

Cheshire Ecology Ltd.

**RHOSROBIN, WREXHAM
GREAT CRESTED NEWT SURVEY**

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EXECUTIVE SUMMARY

Cheshire Ecology Ltd. was commissioned by the Castlemead Group Ltd. to undertake a Great Crested Newt Survey of a series of water-bodies near Rhosrobin, in Wrexham County Borough, Wales, henceforth referred to as 'the site'. The centre of the site is located at OS Grid Reference SJ330529. The site is roughly L-shaped and located at a height of approximately 90m AOD.

The Castlemead Group Ltd. intends to apply for planning permission to build 117 houses on the site.

The water bodies include three traditional field ponds (WB1, WB7 and WB8), a river (WB4), a seasonal water-body (WB5), an artificial lake (WB6), two flooded ditches (WB10 and WB11), two ponds associated with industrial use (WB2 and WB3) and an ornamental pond (WB9). Two of the water-bodies had dried up before the GCN survey was carried out on the 16th April 2014 (WB5 and WB8) and could not be surveyed.

All of the water-bodies within 500m of the site boundary were investigated for their great crested newt potential. The assessment of the aquatic habitat used the Habitat Suitability Index, as described by Oldham *et al* (2000).

A Habitat Suitability Index (HSI) was calculated for all water-bodies within 500m of the site boundary. The HSI allows an assessment of the suitability of the water-bodies in respect of GCN breeding and population survival requirements.

Great crested newts were found in two water-bodies, WB6 and WB7. Both of these water-bodies are located immediately to the north of the Rhosddu Industrial Estate and are 366m and 420m from the site respectively.

In the circumstances we do not feel that any mitigation is necessary for the proposed development. The reasons for this are as follows:

- There are no water-bodies within the site boundary. There will therefore be no loss of breeding sites.
- The proposed development will only have an impact upon semi-improved grassland, which is of moderate value for great crested newts. The grassland is 366m away from the nearest breeding pond.
- The proposed development will not cause any fragmentation of the population of great crested newts and there is no loss of connectivity. Data from Cofnod (2014) shows that the majority of GCN records within 1km are located to the north of Lower Stansty. The area to the west of the site would seem to be the centre of this population. The survey found no existing populations within 500m to the north, east or south of the site.

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- No detriment will occur to the conservation status of the great crested newts in the local area.

The impact of the proposed development can be calculated using the table on page 34 of the *Great Crested Newt Mitigation Guidelines* (English Nature 2001). According to the table the destruction of the grassland will have a **LOW** impact.

Based upon our findings water-body WB6 has a **MEDIUM** population of great crested newts and WB7 has a **SMALL** population.

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1 INTRODUCTION

- 1.1.1 Cheshire Ecology Ltd. was commissioned by the Castlemead Group Ltd. to undertake a Great Crested Newt Survey of a series of water-bodies near Rhosrobin, in Wrexham County Borough, Wales, henceforth referred to as 'the site'. The centre of the site is located at OS Grid Reference SJ330529. The site is roughly L-shaped and located at a height of approximately 90m AOD.
- 1.1.2 The Castlemead Group Ltd. intends to apply for planning permission to build approximately 117 houses on the site.

1.2 Site context

- 1.2.1 The site is bounded to the north by Plas Acton Road (Ffordd Plas Acton) and to the west by Main Road (Ffordd Fawr). A new cemetery lies to the north and to the southeast a railway line. The southern boundary is formed by a recent housing development, known as 'Churchlea'. The site boundary is shown on Drawing CE119-1.



Figure 1: Site location

- 1.2.2 The site consists of five agricultural fields, divided by hedgerows. Most of the fields are shown as arable land in an undated Phase 1 Habitat Survey plan provided by Cofnod (2014). The site is currently unmanaged and covered by tussocky, semi-improved grassland.
- 1.2.3 Study of old Ordnance Survey maps shows the site has probably always been agricultural land and there is no evidence for any buildings on the site. The site is traversed from west to east by a public footpath. The site presumably used to belong to the owners of Pandy Farm, which lies immediately to the east of the site. The farm has now been converted into residential housing.
- 1.2.4 The site is located 260m to the south of the River Alyn and Wilderness Wood. The majority of the land to the west is used for agriculture, but there is a small business park to the north and residential housing to the west, south and east. The area to the south and east is predominantly residential housing.
- 1.2.5 The most important habitats within the site boundary are, in order of importance:
- Neutral grassland
 - Hedgerows
 - Scrub
 - Marshy grassland
 - Amenity grassland
- 1.2.6 The original Extended Phase 1 Habitat Survey (Cheshire Ecology, 2014) found a total of eight water-bodies within a radius of 500m of the site boundary. A further three were discovered as a result of the great crested newt survey. The Extended Phase 1 Habitat Survey has been revised to reflect this.
- 1.2.7 Distances have been measured in metres from the site boundary.

1.3 Legislation

- 1.3.1 The great crested newt *Triturus cristatus* is protected under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is also protected under The Conservation of Species and Habitats Regulations 2010 (as amended) and is known as a 'European Protected Species' (EPS).

The combined legislation makes it illegal to:

- Intentionally or deliberately to capture, kill or injure a great crested newt;
- Intentionally or recklessly damage, destroy or obstruct access to any place used for shelter and protection including resting and breeding places, whether occupied or not;
- Deliberately, intentionally or recklessly to disturb a great crested newt when it is in a place of shelter.

- 1.3.2 The great crested newt is a 'Priority Species' in the UK Biodiversity Action

Plan (UKBAP) and the subject of a Species Action Plan in the Wrexham County Council Local Biodiversity Action Plan (LBAP).

