HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.7.26 ES Volume G - A5025 Off-line Highway Improvements App G9-5 - A5025 Route Improvement Contract EIA: Great Crested Newt Field Survey Results

PINS Reference Number: EN010007

Application Reference Number: 6.7.26

June 2018

Revision 1.0

Regulation Number: 5(2)(a)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-JAC-PAC-APP-00198

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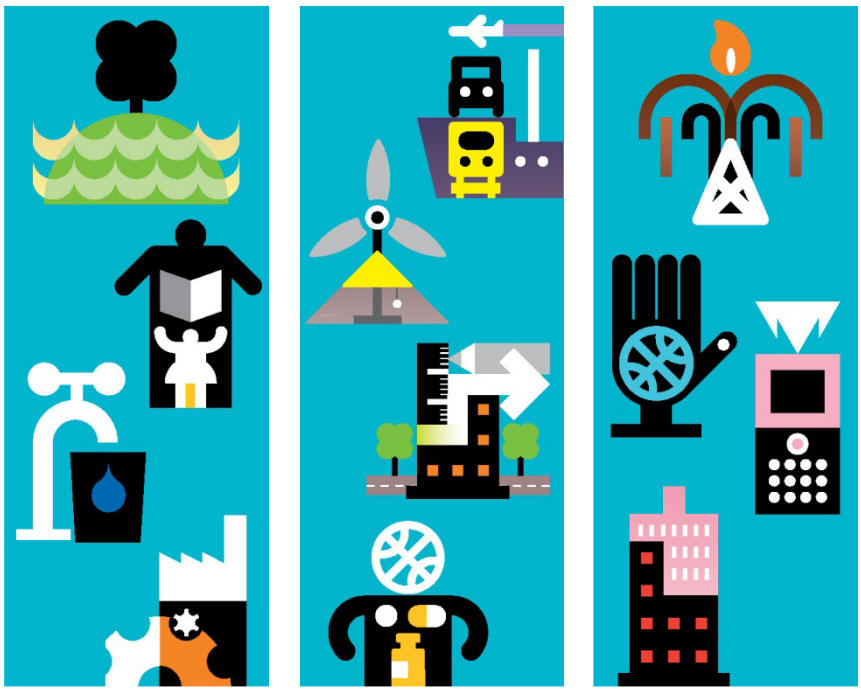

A5025 Route Improvement Contract EIA

Great Crested Newt Field Survey Results

May 2014

Horizon Nuclear Power

Mott MacDonald

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Great Crested Newt Field Survey Results

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Horizon Nuclear Power

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
A	April 2014	L. Hill	T. Crabb	C. Probert	First Issue	

Contents

1 Introduction

1.1 Background

Horizon Nuclear Power Ltd (a subsidiary of Hitachi Ltd) is proposing to build a new nuclear power station on land beside the existing operational Magnox nuclear power station on Wylfa Peninsula, Anglesey, North Wales. Horizon Nuclear Power (HNP) are currently preparing a Development Consent Order (DCO) application for the proposed power station, which will include nuclear reactors with a minimum generating capacity of up to 2,700 Mega Watts (MW) of electricity which will be submitted to The Planning Inspectorate for review.

In order to facilitate the construction and operation of the new power station, the project will require a number of additional components (which fall outside the DCO application) and these are termed 'associated developments'. One of which relates to the upgrade of the existing transport infrastructure and is termed the A5025 Route Improvement Contract (RIC). The purpose of the upgrade is to facilitate the movement of the workforce and materials, and to minimise the impact of the movements on local communities.

Mott MacDonald (MM) has been commissioned by HNP to undertake a Preliminary Ecological Appraisal (PEA) to identify any potential ecological impacts and constraints associated with the proposed development.

The proposed route, hereby referred to as the 'scheme', follows a 22 km length of the A5025 between National Grid references: SH4171093260; and SH3004078890. A plan showing the extent of the scheme is provided in Appendix A. The route starts at the junction of the A5 trunk road at the village of Valley, and runs in a north easterly direction towards the existing power station at Wylfa Head to the east of the Village of Cemaes. The scheme includes a small section of the un-graded road Pen-yr-Orsedd. This is located to the west of the A5025 and is situated approximately 2 km to the north of the village of Llanrhyddlad. The A5025 runs through a number of villages and small rural communities.

The scheme design is yet to be defined and a number of options are currently being considered in consultation with the Isle of Anglesey County Council (IoACC), the Highways Authority (North and Mid Wales Trunk Road Agency) and other stakeholders. It is anticipated that the majority of the works will be undertaken within the existing highway boundary (known as on-line works); however at a number of locations, works outside of the highway boundary (off-line works) may be required, which may include minor road straightening, by-passes, roundabouts and junction improvements as detailed below.

The following areas for possible offline route improvements are:

- The Valley crossroads, which may require bypassing;
- Llanfachraeth, where a bypass to the east of the village is being considered;
- Llanfaethlu, where bends at the Black Lion Inn and Llanfaethlu may need to be straightened;
- Cefn Coch, where the existing route between Bod-Hedd and Cefn Coch may need to be straightened;
- Tregele, where modifications to the site access are being considered. Alternatively, a by-pass as well as potential changes to the access to Cemlyn may be required; and

- Improvements along the A5025, between the construction site and Amlwch, to the proposed new workers village.

A map is provided in Appendix A highlighting both the online and offline works proposed along the A5025.

1.2 Ecology Background

Extended Phase 1 Habitat Surveys were carried out by MM between August 2011 and March 2014. To fully utilise land access, protected species data was gathered simultaneously. This included recording when habitat was deemed suitable for great crested newts *Triturus cristatus* (GCN). Where possible, Habitat Suitability Index (HSI) surveys were also carried out. Presence / absence surveys commenced in 2013 for water bodies deemed suitable for GCN (with a HSI score of 0.5 and above).

1.3 Scope of the Report

The proposed works are expected to affect the A5025 soft estate and the corridor of land either side. The purpose of this report therefore is to give an account of the baseline information relevant to these works. Jacobs Engineering Group Inc. has been commissioned to continue with the ecological surveys for the A5025 upgrade works from the 1st April 2014. This report aims to provide all results of GCN surveys carried out by MM to date, and aims to provide a means of transferring this data in order for any further recommendations and/or surveys to occur.

The objectives of this report are as follows:
- To present the methodology used for all GCN work to date;
- To present the results of the desk study & field survey work to date; and
- To provide brief recommendations for further survey work.

1.4 Survey Limitations

It was not possible to access some areas within the survey extent; this was largely due to limited and/or irregular land access (i.e. where a land owner, tenant or agent has refused entry). This had negative implications on the timing and duration of the surveys, whereby the surveys were conducted over a longer period of time and subsequently covered a spectrum of optimal and non-optimal time for assessment. In addition to access issues, adverse weather conditions (night time temperature) also had a negative effect on the survey timings undertaken in 2013. Subsequently a number of presence / absence surveys were not completed in 2013.

2 Methodology

All ecological works followed up to date best practice guidelines provided by the Chartered Institute of Ecology and Environmental Management (CIEEM). In addition, further specific highway guidance was also followed. This is provided by The Design Manual for Roads and Bridges (DMRB), specifically Volume 10 (Environmental Design and Management) and Volume 11 (Environmental Assessment), along with relevant Interim Advice Notes (IANs), such as IAN 130/10 Ecology and Nature Conservation: Criteria for Impact Assessment which supplements DMRB Volume 11, SECTION 3 Part 4 'Ecology and Nature Conservation'.

