

The Wrexham (Gas Fired Power Station) Order

6.4.6 Volume 4: Environmental Statement Appendix 11.2: Survey Data - Bat and GCN

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Appendix A11.2 ◆ Great Crested Newt and Bat Survey Methodologies and Results

INTRODUCTION

A11.1 Following the results of the initial 'Extended Phase 1' habitat surveys and a consultation and scoping exercise with Natural Resources Wales (NRW) and Wrexham County Borough Council (WCBC), detailed protected species surveys were undertaken. This technical appendix includes the methodologies and the results of the bat surveys and great crested newt surveys of the Power Station Complex Site. The evaluation of the baseline, mitigation and impact assessment are included in the main ES.

BAT SURVEYS

Objectives

A11.2 The objectives of the bat surveys was to gather sufficient information on roosting, foraging and commuting bats within the Power Station Complex Site in order to:

- Evaluate the importance of the habitats within the Power Station Complex Site for local bat populations;
- Identify the potential effects of the Scheme on the local bat population and determine whether the Scheme is likely to have a significant effect on the population;
- Aid in the design of the Scheme to avoid potential adverse effects on the local bat population or to design appropriate mitigation and/or compensation measures for potential adverse effects;
- Provide information to support a Natural Resources Wales (NRW) European Protected Species (EPS) 'development' licence, if required.

Guidance

A11.3 The bat surveys was undertaken in line with current guidance: Hundt, L (2012). *Bat Surveys: Good Practice Guidelines, 2nd Edition*. Bat Conservation Trust, London.

Methodology

Preliminary Roost Assessment

- A11.4 During the 'Extended Phase 1' walkover surveys, the potential for trees and buildings to support roosting bats was assessed according to the categories provided in Table 11.1 and Table 11.2. The categories are based on a survey effort which included an external inspection of buildings and viewing trees from the ground with the aid of binoculars. The categories were used as an initial assessment tool to aid recommendations for further survey, if necessary. The assessment was limited to visual assessments and external inspections undertaken from the ground only. Where access allowed, features were inspected with the aid of an endoscope, torch and examination mirror to determine the actual or likely presence of bats.
- A11.5 With regard to trees, the following ecological features which are considered to be of value to roosting bats were recorded:
- Holes/hollows/cavities;
 - Cracks or splits in major limbs;
 - Loose bark;
 - dense, thick-stemmed ivy.
- A11.6 With regard to buildings, the following features were afforded particular attention:
- Holes in walls, pipes, and gaps behind window frames, lintels and doorways;
 - Cracks and crevices in stonework and brickwork;
 - Gaps between ridge tiles and ridge and roof tiles (e.g. where mortar has fallen out);
 - Gaps between lintels above doors and windows;
 - Broken or lifted roof tiles, and lifted lead flashing;
 - Gaps between the eaves, soffit boards and outside walls;
 - Gaps behind weatherboarding, hanging tiles and fascia boarding;
 - Possible entry and exit points around the eaves, soffits, fascia and barge boarding, under tiles.
- A11.7 Whilst the categories in Table 11.1 and Table 11.2 attempt a standard terminology, there will be instances where an experienced bat surveyor may categorise a tree or building as having lower potential to support roosting bats than based purely on the features of the tree or building. For example, sources of disturbance may reduce the potential of a feature to support roosting bats, such as exterior light spillage reducing

the potential for light sensitive species. The potential of a tree or structure which appears to have features suitable for roosting bats but which is isolated from suitable foraging and commuting habitat may be reduced. Conversely, good foraging and commuting habitat directly adjacent to a tree, building or other structure can enhance the potential for roosting bats.

