



Land at
Chepstow Road
Raglan
Monmouthshire

**A Survey for Otters,
Bats and White-
clawed Crayfish By:**



On Behalf Of:



September 2017

Client	Monmouthshire County Council
Project Name	Land at Chepstow Road, Raglan, Monmouthshire
Report Title	A Survey for Otters, Bats and White-clawed Crayfish
File Reference	GEN5513 (Revision 1)

Status	Signed	Name	Position	Date
Author		Carola Dallmeier BA (Hons) MSc Grad CIEEM	Ecologist	22nd August 2014
Co-author (1st revision)		Grace Dooley BSc (Hons) MSc	Assistant Ecologist	5th September 2017
Co-author (1st revision)		Carola Hoskins BA (Hons) MSc ACIEEM	Senior Ecologist	5th September 2017
Reviewer		Phillip L Morgan CEnv MCIEEM	Principal Ecologist	7th September 2017

Members: Phillip Morgan CEnv MCIEEM Diane Morgan BA (Hons) ACIEEM
Carola Hoskins BA (Hons) MSc ACIEEM Robert Morgan
Issuing Office: Suite 131-136, Plas y Ffynnon, Cambrian Way, Brecon LD3 7HP
Web Site: www.justmammals.co.uk **E-Mail:** carola@justmammals.co.uk **Telephone:** 01874 623616
Registered In: Cardiff **No:** OC345272 **Registered Address:** Llys Newydd, Llanfihangel Talylyn, Brecon LD3 7TG
Vat No: 821 6376 35

Contents

	Page No.
1	1
2	1
3	1 – 2
4	2
5	3
6	3
7	3 – 6
8	6
9	6 – 7
10	7
	8
	9
	10 – 11
	12 – 13
	14

List of Tables

Table	Description of Contents	Page
Table 1	Summary of Survey Activity and Weather Conditions	3
Table 2	Chepstow Road, Raglan – Dusk Transect Survey 7 th July 2014	3 – 4
Table 3	Chepstow Road, Raglan – Dusk Transect Survey 20 th July 2017	5 – 6

List of Figures

Figure	Description of Contents	Page
Figure 1	Site boundary	8
Figure 2	Bat transect route, 2014 – CH	10
Figure 3	Bat transect route, 2017 – GD	11
Figure 4	Bat transect results, 2014 – CH	12
Figure 5	Bat transect results, 2017 – GD	13
Figure 6	Waterway survey route; 2014 and 2017	14

List of Plates

Plate	Description of Image	Page
Plate 1	Clear, cold Nant y Wilcae, looking downstream	9
Plate 2	Otter spraint upon rock	9
Plate 3	Otter spraint beneath bridge	9
Plate 4	Otter spraint beneath bridge	9
Plate 5	Multiple caddisfly larvae cases under rock	9
Plate 6	Otter spraint on discarded rubbish	9
Plate 7	Tree with potential bat roost	9

1 Executive Summary

- 1.1 Planning permission is being sought for an area of land off Chepstow Road, in Raglan. An extended Phase 1 survey, conducted in July 2013, highlighted the need for further assessment effort with respect to otters, white-clawed crayfish, and bats. Follow-up survey was conducted in July 2014. Since a period of several years has passed without any works proceeding on site, an update appraisal was conducted during July and August 2017.
- 1.2 During 2014, survey for both otter and crayfish, conducted simultaneously, and following standard methodology, yielded evidence for the presence of otters. Multiple spraints were noted upon rocks within the watercourse; though no crayfish were encountered as a result of the survey, a low number of bullhead were noted. The survey for bats identified the importance of the riparian corridor, and the treeline just beyond the northern end of the site, as well as the hedgerow to the west. A potential bat roost was found within a tree on the right bank of the Nant y Wilcae, but no bats were witnessed emerging from this potential roost on the day of the survey.
- 1.3 At the time of the 2017 update assessment, conditions on site appeared to remain largely unchanged. Evidence of otter, with multiple otter spraints encountered upon rocks within the watercourse, was noted. No white-clawed crayfish were recorded, though moderate numbers of bullhead fish were again found to be present. Bullhead is a species which thrives in similar conditions to the native crayfish. The riparian corridor, along with the hedgerows along the western boundary, and the northern half of the eastern boundary, were noted to be of importance. No bats were found to be emerging from any tree on the day of the survey.
- 1.4 In addition to the information about the target species, the update survey revealed the lingering presence of Himalayan balsam, on both banks of the Nant y Wilcae. This invasive species is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and as such, must be taken into account during and following development. A badger sett was found on the right bank, within the riparian woodland. Recommendations with respect to both have been made.
- 1.5 Recommendations for the site also include the requirement for a detailed lighting plan; the provision of a wildlife corridor – including the stream – with creation of features for otters and hedgehogs; and the need for an ecological method statement to prevent harmful impacts on otters during the construction process. A pollution prevention plan for the Nant y Wilcae will also be required.