2.1 Desk study

The aims of the desk study with specific regards to GCN was to review the presence of statutory and non-statutory designated sites within a 2 km buffer. These may be designated for the presence of GCN or may provide habitat suitable for GCN within the surrounding area. In addition the desk study allowed a review of any GCN records within 2 km of the road and was also used to identify water bodies within a 500 m buffer of the proposed route corridor by consulting OS mapping and aerial photography.

The following databases were used to extract the required information outlined above:

- Cofnod – North Wales Environmental Information Service;
- Isle of Anglesey County Council (IoACC);
- Anglesey Nature website: (http://angleseynature.co.uk/)
- Natural Resources Wales (NRW)/Countryside Council for Wales (CCW) websites: (http://naturalresourceswales.gov.uk/splash?orig=/ and http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/protected-sites-map.aspx?lang=en);
- Joint Nature Conservation Committee (JNCC) website: (http://jncc.defra.gov.uk/); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website: (http://magic.defra.gov.uk/).

A review and summary of the desk study findings (including maps) was carried out and presented within the A5025 Preliminary Ecological Appraisal report (Mott MacDonald, 2014). Results of the GCN record findings are also discussed further within this report (Chapter 3).

2.2 Field Surveys

Extended Phase 1 Habitat Surveys were carried out on land up to 250 m from the A5025. During these surveys any water bodies and terrestrial habitat present were identified as being suitable or not suitable for GCN. In addition, any water bodies up to 500 m from the A5025 identified with the use of OS mapping and aerial photography, were also assessed for GCN suitability. In both cases, sites highlighted as suitable were then assessed through the HSI (the scoring system for which is set out overleaf) and where potential for GCN was identified (a score of 0.5 or above), further presence/absence surveys were also carried out. The methodology used for these two surveys is detailed below.

2.2.1 Habitat Suitability Index Assessment

The Habitat Suitability Index assessment (Oldham et al. 2000) is a standard approach adopted by ecological consultants for assessing a pond's potential to support GCN. The HSI is essentially a measure of habitat suitability and incorporates ten indices (all of which are environmental variables), which are thought to affect GCN:

- Geographic location (SI1);
- Pond area (SI2);
- Pond permanence (SI3);
- Pond quality (SI4);
- Pond shading (SI5);
- Number of waterfowl (SI6);
- Occurrence of fish (SI7);
- Pond density (SI8);
- Proportion of suitable habitat in the study area (SI9); and
- Macrophyte cover (SI10).

The HSI score is the geometric mean of the ten habitat variables listed above, obtained by multiplying each of the variable scores together, and then taking the 10th root of the product:

HSI = (SI1 + SI2 + SI3 + SI4 + SI5 + SI6 + SI7 + SI8 + SI9 + SI10)

The resulting HSI scores were cross-referenced with the NARRS (2008) guidance (as shown in Table 2.1) to estimate the suitability of each pond to support breeding population of great crested newt.

Table 2.1: HSI and Pond Suitability for GCN

HSI Score	Pond Suitability for GCN
0.00 – 0.49	Poor
0.50 – 0.59	Below average
0.60 – 0.69	Good
0.80 – 1.00	Excellent

Source: NARRS, 2008

The index produces a score between 0 and 1 (in increments of 0.1), with 0 being unsuitable habitat and 1 representing optimal habitat. In general, ponds with high HSI scores (>0.6) are more likely to support GCN than those with low scores (<0.5) but the method is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so. However, the HSI score can be used as an aid in the decision whether to undertake GCN presence/absence surveys on a pond.

As a cautious approach, water bodies with a HSI score of 0.5 and above were scoped in for further surveys. An exception to this was where the water body qualified for further surveys due to overriding suitability reasons e.g. reports of GCN within a water body.

2.2.2 Presence / Absence Surveys

In order to accurately establish the presence of GCN, a minimum of four survey visits must be undertaken during the GCN breeding season between mid-March and mid-June with half of these surveys required to take place during the peak breeding phase between mid-April and mid-May. If GCN are found during these visits and it is likely that a GCN derogation licence will be required for the works to proceed, then relative abundance of GCN within the pond(s) is required. This is calculated by undertaking two further visits (six surveys in total). In the event that no GCN are identified during the first four visits, no further surveys are required as GCN are assumed absent.

Survey work was undertaken by suitably qualified ecologists with possession of a GCN survey licence, or by ecologists accredited on another Licence Holder's GCN survey licence.

Survey work would only take place if average night time air temperatures were greater than 5 °C.

There are five different types of survey techniques, as detailed below. These all follow best practice guidance. A total of three methods must be employed on each survey visit to determine the presence or absence of GCN. The five survey techniques include:

1. Torching

GCN are nocturnal and actively court at night, in open water during the breeding season where they can be observed and counted using million candle watt torches. After night fall, surveyors move slowly along the bank sweeping with the torch to identify newts in the water, on emergent vegetation, or moving on land between water bodies. For this method to be effective there must be a certain amount of visibility through the water. This method cannot be effectively carried out in heavy rain.

2. Bottle Trapping

Specially designed bottle traps (1.5 to 2.0 litre inverted bottles) are submerged in the water body on stakes at intervals of one trap per 2 m length of shoreline. The bottle traps are designed and installed by experienced surveyors to ensure sufficient air pockets for captured newts, which will provide ample oxygen for at least 12 hours. Bottle traps are placed in the water at dusk. After night fall active newts enter the traps, from which they cannot escape, and the surveyors return in the morning soon after dawn to record the species, gender and number of newts captured. They are then returned to the water. In order to ensure that newts are not harmed during the trapping, newt traps are not left in situ for more than 12 hours.

3. Egg Searching

Newts lay jelly capsule eggs singly on aquatic plants, folding the leaf around the egg. If aquatic plants are absent, newts will lay on dead leaves and litter. GCN eggs can be distinguished readily from those of the

smaller newt species by their larger size, shape and colour. It is not possible to distinguish smooth newt from palmate newt eggs.

Surveyors search for folded leaves and gently open them to check for eggs. Once unfolded, leaves will not re-adhere to eggs, and these unwrapped eggs may suffer a higher predation rate. The presence of great crested newts can be confirmed by a single GCN laid egg. It is not possible to get any measure of population size or viability from egg counts, therefore once one GCN egg is found within a water body, this method is discontinued at that location. Egg searching is best carried out from April to June, although eggs can sometimes be found in March and July in smaller numbers.

4. Netting

This technique is not as efficient at identifying the presence of newts as egg searching, bottle trapping or torching. The technique involves using a sturdy net, with 2 - 4 mm holes to sweep-net the pond. This method can cause a great deal of disturbance to a pond and its inhabitants and should be employed with care to minimise this impact. If invasive exotic plants, particularly New Zealand stonecrop (Crassula helmsii) and water fern (Azolla filiculoides) are present within a pond, this method should not be employed as it can transfer these species between ponds via the nets.

The optimum time for netting is generally from March to May, when most adults are in the pond, and mid-July to August when larvae are bigger and easier to identify. By standardising the netting to fifteen minutes of netting per 50 m of pond shoreline, a relative abundance score can be produced.

5. Terrestrial Searches

Between March and October, juvenile and adult newts may be found under refuges such as piles of logs and rocks. However, as a technique to detect the presence of newts, it is not very reliable and newts may be present at a site but not found under searched refuges.