Table 11.1: Assessment of Tree Potential to Support Roosting Bats

Potential to Support Roosting Bats	Description
Negligible potential	Tree contains no suitable features for roosting bats. These can include young trees without ivy and without loose bark and obvious cracks/fissures. Usually saplings, semi-mature specimens with a small girth or mature trees which do not tend to form fissures as readily such as sycamore.
Low potential	Tree contains limited features suitable for roosting bats. Usually young (sapling or semi-mature) trees with some ivy or some loose bark ¹ but no obvious cracks or fissures. No evidence of bats found (e.g. droppings/staining).
Moderate potential	Tree contains some features suitable for roosting bats. Trees with some cracks or fissures ² and/or large amounts of ivy/loose bark. Usually semi-mature or mature specimens. Trees tend not to have large splits, hollow trunks or woodpecker holes. No evidence of bats found.
High potential	Tree contains features that are highly desirable for roosting bats. Trees with woodpecker holes/large cracks and/or crevices. Often with a hollow trunk. May support very dense ivy. No evidence of bats found.
Confirmed roost	Bats discovered roosting within the tree, or recorded emerging/entering a tree at dusk/dawn. Trees found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed roost record (as supplied by an established source such as the local bat group) would also fall into this category.

Table 11.2: Assessment of Building Potential to Support Roosting Bats

Potential to Support Roosting Bats	Description
Negligible potential	Buildings with no features capable of supporting roosting bats. Often these buildings are of a 'sound' well-sealed nature, or have a single skin and no roof void. They tend to have high interior light-levels, and little or no

¹ In some areas loose bark can be important for species such as barbastelle and, in the right geographic location, could be a feature providing high potential for this species.

² Crack or fissures should be sheltered from rain and wind to be of potential for roosting bats, for example a tree with a large crevice which is open at the top and becomes wet during rain would not be suitable for roosting bats.

Potential to Support Roosting Bats	Description
	insulation. Buildings without any roofs may also fall into this category.
Low potential	Buildings with limited features for roosting bats (e.g. shallow crevices where mortar is missing between building blocks/bricks). They may have open locations which may be subject to large temperature fluctuations and bat-access points may be constrained. No evidence of bats found (e.g. droppings/staining). Buildings may be surrounded by poor or sub-optimal bat foraging habitat. No evidence of bats found.
Moderate potential	Buildings with some features suitable for roosting bats. Buildings usually of brick or stone construction with a small number of features of potential value to roosting bats e.g. loose roof/ridge tiles, gaps in brickwork, gaps under fascia boards, and/or warm sealed roof-spaces with under-felt. These buildings may be used as occasional or transient roosts in the summer, but are unsuitable for large colonies. No evidence of bats found.
High potential	Buildings with a large number of features or extensive areas of obvious potential for roosting bats. Generally they have sheltered locations, with a stable temperature regime and suitable bat-access points. Could be suitable for a maternity roost. No evidence of bats found.
Confirmed roost	Bats discovered roosting within the building, or recorded emerging/entering the building at dusk/dawn. Building found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.

Presence/Absence Surveys

A11.8 Following preliminary roost assessments of ecological features for their potential to support roosting bats, presence/absence surveys were undertaken to identify the presence of any roosts within the features that were assessed as having bat roost potential. The presence/absence surveys were restricted to features present within the survey area of the Power Station Complex Site only which were likely to be affected by the Scheme.

A11.9 Following *Bat Surveys: Good Practice Guidelines, 2nd Edition* (Hundt, L, 2012), the presence/absence surveys comprised a suite of dusk emergence surveys and pre-dawn re-entry surveys to record bats emerging from or re-entering the features that were assessed as having bat roost potential and that may be affected by the Scheme.

A11.10 Twenty-nine trees and one building within the survey area of the Power Station Complex Site were subject to presence/absence surveys. The locations of the trees that were surveyed are indicated on Figure 11.5 (Trees with bat Roost Potential) and the location of the building that was surveyed is indicated on Figure 11.3 (Phase 1 Habitat Survey Plan, see TN 10). Features assessed as having high bat roost potential were

subject to two dusk emergence surveys and a pre-dawn re-entry survey; features assessed as having moderate bat roost potential were subject to one dusk emergence survey and a pre-dawn re-entry survey; features assessed as having low bat roost potential were subject to one dusk emergence survey. Subject to suitable weather conditions, dusk emergence surveys were undertaken from thirty minutes before sunset and continued for up to two hours after sunset. Pre-dawn re-entry surveys were undertaken from ninety minutes before sunrise and continued until sunrise. All presence/absence surveys were undertaken with the aid of bat detectors (*Batbox Duet*, *Wildlife Acoustics Echo Meter EM3* and *Pettersson D-200*).