2 Introduction

- 2.1 An area of land off Chepstow Road, in Raglan, at National Grid Reference SO 41357 07362, at an altitude of approximately 39m Above Ordnance Datum (AOD), is proposed for development. Planning permission from Monmouthshire County Council is being sought, with the Just Mammals Consultancy LLP being commissioned to conduct protected species surveys at the site; specifically, searching for signs of white-clawed crayfish (*Austropotamobius pallipes*), otters (*Lutra lutra*), and bats (*Chiroptera*).
- 2.2 Survey included the focus upon the aquatic habitat and therefore crayfish and otter presence, as well as a transect survey for the presence of bats.
- 2.3 This report presents the findings of the 2014 survey work undertaken by experienced ecologists, which addresses the requirements needed by the planning authority, and makes appropriate recommendations. It also contains details of additional site assessment visits, during July and August 2017, to consider any changes to the ecological status of the site.

3 Survey Team Experience

- 3.1 Lead surveyor in both 2014 and 2017 was Carola Hoskins, who is co-author of this report. Carola is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM), and she holds an MSc in Environmental Conservation Management and has practical expertise with bats, birds, botanical assessments, mammalian and reptile surveys. As well as assisting in conservation-based research, she has carried out biodiversity audits and ecological enquiries. Carola holds licences with Natural Resources Wales for otters (71177:OTH:SA:2016), bats (69063:OTH:CSAB:2015), white-clawed crayfish (73035:OTH:SA:2016) and other protected species. She has completed a study of water voles and is currently assisting with bird ringing. Carola also holds a City & Guilds Level 2 award for

working in Medium Risk Confined Spaces. Carola is a Senior Ecologist with the Just Mammals Consultancy LLP.

- 3.2 Assisting with the 2017 surveys was Grace Dooley, co-author of this report. Grace holds an MSc in Conservation and Ecology and has 3 years' practical experience with bats, great crested newts, badger and reptile surveys, as well as botanical assessments for a variety of projects. Grace is an Assistant Ecologist with the Just Mammals Consultancy LLP and is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

4 Survey Methodology

- 4.1 Methods employed were identical for the surveys in 2014 and 2017, with slightly fewer stones turned during the update survey. A manual search of the Nant y Wilcae, along the boundary of the site, and slightly beyond, was carried out looking for signs of native crayfish. Some 200 stones were turned in locations along the brook, where the habitat was deemed suitable, and siltation was minimal. Stones were gently lifted, the substrate below, and the underside of the stone inspected and then the stones carefully put back into place.
- 4.2 Both banks of the relatively small tributary to the Nant y Wilcae were surveyed for otters, from the bridge crossing Chepstow Road at the southern end of the property to a little bit beyond the south-western boundary of the site. A small inlet running alongside the southern boundary from one of the adjacent houses was also surveyed. The total distance surveyed was approximately 250m.
- 4.3 The surveyors were seeking signs such as spraints (otter faeces); paw prints; hairs (caught on thorns); and runs and mud slides, which indicate the presence of the species on the water course. A primary focus was to find evidence of otter resting places, known as holts and hovers, as well as above ground resting places known as couches, which can be located in dense vegetation. In addition, the surveyors assessed the potential for otters to leave the river corridor and access neighbouring properties – particularly the site to be developed.
- 4.4 A dusk transect survey was carried out, seeking to identify typical summer foraging and commuting bat activity. A transect route was established which encompassed key features and habitats around the site. The bat transect survey commenced shortly before sunset and continued for a period of approximately 110 minutes. The general location of the observer was noted when bat activity was heard, and the data of the bat flight direction and behaviour was noted whenever possible, together with the time for the activity observed. Echo-location calls were recorded for subsequent analysis for the precise identification of the bat species.
- 4.5 The surveyor was equipped with a Pettersson D-240X bat detector. These devices are particularly sensitive and excellent at separating species which employ the middle range frequencies for foraging (45 – 55 kHz). They are therefore very good at identifying the different pipistrelle species (*Pipistrellus sp.*) and the different myotis bats* (*Myotis sp.*) (*myotis bat is a collective term used where the species could not be specifically identified beyond this broad group). The myotis group encompasses seven species of British bat including Alcatheo's (*Myotis alcatheo*); Bechstein's (*M. bechsteinii*); Brandt's (*M. brandtii*); Daubenton's (*M. daubentonii*); Mouse-eared (*M. myotis*); Natterer's (*M. nattereri*); and the whiskered bat (*M. mystacinus*).
- 4.6 The Pettersson D-240X machine can be used in heterodyne or time expansion modes and for the purposes of this survey, only the time expansion facility was used. The received signals were then recorded to Panasonic SJ-MR220 Mini Discs (Roland RO5 in 2017), for later analysis. The time expansion method is similar to making a high-speed tape recording of a bat's ultrasonic call and then playing it back at a slower speed. Digital technology is used to make the recording and slow it down for play back. Since the signal is stretched out in time, it is possible to hear details of the sound not audible with other types of detector.
- 4.7 Time expansion is also the only technique which preserves all characteristics of the original signal, which makes time expanded signals ideal for sound analysis. In addition to the simple echo location calls which can be used for commuting, enabling the bat to find its way about, bats will also produce feeding 'buzzes' when foraging. These buzzes occur when the bat closes in on its prey and are a consequence of the Doppler Effect, which results in a feeding 'buzz' as the reflected signal shortens when the animal approaches its prey. Such buzzes are used to assess the importance of an area for foraging. The recorded echo location calls are then interpreted

using BatSound sound analysis software. By use of the software it is possible to separate the different species by analysis of the sonograms produced.