1.4 Data trawl

- 1.4.1 The desktop study involved conducting database searches for statutory and non-statutory sites, legally protected plant and animal species and other features of interest within a radius of 2km of the site. The central grid reference was used as the focus for all these searches.
- 1.4.2 Great crested newts (GCN) have been recorded within three hundred metres of the site (Cofnod, 2014). The record dates from 1992 and is mainly of historical interest. The water-body was recorded during the Extended Phase 1 Habitat Survey as Water-body 1 (WB1).
- 1.4.3 There is a single record for GCN from a water-body beside the River Alyn, approximately 535m to the northeast of the site.
- 1.4.4 There are a large number of records from the site of the former Wrexham Metal Box Company, which was located approximately 800m to the west of the site. The site had subsequently been developed for residential housing.
- 1.4.5 Slightly closer to home there are records of GCN from the eastern side of the Wrexham to Connah's Quay railway line. These are approximately 600m from the site and close to WB5, WB6 and WB7.

1.5 Description of water-bodies

- 1.5.1 The water bodies include three traditional field ponds (WB1, WB7 and WB8), a river (WB4), a seasonal water-body (WB5), an artificial lake (WB6), two flooded ditches (WB10 and WB11), two ponds associated with former industrial use (WB2 and WB3) and an ornamental pond (WB9). Two of the water-bodies had dried up before the GCN survey was carried out on the 16th April 2014 (WB5 and WB8) and could not be surveyed.

Water-body 1

- 1.5.2 Water-body 1 (WB1) is located approximately 280m from the site boundary and is situated in a cattle-grazed field. The water-body is roughly oval in shape and measures approximately 550m² in extent. There were no aquatic plants present and the margins are badly poached by the cattle. Vegetation was limited to patches of sweet grass *Glyceria fluitans* and creeping bent *Agrostis stolonifera*.
- 1.5.3 The water was extremely turbid throughout the survey period and badly polluted with manure. A small number of invertebrates were present including tubifex worms *Tubifex sp.*, water boatmen *Corixa sp.* and great diving beetles *Dytiscus marginalis*.

Water-body 2

- 1.5.4 WB2 is roughly oval in shape and is located to the west of Gwersyllt Hall Farm, approximately 460m from the site. The water-body is fed by a fast-flowing stream, which passes over a roughly made concrete cascade (see Photograph 2) and then exits at the eastern end. It then flows through a culvert and eventually empties into the River Alyn (see Photograph 3). The water-body had an unpleasant odour and appears to be regularly flooded by sewage. The bed of the water-body is scoured by the stream and was considered unsuitable for great crested newts. It seems likely that the water flow used to be controlled by a sluice gate and that it was originally much higher than it is now.
- 1.5.5 The water-body has a clump of alder trees *Alnus glutinosa* growing in the middle of it and there are several clumps of marsh marigold *Caltha palustris* and yellow flag *Iris pseudacorus*.

Water-body 3

- 1.5.6 Water-body 3 is a disused millpond and is situated next to the River Alyn (see Photographs 4 and 5). It is approximately 330m from the site. The western bank is fringed by yellow flag and has extremely clear water. Two streams maintain the water level, with the excess flowing into the River Alyn. The water-body has a variety of invertebrate life and is immediately next to the river.

Water-body 4

- 1.5.7 The River Alyn is located approximately 260m to the north of the site. The river is fast flowing and was considered to be unsuitable for GCN (see Photograph 6).

Water-body 5

- 1.5.8 This seasonal body of water was located to the north of Rhosddu Industrial Estate (see Photograph 7). It is situated approximately 400m from the site. The water-body was roughly triangular in shape and had no aquatic vegetation. It was dry before the GCN survey commenced.

Water-body 6

- 1.5.9 This is a deep pool, measuring approximately 1800m² in extent (see Photographs 8 and 9). The water body has steep sides and is located to the north of the Rhosddu Industrial Estate. The depth of the water-body is uncertain but it appears to be at least 2m deep. There is no emergent aquatic vegetation, but submerged vegetation could be seen when the water level dropped in early May 2014. The denuded margins of the water-body suggest that it is probably colonised by Canada Geese in the winter months. It is located 366m from the site.
- 1.5.10 A rush-filled ditch connects water bodies 6 and 7. The ditch was dry when the GCN surveys were started but had filled with water by the time that the 5th

survey was conducted on 2nd June 2014. The ditch is of limited value to GCN because it had dried out again when the site was visited on 19th June 2014.

Water-body 7

- 1.5.11 This is a small, irregularly shaped water-body, located approximately 420m from the site (see Photograph 10). The water-body is of uncertain depth and has had blocks of concrete dumped in it. The water-body is surrounded on three sides by hawthorn *Crataegus monogyna* and grey willow *Salix cinerea* trees and only the southern quarter was accessible. The water was usually very turbid and polluted with sheep manure. A dead sheep was found on the last survey. The ditch is connected to WB 6 by a rush-filled ditch (see photographs 11 and 12).

Water-body 8

- 1.5.12 This disused water-body is located on the opposite side of the railway line, approximately 150m from the site (see Photograph 13). The water-body was dry at the time of the survey, but it appears to have been constructed by building a raised bank at the end of a deep ditch. The ground was covered with a film of dead filamentous green algae when the water-body was surveyed in May 2014. The former water-body is heavily shaded and has no GCN potential.

Water body 9

- 1.5.13 Anecdotal evidence suggests that this water-body was constructed by the previous house owner and has always been for ornamental purposes (see Photograph 14). It is crossed by a wooden bridge and has crystal-clear water, with plenty of submerged vegetation. The water-body is fed by two small streams and drains away at the eastern end. It had potential for GCN when it was originally surveyed. It is located approximately 350m from the site.

Water-body 10

- 1.5.14 WB10 is a flooded ditch between two horse-grazed fields and is located approximately 150m from the site (see Photograph 15). The ditch was covered by filamentous green algae and was very turbid. The margins are badly poached and covered with sparse *Glyceria fluitans* and *G. declinata*. The water-body has low potential for GCN.

