by English Nature<sup>10</sup> and the Design Manual for Roads & Bridges (DMRB 2005; 2001). Fences will either be fabricated on site or will be of purpose-made prefabricated design (e.g. 'Herpetosure' fencing), and will be protected from interference by grazing stock (along the eastern site boundary) either by stock withdrawal or by means of temporary electric fencing.

Refugia, comprising 60cm x 60cm square carpet tiles and/or squares of roofing felt, will be distributed in a random mixture within the compartments at a density of about one per 10m<sup>2</sup>.

In addition, pitfall traps will be installed alongside the interior boundary of fences at a density of about one per 10m, and bottle-traps will be installed in waterbodies which hold water at the time of the clearance, at a density of about one per 2m length of bank. The design, construction and installation of these will be in accordance with EN (2001). Pitfall and bottle-trapping will be carried out over a period of time to be agreed with NRW, with all traps and refugia being emptied daily before 11.00am. Trapping will continue until a sequence of at least five nights minimum has occurred with no further captures.

Following bottle trapping of waterbodies, these will then be drained down to catch any remaining GCN and other amphibians. Screen with a fine (<1.5mm) mesh should be fitted to pumps used for draining down to prevent any remaining newts from being drawn through the pump. Any GCN which escape from waterbodies overnight will be captured by pitfall traps or refuges within fencing surrounding waterbodies.

All herptile fences will be maintained in a herptile-proof condition throughout the trapping period. Vegetation growing alongside the fence will either be cut-back or sprayed-off to prevent it from growing up and breaching the fenceline. All pitfall traps will be equipped with 'escape sticks' for small mammals, and will have lids for secure closure during any periods when daily checking is not possible or when weather conditions are unsuitable (e.g. heavy continuous rain or ambient overnight air temperatures fall below 8°C).

Once enclosed, the site will be visited at daily intervals by an appropriately experienced herptile surveyor, and any herptiles present will be collected and immediately deposited into the retained marshy grassland (east of the site), outside of the herptile-proof fences. Any GCN collected will be temporarily stored in breathable containers, with individuals being kept separately. GCN collection visits will take place before 11.00am on each morning. If ambient

temperatures during the day exceed 22°C, the pitfall and bottle-traps will be inspected at 12-hourly intervals. The integrity of the herptile fences will also be checked daily, and any breaches or damage will be repaired within a maximum of 24 hours.

Herptile checking will continue in each compartment until a minimum of five consecutive visits have occurred, during suitable weather conditions, with no GCN having been encountered. Individual compartments may therefore be deemed clear at different times, but the site as a whole will only be deemed to have been cleared when all of the compartments have achieved five visits with no GCN being encountered.

It is assumed the enabling works and construction activities will commence as soon as the site has been subject to trapping and destructive searching for great crested newts. In the event there is a delay it will be necessary to ensure the maintenance of herptile fencing is good condition until the start of the main construction earthworks. The fences will continue to be inspected daily, and any damage repaired within a maximum of 24 hours. If significant breaching of a herptile fence occurs at any time during the period March to October inclusive, the affected compartment will be subject to a repeat of the daily pitfall trap and refugia checking after repair until a further five clear days without herptiles are achieved.

If damaging public incursions or vandalism are found to be a problem on the site, consideration will be given to enclosing the site with Heras fences, or equivalent secure fencing, in order to deter intruders. The developer will respond adequately to any such trespass and vandalism in order to avoid the invalidation of the trapping exercise. Experience elsewhere suggests that in a 'worse-case scenario', an active security presence may be necessary on the site in order to protect the integrity of the herptile proof fences.

There are some areas of the site which cannot realistically be enclosed within herptile fences, due to topographical or other reasons, or where the probability of herptiles is considered to be low (i.e. areas of dense scrub and woodland). Where these areas will be affected by earthmoving operations in connection with the development, they will be subject to 'destructive searching' for herptiles. This will take place outside the hibernation period for herptiles, which is from November to March inclusive, in accordance with NRW guidelines.

Clearance will be by means of hand-clearance using strimmers, brush-cutters and chainsaws etc. Destructive searching will take place after the end of March and will be completed by the end of October.

In 'destructive searching', the surface 250mm of topsoil will be carefully removed under supervision, in a sequential manner across the site, in order to allow any herptiles which may be present to be individually captured and removed. The soil clearance operations will be observed throughout by one or more herptile-handlers who are able to stop the operation at any time in order to rescue and remove any reptiles which may become evident.

The clearance of soils will be carried out using a wide, toothed bucket on the swing arm of an appropriate excavator, such as a 3CX or an R210. Forward

blading (i.e. bulldozing) will not be allowed. Care will be taken not to either track over areas which have not yet been cleared, or to store the stripped topsoil on such areas.

Once these areas have been destructively searched in this manner, they will be considered to have been cleared of GCN, and normal earthworks and construction activities will then proceed in a conventional manner with no further constraint. However, the services of an appropriately experienced herptile-handler will be kept available on an ‘on call’ basis throughout the remainder of the construction period, in order to deal promptly with any unexpected emergencies involving GCN which may arise.

Areas of conifer plantation will not be fenced and subject to any trapping due to being considered generally unsuitable for GCN. Areas of broadleaved woodland within this will be subject to destructive searching however and waterbodies holding water will be bottle trapped and drained using mesh (in the event they hold water during clearance), as detailed above. These works will need to take into consideration the presence of badger setts in the area, and only be disturbed once it is confirmed that setts are not in use. Where active badger setts are found these will need to be closed under a separate licence from NRW.

### 7.3 Habitat Protection and General Mitigation

To protect retained habitats from pollution including dust, pollution events or sediment run-off, all site activities in proximity to watercourses and waterbodies will be controlled and in accordance with relevant legislation and undertaken in compliance with the relevant Guidance for Pollution Prevention (e.g. GPP514) and industry best practice (CIRIA<sup>15</sup> and CIRIA C741<sup>16</sup>). Additional measures such as silt fencing, silt busters or bales will be used where necessary to prevent silt or contaminants from being released into connecting watercourses.