5 Site Description

- 5.1 The land at Chepstow Road comprises of two grassland fields, separated by stock proof fencing. The Nant y Wilcae runs along the southern boundary of the site. A detailed description of the site is given in the previous extended Phase 1 report, 'Land at Chepstow Road, Raglan, Monmouthshire: An Extended Phase 1 Habitat Survey Report', produced in 2013.

6 Survey Constraints

- 6.1 There were no constraints to the survey. Conditions were favourable for all three types of survey at the time of surveys. Access to the site was possible at all times both in 2014 and 2017.

7 Survey Results

- 7.1 As already noted, the initial surveys were undertaken in July 2014 by an experienced ecologist and an assistant. A suite of refresher surveys was conducted in July and August 2017, again by an experienced ecologist with an assistant. Details of the conditions under which survey was conducted are given in Table 1 below. The results of the survey are then separated by year.

Table 1: Summary of Survey Activity and Weather Conditions

Survey Type and Location	Dates	Timing	Weather Conditions
Day time survey for otters and white-clawed crayfish (CH, JG)	01/07/2014	11.00– 13:30 hours British Summer Time (BST)	Air temperature: 20°C Cloud cover: 2/8 oktas Wind speed: F2, light breeze Conditions: Dry
Dusk transect survey for foraging and commuting activity, as well as potential emergences (CH)	07/07/2014	21.25– 23.15 hours BST (Sunset: 21.32 hours)	Air temperature: 14.5°C – 15.5°C Cloud cover: 8/8 oktas Wind speed: F0, calm Conditions: Light drizzle, then dry
Day time survey for otters and white-clawed crayfish (CH, GD)	16/08/2017	10:00– 12:00 hours BST	Air temperature: 15°C Cloud cover: 5/8 oktas Wind speed: F2, light breeze Conditions: Dry
Dusk transect survey for foraging and commuting activity, as well as potential emergences (GD)	17/07/2017	21:22– 23:22 hours BST (Sunset: 21:22 hours)	Air temperature: 21°C Cloud cover: 8/8 oktas Wind speed: F1, light air Conditions: Dry
Survey Team	Carola Hoskins (CH), Jenny Gatward (JG), Grace Dooley (GD)		

- 7.2 No white clawed crayfish were encountered during the 2014 survey. Animals encountered during the survey effort included caddis-fly cases, on the undersides of rocks, as well as three European bullheads (*Cottus gobia*), found hiding under rocks. No other animals were encountered under the turned stones. A number of otter spraints were also found along the length of the survey stretch. Fresh spraints in good numbers were found both along the ledges on the bridge underneath Chepstow Road, as well as on a small pipe leading across the stream north to south.
- 7.3 Additional otter spraints were found further up the stream on the bank which forms part of the site to be developed. The bank on the lower part of the site is relatively shallow and it is easily possible for an otter to access the site. However, no hovers or couches – temporary resting places of otters – were found during the survey. No potential otter holts were found on the bank within the site to be developed. A large badger sett was encountered upon the steep southern bank, with more than 15 entrances, and with well-worn paths between the holes.
- 7.4 Results of the 2014 bat activity transect can be found in Table 2 below. Further information is provided on the map in Appendix IV.

Table 2: Chepstow Road, Raglan – Dusk Transect Survey 7th July 2014

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
21.35 hours	Common pipistrelle	35 CH	Heard but not seen near fallen tree at south-west boundary of southern field
21.38 hours	Common pipistrelle (x2)	36 CH	Bats up near potential roost by river to south-western end of southern field, a lot of bat activity up in canopy at this point also
21.39 hours	Common pipistrelle	37 CH	Near potential roost by river to south-western end of the site, a lot of bat activity up in the canopy at this point also

