

Cardiff Parkway Developments Ltd
Cardiff Hendre Lakes
2019 Great Crested Newt Survey
Report

Environmental Statement Appendix 7.14

Issue | 11 February 2020

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.

Job number 252199

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Figure 1: Waterbodies surveyed for great crested newt in 2019

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Appendix A

Survey Weather Conditions

1 Introduction

1.1 Project Background

Ove Arup & Partners Ltd. (Arup) has been commissioned by Cardiff Parkway Developments Ltd (CPDL) to undertake baseline ecological surveys to inform the design and environmental assessment of a proposed new train station and expansion of the business park at St. Mellons, Cardiff.

The site currently consists of predominantly arable and pastoral farming on the western edge of St. Mellons. The site's field boundaries are formed by hedge and tree lines with reens throughout. There is a lake, recreational grassland and woodland to the west of the site. The wider landscape comprises residential and commercial properties, and broad-leaved woodland to the north and west. To the south, the land is bisected by the railway line with neighbouring agricultural land. To the east, there is further agricultural land.

An extended Phase 1 Habitat survey was undertaken in January 2017¹ (and updated in 2019²) to establish the habitats present on site and to assess the potential for legally protected species to be present. As a result of that survey and a desk study of available records, it was considered that there was the potential for great crested newt *Triturus cristatus* to be present and therefore a species-specific survey was required.

This report provides an update to the 2017 amphibian and reptile survey³ which was undertaken to inform the development of the project; this report determines the presence/likely absence of great crested newt within the site, to inform any additional survey or mitigation measures that may be required.

The survey area was based within the scheme boundary, and the waterbodies included in the survey are shown on Figure 1.

1.2 Survey Objectives

The aims and objectives of the surveys were to:

- determine the presence or likely absence of great crested newt within the survey area;
- where present, determine the distribution of great crested newts within the survey area and their usage of the site; and,
- provide sufficient information to inform the assessment of the impacts on great crested newts from the proposed development as part of the Environmental Impact Assessment.

¹ Arup (2017) Cardiff Hendre Lakes | 2017 Extended Phase 1 Habitat Survey Report

² Arup (2020) Cardiff Hendre Lakes | 2019 Extended Phase 1 Habitat Update Survey Report

³ Arup (2018) Cardiff Hendre Lakes | 2017 Amphibian and Reptile Survey Report

1.3 Legislative and Policy Context

Great crested newt is protected as a European Protected Species (EPS), under the Conservation of Habitats and Species Regulations 2017 (as amended), commonly referred to as the Habitats Regulations. Under this legislation it is an offence to:

- deliberately or recklessly kill, injure or capture them;
- deliberately or recklessly disturb them such as to affect its ability to breed or its local distribution, or;
- damage, destroy or obstruct access to a breeding site or resting place (e.g. shelter) used by these species.

Great crested newt is also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Legal protection makes it an offence to:

- intentionally kill, injure or take (capture) these species;
- possess or control alive or dead animal of these species, or any part of them, or;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which these species use for shelter or protection, or disturb them while they are using such a place.

Great crested newt is listed as a priority for nature conservation (Priority Species) within the 'UK Post-2010 Biodiversity Framework' Biodiversity Action Plan (UKBAP) and is specifically listed for Wales.

The Environment (Wales) Act 2016 includes a duty on all public authorities to have regard to the conservation of biodiversity in the exercise of their functions. This duty applies to government bodies, local authorities and statutory undertakers. The Act also requires lists to be published of Habitats and Species considered to be of Principal Importance for the Conservation of Biological Diversity. These are referred to as Section 7 habitats and species after the sections of the Act which require the publication of lists in each devolved area. Great crested newts are listed as Section 7 Species considered of Principal Importance for the Conservation of Biological Diversity.

Local Biodiversity Action Plans (LBAPs) continue to provide a list of habitats and species of conservation significance for their relevant area. Particular attention has been given to the Cardiff LBAP⁴ and the Species Action Plan for great crested newt.

⁴ Cardiff Council, 2008. *Cardiff Local Biodiversity Action Plan*.