A11.11 Table 11.3 below summarises the bat roost potential of the features within the survey area of the Power Station Complex that were subject to presence/absence surveys.

Table 11.3: Bat Roost Potential of Features Subject to Presence/Absence Surveys

Potential to Support Roosting Bats	Features
Low potential	Trees – TNs 33, 59, 62
Moderate potential	Building – TN; Trees – TNs 19, 36, 63
High potential	Trees – TNs 18, 20, 21, 22, 23, 25, 26, 29, 30, 31, 32, 35, 37, 38, 52, 53, 54, 55, 56, 57, 58, 60, 61

A11.12 The survey effort, the dates of the surveys and the weather conditions recorded during the presence/absence surveys are provided in Table 11.4 below.

Table 11.4: Survey Dates and Weather Conditions for Presence/Absence Surveys

Date	Survey Type	Sunset / Sunrise	Survey Times	Weather Conditions
22 nd May 2013	Dusk emergence survey: trees (TNs 37, 38)	21:16	20:45 – 22:45	Dry (light shower), 7-5°C, gentle breeze
5 th June 2013	Dusk emergence survey: building (TN 10)	21:33	20:57 – 23:00	Dry, 18-9°C, light breeze, clear
13 th June 2013	Dusk emergence survey: trees (TNs 18,25)	21:39	21:09-23:09	Dry (spell of drizzle), 14-10°C, cloudy
17 th June 2013	Dusk emergence survey: trees (TNs 29, 30, 31, 33)	21:41	21:11 – 23:25	Dry, 19-15°C; partly cloudy
18 th June 2013	Dusk emergence survey: trees (TNs 19, 20, 21, 22, 23)	21:41	21:11-23:15	Dry, 19-15°C; light air, cloudy
8 th July 2013	Dusk emergence survey: trees (TNs 26, 61, 62, 63)	21:37	21:20-23:15	Dry, 20-14°C, partly cloudy, light breeze
9 th July 2013	Dusk emergence survey: trees (TNs 30, 31, 32)	21:37	21:20-23: 5	Dry, 22-14°C, clear, light breeze
10 th July	Dusk emergence survey:	21:36	21:11-23:00	Dry, 20-19°C, cloudy,

Date	Survey Type	Sunset / Sunrise	Survey Times	Weather Conditions
2013	trees (TNs 56, 57, 58, 59, 60)			light breeze
11 th July 2013	Pre-dawn re-entry survey: trees (TNs 37, 38)	05:00	03:30-05:00	Dry, cloudy, calm
16 th July 2013	Dusk emergence survey: trees (TNs 35, 36)	21:30	21:00-23:00	Dry, 20-17°C, partly cloudy, light breeze
17 th July 2013	Pre-dawn re-entry survey: building (TN 10)	05:06	03:36-05:06	Dry, 14°C, cloudy, calm
29 th July 2013	Dusk emergence survey: trees (TNs 52, 54, 55)	21:13	20:43 – 22:20	Dry, 22-17°C, partly cloudy, gentle to moderate breeze
30 th July 2013	Pre-dawn re-entry survey: trees (TNs 18, 25)	05:26	03:26 – 05:26	Dry, 13°C, partly cloudy, light breeze
1 st August 2013	Dusk emergence survey: trees (TNs 52, 53, 60)	21:05	08:35 – 23:05	Dry, 20°C, light breeze, clear
2 nd August 2013	Pre-dawn re-entry survey: trees (TNs 19, 20, 21)	05:29	03:59 – 05:29	Dry, 17°C, partly cloudy, calm
5 th August 2013	Dusk emergence survey: trees (TNs 26, 61)	20:59	20.30-22.00	Dry, 15-13°C, partly cloudy, calm
6 th August 2013	Pre-dawn re-entry survey: trees (TNs 22, 23)	05:37	04:00-05:37	Dry, 14-15°C, partly cloudy, light breeze
11 th August 2014	Dusk emergence survey: trees (TNs 37, 38)	20:30	20:00 – 22:00	Dry, 16°C, partly cloudy, light breeze
12 th August 2014	Pre-dawn re-entry survey: tree (TN 31, 32)	05:30	04:00 – 06:00	Dry, 13°C, partly cloudy, light air/light breeze
12 th August 2014	Dusk emergence survey: trees (TNs 25, 35)	20:42	20:30 – 22:00	Dry, 16°C, cloudy, light air/light breeze
13 th August 2014	Dusk emergence survey: trees (TN 32, 21)	20:45	20:15 – 23:00	Dry, 15°C, partly cloudy, light air/light breeze
14 th August 2014	Pre-dawn re-entry survey: trees (TN 30, 35, 36, 61)	05:30	04:00 – 06:30	Dry, 11°C, partly cloudy, calm/light air
14 th August 2014	Dusk emergence survey: trees (TNs 22, 23)	20:45	20:00 – 22:00	Dry, 10°C, partly cloudy, light air/light breeze
18 th August	Dusk emergence survey: trees (TNs 18, 20)	20:31	20:00 – 22:00	Dry, 11°C, partly cloudy, light air/light breeze
20 th	Pre-dawn re-entry	05:52	04:02 – 06:30	Dry, 9°C, partly cloudy,