21.40 hours	Common pipistrelle (x2)	38 CH	Near potential roost by river to south-western end of southern field, a lot of bat activity up in canopy at this point also
21.43 hours	Common pipistrelle (x2)	39 CH	Bats up near potential roost by river to south-western end of southern field a lot of bat activity up in canopy at this point also
21.47 hours	Common pipistrelle	40 CH	Bat feeding towards bridge near the south-eastern boundary of the southern field
21.49 hours	Soprano pipistrelle	41 CH	Heard but not seen from south-east boundary of southern field near river
21.50 hours	Common pipistrelle and myotis sp. (faint)	42 CH	Heard but not seen from south-east boundary of southern field
21.51 hours	Common pipistrelle	43 CH	Heard but not seen from south-east corner of southern field
21.56 hours	Common pipistrelle	44 CH	Heard but not seen at end of hedgerow at north-east boundary of northern field
22.00 hours	Soprano pipistrelle	45 CH	Heard but not seen at north-west corner of northern field by houses
22.01 hours	Common pipistrelle	46 CH	Heard but not seen from north-west boundary of northern field near black fence
22.03 hours	Common pipistrelle	47 CH	Foraging in northern field near north-west boundary
22.04 hours	Noctule	48 CH	Heard but not seen, recorded from near the north-west corner of the southern field
22.07 hours	Common pipistrelle	49 CH	Heard but not seen at south-west corner of southern field
22.08 hours	Common pipistrelle	50 CH	Heard but not seen near south-west corner of southern field
22.11 hours	Common pipistrelle	51 CH	Heard but not seen from western side of fallen tree located at the south-west area of southern field
22.14 hours	Common pipistrelle	52 CH	Heard but not seen from near the eastern side of the fallen tree located at the south-west area of the southern field
22.15 hours	Common pipistrelle	53 CH	Heard but not seen from south-east boundary of southern field
22.16 hours	Common pipistrelle and soprano pipistrelle	54 CH	Heard but not seen from south-east boundary of southern field
22.20 hours	Common pipistrelle (x2)	55 CH	Heard but not seen from south-east boundary of southern field
22.24 hours	Common pipistrelle	56 CH	Heard not seen, recorded from the south-east boundary of the southern field
22.25 hours	Common pipistrelle (x2)	57 CH	Heard not seen, recorded from the south-east boundary of the southern field
22.28 hours	Common pipistrelle (x2)	58 CH	Heard but not seen from south-east corner of southern field
22.32 hours	Common pipistrelle	59 CH	Heard but not seen from centre of eastern boundary of southern field
22.33 hours	Common pipistrelle	60 CH	Heard but not seen near north-east corner of southern field
22.34 hours	Noctule	61 CH	Heard but not seen from south-east corner of northern field
22.35 hours	Common pipistrelle and noctule	62 CH	Heard but not seen from south-east boundary of northern field
22.37 hours	Noctule	63 CH	Heard but not seen from north-east corner of northern field
22.39 hours	Common pipistrelle and noctule	64 CH	Heard but not seen from north-east corner of northern field
22.43 hours	Common pipistrelle	65 CH	Commuting east to west along treeline of northern boundary of northern field
22.43 hours	Common pipistrelle	66 CH	Heard but not seen from centre of northern boundary of northern field
22.44 hours	Common pipistrelle	67 CH	Heard but not seen from centre of northern boundary of northern field
22.48 hours	Common pipistrelle	68 CH	Heard but not seen from north-west corner of southern field
22.50 hours	Common pipistrelle (x2)	69 CH	Heard but not seen from western side of fallen tree located at south-west area of southern field
22.51 hours	Common pipistrelle	70 CH	Heard but not seen from near eastern side of fallen tree located at south-west area of southern field
22.56 hours	Common pipistrelle and myotis sp. (whiskered/Brandt's)	71 CH	Heard but not seen, recorded from the recorded from the south-east boundary of the southern field
22.58 hours	Common pipistrelle	72 CH	Heard but not seen, recorded from the recorded from the south-east boundary of the southern field
23.02 hours	Common pipistrelle and myotis sp. (Daubenton's)	73 CH	Heard but not seen, recorded from the recorded from the south-east boundary of the southern field
23.03 hours	Myotis sp. (Daubenton's) (x2)	74 CH	Heard but not seen, recorded from the recorded from the south-east boundary of the southern field
23.08 hours	Common pipistrelle	75 CH	Heard but not seen near south-east corner of northern field

- 7.5 Bat activity on the site in 2014 was recorded from immediately after sunset. The vast majority of the activity was recorded along the riparian corridor, this included feeding activity as well as commuting. The very early start of activity just following sunset indicates roost locations either within the riparian corridor or very close-by. Additionally, the hedgerow along Chepstow Road as part of the eastern boundary of the site was noted to have high bat activity. A hedgehog (*Erinaceus europaeus*) was also encountered during the bat transect. It was wandering along the hedgerow and fence which form the borders along the western edge of the site.
- 7.6 Survey in 2017 gathered largely similar data. No evidence or signs of white-clawed crayfish were noted. Large numbers of caddis-fly cases and leeches (*Annelida sp.*) were recorded upon the underside of stones, as well as 28 bullheads, an increase from the previous survey. Again, similarly to 2014, no live otters were encountered, although twelve spraints, of varying ages and sizes, were recorded upon the northern ledge of the bridge, as well as on prominent rocks and boulders along the river banks.
- 7.7 During the bat survey, a total of 48 recordings were made, with most activity occurring along the treeline at the southern boundary, as well as at the hedgerow along Chepstow Road and along the western boundary. This included both feeding activity and commuting to other foraging areas further afield. Elsewhere around the site boundary, bat activity was generally low, with noctule bats seen commuting high over the site. Results of the refresher bat activity transect can be found in Table 3 below.

