

APPENDIX 8.6

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WASTE RESOURCE MANAGEMENT



WELSH GOVERNMENT

COSMESTON

REPTILE SURVEY REPORT

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WELSH GOVERNMENT

COSMESTON

REPTILE SURVEY REPORT

SEPTEMBER 2018

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ENERGY AND CLIMATE CHANGE
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INFRASTRUCTURE AND UTILITIES
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EXECUTIVE SUMMARY

Wardell Armstrong LLP was commissioned by Welsh Government to undertake reptile surveys at a site at Cosmeston, Penarth, located at approximate National Grid Reference ST17964 68945.

The area of detailed ecological study referred to as the 'site' comprises a working livery yard with stable block buildings, improved and semi-improved grassland fields utilised for horse pasture, arable fields, a disused railway line, boundary hedges and woodland blocks and covers of approximately 29 hectares. The Ty'r Orsaf Site of Importance for Nature Conservation (SINC) is located at the south west corner of the site.

The results of the reptile survey undertaken in 2016 and 2017 have confirmed the presence of a 'Good' sized population of slow worm within the site.

The proposed development of the site will result in the loss of suitable reptile habitats within the site. It is considered probable that the site clearance and construction works will have a significant adverse effect on reptiles including the risk of killing and injuring individuals. Mitigation measures have been recommended to mitigate potential harm and injury to reptiles and for habitat losses. Mitigation measures include the following measures to be implemented during earthworks and construction:

- Briefing all relevant contractors regarding reptiles;

- Discouraging reptiles from construction working areas;

- Ground work in areas of key reptile habitat to be undertaken outside reptile hibernation periods; and

- Translocation of slow worms to either an on-site or off-site reptile receptor area to be agreed with the Council's ecologist.

Habitat creation and design proposals should include:

- Provision of dense and scattered scrub, rough and species rich grassland corridors/within areas of green infrastructure;

- Creation rubble and wood piles (reptile hibernacula);

- Creation of south and south-east facing slopes within areas of green infrastructure; and

- Provision of bare and sparsely vegetated areas.

The design of the green infrastructure for the site should include provision of suitable wildlife corridors and habitat suitable for reptiles to encourage dispersal into the newly created suitable habitats within the completed development.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Welsh Government (WG) to undertake reptile surveys at a site in Cosmeston, Penarth located at approximate National Grid Reference ST17964 68945.

1.2 Report Objectives

1.2.1 The purpose of this report is to detail the results of the 2016/2017 reptile surveys assessing presence and the population of reptiles using the site and evaluate the value of the reptile populations present. Mitigation and enhancement opportunities are also discussed, where appropriate.

1.3 Site Description

1.3.1 The site is situated in the Vale of Glamorgan to the east of Lavernock Road (B4267) and south of 'Lower Penarth' housing estate as shown on Drawing Number CA11040-001/RevA (Site Location and Ecological Survey Area). Farmland borders the site immediately to the east beyond which is the coastline of the Severn Estuary, with further agricultural land present to the south east. Part of the south-western part of the site is bordered by the 'Fort Road' which leads to the Lavernock Holiday Village.

1.3.2 The site area is shown on Drawing Number CA11040-002 (Habitat Plan) and covers approximately 29 ha. The area of detailed ecological study referred to as the site comprises a working livery yard with stable block buildings to the east of the site and semi-improved and improved grassland fields extending to north, south and west. The Ty'r Orsaf SINC is located at the south west corner of the site surrounded by broadleaved woodland. The north and eastern boundaries of the site are bordered by intact hedgerows, with broadleaved woodland dominating the western boundary and residential properties to the north.

1.4 Description of Development

1.4.1 The ecological studies are required to inform an outline planning application with accompanying masterplan for a proposed residential development.

1.5 Legislative Framework

1.5.1 All UK reptile (herpetofauna) species found naturally are protected under the Wildlife and Countryside Act 1981 (as amended). The adder (*Vipera berus*), common lizard

(*Zootoca vivipara*) and slow worm (*Anguis fragilis*) receive partial protection under this Act, making it illegal to intentionally kill, injure or sell them.