Date	Survey Type	Sunset / Sunrise	Survey Times	Weather Conditions
August 2014	survey: trees (TNs 26, 60)			light air/light breeze
8 th September 2014	Pre-dawn re-entry survey: tree (TN 29)	06:34	05:04 – 06:34	Dry, 10°C, partly cloudy, light air/light breeze
9 th September 2014	Pre-dawn re-entry survey: tree (TN 63)	06:36	05:06 – 06:36	Dry, 10°C, partly cloudy, light air/light breeze
10 th September 2014	Dusk emergence survey: tree (TN 29)	19:39	19:09 – 21:09	Dry, 14°C, partly cloudy, light air/light breeze

Activity Surveys

A11.13 Bat activity surveys were undertaken to determine the use of the Power Station Complex Site by bats (and by which species of bat) and to assess the likely effects of the Scheme on any important foraging habitats and commuting routes that may be present within the Power Station Complex Site. The bat activity surveys were restricted to the Power Station Complex Site only.

A11.14 Following *Bat Surveys: Good Practice Guidelines, 2nd Edition* (Hundt, L, 2012), the bat activity surveys comprised a suite of acoustic transect surveys and acoustic automated surveys to determine the levels of bat activity across the Power Station Complex Site.

A11.15 The transect surveys, which were walked at a constant speed, comprised dusk surveys that were undertaken from approximately fifteen minutes before sunset and continued for at least two hours, subject to suitable weather conditions. The transect route was designed to incorporate habitat features present within the Power Station Complex Site with potential for use by foraging and commuting bats and ensured that the Power Station Complex Site was adequately sampled within the recommended two to three hours. Listening points were included in the transect route to ensure sampling across the different habitats present within the Power Station Complex Site was evenly distributed; the surveyor stopped to observe and record bat activity for three minutes at each listening point. The transect route is indicated on Figure 11.6. In 2013, one transect survey was undertaken per month during May to July inclusive. In 2014, one transect survey was undertaken per month during August to September inclusive.

A11.16 The survey effort, the dates of the surveys and the weather conditions recorded during the transect surveys are provided in Table 11.5 below.

Table 11.5: Survey Dates and Weather Conditions for Transect Surveys

Date	Survey Type	Sunset / Sunrise	Survey Times	Weather Conditions
28 th May 2013	Dusk transect survey	21:23	21:23 – 22:00 (survey abandoned at 22:00 due to heavy rain)	Heavy rain, 10-8°C, cloudy, light breeze
10 th June 2013	Dusk transect survey	21:37	21:37 – 23:37	Dry, 14-11°C, light breeze, partly cloudy
24 th July 2013	Dusk transect survey	21:19	21:04 – 23:30	Dry (spell of light drizzle), 24-21°C, calm, cloudy
12 th August 2014	Dusk transect survey	20:45	20:25 – 23:00	Light rain to start and then dry, 15-12°C, light air/light breeze, cloudy
9 th September 2014	Dusk transect survey	19:42	19:30 – 21:42	Dry (rain at 21:00), 14-12°C, light breeze, partly cloudy

A11.17 The automated surveys, which were used to increase the survey effort and sampling time, comprised the use of an automated detector system across the Power Station Complex Site. The automated detector system was programmed to collect data for three consecutive nights and to record from thirty minutes before sunset until two hours after sunset and from two hours before sunrise until sunrise. The survey effort allowed for automated surveys to be undertaken at two locations per month. In 2013, the automated surveys were undertaken in May, June and July. In 2014, automated surveys were undertaken in August and September. The locations of the automated detector systems are indicated on Figure 11.6.