2 Methodology

2.1 Desk Study

Biodiversity Information was obtained from the South East Wales Biodiversity Records Centre (SEWBRc)⁵ on the 31st January 2017. The search included information for amphibians up to 2km from the site centre point, and data was limited to the last 10 years.

The previous survey report detailing presence/absence surveys and HSI assessments carried out in 2017 was also reviewed as part of the study³.

2.2 Field Survey

In 2019, great crested newt habitat suitability and environmental DNA (eDNA) presence/absence surveys were undertaken of waterbodies within the survey area. These survey methodologies are described in the following sections.

2.2.1 Habitat Suitability Assessment

A search was made for waterbodies with potential to support great crested newts within the site boundary based on publicly available 1:25k Ordnance Survey mapping and during the Extended Phase 1 Habitat Survey in January 2017.

A great crested newt habitat assessment using Habitat Suitability Index⁶ (HSI) criteria was undertaken on the waterbodies shown in Figure 1 between April and October 2019 by experienced and suitably qualified ecologists from Arup.

The HSI is a numerical index which ranges from 0 and 1. It is calculated using 10 key habitat criteria and is based on the assumption that the habitat quality determines great crested newt presence/absence. Using this standard approach, waterbodies with high scores are more likely to support breeding great crested newt than those with a lower score (see Table 1 below).

Table 1: Habitat Suitability Index

HSI	Pond Suitability	Predicted Occupancy
<0.5	Poor	0.03
0.5-0.59	Below Average	0.20
0.6-0.69	Average	0.55
0.7-0.79	Good	0.79
>0.8	Excellent	0.93

The standard methodology is designed for ponds; however, it was adapted to take into account the long, linear waterbodies and reens habitat which characterise the Gwent Levels, and those within the survey area. This was achieved by excluding three HSI criteria (pond area, waterfowl and pond density indices), which were not relevant to the reens for the HSI assessment; this enabled the HSI score to

⁵ <http://www.sewbrec.org.uk/home.page>

⁶ Amphibian and Reptile Groups of the UK (2010) (ARG UK Advice Note 5, Great crested newt Habitat Suitability Index.

better reflect the habitat suitability of the linear waterbodies and interconnected reens. This adaptation of the methodology has previously been accepted by Natural Resources Wales (NRW) on other projects which Arup has undertaken. A standard form was used to record the assessment for each waterbody, including the GPS location, and photographs of field signs or relevant features.

For the purposes of the HSI, each waterbody within the survey area was defined as either:

- A pond – an artificial semi-stagnant waterbody (including lakes), filled by a stream or by man-made means, which wouldn't usually dry out; or,
- A reen – man-made drainage channel or canalised stream, which can dry out.

It is important to note that the HSI system is not sufficiently precise to conclude that any particular waterbody with a high score will support great crested newt or that any waterbody with a low score will not.

2.2.2 eDNA Survey

Great crested newt eDNA surveys were undertaken to inform likely presence/absence of great crested newt. In accordance with the guidelines⁷, surveys were undertaken within the optimum timeframe (survey dates were between 29 April 2019 and 14 May 2019) following the recommended methodology. Collected samples were sent to NatureMetrics Ltd⁸ for analysis.

Surveying for great crested newt using eDNA sampling has been shown to correctly detect great crested newt presence 99.3%⁹ of the time. This is therefore considered to be a suitable method of survey for this site.

eDNA surveys were undertaken on all waterbodies identified within the survey boundary, with the exception of Waterbodies 4, 37 and 38:

- Waterbody 4 was not sampled as it was considered unsuitable for great crested newt due to being dry at the time of visit.
- Waterbody 37 initially returned an inconclusive result; however, on the return visit to re-sample, it was considered unsuitable for great crested newt due to being dry at the time of visit.
- Waterbody 38 was not sampled as it was considered unsuitable for great crested newt due to being almost dry at the time of visit.

On the reens, sample points were spaced at equidistant intervals along the reen, where possible. At Hendre Lake, samples were spaced at equidistant intervals around the perimeter of the lake, where possible.