- 1.5.2 Rare herpetofauna species including the sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*) and their respective habitats are fully protected under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended) and under the Conservation of Habitats & Species Regulations 2017. It is illegal to kill, injure, capture, handle or disturb them, and the places they use for breeding, resting, shelter and protection are also protected from being damaged or destroyed (their habitat). It is also illegal to obstruct these animals from using such areas.
- 1.5.3 Works affecting breeding or terrestrial habitat of fully protected herpetofauna species as such may require a licence from (Natural Resources Wales (NRW)). A licence may be required, if impacts cannot be avoided or reduced sufficiently to avoid triggering an offence.
- 1.5.4 Slow worm, grass snake, adder, common lizard and sand lizard are included on Section 7 of The Environmental (Wales) Act 2016. Species listed on this section are considered to be of principal importance for the conservation of biodiversity in relation to Wales.

1.6 Reptile Ecology

- 1.6.1 Sand lizard and smooth snake have a restricted distribution. Smooth snake populations in the UK are limited to lowland heath in Hampshire, Dorset and Surrey. A large proportion of the sand lizard population can also be found in these areas but there are also some smaller populations in the Weald and Thames Basin heathlands and they can be found on sand dunes in Merseyside, Wales and south-east England. Both species are geographically absent from the study area. Thus, these species are not mentioned further in this report.
- 1.6.2 Grass snakes are most commonly associated with wet habitats such as ponds, lakes, marshes, streams, ditches and rivers and have a diet consisting almost entirely of amphibians. The adder and slow worm are typically associated with drier, heathland habitat and the common lizard is found in a wide range of habitats. All these species are "cold blooded", and need to bask in sunlight: such basking opportunities are readily found on south-facing slopes, and free-draining railway embankments are, traditionally, good sites to find these species.

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken as part of the Preliminary Ecological Appraisal (PEA) in February 2017 and was informed by review of existing available information provided by South East Wales Biodiversity Records Centre (SEWBReC), for a 2km search radius from the sites boundary. Ordnance Survey (OS) and satellite mapping was also used to gain contextual habitat information.

2.2 Extended Phase 1 Habitat Survey

2.2.1 An Extended Phase 1 Habitat Survey was undertaken at the site in September 2016 and updated in April 2017. The purpose of this survey was to map the habitats present within the site and to assess the potential for protected species to be present.

2.2.2 The semi-improved grassland, woodland edge, tall ruderals and scrub habitats around the site were identified as having the potential to support common reptiles.

2.3 Reptile Survey

2.3.1 There is presently no definitive methodology for surveying for reptiles. The methodology for this survey was principally derived from guidance given in the Froglife Advice Sheet 10: Reptile Survey leaflet¹ and the Herpetological Workers Manual² which uses artificial refugia which provide an opportunity for reptile species to hide and to heat up (during suitable weather conditions) whilst minimising exposure to predators.

2.3.2 A total of 86 reptile refuges were used during the reptile survey, locations of these are shown on Drawing Number CA11040-007 (Reptile Refuge Location Plan and Survey Results). Sixty artificial refugia (rectangles of roofing felt, each about 0.5m²) were laid out on 2nd September 2016 with an additional twenty-six laid out on the 25th April 2017 following a revision to the site boundary. Twenty survey visits were undertaken over the months of September 2016, May 2017 and September 2017 to establish presence/absence and assess population size.

¹ Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

² Joint Nature Conservation Committee (2003) *Herpetofauna Workers' Manual*, Peterborough.

- 2.3.3 The effectiveness of surveys is weather dependent. Bright sunshine on a cooler day, hazy or intermittent sun towards the warmer end of the scale, a hot spell after several days of cold weather and showery weather after a dry spell will often bring reptiles out. Rainy or windy conditions are usually unsuitable.
- 2.3.4 Refuges were checked between 08.30 and 11:00 or in late afternoon when the temperature was between 9 and 18°C during spells of suitable weather i.e. bright sunshine on a cooler day, hazy or intermittent sun, a hot spell after several days of cold weather and showery weather after a dry spell. Specific dates, times and weather conditions for each survey visit are detailed in Appendix 1.

2.4 Constraints

- 2.4.1 During several visits, a number of refuges were found to have been periodically removed or disturbed over the survey period but these were replaced or relocated to a broadly similar location and is therefore not considered to have significantly affected the results.