A11.18 The survey effort, the dates of the surveys and the locations of the automated detector systems are provided in Table 11.6 below.

Table 11.6: Survey Dates and Locations of Automated Surveys

Dates	Location (OS NGR)
28 th -31 st May 2013	SJ393506
24 th -27 th June 2013	SJ391503
10 th -13 th July 2013	SJ394503
24 th -27 th July 2013	SJ394505
12 th -15 th August 2014	SJ391503
15 th -18 th August 2014	SJ392502
8 th -11 th September 2014	SJ395502
8 th -11 th September 2014	SJ394503

A11.19 The transect surveys were undertaken using the *Wildlife Acoustics Echo Meter EM3* and the automated surveys were undertaken using the *Wildlife Acoustics Song Meter SM2+*; both of these detectors record bat ultrasound using full spectrum sampling. Subsequent

analysis and identification of bats from their echolocation calls was undertaken using a combination of *Pettersson Batsound (version 4.2)* and *AnalookW* software.

A11.20 All surveys were undertaken by suitably experienced ecologists and were led by NRW licensed bat surveyors. Surveys in 2013 were undertaken by Atkins and surveys in 2014 were undertaken by Quants Environmental Ltd.

Limitations to Survey

A11.21 The survey effort for the bat presence/absence surveys and bat activity surveys within the Power Station Complex Site has been undertaken over the course of two survey seasons, i.e. 2013 and 2014. With regard to the presence/absence surveys, this has meant that some trees were not subject to the minimum number of survey visits required to provide confidence in negative survey results in the same season. With regard to the activity surveys, although they only provide a snapshot of activity, information has not been collected for a complete bat activity season within the same year. During the bat activity surveys, one automated survey was undertaken in May 2013, and one automated survey was undertaken in June 2013 due to cattle damaging the automated detector system and one automated survey was undertaken in August 2013. In 2014, the automated detector system failed at one location in September. In addition, the presence of cattle affected the transect surveys during June 2013 and August 2014; the surveyors had to shorten the section of transect within the field present in the north-east corner of the Power Station Complex Site.

A11.22 It is considered that the results of the desk based assessment and field surveys are sufficient to inform the assessment. The results have allowed the identification and evaluation of ecological features within the study area, the assessment of the significance of any effects of the Scheme on the identified ecological features and the requirement for any necessary mitigation measures.

A11.23 With the exception of preliminary roost assessments (undertaken from the ground only), no bat surveys have been undertaken within the Gas Connection Route. With regard to the presence of trees with bat roost potential in the Gas Connection Route, following agreement with NRW and Wrexham County Borough Council, further bat surveys were not required to inform the assessment on the proviso that potential impacts to trees with bat roost potential were avoided by routing the gas connection at least 10 m from the trees. This mitigation has been included in the design of the Scheme. Following on from the fact that preliminary roost assessments have been undertaken from the ground only, comprehensive elevated roost assessments will be undertaken as part of the early mitigation measures during construction of the Scheme.

Results

Preliminary Roost Assessment

A11.24 There are thirty-three trees within or on the boundary of the Power Station Complex Site which have been assessed by Atkins in 2013 as having bat roost potential according to the categories provided in Table 11.1 above. The locations of these trees are indicated on the Tree with Bat Roost Potential plan (see Figure 11.5) with the references to Target Notes provided in Appendix 11.1.

A11.25 There are twenty-five trees within or on the boundary of the Gas Connection Route and AGIS Site which have been assessed by Atkins in 2013 as having bat roost potential according to the categories provided in Table 11.1 above. The locations of these trees are indicated on the Trees with Bat Roost Potential plan (see Figure 11.5) with the reference to Target Notes provided in Appendix 11.1. Following agreement with NRW and WCBC, further surveys of these trees have not been undertaken.