Management measures to minimise pollution to water and air quality will be also be detailed within the CEMP, and protection measures for retained habitats such as the use of Heras fencing around retained marshy grassland.

Retained lengths of trees and marshy grassland will be securely fenced-off with appropriate temporary fencing (e.g. chestnut paling on scaffold supports, or ‘Heras’ fences) and safeguarded during construction to prevent access and incidental damage by site vehicles and personnel. The trees/woodland will be treated in accordance with British Standard BS5837 (2005). No equipment, machinery or materials will be brought into the retained habitat areas, or stored under retained tree canopies, and ground levels will not be altered within any of the demarcated zones of protection.

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<sup>14</sup> Natural Resources Wales (NRW), the Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA) (2018). Guidance for Pollution Prevention – Works or maintenance in or near water: GPP5 v1.2 Feb 2018. <http://www.netregs.org.uk/media/1418/gpp5-works-and-maintenance-in-or-near-water.pdf>

<sup>15</sup> CIRIA (2018) CIRIA <http://www.ciria.org>

<sup>16</sup> CIRIA C741 ‘Environmental Good Practice on Site’; Fourth Edition (2015).

All contractors carrying out demolition and/or construction work on the site will be informed about the potential presence of GCN, their protected status and the conditions and requirements of the development licence, by means of a 'toolbox talk' at the outset of the works. The toolbox talk will be delivered by a suitably qualified person. It will be clearly understood that in the event of any GCN being found during works, all works will cease in the affected area and appropriate expert advice sought.

## 7.4 Site Design

The layout of the developed site will incorporate landscape and design features to accommodate GCN, as shown in Figure 7.

Adjacent marshy grassland, in the eastern part of the site, retained as part of the development, will be enhanced for GCN/reptiles (and used as the receptor site for any translocated GCN). Enhancements will comprise the creation of herptile refugia/hibernacula (at least ten) which will provide hibernation and shelter opportunities for GCN (See Appendix A). This enhancement will be undertaken prior to any GCN being relocated in 2022.

The proposed landscaping and drainage for the site comprises SuDS including three waterbodies, and one pond created specifically for GCN (and no additional drainage functions) with a total of approximately 0.3 ha of open water. These new waterbodies will compensate for the loss of a number of ephemeral waterbodies (0.16 ha) currently present within the site including one waterbody where potential evidence of GCN has been found (i.e. the eDNA result). These new waterbodies will comprise a mix of temporary and permanent waterbodies, designed with GCN, in mind. The SuDS/drainage waterbodies, will be approximately 0.22 ha in extent, and are likely to be ephemeral and only support water for some of the year due to their drainage functions. This is similar to the regime of waterbody 4 that dries on occasions. One waterbody, which will be approximately 0.008 ha / 80m<sup>2</sup>, will not have any drainage functions and will therefore have water permanently. All waterbodies will be at least 1m deep at the centre, with gently sloping edges.

To reduce the risk of the accidental introduction of invasive non-native species, the newly created GCN pond will not be planted, instead be allowed to colonise naturally. SuDS features will be planted with native waterplants. No features will be stocked with fish. The waterbodies will stand in areas of grassland and woodland. The SuDS ponds will be created as part of the site's construction (between 2022 and 2024) whilst the single pond, which has no drainage function, will be created prior to any GCN being relocated in 2022.

The grassland surrounding these waterbodies will be species rich sward which will provide commuting and foraging habitat for GCN, moving to and from waterbodies. Grassland will be mown to 200-250mm, once or twice a year in late summer or autumn, with all arisings being removed from the site. Any mowing will need to avoid any GCN hibernaculae that are present within the site.

New tree planting will reinforce existing tree lines and create areas of scattered trees and woodland which will also provide foraging habitat for GCN. In addition,

areas of tree planting and woodland may also provide hibernation habitat. Grassland creation and tree planting will be undertaken once the construction works are complete in areas of the site (between 2022 and 2024).

Where continuity of habitat corridors is breached by the new road which runs around the eastern periphery of the buildings, connectivity of GCN habitats will be maintained by means of subsurface newt underpasses (see Figure 4). The precise number and layout of the newt underpasses will be determined at the detailed planning stage. The underpasses will be supplemented by permanent newt-fences to direct any commuting newts into the underpass entrances and/or to prevent them wandering onto the roads and other inimical hard surfaces. In particular it is considered desirable that GCN are prevented from migrating onto the main working area of the site (see Figure 4). Underpasses and newt fences will all be constructed in accordance with the specifications provided by EN (2001) and DMRB (2005; 2001). Some examples of suitable underpasses are shown at Appendix A.

Permanent newt fencing will also be designed to ensure that newts are not able to access drainage features within roads and pavements, which could trap them. The permanent newt fencing will also direct newts away from bio retention drainage channels located in the north of the site (as detailed in the drainage design strategy).

Careful consideration will be given to the design and layout of lighting in the developed site at the detailed planning stage, as this can adversely affect activity by a variety of nocturnal fauna, potentially including GCN. Light spillage into the waterbodies and adjacent terrestrial habitats will be avoided. Measures such as low-level lighting columns, cut-off lanterns with hoods, and low pressure sodium lamps or mercury vapour lamps fitted with appropriate UV filters and hoods, will be used where appropriate.

## 7.5 Residual Impact Assessment

Providing the above mitigation measures as outlined in sections 7.2 -7.4, it is not anticipated that there would be any long-term residual effects from construction or operation to GCN populations.

It is acknowledged that the proposed landscaping will not be fully implemented until later stages of the construction programme (between 2022 and 2024); however, the landscaping and habitat enhancement/creation proposed prior to the translocation of any GCN (i.e. creation of GCN pond and enhancement of retained marshy grassland) is considered sufficient as compensatory habitat for any relocated GCN within the site due to the assumed small population. Further landscaping including the creation of SuDS ponds, species rich open mosaic grassland, tree planting and GCN specific infrastructure (newt underpasses and fencing), which will be completed during the remaining construction programme, will however provide additional habitat for foraging, sheltering and hibernating GCN within the site.



The proposed long-term monitoring (as detailed below in Section 10) will confirm any residual effects to habitats and or species, and where necessary identify further mitigation measures that may be required.