2.5 Quality Assurance & Environmental Management

- 2.5.1 The surveys and assessments have been overseen by and the report checked and verified by a member of CIEEM, whom is bound by its code of professional conduct. All surveys and assessments have been undertaken with reference to the current specialist best practice guidance.

3 RESULTS

3.1 Desk Study

3.1.1 Information received from SEWBReC provided records of slow worm within 2km of the site within the last 10 years (approximately 975m from the site).

3.2 Results

3.2.1 A summary of the reptile survey results is provided in Table 1 below.

Table 1: Summary of Reptile Survey Results				
Date	Refuge Number	Species	Number of individuals observed	Peak Count (Adults)
16/09/2016			None	-
21/09/2016			None	-
26/09/2016			None	-
29/09/2016			None	-
09/05/2017	1	Slow worm	3 adults	7 slow worm
	55		1 adult	
	67		1 adult	
	68		1 adult	
	76		1 adult	
11/05/2017	76	Slow worm	1 adult	1 slow worm
19/05/2017	4	Slow worm	1 adult	3 slow worm
	55		1 adult	
	67		1 adult	
	77		1 juvenile	
30/05/2017 (am)	77	Slow worm	1 adult	1 slow worm
30/05/2017 (pm)	77	Slow worm	1 adult	1 slow worm
31/05/2017	5	Slow worm	1 juvenile	1 slow worm
	77	Slow worm	1 adult	
02/06/2017	77	Slow worm	1 juvenile	
01/09/2017	55	Slow worm	1 adult	1 slow worm
04/09/2017	42	Slow worm	2 juveniles	-
	55	Slow worm	2 adults	2 slow worms
07/09/2017	2	Slow worm	1 adult	3 slow worm
	42		1 adult, 1 juvenile	
	55		1 adult	
	77		2 juvenile	
13/09/2017	42	Slow worm	1 juvenile	1 slow worm
	55		1 adult	

Table 1: Summary of Reptile Survey Results				
Date	Refuge Number	Species	Number of individuals observed	Peak Count (Adults)
14/09/2017	42	Slow worm	1 juvenile	
	43		1 juvenile	
18/09/2017	42	Slow worm	1 adult	2 slow worm
	55		1 adult	
21/09/2017	2	Slow worm	1 juvenile	3 slow worm
	42		2 adult, 2 juvenile	
	76		1 adult	
22/09/2017	2	Slow worm	1 adult, 1 juvenile	3 slow worm
	42		1 adult	
	77		1 adult	
29/09/2017	2	Slow worm	1 juvenile	-

3.3 Population Size Assessment

3.3.1 A maximum count of 7 adults have been observed across the site under refuges in the following locations:

Grassy areas along the field margins of pony paddocks (refuges 67, 68 and 76);

Field margin of arable field (refuge 77); and

Grassy bank areas around the access routes near the old railway bridge (refuges 1, 2, 4, 42 and 43).

3.3.2 The locations of these sightings are shown on Drawing Number CA11040-007 (Reptile Refuge Location Plan and Survey Results).

3.3.3 Table 2 below is taken from Froglife Advice Sheet 10: Reptile Survey leaflet³ which provides guidance on evaluating the size of a reptile population and assessing a site's importance for common reptiles. This is based on the number of adults seen by one person in one survey visit.

³ Froglife (1999) *Reptile Survey: An Introduction to planning, conducting and interpreting surveys for snake and lizard conservation* Froglife Advice Sheet 10, Froglife, Halesworth.

Table 2: Assessing Reptile Population Size Class			
<i>Species</i>	<i>Low Population</i>	<i>Good Population</i>	<i>Exceptional Population (Score 3)</i>
Adder	<5	5 – 10	>10
Grass snake	<5	5 – 10	>10
Common lizard	<5	5 – 20	>20
Slow worm	<5	5 -20	>20

NB: Figures in the table refer to the maximum number of adults seen by observation and/or under tins (placed at a density of up to 10 per hectare), by one person in one day.

3.4 Interpretation of Results

3.4.1 Based on the 2016 and 2017 survey results, the populations of reptiles at the Site would be classed as ‘Good’ for slow worm (5-10 maximum adults seen during one survey) as detailed in Table 2.