Each technique has a number of advantages and disadvantages that may make them more suitable for use according to the nature of the water bodies and habitat. Due to the level of disturbance caused by netting and the limited results from terrestrial searches, torching, bottle trapping and egg searching (provided there is suitable emergent vegetation for egg laying) are considered to be the preferred survey techniques.

The species, gender and abundance of all captured specimens should be accurately recorded and records of GCN passed to the Licensing Body NRW.

By following these survey methods, the data collected is considered sufficient to apply for a derogation licence from NRW, should one be required for the works to be undertaken.

3 Results

3.1 Species Records

Twenty Eight records of GCN were identified from the Cofnod data from the last 10 years. Of these records a significant number were within the same locations. All records are located within one of three places:

- South A5025 - the Valley area;
- East of the A5025 - Rhosgoch and east towards Penysarn / Gadfa; and
- West of the A5025 – on the peninsula west of Tregele.

The closest record is located approximately 675 m south east of the A5025, close to the town of Valley.

No records of smooth newt *Lissotriton vulgaris* were returned. Two records of palmate newt *Lissotriton helveticus* were returned, both located at the village of Cemlyn within the north west region.

3.2 Field Surveys

3.2.1 Habitat Suitability Index Assessment

All HSI assessment surveys were carried out between 2012 and 2014. Appendix B provides tables of all HSI information to date. To date 229 water bodies (this predominantly includes ditches and ponds) have had a HSI assessment. Of these water bodies 160 were scoped out for suitability for GCN – i.e. their HSI score was less than 0.5, or varying factors resulted in unsuitable conditions. Therefore no further surveys were completed at these sites. There were an additional 3 sites that were not surveyed enough to gain completed HSI scores due to poor weather preventing assessment.

A total of 69 water bodies were identified that achieved a HSI score of 0.5 or greater, or qualified for further surveys due to overriding suitability features. Presence / absence surveys were recommended for all these sites as detailed in the following section of this report.

Appendix B provides all HSI scores and the locations of the ponds are provided on plans contained within Appendix C.

3.2.2 Further GCN Surveys

While presence / absence surveys were recommended for all these sites, due to the limitations (as identified within Section 1.4) the following results were obtained as summarised below:

- It was not possible to undertake further surveys on 39 of the water bodies due to either access issues or as a result of priority being given to completing HSI assessments on un-surveyed water bodies;
- 21 water bodies had GCN surveys started but not continued (i.e. less than 4 visits) due to the reasons outlined in Section 1.4;
- 5 water bodies had GCN surveys carried out but no GCN were found; and
- 4 water bodies had GCN surveys carried out and GCN presence were identified. Of these 4 water bodies, only one pond was surveyed sufficiently to gain full HIS scoring.

The following table outlines the details of these surveys and maps showing locations of surveys can be found within Appendix C.

Table 3.1: Further GCN Survey Results

Water Body Reference	Water Body Type	Survey Buffer 250 m/500 m (distance from A5025)	Details
GCN presence confirmed			
21	Pond	250 m	6 surveys completed: 6 male GCN 7 common newt
50	Pond	250 m	5 surveys completed: 4 female GCN ~ 20 common newt
13	Pond	250 m	2 surveys completed: 5 male, 7 female GCN 4 common newt
129	Pond	250 m	4 surveys completed: 1 female GCN
GCN Not Found			
8	Pond	250 m	4 surveys completed: 8 palmate newt
47	Pond	250 m	4 surveys completed: 1 palmate newt 50+ palmate newt eggs
49	Pond	250 m	4 surveys completed: No newts
19A	Pond	250 m	4 surveys completed: Both smooth & palmate newt
85	Pond	250 m	4 surveys completed: 1 palmate newt

Source: Mott MacDonald 2012-2014

4 Recommendations

4.1 Further GCN Surveys

A minimum of 3 water bodies will still require HSI assessments being completed which includes the 3 sites that did not have HSI scores completed due to poor weather conditions. This calculation does not include any additional sites that have not yet had land access granted.

A minimum of 60 water bodies will require further GCN surveys which includes the surveys started but not completed (21 in total) and surveys scoped in for further surveys but not yet started (39 in total).

A minimum of 3 water bodies would also require GCN population surveys if a licence is required which includes surveys where GCN were discovered but less than 6 surveys were completed.

If appropriate, re-assessment of 'dried out' water bodies may be required to establish where seasonal water bodies are present.

4.2 GCN Derogation Licence

There are 28 Cofnod records of GCN presence on the Isle of Anglesey within the last 10 years. Surveys carried out by Mott MacDonald in 2013 also observed the presence of GCN within some water bodies within a 250 m distance of the A5025. Whilst further surveys are required, it would be expected that a GCN derogation licence will be required for the proposed Route Improvement Contract; in particular the offline sections where potential for impacts is greatest.

Due to the scale of the required GCN surveys, it would be recommended that discussions are carried out between the County Ecologist and NRW to discuss an achievable and acceptable level of GCN data required in order to successfully apply for a GCN derogation licence from NRW. It would be expected that the proposed offline works and their surrounding areas were set as the key priority/target areas for these discussions.

5 References

Anglesey Nature website: http://angleseynature.co.uk/;

CIEEM (2013). Competencies for Species Survey: Great Crested Newt. Chartered Institute of Ecology and Environmental Management, Winchester;

Cofnod - North Wales Environmental Information Service;

Highways Agency's Design Manual for Roads and Bridges (DMRB) (1993), Volume 10;

Highways Agency's Design Manual for Roads and Bridges (DMRB) (1993), Volume 11, Section 3, Part 4 Ecology and Nature Conservation;

Highways Agency's Design Manual for Roads and Bridges (DMRB) (1993), Volume 11, Section 3, Part 10, HD 45/09 Road Drainage and the Water Environment;

Highways Agency Interim Advice Note 130/10 (2011), Ecology and Nature Conservation: Criteria for Impact Assessment;

Isle of Anglesey County Council website: http://www.anglesey.gov.uk/planning-and-waste/countryside/;

Joint Nature Conservation Council (JNCC) website: http://jncc.defra.gov.uk/;

Mott MacDonald (2014) A5025 Upgrade Wylfa, Preliminary Ecological Appraisal;