## 8 Long Term Management

The retained and new habitats of the site, including the retained marshy grassland, retained and newly planted trees, new waterbodies, new woodland and grassland, and newt underpasses etc, will be subject to an initial five-year management plan (Figure 7). These will be designed to maintain and enhance their value to wildlife. The management will subsequently be reviewed and revised at five-yearly intervals. Adequate resources will be made available by the developer to ensure the revision of the management and the maintenance of the habitats for a minimum of 25 years after development.

The retained and new habitats of the site, including the large pond and carr area, linear park, new plantings, new hedgerows and newt underpasses etc, will be designed to maintain and enhance their value to wildlife. The management prescriptions will subsequently be reviewed and revised at five yearly intervals.

A summary of management prescriptions are detailed below in Table 5 and a full timetable is included at Appendix B. Figure 7 also illustrates the management areas.

Table 5: A summary of management tasks relevant to key features on the site

Key Features
<ul style="list-style-type: none"> <li>• One existing waterbody (waterbody 4) could support GCN due to the presence of a positive eDNA sample. Surrounding grassland is likely to provide optimal foraging habitats and areas of broadleaved trees/woodland may also offer hibernation opportunities. Surrounding ephemeral waterbodies may also support GCN at times when they hold water. These waterbodies and surrounding terrestrial habitat will be lost as a result of the proposed development within the site.</li> <li>• Four new waterbodies will be created in the south eastern part of the site which will be surrounded by grassland, scattered trees and woodland.</li> <li>• Existing marshy grassland east of the site will be retained and retain connectivity to newly created habitats such as ponds, grassland and woodland.</li> <li>• Ten refugia within marshy grassland will provide a location for GCN to shelter and hibernate.</li> <li>• Where habitats are breached such as by new roads, subsurface underpasses will be installed which are suitable for use by GCN and are well connected to adjacent habitats, to provide connectivity between habitats within the site.</li> </ul>
Management Considerations
<ul style="list-style-type: none"> <li>• Casual vandalism and disturbance to newly created and retained habitats</li> <li>• Overshading of waterbodies and build up of vegetation/sediment</li> <li>• Encroachment of grassland with scrub and trees</li> </ul>

<ul style="list-style-type: none"> <li>• Establishment of Invasive Non-Native species (INNS) within newly created/retained habitats</li> <li>• Establishment of fish populations within new waterbodies</li> <li>• Build up of sediment/vegetation at access/exit points of subsurface underpasses</li> </ul>			
<p>Management Aims</p>			
<ul style="list-style-type: none"> <li>• Maintain habitats within the site to provide areas for breeding, foraging, shelter and hibernation</li> <li>• Maintain a small population of great crested newts within the site</li> <li>• Ensure habitats are well connected and can facilitate movement by GCN around the site particularly between breeding habitat and terrestrial habitats.</li> </ul>			
<p>Management Objectives</p>			
<p>Maintain new waterbodies in optimal condition for GCN breeding and ensure well connected to adjacent terrestrial habitats</p> <p>Maintain terrestrial habitats within the site including grassland, tree planting and marshy grassland are in optimal condition for use by foraging, sheltering, and hibernating GCN</p> <p>Ensure connectivity of habitat corridors within the site is maintained to allow movement of GCN</p> <p>Minimise disturbance of GCN habitats within the site from vandalism etc</p> <p>Ensure invasive non-native species to do establish and deteriorate the condition of habitats</p> <p>Maintain the condition of GCN underpasses and fencing</p>			
Waterbodies	Year	Return (years)	Method
<ul style="list-style-type: none"> <li>• Monitor proportions of vegetation and open water within the pond, and remove vegetation where necessary</li> </ul>	2	2	A
<ul style="list-style-type: none"> <li>• Monitor for build-up of sediment and leaf litter, desilt where necessary</li> </ul>	2	As required	B
<ul style="list-style-type: none"> <li>• Clearance of litter etc from ponds</li> </ul>	1-5	Annually	-
<ul style="list-style-type: none"> <li>• Monitor for invasive alien species and remove as required</li> </ul>	1-5	Annually	C/D
<ul style="list-style-type: none"> <li>• Monitor water for presence of fish, and remove if necessary</li> </ul>	1-5	Annually	E
<ul style="list-style-type: none"> <li>• Undertake clearance of shading trees and scrub around pond margins where necessary</li> </ul>	2	2	H

<b>Grassland</b>			
<ul style="list-style-type: none"> <li>• Maintain diverse sward within open mosaic grassland, mowing once or twice a year in later summer/autumn, and removing all arisings</li> </ul>	1-5	Annually	G
<ul style="list-style-type: none"> <li>• Where possible, between 1m and 5m margin of grassland around ponds and boundary features such as hedgerows should be left uncut, to provide dense cover to sheltering GCN and other fauna throughout the year.</li> </ul>	1-5	Annually	G
<ul style="list-style-type: none"> <li>• Keep amenity grassland areas short, cutting regularly to an average height of 100-150mm</li> </ul>	1-5	As required	-
<ul style="list-style-type: none"> <li>• Remove encroaching scrub where necessary</li> </ul>	2	2	H
<ul style="list-style-type: none"> <li>• Monitor for invasive species and remove as required</li> </ul>	1-5	Annually	D
<b>Trees and woodland</b>			
<ul style="list-style-type: none"> <li>• Manage woodland, trees scrub through rotation coppice</li> </ul>	1-5	2	H
<ul style="list-style-type: none"> <li>• Monitor trees and undertake replanting where necessary (i.e. if new planting fails or disturbed/damaged by ongoing development/vandalism)</li> </ul>	1 -5	Annually	-
<ul style="list-style-type: none"> <li>• Monitor for invasive species and remove as required</li> </ul>	1-5	Annually	D
<b>Underpasses and permanent fencing</b>			
<ul style="list-style-type: none"> <li>• Monitor newt underpasses to ensure tunnels are clear and either ends well connected to adjacent GCN habitat ie rough grassland, trees and woodland</li> </ul>	1-5	Annually	-
<ul style="list-style-type: none"> <li>• Monitor newt underpasses and fencing to ensure it remains in good working condition</li> </ul>	1-5	Annually	-

## 9 Management Methods

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### A. Maintenance of Pond Vegetation

Wetland vegetation should not need much maintenance, but may need occasional clearance to maintain open water. Where this is required, clearance will be undertaken back from the leading edge using either hand clearance or toothed ditching bucket on swing arm of an appropriate excavator. Clearance will be undertaken during the winter months to avoid harming GCN, and nesting birds. Cleared material will be left on the pond bank for 24 hours, and any invertebrates present allowed to escape back into the water, before removing from site for disposal. Where large areas require clearance, this will be undertaken in stage, spread over several seasons.