The survey visits were led by Matthew Levan an ecologist at Levan Ecology Ltd¹⁰ who holds a great crested newt survey license for work in Wales (S086534/1). He

⁷ <https://naturalresources.wales/media/3509/guidance-on-use-of-dna-sampling-of-great-crested-newts.pdf>

⁸ <https://www.naturemetrics.co.uk/>

⁹ Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

¹⁰ <http://www.levanecology.co.uk/>

was assisted by Arup ecologists Eloise Arif and Rosemary Cripps and Arup assistants Matthew Sambrook and Tom Roberts.

The weather conditions for each survey visit are provided in Appendix A.

2.2.3 Biosecurity Measures

The following measures were implemented to avoid the spread of amphibian diseases including chytridiomycosis and ranavirus, in accordance with best practise¹¹ UK Advice Note 4 (ARG UK, 2017):

- surveyors were made aware of disease issues and precautions;
- survey equipment and footwear was dedicated solely for use within the survey area; and,
- field equipment was stored on site.

All equipment used and which had come into contact with water or amphibians was disinfected at the end of the surveys, using Virkon®, ensuring that all disinfected solutions were poured directly into a sewerage system and flushed with clean water.

2.3 Limitations and Assumptions

The findings presented in this study represent those at the time of survey and reporting, and data collected from available sources. Ecological surveys are limited by factors which affect the presence of flora and fauna, factors such as the time of year and natural behaviour of the animals. Nevertheless, these surveys were conducted at the optimal survey periods and using methodologies which are in accordance with published guidelines.

Where there were limitations, surveyors still strove to collect as much relevant information within the survey criteria as possible.

The main limitations encountered during the great crested newt presence/absence surveys were:

- dense vegetation, including vegetation growing in and adjacent to a waterbody, preventing access to the ideal next sample point;
- high levels of sediment or other vegetation within a few waterbodies; DNA can be preserved in sediment from previous newt activity leading to a false positive result; and,
- low rainfall/warm weather resulting in some waterbodies drying out, which might retain water in other years.

Despite these limitations, it is considered that sufficient survey effort has been undertaken to have confidence in the validity of the results.

¹¹ Amphibian and Reptile Group UK (2017). UK Advice Note 4. Amphibian Disease Precautions: A Guide for UK fieldworkers. London: ZSL Institute of Zoology

3 Results

3.1 Desk Study

SEWBRc returned one record of great crested newt within 2km of the site; this was located 950m to the north-east of the site in 2008. The full desk study results are provided in the 2017 Extended Phase 1 Habitat Survey Report¹.

Previous HSI assessments and presence / absence surveys were carried out by Arup in 2017³. HSI scores for the waterbodies ranged from poor to good, with 15 waterbodies either not included or with no score. Presence / absence surveys undertaken on waterbodies with average or above suitability did not record any great crested newts. Smooth newts were recorded in four of the waterbodies (5, 8, 16 and 19). Palmate newt was recorded in waterbody 5. Other notable species recorded during the surveys included common frog, common toad and European eel. Stickleback were also recorded, as well as a range of aquatic invertebrates such as water scorpion, great diving beetle, and dragonfly nymph.

3.2 Field Survey

3.2.1 Habitat Suitability Assessment

HSI assessments were undertaken for waterbodies during the eDNA testing in spring 2019. Of the 39 waterbodies subject to a HSI assessment in 2019, 9 were good, 10 were average, 9 were below average and 11 were poor suitability. This is a change when compared to the HSI assessment results in 2017³, where 2 were good, 12 were average, 5 were below average, 5 were poor, and 15 had no score (due to various survey limitations) or were outside the 2017 survey boundary.

The differences in the HSI score between 2017 and 2019 were likely due to timing of maintenance activities making the waterbodies banks less and / or more suitable, the peening of the reens within the different years affecting the water level of the reens and possibly any effects the weather conditions on water levels of the reens. The results of these assessments are shown in Table 2 and Figure 2.