Table 3: Chepstow Road, Raglan – Dusk Transect Survey 20th July 2017

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Recorded Behaviour and Location
21.37 hours	Common pipistrelle	1 GD	Seen commuting north-south towards observer, then foraging overhead at the south-western corner of the field
21.38 hours	Common pipistrelle	2 GD	Seen commuting north-south towards observer, then foraging overhead at the south-western corner of the field
21.43 hours	Common pipistrelle	3 GD	Foraging above trees along the southern boundary
21.44 hours	Soprano pipistrelle	4 GD	Heard but not seen along southern boundary
21.45 hours	Common pipistrelle	5 GD	Foraging within tree canopy along southern boundary
21.46 hours	Common pipistrelle	6 GD	Multiple bats foraging within tree canopy along southern boundary
21.47 hours	Common pipistrelle	7 GD	Foraging above tree canopy towards south-east corner of field
21.50 hours	Common pipistrelle	8 GD	Heard but not seen at south-east corner of field
21.51 hours	Common pipistrelle	9 GD	Heard but not seen at south-east corner of field
21.52 hours	Common pipistrelle	10 GD	Foraging over trees at south-east corner of field, then flew to west
21.54 hours	Common pipistrelle	11 GD	Heard but not seen at south-east corner of field
21.57 hours	Noctule	12 GD	Heard but not seen along eastern boundary of field
21.58 hours	Noctule	13 GD	Heard but not seen along eastern boundary of field
22.07 hours	Common pipistrelle	14 GD	Heard commuting but not seen at entrance gate
22.11 hours	Noctule	15 GD	Heard but not seen by observer at the entrance gate
22.13 hours	Common pipistrelle	16 GD	Foraging around trees at northern corner of field
22.14 hours	Soprano pipistrelle	17 GD	Foraging around trees at northern corner of field
22.14 hours	Common pipistrelle	18 GD	Commuting east across road at northern corner of field
22.17 hours	Noctule	19 GD	Heard but not seen by observer at northern corner of field
22.19 hours	Common pipistrelle	20 GD	Foraging around trees along border of site, along north-western boundary
22.20 hours	Common pipistrelle	21 GD	Commuting north along border of site, along north-western boundary
22.21 hours	Noctule	22 GD	Heard but not seen along north-western boundary
22.25 hours	Soprano pipistrelle and noctule	23 GD	Heard but not seen along north-western boundary
22.26 hours	Noctule	24 GD	Commuting south over field along western boundary of field
22.27 hours	Common pipistrelle	25 GD	Heard but not seen along western boundary of field
22.35 hours	Common pipistrelle	26 GD	Heard but not seen at south-western corner of field
22.36 hours	Noctule	27 GD	Heard but not seen at south-western corner of field
22.38 hours	Common pipistrelle	28 GD	Heard but not seen at south-western corner of field
22.39 hours	Noctule	29 GD	Heard but not seen at south-western corner of field
22.42 hours	Common pipistrelle	30 GD	Heard but not seen along southern boundary
22.43 hours	Common pipistrelle	31 GD	Heard but not seen along southern boundary
22.46 hours	Noctule	32 GD	Heard but not seen along southern boundary
22.47 hours	Soprano pipistrelle	33 GD	Heard but not seen along southern boundary
22.49 hours	Common pipistrelle	34 GD	Heard but not seen at south-east corner of field
22.52 hours	Common pipistrelle	35 GD	Heard but not seen at the south-east corner of field
22.54 hours	Common pipistrelle	36 GD	Foraging within and above tree canopy at south-east corner of field
22.55 hours	Common pipistrelle	37 GD	Heard but not seen at south-east corner of the field

22.56 hours	Common pipistrelle	38 GD	Heard but not seen toward south end of eastern boundary
22.57 hours	Common pipistrelle	39 GD	Heard but not seen along eastern boundary of field
22.57 hours	Brown long-eared	40 GD	Heard but not seen along eastern boundary of field
22.59 hours	Noctule	41 GD	Heard but not seen along the eastern boundary of the field
23.01 hours	Common pipistrelle	42 GD	Heard but not seen along eastern boundary of the field
23.03 hours	Noctule	43 GD	Heard but not seen just south of entrance gate
23.04 hours	Common pipistrelle	44 GD	Heard but not seen just south of entrance gate
23.05 hours	Common pipistrelle	45 GD	Heard commuting but not seen just south of entrance gate
23.08 hours	Common pipistrelle	46 GD	Heard but not seen by observer at the entrance gate
23.09 hours	Common pipistrelle	47 GD	Heard but not seen by observer at the entrance gate
23.11 hours	Common pipistrelle	48 GD	Heard but not seen by observer at the entrance gate

- 7.8 Bat activity on the site in 2017 started immediately from sunset. The majority of the bat activity was concentrated along the length of the southern boundary and along the northern half of the eastern boundary. No emergence activity was noted from any bats during the transect assessment. Species recorded was much like 2014, with common pipistrelle, soprano pipistrelle, and noctule bats. However no myotis species were encountered on this occasion. On the plus side, a recording was made of a brown long-eared bat (*Plecotus auritus*), a species which prefers darker environments.