### B. De-siltation of Ponds

The ponds may require de-silting to encourage the development of open water and emergent vegetation. Due to its size and sensitivity, the larger pond will require periodic removal of small areas of silt and any scrub/willow carr present, to deepen the pond and provide more open water. Care will be taken to ensure a reasonable proportion of marginal and emergent vegetation remains in the pond. For the smaller ponds, it is possible the entire pond could be de-silted, and so a proportion of emergent and marginal vegetation will need to be replanted once the clearance works have been completed. All pond clearance works will be undertaken, during the winter (November to January) to avoid disturbing GCN and nesting birds, preferably by hand with care being taken to ensure that any pond linings are not damaged. If large amounts of silt are removed, an excavator may be required. This will need to be a tracked excavator with hinged arm than can swivel 360 degrees. Chemicals will not be used, unless they are required for the treatment of invasive 'alien' species and in which case, should be used as a final resort.

This will need to be undertaken under the supervision of a great crested newt licensed ecologist, who will be able to handle any GCN if required.

### C. Clearance of Invasive Aquatic Species

No Aquatic invasive species have been recorded within the site to date, however it is possible that new species may be introduced and become problematic. Should this be the case, and new species are identified during annual site monitoring, species specific treatment and removal will be detailed within a Invasive species management plan, in agreement with the client and NRW, at the time. This is likely to include hand, mechanical and chemical treatment as appropriate.

### D. Clearance Invasive terrestrial Species

Rhododendron (*Rhododendron ponticum*) and cotoneaster species (*Cotoneaster bullatus* and *C. simonsii*) have been recorded within the site. These species and new species may establish themselves within terrestrial habitats of the site post

construction, and would therefore require treatment to prevent further encroachment.

The methods of treating rhododendron will depend on the size, life stage and accessibility of the plant. In general stem treatment is the most effective and efficient method of killing large rhododendron bushes. Where there is no access to treat stems, an overall foliar spray is recommended. Small bushes are easily treated by foliar sprays cannot be applied to larger bushes, which must therefore be reduced in size before herbicide application can be given. This can be done using a mechanical flail or by manual cutting.

Cotoneaster can be controlled either using mechanical control methods such as removing the plants and root mass. Any plant materials which are removed would need to be chipped or burnt on site or removed to a licensed landfill as controlled waste. It is also possible to spray smaller plants with a herbicide however chemical uptake in larger plants is reduced. Larger stumps should be stump treated after cutting to prevent regrowth.

If herbicides are to be used in any water catchment area where there is a risk of water contamination, it is essential to inform the relevant regulator (i.e. NRW) before the start of operations. It is recommended that, where applications are made within 10 m of a permanent watercourse or 20 m of standing water, only a glyphosate-based product with no hazard rating for aquatic life will be used.

## **E. Fish removal**

The ponds will not be stocked with fish, and where fish are accidentally introduced into any of the ponds immediate action will be undertaken to remove fish and ensure the existing or future population of GCN are not affected.

All methods of fish removal are subject to licensing and/or constraints. As such, permissions and consents will be required from NRW prior to the implementation of any proposals to remove fish from ponds within the site. NRW will need to be consulted in the first instance.

There are a number of ways of removing fish from ponds. The only way to guarantee fish removal is through complete draining and drying out of a pond, however this is very disruptive to local wildlife and as such will require particular mitigation measures to protect GCN and other wildlife. Other methods include netting, preferably in the winter, which will involve lowering the levels of water using a pump or siphon and netting any fish present however this it is difficult to capture all fish using this method, and as such it is recommended to combine with other methods such as electro fishing and the application of chemicals. Electro fishing involves an experienced team with specialised equipment, to stun the fish although this is largely limited to use on larger fish. Where draining is not possible, the removal of fish may be achieved with the authorised use of a piscicide such as Rotenone. Such chemicals will immobilise fish and allow them to be caught at the surface of the water.

## **F. Management of Grassland**

Open mosaic grassland will be managed by mowing once or twice a year to maintain a diverse tall grassland sward, which is attractive to GCN and other fauna. These areas of grassland will be mown to 200- 250mm once or twice per year, in the late summer or autumn (September to October), with all arisings being removed from the site.

Care will be taken to ensure that any GCN hibernaculae within grassland area will not be disturbed during mowing.

Where there amenity grassland areas, a grassland will be kept mown to an average height of 150mm all year round. Mowing will be by means of strimmer: gang-mowers will not be used.

Where possible, between 1m and 5m margin of grassland around ponds and boundary features such as hedgerows should be left uncut, to provide dense cover to sheltering GCN and other fauna throughout the year.

## **G. Clearance of Trees and Encroaching Scrub**

Trees and scrub will be cleared by the cutting of stems to ground level, with follow-up treatment of the cut stems with a suitable herbicide (eg Glyphosate Pro-Biactive) to prevent regrowth. All arisings will either be removed from the site for disposal, although some proportion could be left as piles of cut material ('ecopiles') under shade within scrub or woodland areas for use as a refuge by fauna species. A return period of 2 years will be suitable in most cases.

## 10 Long Term Population Monitoring

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Post-development monitoring will comprise surveys in the new ponds to detect the presence of, and assess the populations of, GCN.

The monitoring shall include biennial abundance counts and Habitat Suitability Index (HSI) assessments. In respect of biennial surveillance, the frequency of monitoring visits shall be increased in the event of fish and or aquatic invasive non-native species are detected.