Table 2 HSI scores recorded during eDNA testing in 2019

Waterbody	2017		2019	
	HSI Score ¹²	HSI Category	HSI Score	HSI Category
1	0.32	Poor	0.66	Average
2	0.63	Average	0.66	Average
3	0.58	Below average	0.46	Poor
4	0.63	Average	0.41	Poor
5	0.69	Average	0.74	Good
6	0.69	Average	0.79	Good
7	0.63	Average	0.74	Good
8	0.71	Good	0.74	Good

¹² Waterbodies that are listed as 'N/A were outside of the 2017 survey boundary

Waterbody	2017		2019	
	HSI Score ¹²	HSI Category	HSI Score	HSI Category
9	0.57	Below average	0.57	Below average
10	0.48	Poor	0.53	Below average
11	No score		0.55	Below average
12	0.41	Poor	0.52	Below average
13	0.53	Below average	0.58	Below average
14	No score		0.45	Poor
15	0.6	Average	0.47	Poor
16	0.68	Average	0.45	Poor
17	0.62	Average	0.40	Poor
18	0.62	Average	0.76	Good
19	0.53	Below average	0.63	Average
20	0.53	Below average	0.45	Poor
21	0.62	Average	0.46	Poor
22	No score		0.42	Poor
23	No score		0.42	Poor
24	No score		0.62	Average
25	No score		0.55	Below average
26	0.63	Average	0.70	Good
27	0.45	Poor	0.61	Average
28	No score		0.65	Average
29	No score		0.44	Poor
30	0.71	Good	0.74	Good
31	N/A		0.69	Average
32	0.63	Average	0.71	Good
33	No score		0.74	Good
34	N/A		0.65	Average
35	N/A		0.62	Average
36	N/A		0.62	Average
37	N/A		0.50	Below average
38	0.45	Poor	0.59	Below average
39	N/A		0.55	Below average

3.2.2 eDNA Survey

All eDNA samples were retuned by NatureMetrics as negative for great crested newt. No great crested newts were identified during surveys, although other species noted during surveys included slow-worm and stickleback. Great crested newt are therefore considered likely absent from the survey area.

4 Conclusions

The 2017 surveys confirmed the presence of common amphibian species such as common frog, common toad, smooth newt and palmate newt.

No great crested newts were recorded during either the 2017 or the 2019 surveys, and great crested newt are therefore considered likely absent from the survey area.