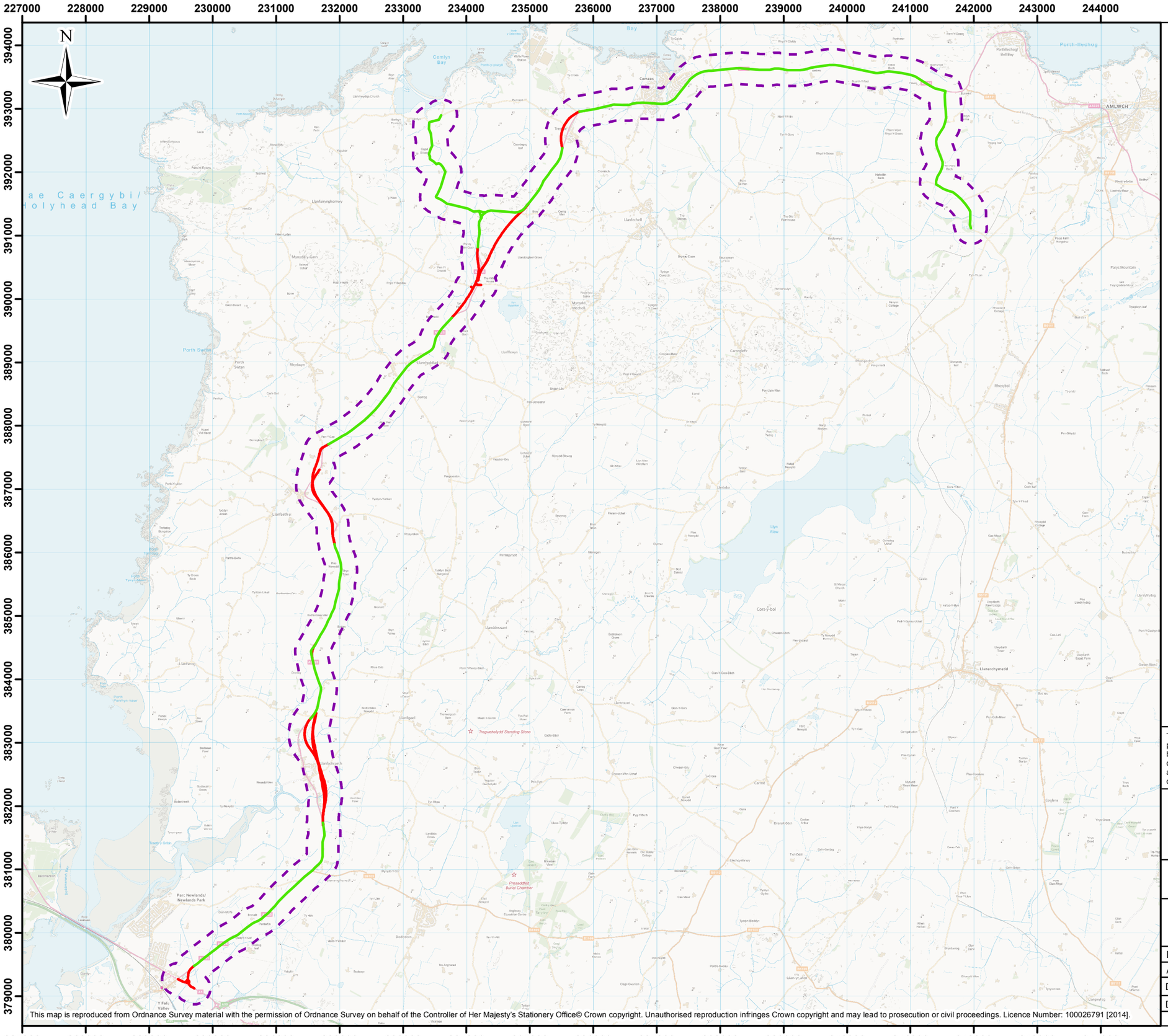
Multi-Agency Geographic Information for the Countryside (MAGIC) website: http://magic.defra.gov.uk/;

Natural Resources Wales (NRW)/Countryside Council for Wales (CCW) websites: (http://naturalresourceswales.gov.uk/splash?orig=/ and http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/protected-sites-map.aspx?lang=en;

Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M., (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal, 10(4), pp143-155.

Appendices

Appendix A. A5025 Online and Offline Works



Legend

- Proposed online sections
- Proposed offline sections
- Indicative site extent - 250m buffer

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Title: **A5025 Road Improvements Contract**
Proposed Extent of Scheme - Online and Offline Sections

0 1,000 2,000 4,000
Metres

Drawn	JW	Checked	TC
Approved	ECP	Rev No	P1
Date: 14/05/2014		Scale: 1:60,000 @ A3	

Drawing No: MMD-320831-L-DR-XX-3398

Appendix B. Habitat Suitability Index Scores

Please note that the information included within this table has been provided to Jacobs Engineering Group Inc. as GIS layers (ESRI Geodatabase). This includes the pond and ditch reference layers that can be cross referenced to the survey points.

Table B.1: Water body assessment details - HSI scores

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
79	Pond	500 m	0.65	Scoped in
D71	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D72	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D73	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D74	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D75	Ditch	250 m	Scoped out – no HSI	Dry ditch
D76	Ditch	250 m	Scoped out – no HSI	Small muddy ditch
D87	Ditch	250 m	Scoped out – no HSI	Flowing
D30	Ditch	500 m	Scoped out – no HSI	Fast flowing water
D63	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D17	Ditch	500 m	Scoped out – no HSI	Fast flowing water
30	Pond	250 m	0.58	Attempted GCN survey – dried out pond
31	Pond	250 m	Scoped out – 0.33	Poor HSI score
D59	Ditch	250 m	Scoped out – no HSI	Shallow, flowing ditch. Possible sewage contamination
D60	Ditch	250 m	Scoped out – no HSI	Dry ditch
D5	Ditch	250 m	To be done	Poor weather conditions-excess rain
24	Pond	250 m	0.75	Scoped in
25	Pond	250 m	Scoped out – 0.20	Poor HSI score
27	Pond	250 m	0.61	Scoped in
28	Pond	250 m	0.60	Survey Incomplete
29	Pond	250 m	Scoped out – no HSI	Unsuitable
118A	Pond	500 m	Scoped out – no HSI	Garden pond – netted & stocked with Koi Carp
D56	Ditch	250 m	Scoped out – no HSI	Shallow stream
6	Pond	250 m	Scoped out – no HSI	No pond present
6A	Pond	250 m	0.55	Scoped in
7	Pond	250 m	Scoped out – no HSI	No pond present
D16	Ditch	500 m	0.66	Scoped in
D16A	Ditch	250 m	0.67	Scoped in
D4	Ditch	250 m	Scoped out – no HSI	Unsuitable
5	Pond	250 m	Scoped out – 0.15	Poor HSI score
D24	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D26	Ditch	500 m	Scoped out – no HSI	Fast flowing water

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
D26A	Ditch	250 m	0.66	Survey incomplete
12	Pond	250 m	0.50	Survey incomplete
D37	Ditch	500 m	Scoped out – no HSI	Unsuitable
D38	Ditch	250 m	Scoped out – no HSI	Unsuitable
21	Pond	250 m	0.78	6 GCN surveys complete[1]. GCN presence confirmed – refer to Table 3.1, Section 3.2.2
21A	Pond	250 m	Scoped out – no HSI	Covered in algae sp. Likely to dry out
20	Pond	250 m	Scoped out – no HSI	Unsuitable
D45	Ditch	250 m	Scoped out – no HSI	Dry ditch
26	Pond	500 m	0.55	Scoped in
D52	Ditch	500 m	Scoped out – no HSI	Dry ditch
D54	Ditch	250 m	Scoped out – no HSI	Shallow stream
4	Pond	250 m	Scoped out – no HSI	No pond present
18	Pond		Scoped out – no HSI	Unsuitable
D15A	Ditch	500 m	0.77	Scoped in
D15B	Ditch	250 m	0.79	Scoped in
8	Pond	250 m	0.47	4 GCN surveys complete. No GCN presence – refer to Table 3.1, Section 3.2.2
D78	Ditch	250 m	Scoped out – no HSI	Unsuitable
D81	Ditch	250 m	Scoped out – no HSI	Unsuitable
47	Pond	250 m	0.50	4 GCN surveys complete. No GCN presence – refer to Table 3.1, Section 3.2.2
49	Pond	250 m	0.79	4 GCN surveys complete. No GCN presence – refer to Table 3.1, Section 3.2.2
50	Pond	250 m	0.71	Survey Incomplete. 5 GCN surveys complete. GCN presence confirmed – refer to Table 3.1, Section 3.2.2
D83	Ditch	250 m	Scoped out – no HSI	Shallow vegetated ditch, fast flowing
48	Pond	250 m	0.59	Attempted GCN survey but pond dried out
51	Pond	250 m	Scoped out – no HSI	No water at time of surveying
53	Pond	250 m	0.68	Scoped in
54	Pond	250 m	Scoped out – no HSI	Unsuitable
55	Pond	250 m	Scoped out – no HSI	Nearly dry in middle of heavily grazed

1 Where GCN surveys have been carried out: When GCN have not been found 4 surveys are required to consider the site assessment complete. When GCN have been found 6 surveys are required to consider the site assessment complete.