The post-development monitoring would also include the on-going recording and assessment of any sources of adverse impact affecting the site, including vandalism, deliberate or accidental disturbance, and unauthorised fish-stocking etc. The results of this monitoring would be used to modify the management prescriptions accordingly. All monitoring records would be provided to NRW and BGCBC by means of an biennial reports.

This monitoring will be carried out for 10 years and then reviewed with NRW and BGCBC. Further monitoring for the life time of the strategy (25 years) will be considered at this time.



## 11 Responsibilities

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The site owner, CiNER Glass Works Ltd., will be person responsible for:

- Compliance with legal consents, statutory requirements and compliance with planning conditions relating to nature conservation;
- Implementation of long-term site management and monitoring of mitigation measures for protected species during and post development;
- Where necessary organising measures to rectify unsuccessful mitigation and or modify management works, under consultation with the supervising ecologist;
- Financial responsibility of mitigation measures, future management of the site and monitoring for great crested newts.

No section 106 to secure mitigation is considered to be necessary, since the developer will be the site owner. It is anticipated that the implementation of mitigation and compensatory measures as detailed within this Conservation Strategy will be a condition of the subsequent planning consent.

CiNER Glass Works Ltd will deliver landscaping and mitigation measures across the site, as part of the sites development, in accordance with the 'site design' and ecological mitigation strategy.

The services of an appropriately qualified and licensed ecologist (the 'Supervising Ecologist') will be available on an 'on-call' basis for the duration of the sites habitat management, in order to provide further advice and or deal with any protected species issues, if and as they arise.

A licensed ecologist will also be required to undertake monitoring of GCN within the site.

## Figures

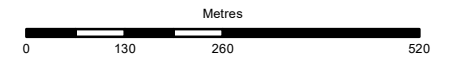
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## Figure 1: Site context



 Planning Application Boundary

Coordinate System: British National Grid



Rev	Date	By	Chkd	Appd
F1	2021-07-12	TK	PM	PH

**ARUP**



Client  
**CINER Glass Ltd.**

Project Title  
**Dragon Glass Bottle Manufacturing Facility**

Drawing Title  
**Site Context**

Scale at A3  
**1:10,000**

Role  
**For Issue**

Arup Job No <b>273927</b>	Rev <b>F1</b>
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Name  
**002**

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

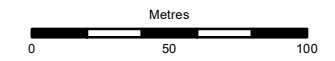
## Figure 2: Waterbodies



### Legend

- Site boundary
- Waterbodies

Coordinate System: British National Grid



F1	2020-11-20	EA	EA	PC
Rev	Date	By	Chkd	Appd

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Client

**CINER Glass Ltd.**



Project Title

**Dragon Glass Bottle Manufacturing Facility**

Drawing Title

**Waterbody Locations**

Scale at A3

**1:2,750**

Role

Suitability

**For Issue**

Arup Job No

**273927**

Rev

**F1**

Name

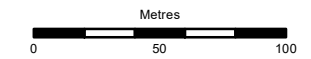
**002**

### Figure 3: Phase 1 plan



- Legend**
- Site boundary
  - A1.1.1 - Broadleaved woodland - semi-natural
  - A1.2.2 - Coniferous woodland - plantation
  - A2.1 - Scrub - dense/continuous
  - A2.2 - Scrub - scattered
  - B1.2 - Acid grassland - semi-improved
  - B5 - Marsh/marshy grassland
  - G1 - Standing water
  - J1.3 - Cultivated/disturbed land - ephemeral/short perennial
  - J3.6 - Buildings
  - J5 - Gravel/hard standing
  - A2.2 - Scrub - scattered
  - A3.3 - Mixed parkland/scattered trees
  - E2.1 - Acid/neutral flush
  - J2.8 - Earth bank
  - J2.4 - Fence
  - J4 - Bare ground
  - G2 - Running water
  - G1 - Standing water
  - Target Notes