3.4.2 To qualify as a ‘Key Reptile Site’, the site in question must meet at least one of the following criteria:

- 1) Supports three or more reptile species;
- 2) Supports two snake species;
- 3) Supports an exceptional population of one species;
- 4) Supports an assemblage of species scoring at least 4; and
- 5) Does not satisfy 1-4 but which is of particular regional importance due to local rarity.

3.4.3 Based on the above criteria, the Site does not qualify as a Key Reptile Site.

3.4.4 The population of slow worm at the site are considered to be of local nature conservation value.

3.4.5 Slow worms are included on Section 7 of The Environmental (Wales) Act 2016 and are legally protected from intentional killing or injury under the Wildlife and Countryside Act 1981 (as amended). They will therefore be considered within the Ecological Impact Assessment for further assessment as to whether the construction and operational phase activities have the potential to give rise to significant adverse effects or to contravene legislation pertaining to reptiles.

4 RECOMMENDATIONS FOR MITIGATION

- 4.1.1 Slow worms are protected under the Wildlife and Countryside Act, 1981 (as amended) against intentionally killing or injuring only (i.e. their habitats are not protected). There is a potential risk of harm to a small number of reptiles, if present, at the time of construction works / site clearance, however mitigation measures can be implemented, to reduce the risk of an offence being committed.
- 4.1.2 Impacts on reptiles in the first instance should be avoided in line with the 'mitigation hierarchy':
- Avoidance of impacts through re-location, re-design or changes in construction programme;
 - Reduction of impacts – involving lessening the severity of an impact which cannot be avoided; and
 - Compensation of impacts through habitat creation or enhancement.
- 4.1.3 One of the key principles in guiding the formulation of mitigation measures should be to retain continuity and functioning of the retained linear habitats, i.e. the hedgerows. The design of the green infrastructure for the site should include provision of suitable wildlife corridors and habitat suitable for reptiles to retain opportunities for reptiles to move around and beyond the site.
- 4.1.4 Construction activity has the potential to kill or injure a low number of common reptiles, if present at the time of the works. Therefore, there is a risk that construction activities could contravene legislation pertaining to reptiles. The risk of harming reptiles can be reduced through the implementation of Reasonable Avoidance Measures under a Precautionary Working Method Statement (PWMS) a summary of these is provided below:
- Briefing all relevant contractors regarding reptiles.
 - Discouraging reptiles from construction areas by vegetation management.
 - Not storing materials / debris in close proximity to retained hedgerow / woodland habitat while reptiles are active.
 - Protecting retained hedgerows by the erection of tree protection fencing in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction*.

Ground work in areas of key reptile habitat to be undertaken outside reptile hibernation periods (hibernation generally between mid-October to March/April depending on weather).

Translocating individuals into suitable habitat either on or off-site.

- 4.1.5 If off-site translocation is required, The Vale of Glamorgan Council has a number of reptile receptor sites where they accept reptiles permanently. Cosmeston Lakes is one of these receptor areas. The translocation scheme is operated by a standard pricing scheme which depends on species and number of animals to translocate off-site. The cost covers monitoring and long-term maintenance and further details should be obtained from the Council's ecologist.

5 ENHANCEMENTS

5.1.1 In accordance with the requirements of the Planning Policy Wales 2016 and BSI 42020:2013, ecological enhancements should be proposed which will result in a net gain in biodiversity.

5.1.2 Habitat proposals should also be implemented or created to promote reptile dispersal across the new development, provide a benefit to reptiles and other wildlife as well as mitigate for the losses of suitable reptile habitat. Measures could include:

Provision of areas of dense and scattered scrub as well as rough and species rich grassland within proposed green infrastructure to provide suitable habitat for reptiles;

Creation of rubble/woodpiles within green infrastructure/landscape areas would provide suitable hibernacula for reptiles and other wildlife. The hibernacula should be sited where they will not conflict with public access and safety;

Provision of south and south-east facing grassy slopes along proposed greenways/waterbodies to provide suitable reptile habitat; and

Provision of areas of bare and sparsely vegetated ground within close proximity to cover, such as scattered scrub and grassland, to provide reptiles with basking areas.