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
				field
D85	Ditch	250 m	Scoped out – no HSI	Shallow, flowing water
43	Pond	250 m	0.50	Attempted GCN survey but pond dried out
43A	Pond	250 m	0.51	Scoped in
D77	Ditch	500 m	Scoped out – no HSI	Unsuitable
13	Pond	250 m	0.84	Survey Incomplete. 5 GCN surveys complete. GCN presence confirmed – refer to Table 3.1, Section 3.2.2
14	Pond	250 m	0.58	Attempted GCN survey but pond dried out
15	Pond	250 m	0.59	Attempted GCN survey but pond dried out
16	Pond	250 m	Scoped out – 0.42	Poor HSI score – advised pond dries regularly
17	Pond	250 m	Scoped out – no HSI	Dried out
19	Pond	250 m	Scoped out – no HSI	Dried out
19A	Pond	250 m	0.52	4 GCN surveys complete. No GCN presence – refer to Table 3.1, Section 3.2.2
23	Pond	250 m	Scoped out – 0.23	Poor HSI score
D40	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D41	Ditch	250 m	Scoped out – no HSI	Shallow, slow flowing & full of silt – sewage also
D42	Ditch	250 m	Scoped out – no HSI	Fast flowing water
3	Pond	250 m	Scoped out – no HSI	Dried out & overgrown
D28	Ditch	250 m	Scoped out – no HSI	Flowing watercourse
D22	Ditch	250 m	0.57	Scoped in
10	Pond	250 m	0.58	Scoped in
D27	Ditch	250 m	0.50	Survey incomplete
D47	Ditch	250 m	Scoped out – 0.49	Poor HSI score
52	Pond	250 m	Scoped out – 0.20	Poor HSI score
D100	Ditch	250 m	Scoped out – no HSI	Unsuitable
117A	Pond	500 m	Scoped out – 0.25	Poor HSI score
46	Pond	250 m	0.61	Survey incomplete
D86	Ditch	500 m	Scoped out – 0.42	Poor HSI score
D49	Ditch	500 m	Scoped out – no HSI	Unsuitable
D50	Ditch	500 m	Scoped out – no HSI	Unsuitable
D79	Ditch	500 m	Scoped out – no HSI	Little water, very overgrown
D57	Ditch	250 m	Scoped out – 0.46	Poor HSI score

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
D46	Ditch	250 m	Scoped out – no HSI	Unsuitable
D39	Ditch	250 m	Scoped out – no HSI	Dry ditch
D43	Ditch	250 m	Scoped out – no HSI	Unsuitable
9	Pond	250 m	Scoped out – 0.34	Poor HSI score
D23	Ditch	250 m	Scoped out – 0.27	Poor HSI score
D25	Ditch	250 m	Scoped out – no HSI	Unsuitable
D35	Ditch	500 m	Scoped out – no HSI	Unsuitable
44	Pond	250 m	Scoped out – no HSI	No pond – damp corner of field
45	Pond	250 m	Scoped out – no HSI	Does not exist
D48	Ditch	250 m	Scoped out – no HSI	Unsuitable
D44	Ditch	250 m	Scoped out – no HSI	Unsuitable
11	Pond	250 m	0.70	Survey incomplete
D9	Ditch	500 m	Scoped out – 0.45	Poor HSI score
D10	Ditch	250 m	Scoped out – 0.45	Poor HSI score
D14	Ditch	250 m	Scoped out – no HSI	Fast flowing water
D18	Ditch		Scoped out – no HSI	Flowing water course
D53	Ditch	250 m	To be done	Poor weather conditions-excess rain
D69	Ditch	250 m	Scoped out – no HSI	Unsuitable
D4A	Ditch	250 m	0.56	Attempted GCN survey but ditch dried out
D7	Ditch	250 m	Scoped out – 0.45	Poor HSI score
1	Pond	250 m	0.58	Survey incomplete
2	Pond	250 m	0.64	Survey incomplete
D34	Ditch	250 m	Scoped out – no HSI	Unsuitable
D36	Ditch	250 m	Scoped out – no HSI	Unsuitable
D51	Ditch	250 m	Scoped out – no HSI	Shallow stream
D55	Ditch	500 m	Scoped out – no HSI	Unsuitable
D58	Ditch	250 m	0.50	Scoped in
D61	Ditch	500 m	Scoped out – no HSI	Shallow, flowing water course with overgrown scrub
D20	River	500 m	Scoped out – no HSI	Large, heavily flowing river
P238A	Pond	250 m	0.66	Scoped in
D82	Ditch	250 m	Scoped out – no HSI	Unsuitable
D7	Ditch	250 m	Scoped out – 0.47	Poor HSI score
D148	Ditch	250 m	Scoped out – no HSI	Unsuitable
D147	Ditch	250 m	0.68	Survey incomplete
D146	Ditch	250 m	Scoped out – 0.24	Poor HSI score
D142	Ditch	500 m	Scoped out – no HSI	Dry ditch