Presence/Absence Surveys

A11.26 In 2013, during the dusk emergence/pre-dawn re-entry surveys of these trees, a soprano pipistrelle was recorded emerging from a mature oak (see TN 61 on Figure 11.5). A soprano pipistrelle was recorded possibly emerging from another mature oak (see TN 26 on Figure 11.5). Both of these trees are located within the Power Station Complex Site but outside the footprint of the Power Station Complex. The emergence (or possible emergence) of single bats does not confirm that these trees supported maternity roosts.

A11.27 No other trees were confirmed as bat roosts during the 2013 and 2014 surveys. However, the nomadic nature of tree-dwelling bats means that tree roosts can be particularly difficult to detect and, therefore, it is considered that all the trees assessed as having bat roost potential retain a likelihood of supporting bats and their roosts.

A11.28 No bats were recorded emerging from or re-entering the single corrugated container building present within the Power Station Complex Site.

Activity Surveys

A summary of the bat activity transect surveys is provided in

A11.29 Table 11.7 below.

Table 11.7: Summary of Bat Activity Transect Surveys

Date	Species and Number of Bat Passes				
	Common pipistrelle	Soprano pipistrelle	Pipistrelle sp. (50 kHz)	Noctule	Myotis sp.
28 th May 2013	Survey affected by heavy rain and eventually abandoned – no bats recorded during survey				
10 th June 2013	10	9	0	2	6
24 th July 2013	4	15	2	19	5
12 th August 2014	1	11	0	1	0
9 th September 2014	2	194	0	0	2

A11.30 A summary of the bat automated surveys is provided in Table 11.8 below.

Table 11.8: Summary of Bat Activity Automated Surveys

Date	Location of (OS NGR)	Species and Number of Bat Passes				
		Common pipistrelle	Soprano pipistrelle	Pipistrelle sp. (50 kHz)	Noctule	Myotis sp.
28 th -31 st May 2013	SJ393506	421	180	23	808	2
24 th -27 th June 2013	SJ391503	126	341	17	11	14
10 th -13 th July 2013	SJ394503	241	377	337	51	0
24 th -27 th July 2013	SJ394505	103	211	35	11	0
12th-15th Aug 2014	SJ391503	2	194	0	0	2
15th-18th Aug 2014	SJ392502	0	124	0	0	0
8th-11th Sept 2014	SJ395502	2	8	0	0	0
8th-11th Sept 2014	SJ394503	SM2 malfunctioned				

GREAT CRESTED NEWT SURVEYS

Objectives

A11.31 The objectives of the great crested newt surveys was to confirm the presence or absence of great crested newt within the Power Station Complex Site and immediate vicinity and to gather sufficient baseline data in order to:

- Assess the size of any local great crested newt population;
- Evaluate the importance of the habitats within the Power Station Complex Site for any great crested newt population;
- Identify the potential effects of the Scheme on any great crested newt population and determine whether the Scheme is likely to have a significant effect on any population;
- Aid in the design of the Scheme to avoid potential adverse effects on great crested newts or to design appropriate mitigation and/or compensation measures for potential adverse effects;
- Provide information to support a Natural Resources Wales (NRW) European Protected Species (EPS) 'development' licence, if required.

Guidance

A11.32 The great crested newt surveys was undertaken in line with current guidance: English Nature (2001). *Great Crested Newt Mitigation Guidelines*.

Methodology

Desk Based Assessment

A11.33 Ordnance Survey (OS) maps and aerial images were reviewed in order to identify the presence of any ponds (and other suitable water-bodies) within 500 m of the Site. Great crested newts can travel large distances between breeding ponds and terrestrial habitat. Following guidance provided by Natural England (English Nature, 2001), land within 500 m of a great crested newt breeding pond should be treated as potential great crested newt terrestrial habitat and evaluated accordingly.

A11.34 In addition, maps that were provided by COFNOD, which indicate a percentage likelihood of great crested newt occurrence, were used to assess the favourable conservation status of great crested newts within the Site and wider environment. The maps are produced from a GIS model, developed by Amphibian and Reptile Conservation (ARC), COFNOD and Countryside Council for Wales (CCW).