Coordinate System: British National Grid



F1	2020-11-20	KJ	CP	PC
Rev	Date	By	Chkd	Appd

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Project Title

**Dragon Glass Bottle Manufacturing Facility**

Drawing Title

**Extended Phase 1 Habitat Survey**

Scale at A3

**1:3,000**

Role

Suitability

**For Issue**

Arup Job No

**273927**

Rev

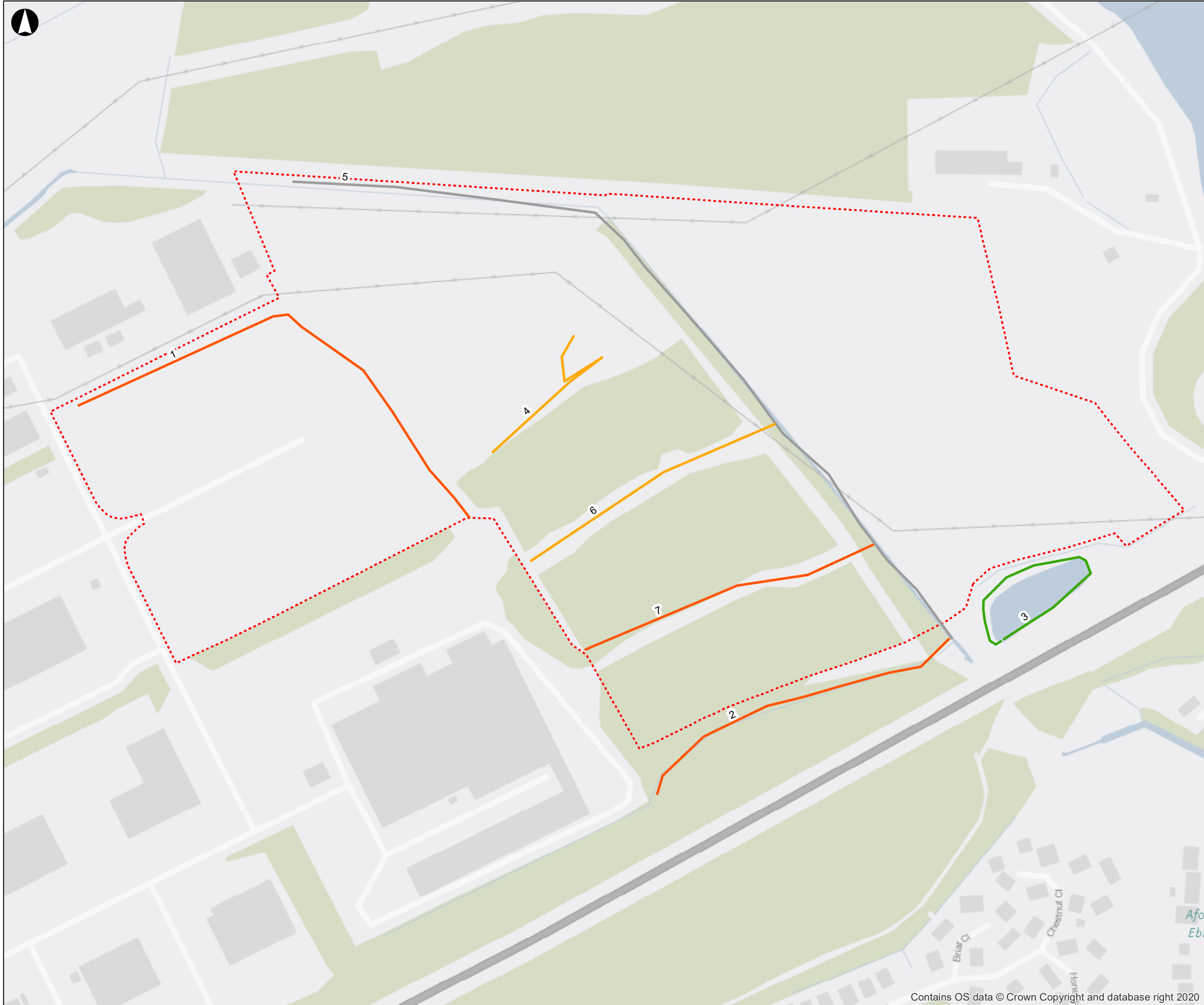
**F1**

Name

**004**



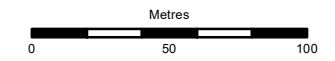
## Figure 4: HSI results



### Legend

- Site boundary
- HSI Category**
- Good
- Average
- Below average
- Unsuitable

Coordinate System: British National Grid



F1	2020-11-20	EA	EA	PC
Rev	Date	By	Chkd	Appd

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**CINER Glass Ltd.**



Project Title

**Dragon Glass Bottle Manufacturing Facility**

Drawing Title

**Habitat Suitability Index (HSI) Assessment Results**

Scale at A3

**1:2,750**

Role

Suitability

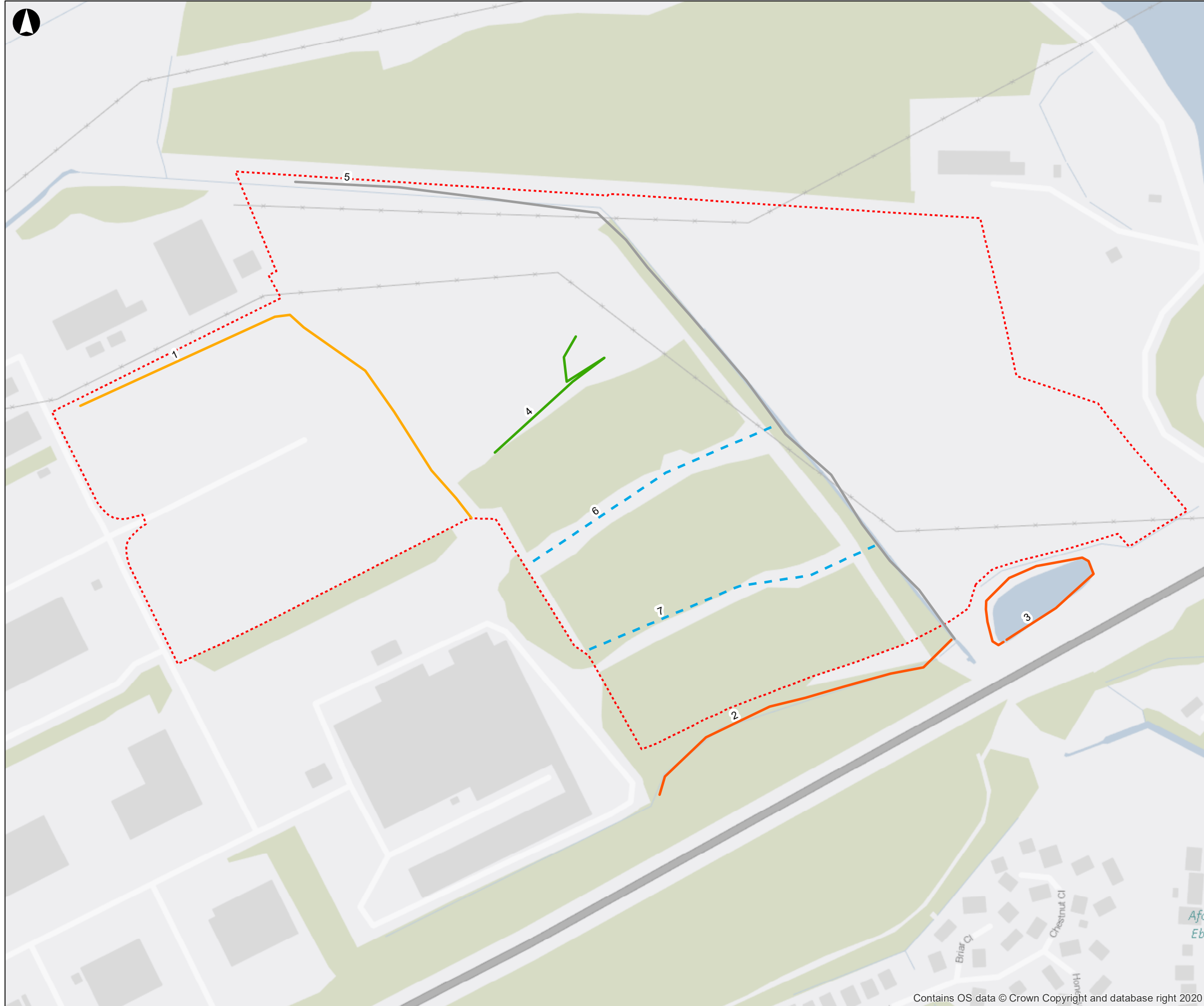
**For Issue**

Arup Job No  
**273927**

Rev  
**F1**

Name  
**004**

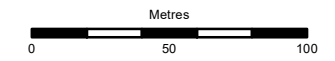
## Figure 5: eDNA results



**Legend**

- Site boundary
- eDNA Result**
- Positive
- Negative
- Inconclusive
- Unsuitable
- eDNA not possible (dry)