Water-body 11

- 1.5.15 Water-body 11 is a flooded ditch, located near the A483. It is located approximately 290m from the site (see Photograph 16). The ditch may be part of Watt's Dyke, which forms the eastern bank of the water-body. The water is shallow and the margins badly poached by horses. There was little aquatic vegetation at the start of the survey, other than a small patch of common water-starwort *Callitriche stagnalis*, but this had become quite extensive by the time that the survey was completed in early June 2014. This water-body was assessed as having low potential for GCN.



Figure 2: Location of water-bodies

1.6 METHODS

1.7 Introduction

1.8 Amphibian Assessment

- 1.8.1 All of the water-bodies within 500m of the site boundary were investigated for their great crested newt potential. The assessment of the aquatic habitat used the Habitat Suitability Index, as described by Oldham *et al* (2000).
- 1.8.2 A Habitat Suitability Index (HSI) was calculated for all water-bodies within 500m of the site boundary. The HSI allows an assessment of the suitability of the water-bodies in respect of GCN breeding and population survival requirements. The results of the GCN survey are summarised in Table 1.

Water body	HSI	Distance from site	Great crested newts present	Smooth newts present	Palmate newts present
1	0.47	280m	No	No	No
2	0.85	460m	No	No	No
3	0.92	330m	No	Yes	No
4	Non	260m	N/A	N/A	No
5	0.29	400m	No	Dry	No
6	0.44	366m	Yes	Yes	No
7	0.50	420m	Yes	Yes	No
8	0.52	150m	No	Dry	No
9	0.99	350m	No	Yes	Yes
10	0.39	150m	No	No	No
11	0.44	290m	No	Yes	No

Table 1: Summary of water-bodies within 500m of the site.

1.8.3 Egg laying survey

- 1.8.4 All of the water-bodies were inspected for evidence of egg laying, using the methods described in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). Live and submerged vegetation was inspected where it was accessible. Particular attention was paid to species such as water forget-me-not, small sweet-grass *Glyceria declinata* and creeping bent *Agrostis stolonifera*, which GCN are known to use for egg laying. The results are shown in Appendix 4.

1.9 Netting survey

- 1.9.1 Water-bodies WB 1, WB10 and WB11 were grazed by cattle or horses throughout the survey period and were therefore netted for evidence of adult GCN or larvae, following the methodology described in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). Each water-body was

surveyed for fifteen minutes on four occasions, where there was sufficient water available. The results are shown in Appendix 4.

1.10 Torch survey

- 1.10.1 Water bodies WB2, WB3, WB6, WB7, WB9, WB10 and WB11 were checked for evidence of adult GCN or larvae, using a high intensity Clulite Clubman CB2 torch. The torch surveys were carried out at night, when there was little or no wind, no rain and with temperatures above 5°C. The results are shown in Appendix 1.
- 1.10.2 Large numbers of newts were counted with the assistance of two Brannan hand-held tally counters. However it is likely that the count has underestimated the number of smooth newts present. The water body is quite large and the majority of the newts recorded were either seen in shallow water near the margins or near the surface of the water.

1.11 Bottle trap survey

- 1.11.1 Water bodies WB3, WB6, WB7 and WB9 were surveyed using bottle traps. Bottle trapping was undertaken on four occasions on the evenings of 16th April 2014, 26th April 2014, 9th May 2014 and 18th May 2014, with the traps being checked the following morning. Great crested newts were only found in WB6 and WB7. These were then surveyed on two more occasions, on 2nd June 2014 and 9th June 2014. The survey was conducted following the methodology described in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). The results are shown in Appendix 4.
- 1.11.2 The bottle traps were placed in groups of five at 2m intervals to ensure that none were left in place by accident. An air bubble was left in each trap. Dr Martin Page MCIEEM (Natural Resources Wales Licence Holder 43199:OTH:SA:2013) led the survey team, with support from Tim Green (NRW Licence Holder 53424:OTH:SA:2014), John Clark and Simon Wood. The results are shown in Appendix 4.
- 1.11.3 Water-bodies 5 and 8 could not be surveyed because they were dry.
- 1.11.4 The distance of Water-body 6 from the site was checked with a measuring wheel.

1.12 Limitations

- 1.12.1 Water-body WB1 is located in a cattle-grazed field and the margins of the pool were badly poached throughout the survey. A herd of bullocks was always present and as a consequence it was decided that it was impractical to carry out a bottle-trapping survey. The main concern was that the bottles would be trampled and great crested newts that had been trapped would either drown or be crushed by the cattle. Surveying was therefore limited to torching, netting and egg-searches.

- 1.12.2 Water-body WB2 was considered unsuitable for great crested newts because of the fast-flowing water. There was evidence that the water had scoured the bottom of the water-body and any amphibians that found their way into it would be washed downstream into the River Alyn. The stream was badly polluted with sewage during the second visit and it was considered unsafe to net. The water-body was torched on four occasions, but no netting or bottle trapping was carried out for reasons of health and safety. It was obvious from the pieces of discarded toilet tissue caught in the tree branches and roots that the stream is regularly polluted.
- 1.12.3 Water-bodies WB10 and WB11 are flooded ditches. Both are located in horse-grazed fields and the margins were badly poached and very turbid. Bottle trapping was considered un-realistic for the same reasons as stated above and netting was carried out instead. The ditches are quite shallow and there was insufficient water depth to carry out bottle trapping until the final survey on 9th/10th June 2014.
- 1.12.4 The depth of WB6 fluctuated considerably during the survey season. At one point it was estimated that the water level had dropped approximately 100cm below the surrounding land. The water-body was surveyed on one occasion using bottle-traps on long lines.