8 Discussion and Conclusions

- 8.1 Survey effort in 2014 revealed the presence of otters along the Nant y Wilcae, and demonstrated the importance of the riparian corridor, as well as the linear features on and around the site in general for bats. The survey did not reveal the presence of white-clawed crayfish, nor the invasive American signal crayfish (*Pacifastacus leniusculus*). Himalayan balsam (*Impatiens glandulifera*), was noted to be present on site during the Phase 1 survey.
- 8.2 The refresher survey of 2017 revealed that the conditions on site remains largely unchanged. A good number of otter spraints were recorded, at multiple locations, along the surveyed stretch of the Nant y Wilcae. No couches or hovers (otter resting places) were noted. Although a robust assessment was conducted for crayfish, with some 160 stones turned at suitable locations along the stretch, no evidence of white-clawed crayfish, nor signal crayfish, were encountered. A hole in the bank was found on the right bank, toward the western end of the site. This is thought to be the burrow of a kingfisher (*Alcedo atthis*), although no kingfisher was recorded during the survey and the burrow appeared to be vacant. Himalayan balsam is still present on both banks of the Nant y Wilcae. This invasive plant is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 8.3 Development of the site must take into account the sensitive nature of the stream, as well as its importance for wildlife. At present, no residential units are to be put into the vicinity of the stream due to flood constraints. This will also have beneficial effects for the wildlife present.
- 8.4 All species surveyed for are nocturnal and the sensitivity of these species to disturbance caused by lighting will have to be taken into account in the developmental process. Protection of the features used by these species, the riparian corridor in particular, is key to the continued suitability of the site for wildlife.
- 8.5 No fences or other deterrents are present alongside the Nant y Wilcae on the proposed development site. This gives species such as otters, or indeed badgers, the opportunity to enter the site and utilise it as part of their territory. While there is little to be gained for an otter on site at present, once development has taken place or during the construction period, inquisitive otters will explore and exploit potential food sources.

9 Recommendations

- 9.1 No further survey is recommended at this time. The results from the targeted species surveys, both in 2014 and 2017, highlight the importance of the riparian corridor and recommendations will largely be based around securing the continued ecological functionality of the water course and its fringes, both during and following the development process.
- 9.2 Otters are present along the southern boundary of the site. While the proposed development will, and must, avoid any long-term impacts on otters, the development process has the potential to cause harm to any otter present. An ecological method statement will be required, laying out