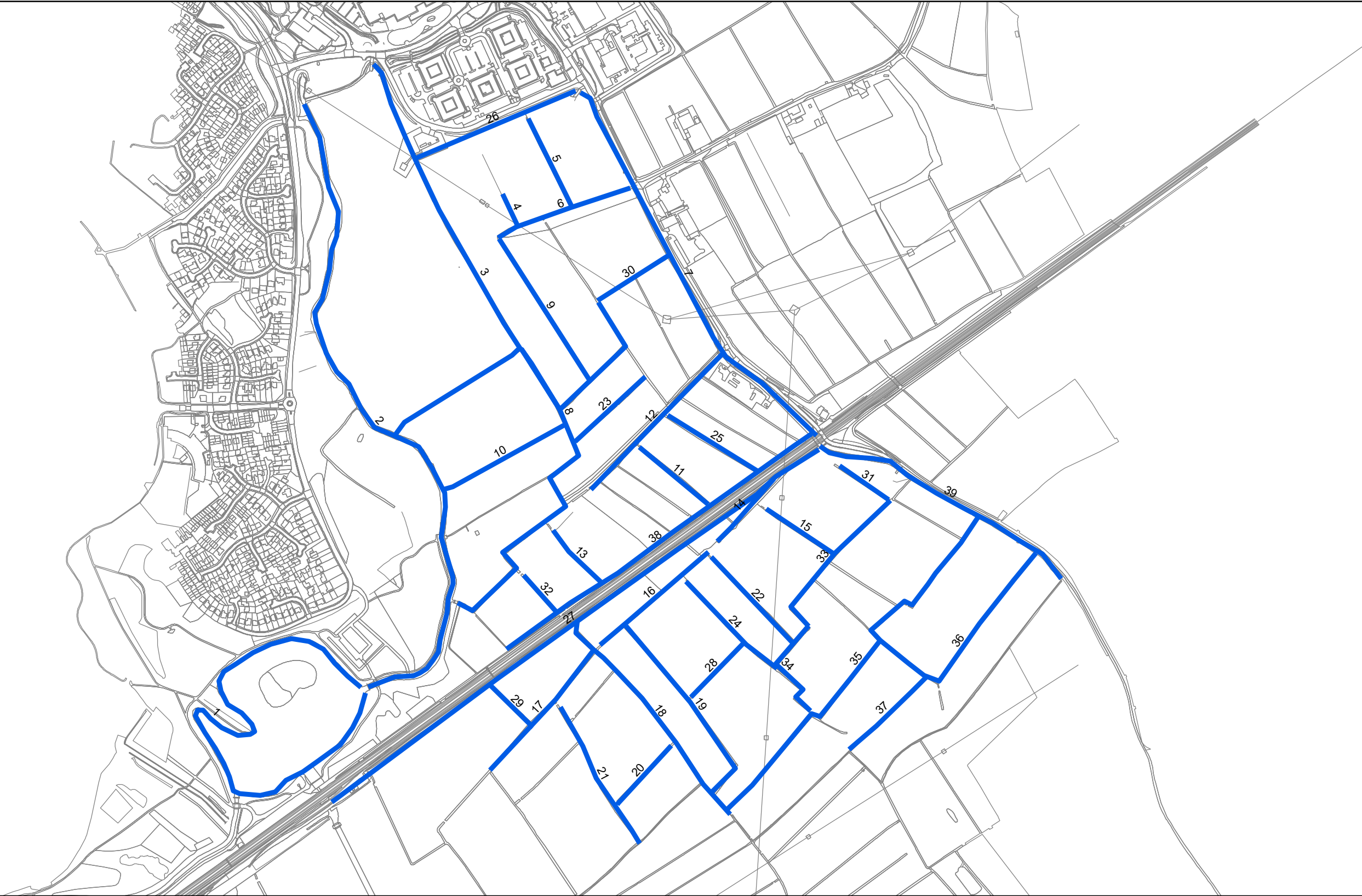
As a result of the presence of common amphibian species, it will be necessary to include appropriate mitigation measures during the construction of any future development. This is likely to include the phased clearance of vegetation and sensitive drawing down of waterbodies, along with amphibian fencing.

This report is the result of survey work undertaken between April and October 2019. This report refers, within the limitations stated, to the condition or proposed works of the site at the time of the surveys. Changes in legislation, guidance, best practice, etc. may necessitate a re-assessment/survey. No warranty is given as to the possibility of future changes in the condition of the site.


Figures

Figure 1: Waterbodies surveyed for great crested newt in 2019

Figure 2: Habitat Suitability Assessment Results



Legend

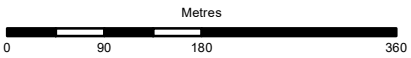
 2019 Waterbodies Surveyed for GCN

F1	2020-01-13	PW	PC	PC
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Issue	Date	By	Chkd	Appd
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Client