2 RESULTS

- 2.1.1 Great crested newts were only found in two water-bodies, WB6 and WB7. Both of these water-bodies are located immediately to the north of the Rhosddu Industrial Estate and are 366m and 420m from the site respectively.
- 2.1.2 The peak number of GCN was recorded in WB6 on 18th May/19th May 2014 when nine male and eight female newts were caught in the bottle traps. The torching survey revealed twenty-two male and ten female newts on the evening of 18th May. Numbers declined in June and only three male GCN and eight female were recorded on the 2nd June.
- 2.1.3 The numbers of GCN were much lower in WB7, with two male GCN recorded in the bottle traps on 18th May 2014 and a single female. No GCN were recorded by torching on the 18th May 2014 in WB7. However the water was very turbid at the time and it is unlikely that GCN would have been seen, even if they were present.
- 2.1.4 GCN eggs, efts (immature newts) and larvae (recently hatched newts) were recorded from Water-body WB6.
- 2.1.5 Smooth newts were found in WB3, WB6, WB7, WB9 and WB11. The population was very high in WB6, with over two hundred male and three hundred female smooth newts being recorded during the survey on 26th/27th April 2014. The number of smooth newts in WB6 is likely to be an underestimate.
- 2.1.6 A very small number of palmate newts were recorded from WB9. A single male palmate newt was recorded on 9th May 2014 and 18th May 2014.

3 CONCLUSIONS

- 3.1.1 With the exception of the water-bodies at Gwersyllt Hall Farm (WB3 and WB9), the majority of those within 500m of the site had low HSI values. Three of them were badly poached by stock and were very turbid. Great crested newts were, rather surprisingly, absent from the Gwersyllt Hall Farm water-bodies, but were present in those at Old Rhosrobin. Both of these had a relatively low HSI (WB6 had an HSI of 0.44 and WB7 had an HSI of 0.50).
- 3.1.2 Great crested newts are known to occur in meta-populations where several water-bodies occur together. There are several water-bodies to the west of the railway near the site of the former Wrexham Metal Box factory. Most of these have records for great crested newt (Cofnod, 2014) and they are only a short distance from the water-bodies at Old Rhosrobin. The water-bodies near Gwersyllt Hall Farm (WB3 and WB9), by contrast, are quite isolated, even though they appear to offer ideal conditions for GCN.
- 3.1.3 WB6 has the largest population of GCN and is situated approximately 366m away from the site. The water-body is separated from the site by a busy road and a line of houses. These would seem to be an effective barrier to the migration of GCN.
- 3.1.4 The impact of the proposed development can be calculated using the table on page 34 of the *Great Crested Newt Mitigation Guidelines* (English Nature 2001). According to the table the destruction of the grassland at the site will have a **LOW** impact.
- 3.1.5 Based upon our findings Water-body WB6 has a **MEDIUM** population of great crested newts and WB7 has a **SMALL** population.

Water-body 1

- 3.1.6 Water-body WB1 is the only one that had an existing record for great crested newt. This was recorded twenty-two years ago in 1992 (Cofnod, 2014). It is impossible know how the field was managed at the time, but it may have been less intensively than now.
- 3.1.7 The water-body is quite shallow and the surrounding soil is badly poached by cattle. Cattle were observed standing in the water-body and trampling would probably kill any newts that were in the water. Great crested newts are quite tolerant of polluted conditions, but the presence of tubifex in shallower water suggests that it is badly polluted and unsuitable for newts. The water-body has an HSI of 0.47 (poor).

Water-body 2

- 3.1.8 The origin of water body WB2 is unclear, but its location next to an old mill suggests that it was originally a millpond. The water body is roughly square in shape and presumably used to hold considerably more water than it does now.

The sluice gate has been removed and water now flows straight through the basin and into a stream to the River Alyn.

- 3.1.9 Pollution seems to be a regular occurrence and the water smelt of sewage on several occasions. There is quite a lot of emergent vegetation in the water-body, but very little water depth and the water that is present has quite a strong current. Any newts that entered the water-body would be at risk of being washed down the stream and into the River Alyn. The water-body has an HSI of 0.85 (excellent), but the Habitat Suitability Index does not take into account the presence of flowing water.

Water-body 3

- 3.1.10 Water-body WB3 appears ideal for GCN at first sight. There is a limited amount of submerged vegetation, but plenty of emergent. The water is crystal-clear and has an HSI of 0.92; which is excellent. A single female smooth newt was seen during the torching survey on 18th May 2014, but there were no GCN.
- 3.1.11 The reasons for this are unclear, although the owners of the water-body thought that it might be something to do with the water quality. There are plenty of suitable terrestrial habitats in the immediate vicinity and there are no obvious reasons why GCN are absent.

Water-bodies 4

- 3.1.12 The River Alyn is a fast flowing river and was considered unsuitable for great crested newts. No HSI was calculated.

Water-body 5

- 3.1.13 Water body WB5 was dry before the GCN survey was started in mid-April. Any newts that had entered the water-body would have had insufficient time to lay eggs before it dried up. The water-body had an HSI of 0.29 (poor).

Water-body 6

- 3.1.14 At first sight this lake should be unsuitable for GCN. The lake has submerged vegetation, but there is little emergent and the banks have been denuded of vegetation by wildfowl. The water-body also has a relatively low HSI of 0.44 (poor), but it was teeming with newts. Reasonably large numbers of adult GCN were recorded and both eggs and efts were found during the June surveys.
- 3.1.15 WB6 has considerable potential for enhancement. The lake is located in a sheep-grazed field, but a barbed wire fence surrounds it and the animals have no access. The lake is connected to WB7 by a shallow ditch, but this was empty during the first four surveys.
- 3.1.16 The lake has little emergent vegetation and the submerged vegetation lies at a depth of 100cm or more. There is little cover for newts when they leave the protection of the water and the banks are probably occupied by Canada Geese in the winter. Goose droppings were obvious when the site was visited in

March, but the birds had left by the time that the GCN survey took place.

- 3.1.17 A small stream, which is situated in the eastern corner, drains into the lake, but there is no obvious outlet, other than the ditch. The water level fell by approximately 100cm between the first survey on 16th April 2014 and the fourth survey on 18th May 2014. This made trapping rather precarious, but the water level had recovered by the fifth survey on 2nd June 2014. A large pipe was seen at the bottom of the lake on the 18th May 2014. It is not known whether this pipe was responsible for the draining of the lake.
- 3.1.18 The lake appears to be of recent origin and is probably an attenuation pond for the Rhosddu Industrial Estate. It is surrounded by intensively managed, sheep-grazed pasture and surrounded on three sides by an earth bund. A spoil heap, now occupied by Rhosddu Industrial Estate, is located on the eastern side.