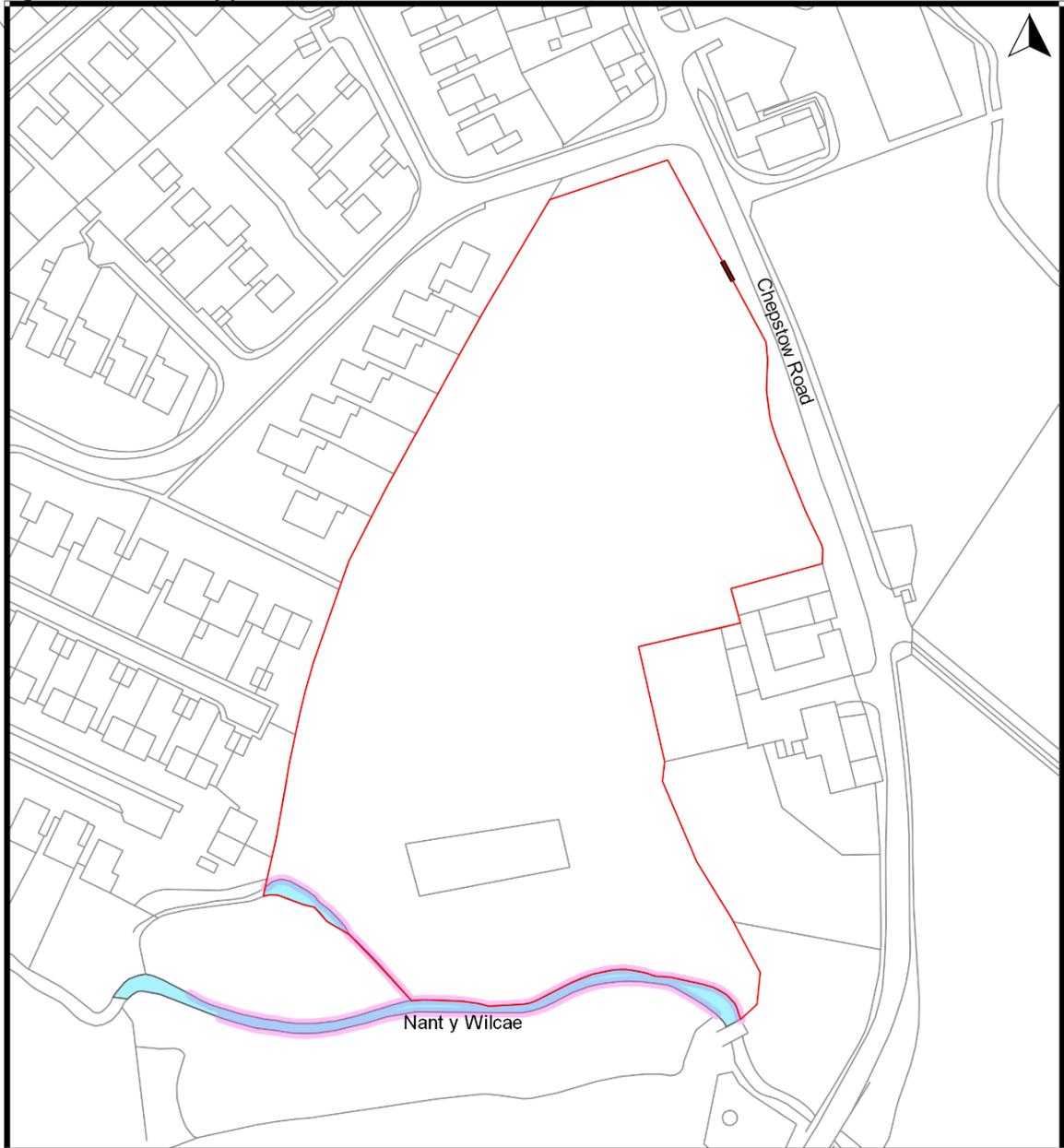
- measures to avoid any impacts for this species. Issues to be covered by the ecological method statement include provision of dark corridors, no night time working, no food waste left on site, planking to provide escape mechanisms from holes and trenches, and more specific measures to benefit otters.
- 9.3 As recommended in the 2013 Phase 1 survey, a dark corridor including a buffer zone must be created along the Nant y Wilcae. Such a measure is facilitated by the requirements of flood zone management. The buffer zone must include the stream, the bank, the tree line and at least 5m of grassland habitat. Ideally, an agreement is to be reached with the owner of the opposite bank of the stream to secure the stream as a whole.
- 9.4 No lighting must occur in the buffer zone, any lighting outside the zone must be directed away from it. Access to the stream is to be limited, a gated fence can provide localised access. Any fencing must include a 15cm wildlife gap at the bottom. A lighting plan for the site is to be designed bearing in mind the importance of the hedgerow and riparian area for both terrestrial and aerial species.
- 9.5 Consideration must be given to the creation of an artificial otter holt as a wildlife feature for the site. Off-the-shelf products or self-made solutions provide otters with a secure resting and potentially even breeding place.
- 9.6 Himalayan balsam is still present on site. Further eradication efforts must be undertaken and a working method for the development of the site be produced as part of a pollution prevention plan for the development.
- 9.7 No hedgerows must be removed as part of this proposal. Where hedgerows are to be removed, these must be replanted or additional planting carried out elsewhere in the first available growing season. Consideration must also be given to additional planting to provide secure flight corridors for bats as well as potential habitats for creatures such as hedgehogs. A hibernation site for a hedgehog can also easily be created in the form of a secure brash pile.

10 References

- Gent, A.H., and Gibson, S.D. (Eds). (1998). *'Herpetofauna Worker's Manual'*. Joint Nature Conservation Committee, Peterborough
- Hayward, J. (1995). *'A New Key to Wild Flowers'*. University Press, Cambridge
- Hubbard, C.E. (1984). *'Grasses: A Guide to their Structure, Identification, Uses and Distribution in the British Isles'*. Penguin Books, London
- Inns, H. (2009). *'Britain's Reptiles and Amphibians'*. WildGuides Ltd., Old Basing
- Joint Nature Conservation Committee (1993). *'Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit'*. JNCC, Peterborough
- JNCC. (2004). *'Common Standards Monitoring Guidance for Reptiles and Amphibians'*. Joint Nature Conservation Committee, Peterborough
- Rose, F. (1981). *'The Wild Flower Key'*. Frederick Warne, London
- Streeter, D. (2009). *'Collins Flower Guide'*. Harper Collins, London
- Williams, C. (2010). *'Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build'*. RIBA Publishing, London
- <http://www.buglife.org.uk/campaigns-and-our-work/crayfish-professionals> accessed 11/07/2014

Appendix I: Site Location Plan

Figure 1: Site boundary plan



Site location plan
<p>Legend</p> <ul style="list-style-type: none"> Site boundary Gate Nant y Wilcae Himalayan balsam
<p>Invasive species Himalayan Balsam (<i>Impatiens glandulifera</i>) present on site</p>

<p>Site name: Land off Chepstow Road, Raglan</p>
<p>Project reference: GEN5513</p>
<p>Map scale: 1: 1500</p>
<p>Source: © Crown copyright and database rights (2017) Ordnance Survey (100055034)</p>