6 MONITORING

- 6.1.1 Following the construction of the development, it is recommended that a monitoring programme is undertaken to assess the effectiveness of the mitigation measures implemented for reptiles, and to ensure that the slow worm population present has been maintained at a favourable conservation status. This monitoring programme should encompass the newly created suitable reptile habitats within the development.

APPENDICES

APPENDIX 1

Reptile Survey Dates, Times, Weather Conditions and Results

Appendix 1 - Reptile Survey Dates, Times, Weather Conditions and Results

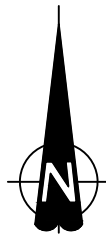
Date	Survey Visit	Weather	Start Time	End Time	Refugia No.	Results
ORIGINAL SURVEY AREA						
16/09/2016	1	16°C partly cloudy	08:30	10:00	-	0
21/09/2016	2	14°C overcast (100%) occasional spot of rain	08:30	10:00	-	0
26/09/2016	3	14°C light /intermittent rain	08:30	10:00	-	0
29/09/2016	4	14°C partially cloudy	08:30	10:00	-	0
09/05/2017	5	9°C overcast and dry	08:30	10:00	1	3 slow worm (adult Female)
					55	1 slow worm (adult Male)
18/05/2017	6	11°C -14°C 40% cloud, dry after heavy rain	08:00	10:00	-	0
19/05/2017	7	11°C -13°C warm sunny spells, 30% cloud, 2-3mph wind.	09:30	10:30	4	1 slow worm (adult Female)
					55	1 slow worm (adult Female)
31/05/2017	8	15°C overcast and humid, no wind	08:00	09:00	5	1 slow worm (Juvenile)
01/09/2017	9	11°C very light breeze, 4mph and clear sky	09:30	10:30	55	1 slow worm (adult Female)
04/09/2017	10	19°C	16:00	17:30	42	2 slow worm (Juvenile)
					55	2 slow worm (adult Female)
07/09/2017	11	17°C light breeze, 70% cloud cover	09:00	10:30	2	1 slow worm (adult Male)
					42	1 slow worm (Juvenile) 1 slow worm (adult Male)
					55	1 slow worm (adult Female)
13/09/2017	12	15°C brief light rain, 70% cloud cover	16:00	17:30	42	1 slow worm (Juvenile)

					55	1 slow worm (adult Female)
14/09/2017	13	11°C, wind 5mph, 40% cloud cover	08:00	10:00	-	0
14/09/2017	14	17°C, 21mph, 30% cloud cover	16:00	17:30	42	1 slow worm (Juvenile)
					43	1 slow worm (Juvenile)
15/09/2017	15	10°C, 7mph, 70% cloud cover	08:30	10:00	-	0
18/09/2017	16	10°C, 7mph, 70% cloud cover	08:30	10:00	42	1 slow worm (adult Female)
					55	1 slow worm (adult Female)
19/09/2017	17	10°C - 13°C, 7mph, 70% cloud cover, no wind	08:15	10:00	-	0
21/09/2017	18	15°C, 70% cloud cover, wind 17mph	09:15	10:30	2	1 slow worm (Juvenile)
					42	1 slow worm (adult Female) 1 slow worm (adult Male) 2 slow worm (Juvenile)
22/09/2017	19	11°C, 80% cloud cover, wind 8mph	08:30	10:00	2	1 slow worm (adult Female) 1 slow worm (Juvenile)
					42	1 slow worm (adult Female)
29/09/2017	20	13°C, 60% cloud cover, wind 10mph	08:30	10:00	2	1 slow worm (juvenile)