Water-body 7

- 3.1.19 Water-body WB7 is shown on all of the historical Ordnance Surveys maps of the area and is obviously a long-standing feature. Unfortunately the water is badly polluted by sheep manure and is very turbid. Lumps of concrete have been dumped in the water-body, making surveying hazardous. An old willow tree has collapsed into the water and mature hawthorn trees surround the northern part of the water-body. The water-body has an HSI of 0.50 (below average).
- 3.1.20 WB7 has clearly been neglected. It acts as a sump for polluted water and would benefit from having the broken concrete removed. It is heavily shaded, which prevents an aquatic flora from developing.
- 3.1.21 The water-body has considerable potential for enhancement. The first step should be to erect a barbed wire fence to prevent sheep from gaining access. The fence should be placed at least two metres away from the waters edge so that natural vegetation can develop. This would provide terrestrial habitat for the GCN and generally enhance the character of the water-body. The existing hawthorn trees should be thinned out or completely removed.
- 3.1.22 Finally the blocks of concrete and barbed wire should be removed. These are hazardous to the sheep and create a danger to the general public.
- 3.1.23 The banks of the adjacent ditch should be fenced to reduce pollution from manure and to provide terrestrial habitat for the newts and other wildlife. The water-body only refilled with water during the latter part of the survey and was not bottle trapped. No great crested newts were present, but a number of smooth newts were seen during the torching survey. The ditch is almost certainly used by newts to migrate between WB6 and WB7, but is unsuitable for egg laying.

Water-body 8

- 3.1.24 Water-body WB9 is shown on current 1:25,000 Ordnance Survey maps as an area of water, but it has clearly been dry for some time. The method of construction suggests that it has never been very successful in retaining water. We have assumed that it holds some water in the winter months and calculated

an HSI of 0.41 (poor).

Water-body 9

- 3.1.25 WB9 is an attractive ornamental water-body with a blue-painted wooden bridge. The water-body already seems to offer optimum conditions for GCN and we cannot explain why they are absent. It had an HSI of 0.99 (excellent), the highest of any of the water-bodies surveyed.

Water-body 10

- 3.1.26 This is a rather unpleasant feature. Horses have poached the margins and the water was very turbid. It was badly infested with midge larva and adult mosquitoes were common. It has limited ecological value. The HSI was 0.36 (poor).

Water-body 11

- 3.1.27 This area is badly poached by horses. A boardwalk has already been installed but it is too short to allow pedestrians to walk along the footpath without getting their feet muddy. The water is very turbid and the ground is too disturbed for it to have any aquatic or marsh vegetation. The area could be greatly improved and enhanced by erecting fencing and extending the boardwalk. The HSI was 0.37 (poor).

4 RECOMMENDATIONS

4.1 Mitigation

- 4.1.1 A number of scientific studies have shown that the great majority of great crested newts remain within 100m of their breeding pond and very few migrate further than 200 to 250m (Frankin, 1993; Oldham and Nicholson, 1986; Jehle, 2000). Jehle (2000) found that 95% of summer refuges were within 63m of the breeding pond. Jehle and Arntzen (2000) found that after the breeding season, 64% of newts were still within 20m of the pond edge.
- 4.1.2 Cresswell and Whitworth (2004) carried out a comprehensive review of mitigation schemes for English Nature. They found that the erection of drift fencing and pit fall trapping was rarely appropriate beyond 200-250m of the breeding pond.
- 4.1.3 In the circumstances we do not feel that any mitigation is necessary for the proposed development. The reasons for this are as follows:
- There are no water-bodies within the site boundary. There will therefore be no loss of breeding sites.
 - The proposed development will only have an impact upon semi-improved grassland, which is of moderate value for great crested newts. The grassland is 366m away from the nearest breeding pond.
 - The proposed development will not cause any fragmentation of the population of great crested newts and there is no loss of connectivity. Data from Cofnod (2014) shows that the majority of GCN records within 1km are located to the north of Lower Stansty. The area to the west of the site would seem to be the centre of this population. The survey found no existing populations within 500m to the north, east or south of the site.
 - No detriment will occur to the conservation status of the great crested newts in the local area.

4.2 Reasonable avoidance methods (RAMS)

- 4.2.1 Reasonable Avoidance Measures (RAMs) will be implemented to reduce the risk of any GCN being injured as a result of development.
- 4.2.2 Great crested newts often use existing mammal burrows as refugia. The removal of all trees, shrubs and hedgerows will be carried out under the supervision of a GCN-licensed ecologist. The ecologist will check for the presence of GCN amongst the roots and surrounding soil while the plants are being removed.
- 4.2.3 Brambles and scrub will be removed to reduce the suitability of the site for

GCN. The vegetation will be mown and kept to a maximum height of 20cm until development is complete. The work will be carried out under the supervision of a GCN-licenced ecologist.

- 4.2.4 Piles of rubble will be removed by hand and under the supervision of a GCN-licenced ecologist. Any newts that are found will be released in suitable habitat by a GCN-licenced ecologist.
- 4.2.5 All construction work will take place during daylight when GCN are less like to be foraging or dispersing on land.
- 4.2.6 A suitably qualified ecologist will give a toolbox talk to all construction works prior to work commencing on the site.
- 4.2.7 Work will stop in the immediate area if a great crest newt is found. A GCN-licenced ecologist will be contacted and will attend as soon as possible.
- 4.2.8 A method statement outlining these procedures will be issued prior to work commencing. A copy will be given to the Site Manager and a copy placed in the main site cabin.