Field Surveys

A11.35 The 'Extended Phase 1' habitat surveys recorded four ponds within the Power Station Complex Site. The desk based assessment revealed the presence of additional ponds within 500 m of the Site (i.e. both the Power Station Complex Site and the Gas Connection Route). All ponds within the Power Station Complex Site were subject to field surveys during 2013 in order to determine the presence or absence of great crested newts within the ponds. In addition, land access allowed surveys of a further five ponds within 500 m of the Power Station Complex Site. These ponds (Ponds 1, 2, 3, 4, 5, 6, 7, 8 and 9) are indicated on the Phase 1 Habitat Survey Plan (see Figure 11.3).

A11.36 Each pond was subject to a Habitat Suitability Index (HSI)³ assessment of their potential to support great crested newt. HSI is a quantitative (numerical index of between 0 and 1) method of evaluating habitat suitability for great crested newts. The method uses ten suitability indices known to affect great crested newt presence which then produces a HSI score; a HSI of 1 is optimal habitat while a HSI of 0 is very poor habitat. The method is not a substitute for undertaking great crested newt surveys and is used only as guidance to assist in determining where great crested newt surveys may be required.

A11.37 Presence/absence surveys of each pond were undertaken in accordance with Natural England guidance (English Nature, 2001) and comprised:

- Three survey methods per visit (torch survey, bottle-trapping and egg search);
- Four survey visits per pond in suitable weather conditions;
- Survey visits undertaken mid-March to mid-June, with at least two visits during mid-April to mid-May.

A11.38 A further two survey visits of ponds with confirmed great crested newt presence were undertaken, using the same survey methods, to assess the population size classes of these ponds. Following Natural England guidance (English Nature, 2001), these ponds were visited between mid-March and mid-June, with three visits being undertaken during mid-April to mid-May.

A11.39 The surveys were undertaken by suitably experienced Atkins ecologists and NRW licensed great crested newt surveyors. The dates of the surveys and the weather conditions recorded during the surveys are provided in Table 11.9, 10, 11 and 12 below.

Table 11.9: Survey Dates and Weather Conditions for Surveys of Ponds 1, 2, 3 and 4

Survey Visit	Date	Night-Time Air Temperature (°C)	Other Weather Conditions
1	16 th April 2013	13	Dry, clear, gentle breeze

³ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155

Survey Visit	Date	Night-Time Air Temperature (°C)	Other Weather Conditions
2	30 th April 2013	12	Dry, clear, calm
3	9 th May 2013	7	Drizzle, cloudy, slight breeze
4	14 th May 2013	6	Heavy rain, cloudy, moderate breeze
5	21 st May 2013	13	Dry, partly cloudy, calm
6	28 th May 2013	13	Rain, cloudy, gentle breeze

Table 11.10: Survey Dates and Weather Conditions for Surveys of Ponds 5, 6 and 7

Survey Visit	Date	Night-Time Air Temperature (°C)	Other Weather Conditions
1	22 nd April 2013	10	Dry, partly cloudy, calm
2	7 th May 2013	12	Dry, partly cloudy, calm
3	13 th May 2013	7	Dry, partly cloudy, calm
4	20 th May 2013	14	Dry, cloudy, calm
5	30 th May 2013	15	Dry, partly cloudy, calm
6	3 rd June 2013	16	Dry, clear, calm

Table 11.11: Survey Dates and Weather Conditions for Surveys of Pond 8

Survey Visit	Date	Night-Time Air Temperature (°C)	Other Weather Conditions
1	9 th May 2013	10	Dry, cloudy, slight breeze
2	13 th May 2013	7	Dry, partly cloudy, calm
3	20 th May 2013	14	Dry, cloudy, calm
4	3 rd June 2013	16	Dry, clear, calm

Table 11.12: Survey Dates and Weather Conditions for Surveys of Pond 9

Survey Visit	Date	Night-Time Air Temperature (°C)	Other Weather Conditions
1	9 th May 2013	10	Dry, cloudy, slight breeze
2	13 th May 2013	7	Dry, partly cloudy, calm
3	20 th May 2013	14	Dry, cloudy, calm
4	30 th May 2013	15	Dry, partly cloudy, calm
5	3 rd June 2013	16	Dry, clear, calm
6	10 th June 2013	14	Dry, partly cloudy, slight breeze