Date	Survey Visit	Weather	Start Time	End Time	Refugia No.	Results
ADDITIONAL SURVEY AREA						
09/05/2017	1	9°C overcast and dry	08:30	10:00	67	1 slow worm (adult Male)
					68	1 slow worm (adult Male)
					76	1 slow worm (adult Female)
11/05/2017	2	15°C overcast and dry	16:30	17:30	76	1 slow worm (adult Male)
18/05/2017	3	11°C -14°C, 40% cloud, dry after heavy rain	08:00	10:00	-	0
19/05/2017	4	11°C -13°C, warm sunny spells, 30% cloud, 2-3mph wind.	09:30	10:30	67	1 slow worm (adult Female)
					77	1 slow worm (juvenile)
30/05/2017	5	14°C drizzle followed by clearing skies and humid	08:30	09:30	77	1 slow worm (adult Female)
30/05/2017	6	16°C clearing skies and gusty wind	16:00	17:00	77	1 slow worm (adult Female)
31/05/2017	7	15°C overcast and humid, no wind	08:00	09:00	77	1 slow worm (adult Female)
02/06/2017	8	16°C, humid, light rain shower, cool breeze	16:00	17:00	77	1 slow worm (juvenile)
01/09/2017	9	11°C very light breeze, 4mph and clear sky	09:30	10:30	-	0
04/09/2017	10	19°C	16:00	17:30	-	0
07/09/2017	11	17°C light breeze, 70% cloud cover	09:00	10:30	77	2 slow worm (Juvenile)
13/09/2017	12	15°C brief light rain, 70% cloud cover	16:00	17:30	-	0

14/09/2017	13	11°C, wind 5mph, 40% cloud cover	08:00	10:00	-	0
14/09/2017	14	17°C, 21mph, 30% cloud cover	16:00	17:30	-	0
15/09/2017	15	10°C, 7mph, 70% cloud cover	08:30	10:00	-	0
18/09/2017	16	10°C, 7mph, 70% cloud cover	08:30	10:00	-	0
19/09/2017	17	10°C - 13°C, 7mph, 70% cloud cover	08:15	10:00	-	0
21/09/2017	18	15°C, 70% cloud cover, wind 17mph	09:15	10:30	76	1 slow worm (adult Female)
22/09/2017	19	11°C, 80% cloud cover, wind 8mph	08:30	10:00	77	1 slow worm (adult Female)
29/09/2017	20	13°C, 60% cloud cover, wind 10mph	08:30	10:00	-	

DRAWINGS



DO NOT SCALE FROM THIS DRAWING

REFERENCE

Site boundary (29.14Ha) _____

2Km Search area _____

Original site boundary EP1 Habitat Survey in September 2016 _____

Additional land included within site boundary and subject to EP1 Habitat Survey in April 2017 _____

A	Amended to show revised site boundary.	05/10/17	RJH	JLH	JLH
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REVISION	DETAILS	DATE	DR'N	CHK'D	APP'D
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CLIENT
WELSH GOVERNMENT