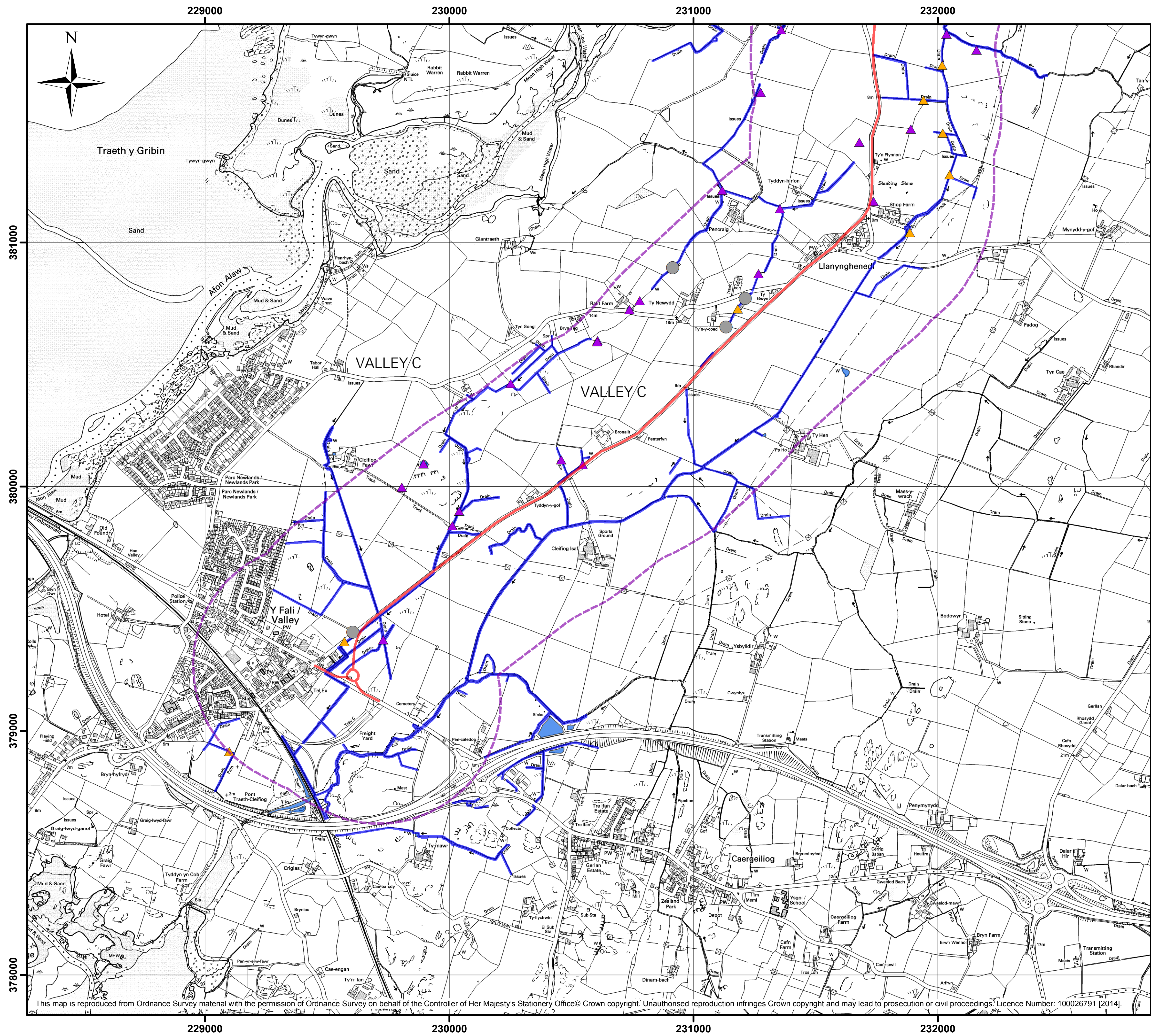
Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
D140	Ditch	500 m	Scoped out – no HSI	Unsuitable
D138	Ditch	500 m	Scoped out – no HSI	Unsuitable
D137	Ditch	500 m	Scoped out – no HSI	Unsuitable
D136	Ditch	500 m	0.51	Survey incomplete
D135	Ditch	500 m	Scoped out – no HSI	Fast flowing water
D134	Ditch	250 m	Scoped out – no HSI	Unsuitable
D133	Ditch	500 m	Scoped out – no HSI	Fast flowing water
D132	Ditch	500 m	Scoped out – no HSI	Unsuitable
D131	Ditch	250 m	0.53	Scoped in
D130	Ditch	500 m	Scoped out – no HSI	Unsuitable
D128	Ditch	500 m	0.64	Scoped in
D127	Ditch	250 m	To be done	Poor weather conditions-excess rain
D126	Ditch	500 m	Scoped out – no HSI	Unsuitable
D119	Ditch	500 m	0.55	Survey incomplete
D117	Ditch	500 m	Scoped out – no HSI	Unsuitable
D113	Ditch	250 m	0.66	Survey incomplete
D110	Ditch	500 m	Scoped out – no HSI	Dry/culverted
138	Pond	500 m	Scoped out – no HSI	Filled in – fly tipping site
136	Pond	500 m	Scoped out – 0.41	Poor HSI score
135	Pond	500 m	Scoped out – no HSI	Shallow & overgrown
129	Pond (un-named ditch beside pond)	250 m	0.62	Survey Incomplete. 4 GCN surveys complete. GCN presence confirmed – refer to Table 3.1, Section 3.2.2
128	Pond	500 m	0.66	Scoped in
124	Pond	500 m	Scoped out – no HSI	Dried out
123	Pond	500 m	Scoped out – no HSI	Dried out
118	Pond	250 m	Scoped out – 0.31	Poor HSI score
122	Pond	250 m	0.65	Scoped in
113	Pond	250 m	0.65	Scoped in
112	Pond		0.53	Scoped in
90	Pond	250 m	Scoped out – 0.43	Poor HSI score
89	Pond	250 m	Scoped out – 0.36	Poor HSI score
88	Pond	250 m	Scoped out – 0.48	Poor HSI score
87	Pond	250 m	0.61	Attempted GCN survey but Pond dried out
86	Pond	250 m	Scoped out – 0.42	Poor HSI score
85	Pond	250 m	0.79	4 GCN surveys complete. No GCN presence – refer to Table 3.1, Section

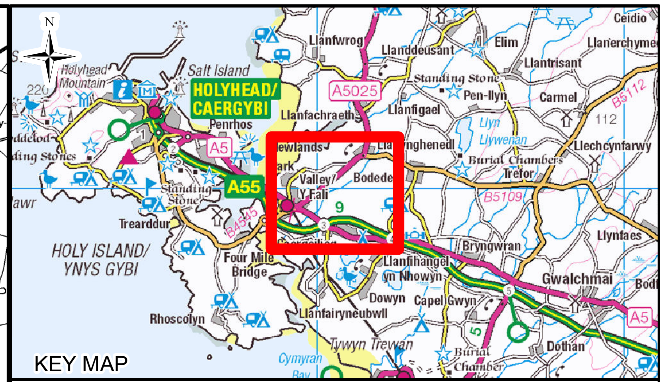
Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
				3.2.2
84	Pond	250 m	Scoped out – no HSI	Dried out
78	Pond	500 m	0.66	Scoped in
77	Pond	500 m	Scoped out – no HSI	Contaminated, no vegetation
74	Ditch	250 m	Scoped out – no HSI	Dried out
75	Pond	500 m	Scoped out – no HSI	Unsuitable
76	Pond	500 m	0.59	Scoped in
91	Pond	250 m	0.62	Scoped in
107	Pond	250 m	Scoped out – no HSI	Unsuitable
116	Pond	250 m	Scoped out – no HSI	Heavily silted
125	Pond	500 m	0.62	Scoped in
106A	Pond	250 m	0.61	Scoped in
138A	Pond	500 m	Scoped out – 0.46	Poor HSI score
87A	Pond	250 m	0.58	Survey Incomplete. 3 GCN surveys complete. No GCN presence
D114	Ditch	500 m	Scoped out – no HSI	Unsuitable
D119	Ditch	500 m	0.55	Scoped in
D14	Ditch	500 m	0.64	Scoped in
D142	Ditch	500 m	Scoped out – no HSI	Unsuitable
D18	Ditch	250 m	Scoped out – no HSI	Unsuitable
D18	Ditch	500 m	Scoped out – no HSI	Unsuitable
D20	Ditch	500 m	Scoped out – no HSI	Unsuitable
D21	Ditch	250 m	Scoped out – no HSI	Unsuitable
D23	Ditch	250 m	Scoped out – 0.27	Poor HSI score
D25	Ditch	250 m	0.63	Scoped in
D26	Ditch	500 m	Scoped out – no HSI	Unsuitable
D29	Ditch	250 m	Scoped out – no HSI	Unsuitable
D30	Ditch	500 m	Scoped out – no HSI	Unsuitable
D32	Ditch	500 m	Scoped out – no HSI	Unsuitable
D33	Ditch	500 m	Scoped out – no HSI	Unsuitable
D35A	Ditch	500 m	0.59	Scoped in
D35B	Ditch	500 m	0.80	Scoped in
D36	Ditch	250 m	Scoped out – no HSI	Unsuitable
D37	Ditch	500 m	Scoped out – no HSI	Unsuitable
D4	Ditch	250 m	0.63	Scoped in
D42A	Ditch	250 m	0.68	Scoped in
D46	Ditch	250 m	Scoped out – no HSI	Unsuitable