Cardiff Parkway Developments Ltd

Job Title

Cardiff Parkway

Waterbodies Surveyed

Scale at A3

1:7,000

Job No

252199-00

Drawing Status

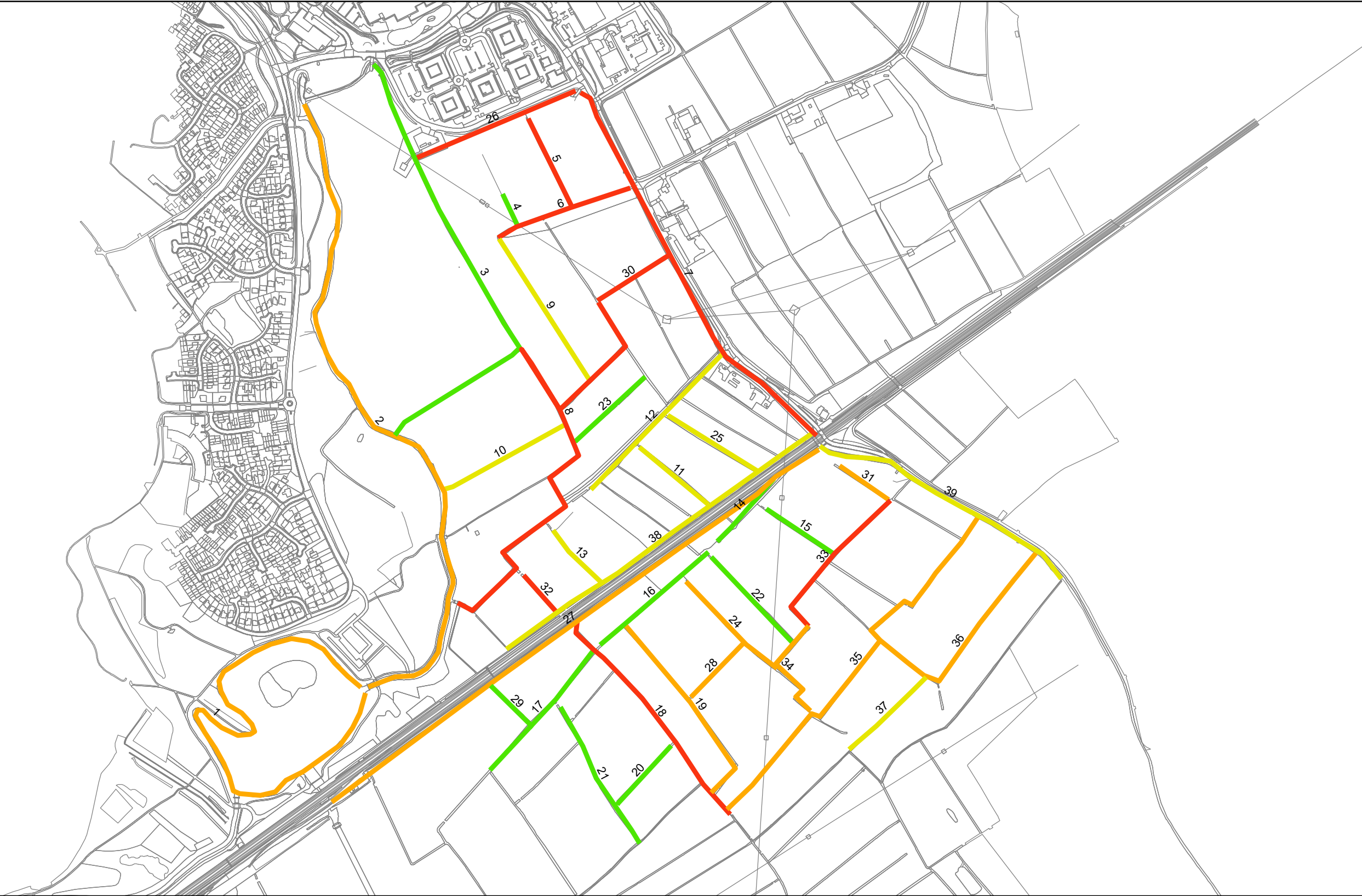
Preliminary

Drawing No

001

Issue

F1



Legend

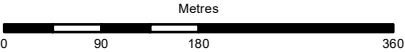
- Average
- Below average
- Good
- Poor

F1	2018-08-11	PW	PC	PC
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Issue	Date	By	Chkd	Appd
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Client

Cardiff Parkway Developments Ltd

Job Title

Cardiff Parkway

Habitat Suitability
Assessment Results

Scale at A3

1:7,000

Job No

252199-00

Drawing Status

For Issue

Drawing No

002

Issue

F1

Appendix A

Survey Weather Conditions

Table 3 Amphibian Survey Weather Conditions

Date	Temp. °C	Wind Speed (Beaufort Scale)	Wind Direction	Cloud Cover (%)	Conditions
29/04/2019	12	1	SE	90	Dry
01/05/2019	10	1	W	50	Dry
02/05/2019	13	1	W	95	Dry
03/05/2019	8	2	SW	75	Dry
08/05/2019	14	1	SW	100	Light drizzle
14/05/2019	18	1	W	50	Dry