Coordinate System: British National Grid



F1	2020-11-20	EA	EA	PC
Rev	Date	By	Chkd	Appd

# ARUP

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Client

**CINER Glass Ltd.**



Project Title

**Dragon Glass Bottle Manufacturing Facility**

Drawing Title

**eDNA Results**

Scale at A3

**1:2,750**

Role

Suitability

**For Issue**

Arup Job No

**273927**

Rev

**F1**

Name

**005**

Figure 6: GCN site clearance plan

- Key**
- Site Boundary
  - Area inside Herptile Fencing
  - Destructive searching required
  - No fencing or refugia in this area
  - Retained marshy grassland to be enhanced
  - Retained scattered trees along watercourse
  - One Way Fencing
  - Herptile Fencing
  - Waterbody

**Notes:**

Coordinate System: British National Grid  
Datum: OSGB 1936  
Projection: Transverse Mercator

**Interest:**  
N/A

**Location:**  
Heads of the Valleys Road, Rassau,  
Blaenau Gwent, NP23 5DD

**Coords:** 315905E 212795N

**Scheme Name:**  
EP - CiNER

**Drawing Name:**  
Figure 6: GCN site clearance plan

**Drawing No:** 208796\_PLN\_INFO\_8.1

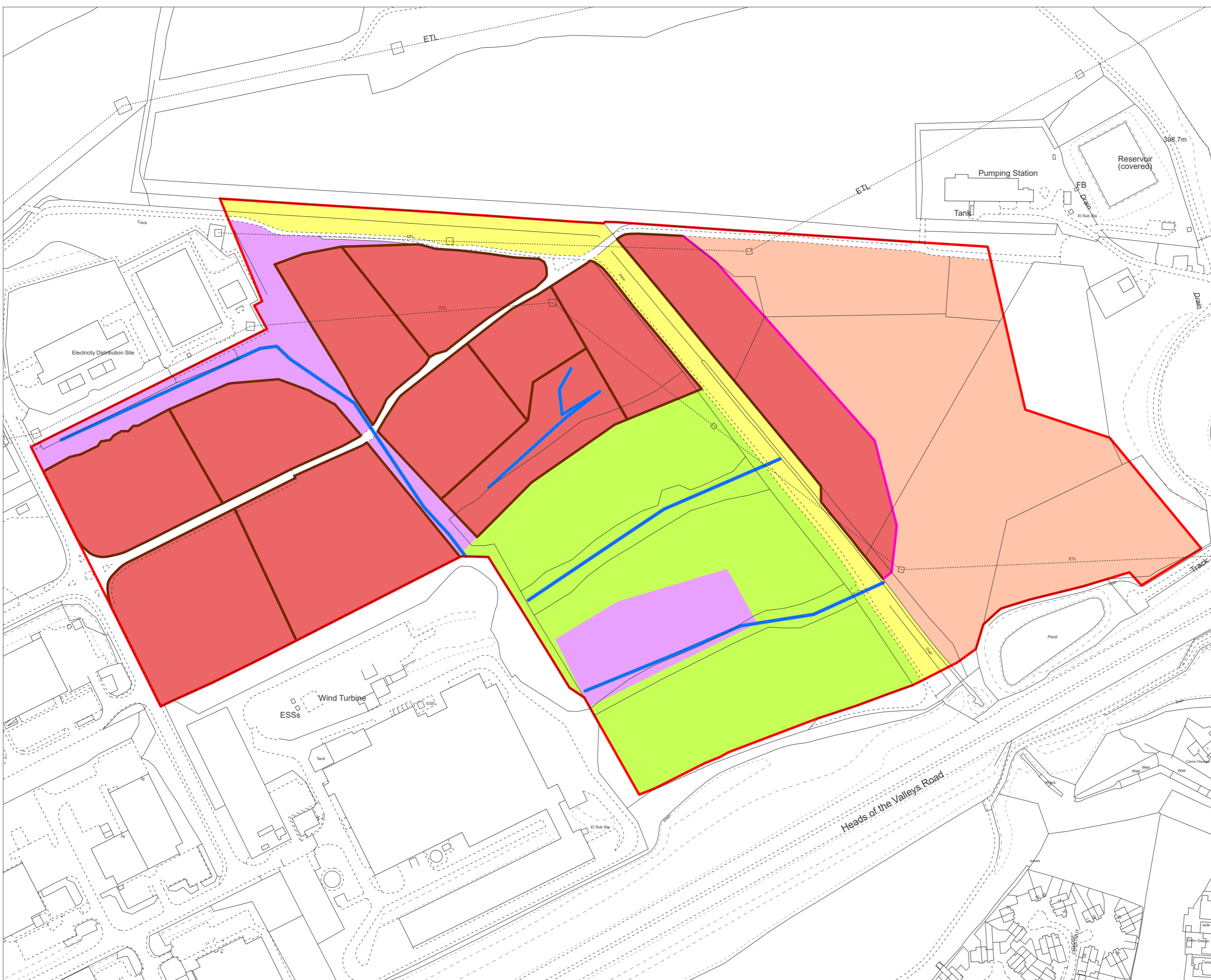
Rev	Date	Description
-	10.09.2021	First Issue

<b>Drawn:</b>	AL
<b>Approved:</b>	CP
<b>Sheet No:</b>	1 of 1
<b>Sheet Size:</b>	A3