PROJECT
COSMESTON ECOLOGICAL SURVEY

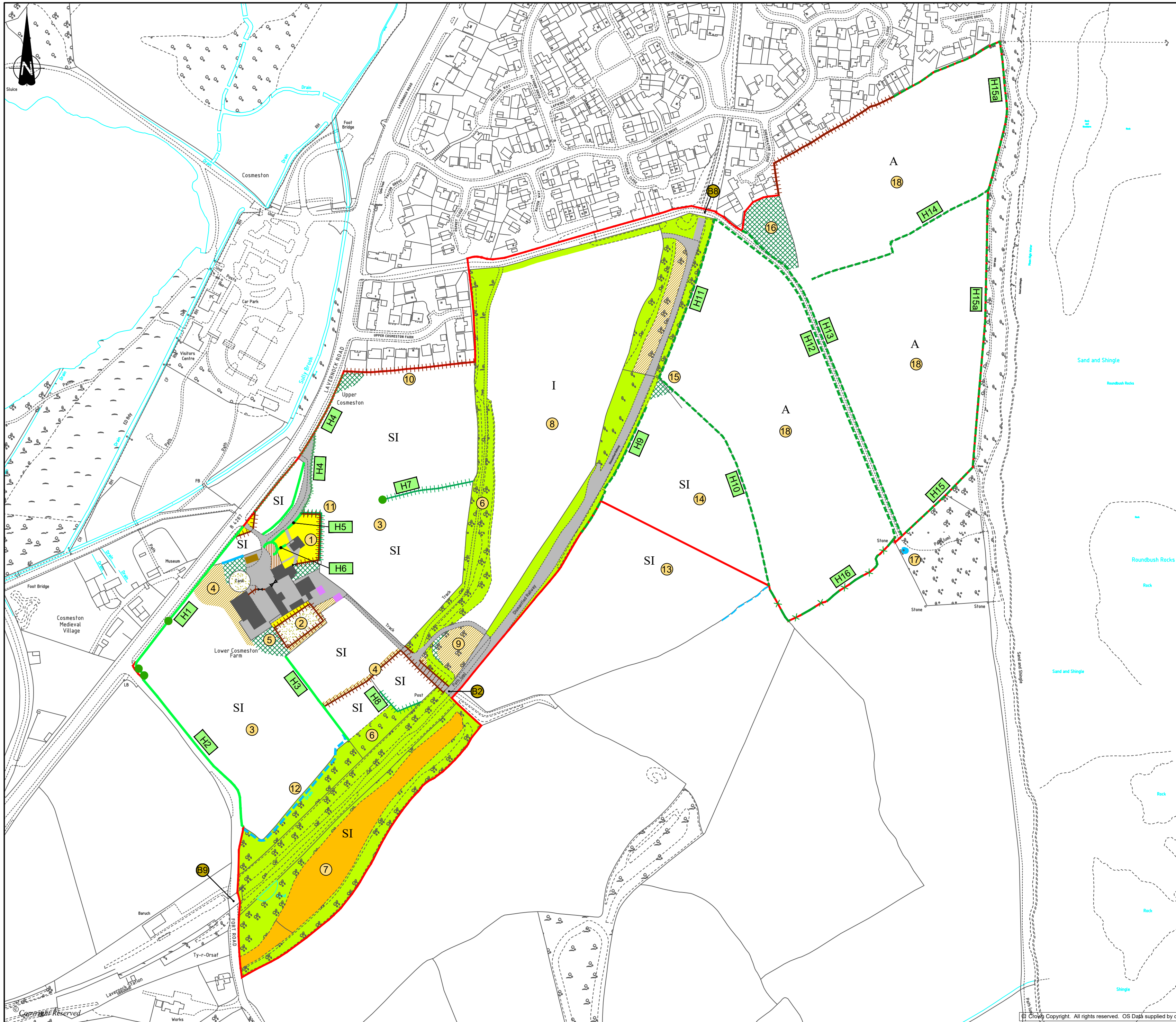
DRAWING TITLE
SITE LOCATION PLAN & ECOLOGICAL SURVEY AREA

DRG No.	CA11040-001	REV	A
DRG SIZE	A3	SCALE	1:25,000
		DATE	17/10/16
DRAWN BY	RJH	CHECKED BY	JLH
		APPROVED BY	JLH

- CARDIFF TEL 029 2072 9191 WEB: WWW.WARDELL-ARMSTRONG.COM
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REFERENCE

Survey area	---	---
Amenity grassland	---	---
Improved grassland	---	I
Semi-improved grassland	---	SI
Poor semi-improved grassland	---	SI
Arable	---	A
Broad-leaved woodland	---	---
Sand	---	---
Tall ruderal	---	---
Pond/Standing water	---	---
Wet watercourse	---	---
Dry watercourse	---	---
Storage container	---	---
Gate	---	---
Building	---	---
Hardstanding	---	---
Disturbed ground	---	---
Scrub	---	---
Chicken coop	---	---
Fence	---	---
Hedgerow intact species poor	---	---
Hedgerow intact species rich	---	---
Hedgerow defunct species poor	---	---
Hedgerow defunct species rich	---	---
Defunct species poor remnant hedgerow	---	---
Tree	---	---
Target note	---	1
Target note hedgerow	---	H1
Bridge reference number	---	B9