5 REFERENCES

- Amphibian and Reptile Groups of the United Kingdom (2010). ARG UK Advice Note 5: *Great Crested Newt Habitat Suitability Index*.
- Biodiversity Reporting and Information Group (BRIG, 2007). *Report on the Habitats and Species Review: A Report to the UK Biodiversity Partnership*. JNCC, Peterborough.
- Cresswell, W. and Whitworth, R. (2004). Report No. 576. An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*. English Nature. Peterborough.
- English Nature (2001). *Great crested newt mitigation guidelines*. Peterborough.
- Franklin, P. S. (1993). The migratory ecology and terrestrial habitat preferences of the great crested newt (*Triturus cristatus*) at Little Wittenham Nature Reserve. De Montford University unpublished thesis.
- Gent, T. and Gibson, S. (2003). *Herpetofauna Worker's Manual*. Peterborough.
- Griffiths, R. A. and Inns, H. (1998). *Surveying*. In: Gent, A. and Gibson, S. (Eds.) *Herpetofauna Worker's Manual*. Joint Nature Conservation Committee.
- Jehle, R. and Arntzen, J. W. (2000). Post-breeding migrations of newts with contrasting ecological requirements. *J. Zool. Lond.*, **251**, pp.297-306.
- JNCC (2004). *Common Standards Monitoring Guidance for Reptiles and Amphibians*. Peterborough.
- 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: 143-155.
- Oldham, R. S. and Nicholson, M. (1986). Status and Ecology of the warty newt (*Triturus cristatus*). Report to the Nature Conservancy Council (Contract HF 3/05/123). Peterborough.
- United Kingdom Biodiversity Group (UKBG, 1998-1999). *Tranche 2 Action Plans*. Volumes 1-6. English Nature.
- United Kingdom Steering Group (UKSG, 1995). *Biodiversity: The UK Steering Group Report*. Volumes 1-2. HMSO. London.

APPENDIX 1 – PHOTOGRAPHS



Photograph 1: WB1 is situated in the middle of a field. The photograph was taken before a herd of bullocks was introduced.



Photograph 2: Flowing water in WB2 made it unsuitable for GCN.



Photograph 3: The stream was badly polluted by sewage on 18th May 2014.



Photograph 4: WB3 is a disused millpond. The water-body is surrounded by emergent vegetation and has clear, unpolluted water.



Photograph 5: The water-body is located next to the River Alyn.



Photograph 6: The River Alyn is fast flowing and unsuitable for GCN.



Photograph 7: WB5 had dried up by the time that the GCN surveys started.



Photograph 8: Great crested newts were present in WB6



Photograph 9: The water level dropped considerably during May 2014.



Photograph 10: WB7 is very turbid and had a small population of GCN.



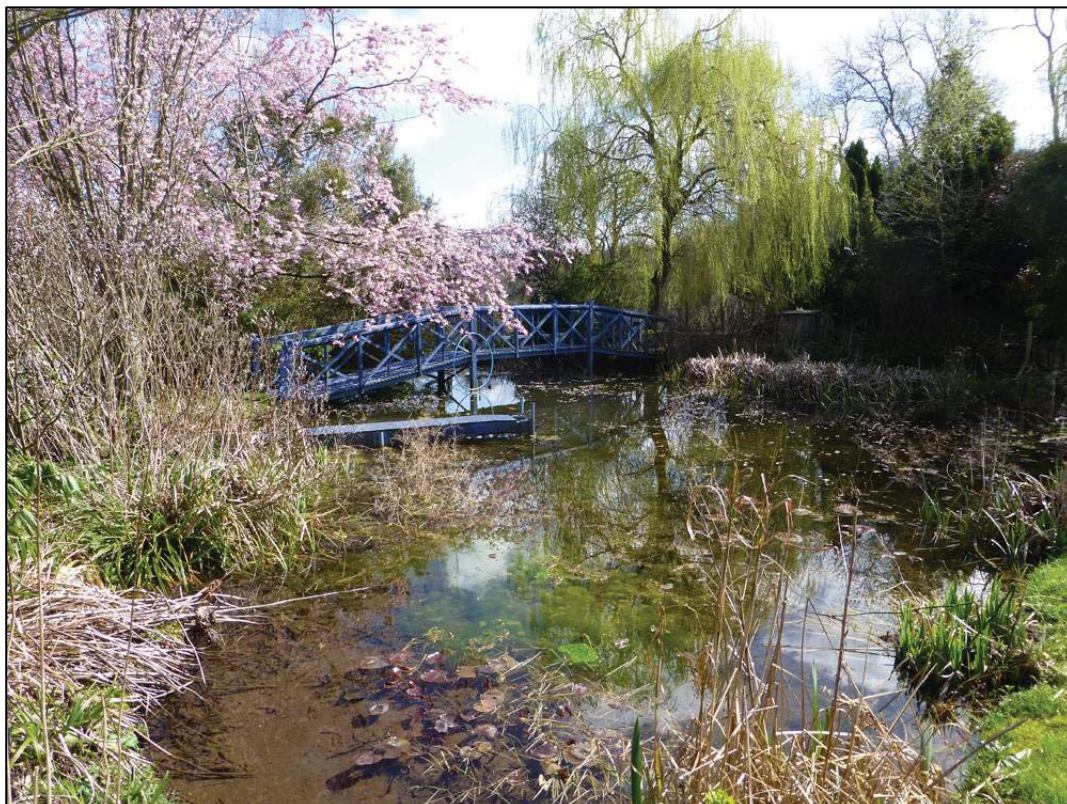
Photograph 11: A rush-filled ditch connects WB6 and WB7. It was completely dry for the majority of the survey.



Photograph 12: Great crested newt eggs were found at the end of the ditch.