Water Body Reference	Water Body type	Survey Buffer 250 m/500 m (distance from A5025)	HSI Score	Details
D48	Ditch	250 m	Scoped out – no HSI	Unsuitable
D51	Ditch	250 m	Scoped out – no HSI	Unsuitable
D55	Ditch	500 m	Scoped out – no HSI	Unsuitable
D56	Ditch	250 m	Scoped out – no HSI	Unsuitable
D57	Ditch	250 m	0.71	Scoped in
D59	Ditch	250 m	0.68	Scoped in
D61	Ditch	500 m	Scoped out – no HSI	Unsuitable
D61	Ditch	500 m	Scoped out – no HSI	Unsuitable
D63	Ditch	500 m	Scoped out – no HSI	Unsuitable
D65	Ditch	250 m	Scoped out – no HSI	Unsuitable
D68	Ditch	250 m	Scoped out – no HSI	Unsuitable
D69	Ditch	250 m	Scoped out – no HSI	Unsuitable
D70	Ditch	250 m	Scoped out – no HSI	Unsuitable
D71	Ditch	250 m	Scoped out – no HSI	Unsuitable
D77	Ditch	500 m	Scoped out – no HSI	Unsuitable
D79	Ditch	500 m	Scoped out – no HSI	Unsuitable
D80	Ditch	500 m	0.61	Scoped in
D87	Ditch	250 m	Scoped out – no HSI	Unsuitable
109	Pond	500 m	0.80	Scoped in
80	Pond	500 m	0.66	Scoped in
9	Pond	250 m	0.34	Poor HSI score
65	Pond	250 m	Scoped out – no HSI	Unsuitable
66	Pond	250 m	Scoped out – no HSI	Unsuitable
67	Pond	250 m	Scoped out – no HSI	Unsuitable
34	Pond		Scoped out – no HSI	Unsuitable
34	Pond		Scoped out – no HSI	Unsuitable
105	Pond	500 m	Scoped out – no HSI	Does not exist
121	Pond	250 m	Scoped out – no HSI	Unsuitable
137	Pond		Scoped out – no HSI	Does not exist
137	Pond	500 m	Scoped out – no HSI	Does not exist

Source: Mott MacDonald 2012-2014

Appendix C. Maps of GCN Survey Results





Legend

- Indicative site extent
- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

- HSI survey completed only - scoped in for further survey
- HSI survey completed only - scoped out from further survey
- Surveys for presence/absence complete - great crested newts absent
- Surveys for presence/absence complete - great crested newts present
- Surveys for presence/absence incomplete - great crested newt presence/absence unconfirmed

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Title: **A5025 Road Improvements Contract**
Great Crested Newt Phase 2 Survey

0 250 500 1,000
Meters

Drawn	JW	Checked	TC
Approved	ECP	Rev No	P1
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Drawing No: MMD-320831-L-DR-XX-3388

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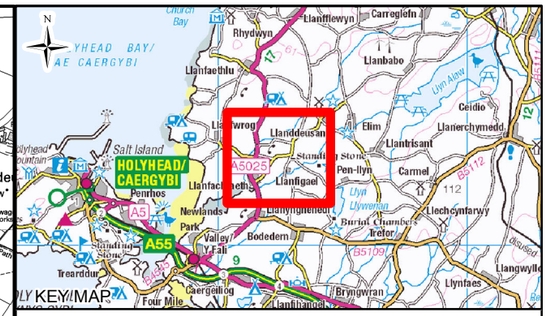

Legend

- Indicative site extent
- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

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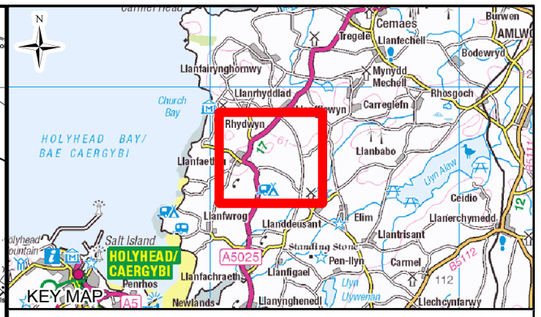

Legend

- Indicative site extent
- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

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Approved	ECP	Rev No	P1
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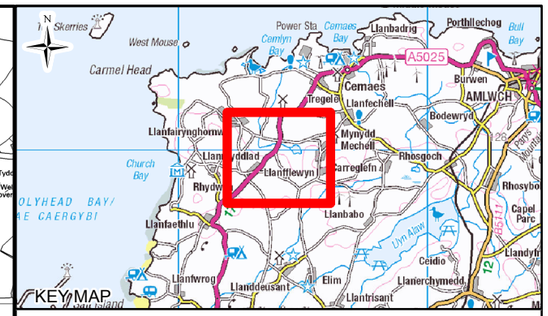
390000

389000

388000



Legend

- Indicative site extent
- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

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Approved	ECP	Rev No	P1
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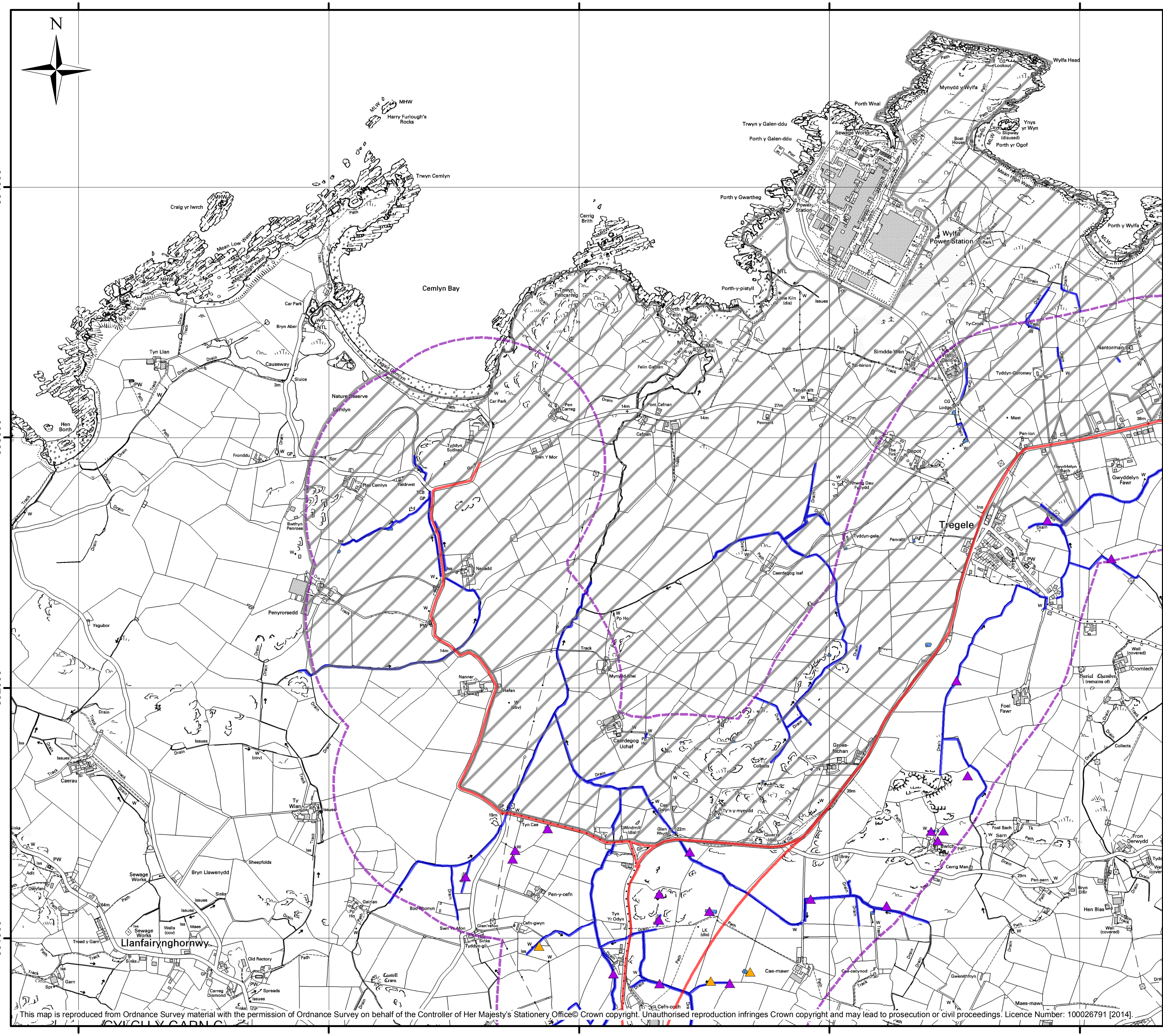