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT
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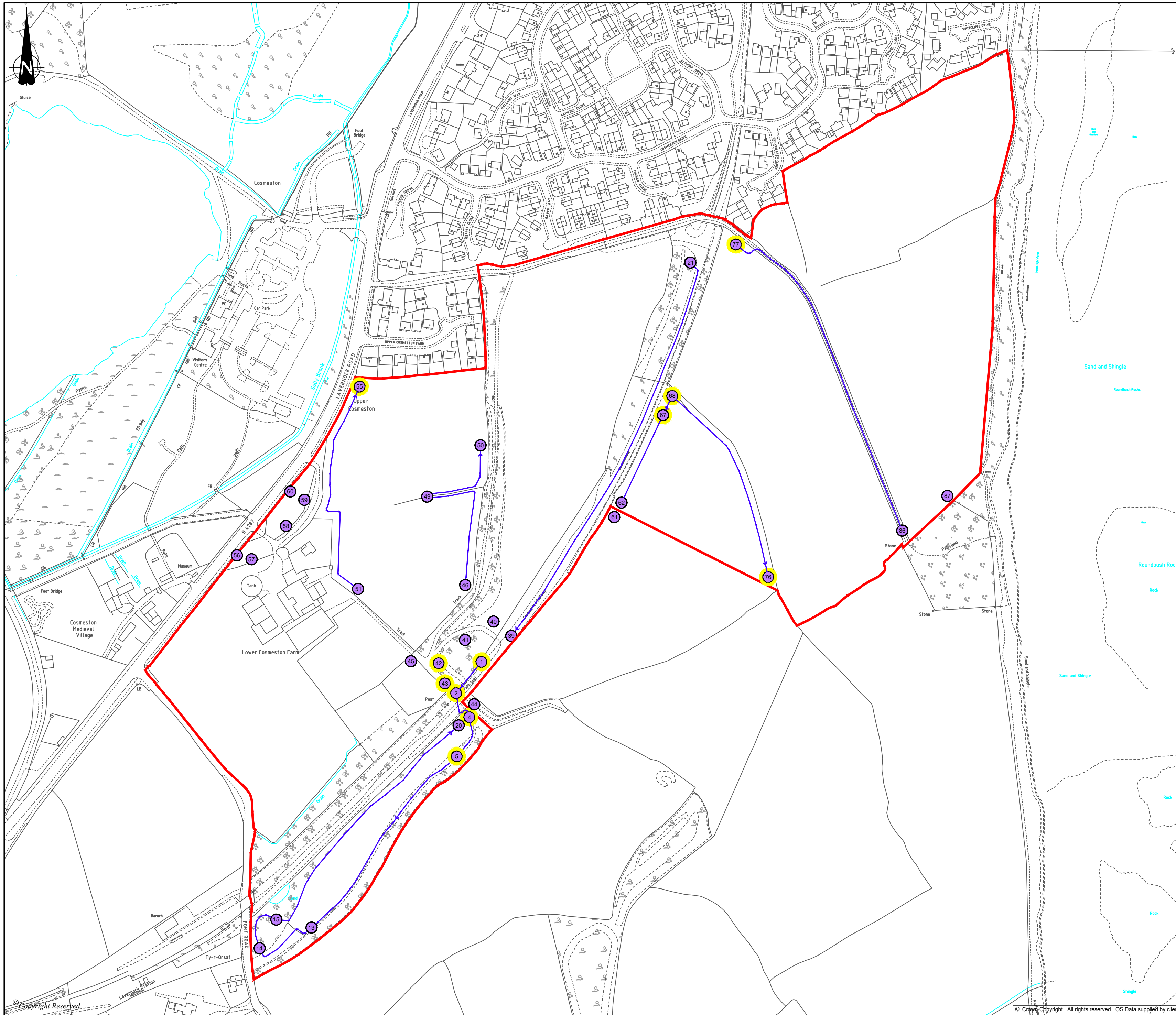
PROJECT
COSMESTON ECOLOGICAL SURVEY

DRAWING TITLE
HABITAT PLAN

DRG No.	CA11040-002	REV	
DRG SIZE	A2	SCALE	1:2500
		DATE	05/10/17
DRAWN BY	RJH	CHECKED BY	KH
		APPROVED BY	JLH

- CARDIFF TEL 029 2072 9191 WEB: WWW.WARDELL-ARMSTRONG.COM
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 GLASGOW LEIGH LONDON MANCHESTER
 NEWCASTLE UPON TYNE SHEFFIELD STOKE-ON-TRENT TAUNTON





DO NOT SCALE FROM THIS DRAWING

REFERENCE

- Survey area _____ —
- Refuge number _____ ①
- Transect route _____ —
- Slow worm _____ ④

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
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CLIENT
WELSH GOVERNMENT

PROJECT
COSMESTON ECOLOGICAL SURVEY

DRAWING TITLE
REPTILE REFUGE LOCATION PLAN & SURVEY RESULTS

DRG No. **CA11040-007** REV

DRG SIZE **A2** SCALE **1:2500** DATE **02/10/17**

DRAWN BY **RJH** CHECKED BY **KH** APPROVED BY **JLH**

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