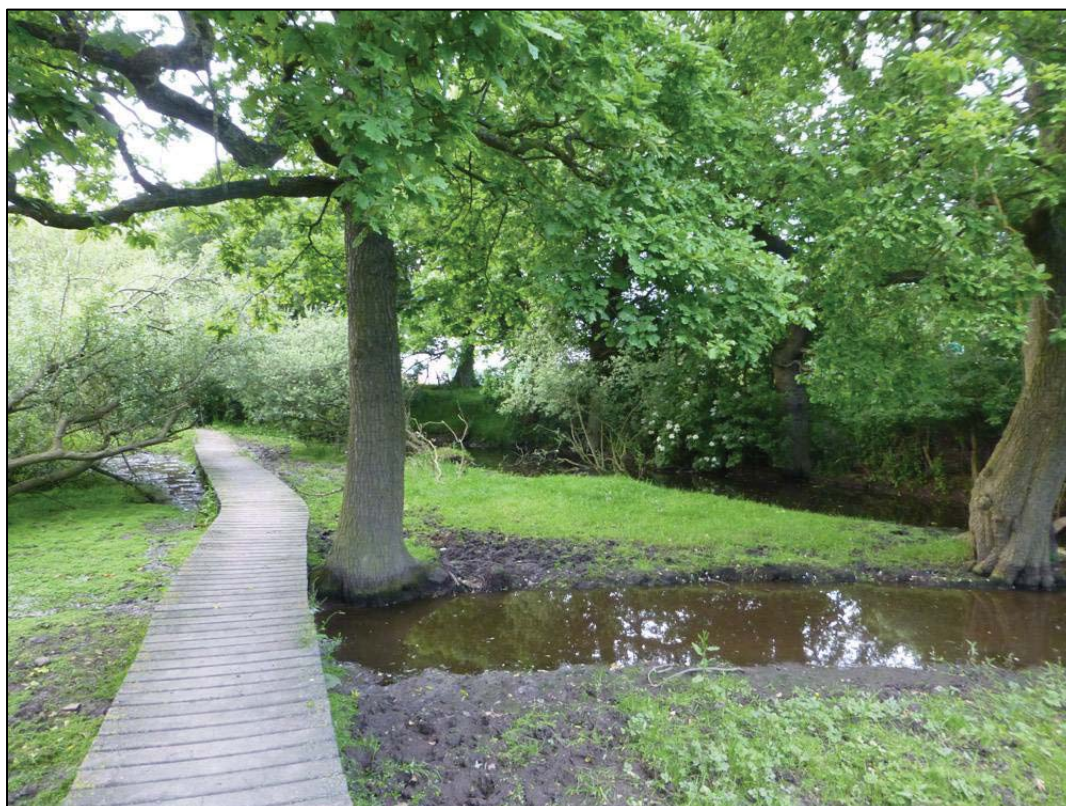
Photograph 13: WB8 no longer retains water and was completely dry.



Photograph 14: WB9 is an ornamental water-body, with crystal clear water.



Photograph 14: WB10 is a turbid, unpleasant ditch.



Photograph 15: WB11 is turbid and was badly poached by horses. It has potential for enhancement however.

APPENDIX 2 – SUMMARY OF WATER-BODIES

Water body number	Description	Distance from site	Size (m ²)	Habitat Suitability Index
WB1	Oval field pond. Margins poached by cattle and very turbid. Vegetation limited to <i>Agrostis stolonifera</i> and <i>Glyceria declinata</i> .	280m	550	0.47
WB2	Former pond with a fast-flowing stream passing through it. Badly polluted in May 2014.	460m	250	0.85
WB3	Disused millpond. Emergent vegetation includes <i>Sparganium erectum</i> , <i>Apium nodiflorum</i> , <i>Carex rostrata</i> and <i>Iris pseudacorus</i> .	330m	1,200	0.92
WB4	River Alyn. Too fast-flowing for great crested newts.	260m	N/A	N/A
WB5	Seasonal water-body No aquatic vegetation.	400m	420	0.29
WB6	Oval lake of uncertain origin. No marginal vegetation other than a few tussocks of <i>Juncus effusus</i> and <i>Phalaris arundinacea</i> (growing near the ditch).	366m	1800	0.44
WB7	Small round field pond. Surrounded by hawthorn trees. No aquatic vegetation other than some <i>Glyceria</i> sp. and <i>Juncus effusus</i> around the southern margins.	420m	100	0.50
WB8	Dried-up water-body near the railway line. Built with a raised bank. No longer appears to hold water. No aquatic vegetation.	150m	70	0.52
WB9	Ornamental pool with <i>Elodea canadensis</i> . Marginal plants include <i>Carex pendula</i> , <i>Iris pseudacorus</i> and <i>Darmera peltata</i> .	350m	300	0.99
WB10	Turbid, flooded ditch between two fields. No aquatic vegetation as such. Margins badly poached. Some <i>Glyceria</i> sp. and <i>Agrostis stolonifera</i> .	150m	70	0.39
WN11	Flooded ditch beside Watt's Dyke. Turbid and surrounded by badly poached mud. Crossed by a boardwalk. Aquatic vegetation limited to <i>Callitriche stagnalis</i> .	290m	220	0.44

APPENDIX 3 – HABITAT SUITABILITY INDICES FOR PONDS AT RHOSROBIN

Water-body HSI Index	WB1	WB2	WB3	WB5	WB6	WB7	WB8	WB9	WB10	WB11
SI1 – Location	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SI2 – Pond area	0.4	1.0	0.92	1.0	0.85	0.5	0.2	1.0	0.05	0.2
SI3 – Pond drying	0.9	0.9	0.9	0.1	0.5	0.9	0.1	0.9	0.5	0.5
SI4 – Water quality	0.01	0.67	1.0	0.01	0.33	0.01	0.33	1.0	0.01	0.01
SI5 – Shade	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SI6 – Fowl	0.67	0.67	1.0	0.67	0.01	0.67	1.0	1.0	1.0	1.0
SI7 – Fish	0.67	1.0	1.0	1.0	1.0	0.67	1.0	1.0	1.0	1.0
SI9 – Ponds	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SI9 – Terrestrial habitat	0.33	0.67	1.0	0.67	0.67	1.0	0.67	1.0	1	1.0
SI10 – Macrophytes	1.0	0.7	0.5	0.01	0.3	1.0	0.3	1.0	0.3	0.3
HSI	0.47	0.85	0.92	0.29	0.44	0.50	0.52	0.99	0.39	0.44
	Poor	Excellent	Excellent	Poor	Poor	Below average	Below average	Excellent	Poor	Poor

Water-body 4 was a river. No HSI was calculated.