Limitations to Survey

A11.40 With regard to great crested newt surveys, the majority of ponds within 500 m of the Site have not been surveyed. However, it was not considered necessary to survey all the

ponds identified in the desk based assessment. All ponds within the Power Station Complex Site have been surveyed and modelling data developed by ARC, COFNOD and CCW have been used to indicate the likelihood of encountering great crested newts within the Gas Connection Route. It is considered that this combination of survey data and modelling data is sufficient to inform the assessment and its conclusions.

A11.41 During the great crested newt surveys of the Power Station Complex Site, Pond 1 (see Figure 11.3) could not be bottle trapped due to it being lined with concrete. This limitation has not affected the assessment of the potential effects on the local great crested newt meta-population. An egg search confirmed the presence of great crested newt within the pond and, to inform the assessment and its conclusions, a population size class of the Power Station Complex Site as a whole has been used rather than for this pond on its own.

Results

Desk Based Assessment

A11.42 The desk study identified three ponds within the Power Station Complex Site and a further twenty-eight ponds within 500 m of the Power Station Complex Site. In addition, the 'Extended Phase 1' habitat survey identified one additional pond within the Power Station Complex Site and two additional ponds within the survey area but outside the Power Station Complex Site (located within the linear woodland strip along the northern boundary of the Power Station Complex Site). Due to the absence of barriers to dispersal and their close proximity, it is considered that there will be regular interchange of animals between these ponds.

A11.43 There are no ponds present within the Gas Connection Route and AGI Site. The desk study identified sixty ponds within 500 m of the Gas Connection Route and AGI Site. Due to the absence of barriers to dispersal and their close proximity, it is considered that these ponds are likely to support a great crested newt meta-population.

Field Surveys

A11.44 The presence of great crested newt was recorded in three of the four ponds within the Power Station Complex Site (Ponds 1, 2 and 6, see Figure 11.3) and three of the five ponds surveyed that are located outside of the Power Station Complex Site (Ponds 4, 7 and 9, see Figure 11.3). A summary of the results showing the maximum adult count per pond in any one survey visit and the population size class⁴ is provided in Table 11.13 below.

Table 11.13: Great Crested Newt Survey Results for Power Station Complex Site

⁴ English Nature (2001). *Great Crested Newt Mitigation Guidelines* (p. 28). English Nature, Peterborough

Pond	COFNOD Record	HSI Score (Atkins 2013)	Presence/ Absence (Atkins 2013)	Maximum Adult Count	Breeding (presence of eggs)	Population Size Class
Pond 1 (within Site)	Yes	0.75 – good suitability	Present	Only eggs recorded	Yes	Unknown (adults were not recorded, but at least low)
Pond 2 (within Site)	Yes	0.73 – good suitability	Present	30	Yes	Medium
Pond 3 (immediately outside Site)	No	0.66 – average suitability	Absent	N/A	N/A	N/A
Pond 4 (immediately outside Site)	No	0.66 – average suitability	Present	1	No	Small
Pond 5 (within Site)	Yes	0.74 – good suitability	Absent	N/A	N/A	N/A
Pond 6 (within Site)	Yes	0.87 – excellent suitability	Present	15	Not confirmed	Medium
Pond 7 (immediately outside Site)	Yes	0.71 – good suitability	Present	3	Not confirmed	Small
Pond 8 (outside Site)	No	0.52 – below average suitability	Absent	N/A	N/A	N/A
Pond 9 (outside Site)	Yes	0.77 – good suitability	Present	4	Not confirmed	Small

A11.45 As it is considered reasonably likely that there will be regular interchange of animals between these ponds, the maximum counts per pond can be summed across ponds for counts obtained on the same visit using the same field survey method. Following this, a total count of great crested newts within the Power Station Complex Site and immediate surrounds can be expressed as 30 animals and, therefore, the population size can be classed as medium. The survey results also indicate that the population is a breeding population.