**ARUP**























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Site Plan 0 50 100 200 300 400 500 600 700 Meters Scale: 1:2500

Drawing Location: C:\Users\andrew.lambe\Documents\Dalcour Maclaren\EP - CiNER - Geomatics\01 DM Plans\2021\0903\_208796\_PLN\_INFO\_8.1.aprx

## Figure 7: Habitat landscaping for GCN

- Key**
-  Building
  -  PM1 - Amenity Planting
  -  PM2 - Wet Woodland
  -  PM3 - Native Woodland
  -  PM4 - Open Mosaic Grass
  -  PM6 - Raingarden
  -  PM7 - Amenity Lawn
  -  PT1 - In-Situ Exposed Aggregate
  -  PT2 - Reinforced Concrete
  -  PT3 - Resin Bound Gravel
  -  PT4 - Gravel Reinforced With Geogrids
  -  PT5 - Gravel (Undercroft)
  -  PT6 - Previous Asphalt (Car Park)
  -  PT7 - Asphalt (Carriageway)
  -  PT8 - Asphalt (Footway)
  -  Restored Marshy Grassland & Heathland
  -  Water
  -  Underpass
  -  Permanent Newt Fencing
  -  GCN Hibernaculum
  -  Existing Tree
  -  Proposed Tree

Coordinate System: British National Grid  
 Datum: OSGB 1936  
 Projection: Transverse Mercator

**Location:**  
 Heads of the Valleys Road, Rassau,  
 Blaenau Gwent, NP23 5DD

**Coords:** 315905E 212795N

**Scheme Name:**  
 EP - CiNER

**Drawing Name:**  
 Figure 7: GCN Landscaping Plan

**Drawing No:** 208796\_PLN\_INFO\_9.1

Rev	Date	Description
-	10.09.2021	First Issue
A	15.09.2021	Amended pond location

**Drawn:** AL  
**Approved:** CP  
**Sheet No:** 1 of 1  
**Sheet Size:** A3



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## Appendix A

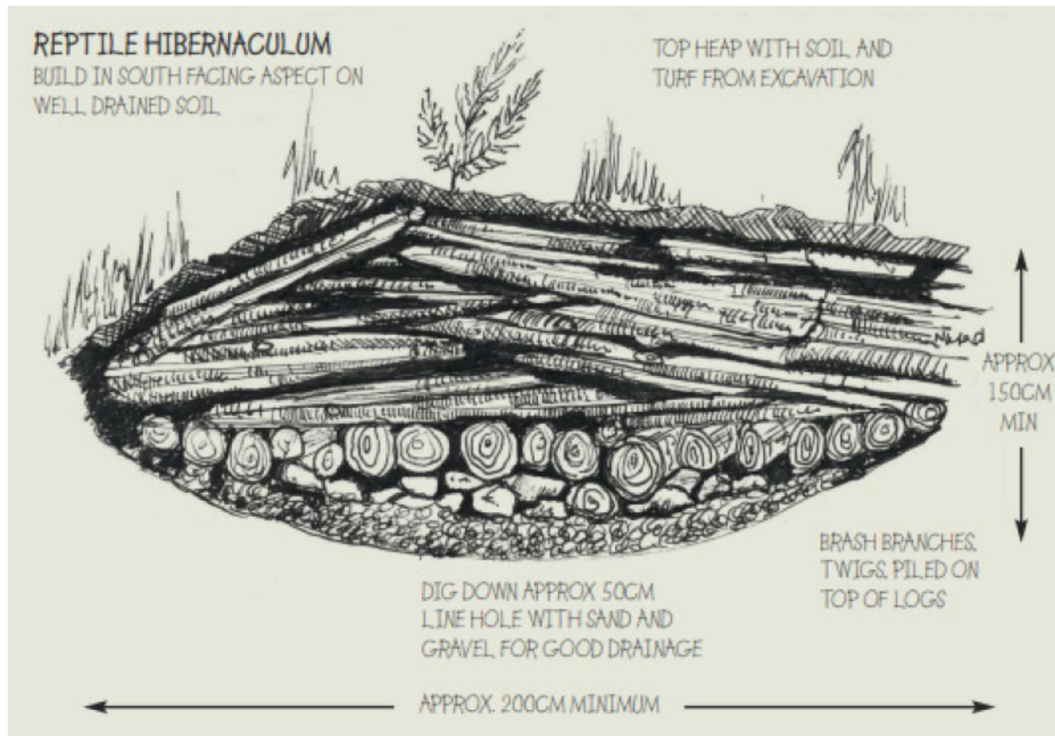
# A1 GCN underpasses

---



'Aco 300' GCN tunnel sections with custom stone-built headwalls, used on footpaths

## A2 GCN refugia/hibernacula



Taken from ARG Advice Note 11

## Appendix B

## B1 Tables detailing 5-year management in newly created and retained/enhanced habitats

Table 6: 5 year Management of additional landscaped areas created between 2023 and 2025 (GCN pond and marshy grassland)

Areas / tasks	2023						2024						2025						2026						2027											
	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D						
<b>Waterbodies (GCN pond)</b>																																				
Monitor proportions open water and remove vegetation where necessary																																				
Monitor for build up of vegetation/silt and remove as required																																				
Clearance of litter etc from waterbodies																																				

	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D
Monitor for invasive species and remove as required																														
Monitor for fish as remove as required																														
<b>Marshy Grassland</b>																														
Grassland cutting																														
Scrub removal																														
Treatment of Non native species																														
<b>Herptile fencing</b>																														
Maintain herptile 'no pass' fencing around perimeter o construction areas																														

Table 7: 5 year Management of additional landscaped areas created between 2023 and 2024 (open mosaic grassland, tree planting, SuDS ponds, and newt underpasses)

Areas / tasks	2025						2026						2027						2028						2030											
	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D						
<b>Waterbodies (SuDS)</b>																																				
	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D
Monitor proportions open water and remove vegetation where necessary																																				
Monitor for build up of vegetation/silt and remove as required																																				







where required																																
<b>Underpasses and fencing</b>																																
Monitor newt underpasses ensure tunnel clear																																
Monitor condition of fencing and underpasses																																