APPENDIX 4 – RESULTS OF GREAT CRESTED NEWT SURVEY

Bottle trapping					
Male GCN					
	WB2	WB3	WB6	WB7	WB9
16/04/2014		0	0	0	0
26/04/2014		0	0	0	0
09/05/2014		0	4	0	0
18/05/2014		0	9	2	0
02/06/2014			0	0	
09/06/2014			0	0	
Female GCN					
	WB2	WB3	WB6	WB7	WB9
16/04/2014		0	1	0	0
26/04/2014		0	1	0	0
09/05/2014		0	3	0	0
18/05/2014		0	8	1	0
02/06/2014			0	0	
09/06/2014			0	0	
GCN Efts and larvae					
	WB2	WB3	WB6	WB7	WB9
16/04/2014		0	0	0	0
26/04/2014		0	0	0	0
09/05/2014		0	0	0	0
18/05/2014		0	0	0	0
02/06/2014			1	0	
09/06/2014			3	0	
Male smooth newts					
	WB2	WB3	WB6	WB7	WB9
16/04/2014		0	0	0	0
26/04/2014		0	3	1	1
09/05/2014		0	1	1	0
18/05/2014		0	11	1	0
02/06/2014			1	0	
09/06/2014			5	4	

Key to habitats



Site boundary

Do not scale from this drawing

Client

Castlemead Group Ltd.

Project name

Rhosrobin, Wrexham

Drawing

Site boundary

Drawing No

CE119-1

Version

1.0

Date

18.06.2014

Drawn by

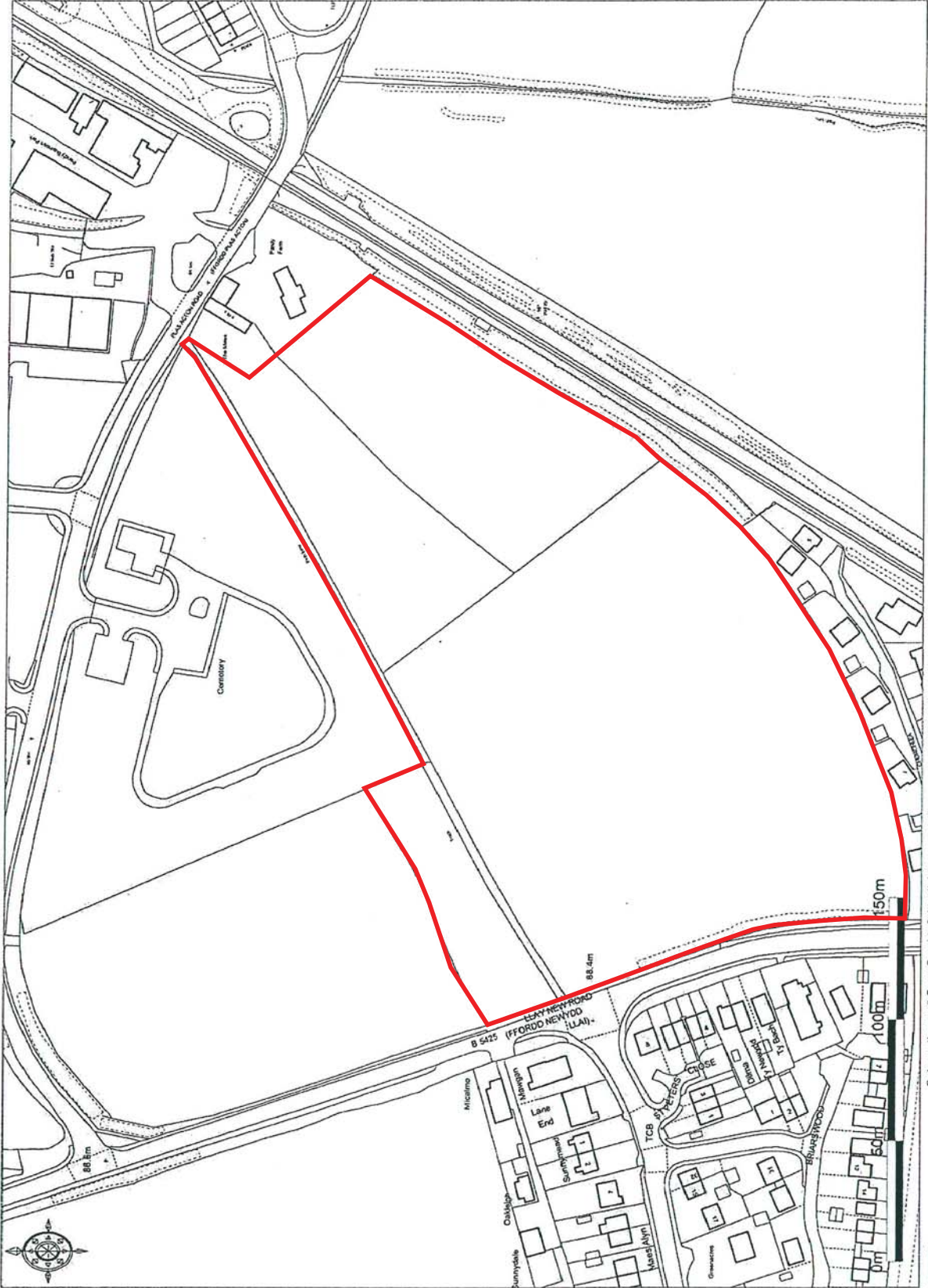
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Scale

1: 1,250

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Key



WB1 Water-body



Do not scale from this drawing

Client

Castlemead Group Ltd.

Project name

Rhosrobin, Wrexham

Drawing

Location of water-bodies

Drawing No	Scale	Date
CE119-2	1.0	18.06.2014
NG	1:10,000	

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