KEY MAP

Legend

- Indicative site extent
- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

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Meters

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Approved	ECP	Rev No	P1
Date:	30/04/2014	Scale: 1:15,000	@ A3

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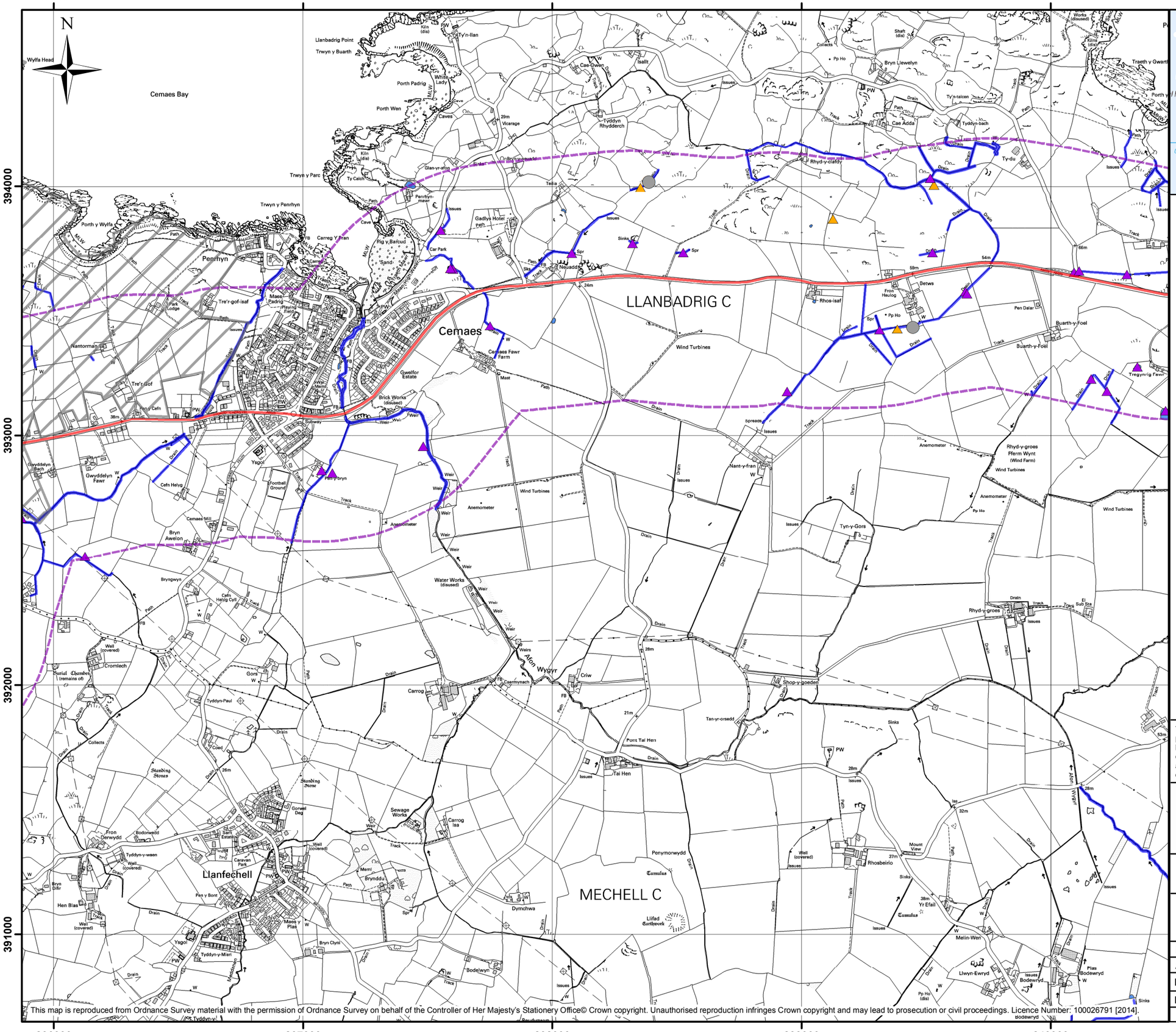

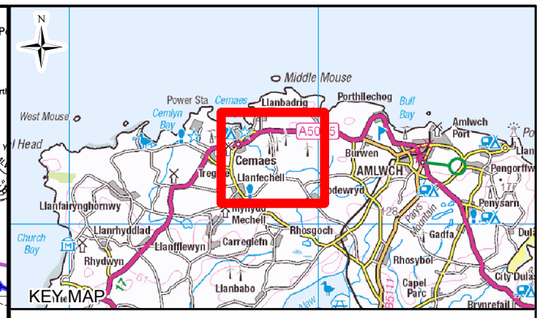

Legend

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- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

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Approved	ECP	Rev No	P1
Date: 30/04/2014		Scale: 1:15,000 @ A3	
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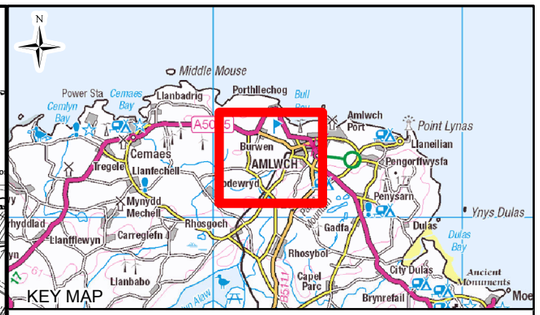

Legend

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- Indicative site extent - 500m buffer
- Jacobs site extent
- Potential great crested newt ditches
- Potential great crested newt ponds

Great crested newt survey status:

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