Just MAMMALS
Consultancy
Limited Liability Partnership

Appendix II: Site Photographs

Plate 1: Clear, cold Nant y Wilcae, looking down stream



Plate 2: Otter spraint upon rock



Plate 3: Otter spraint beneath bridge



Plate 4: Otter spraint beneath bridge



Plate 5: Multiple caddisfly larvae cases under rock



Plate 6: Otter spraint on discarded rubbish



Plate 7: Tree with potential bat roost

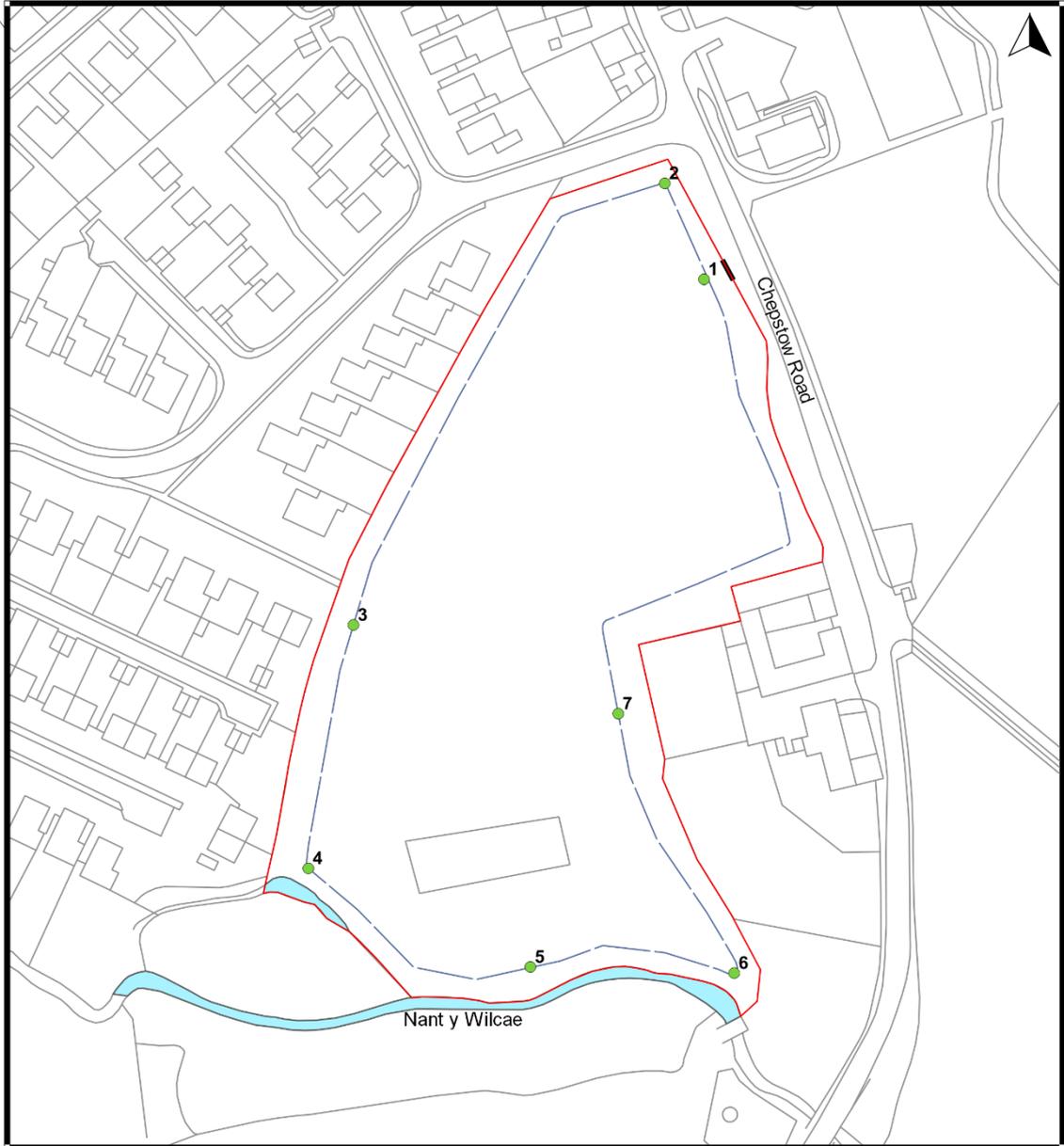


Appendix III: Bat Transect Routes

Figure 2: Bat transect route, 2014 – CH



Figure 3: Bat transect route 2017 – GD



<p>Bat Transect Route</p>	<p>Site name: Land off Chepstow Road, Raglan</p>	 <p>Just MAMMALS Consultancy Limited Liability Partnership</p>
<p>Legend</p> <ul style="list-style-type: none"> Site boundary Nant y Wilcae Gate Bat transect route ● Stopping points 	<p>Project reference: GEN5513</p>	
	<p>Map scale: 1: 1500</p>	
	<p>Source: © Crown copyright and database rights (2017) Ordnance Survey (100055034)</p>	

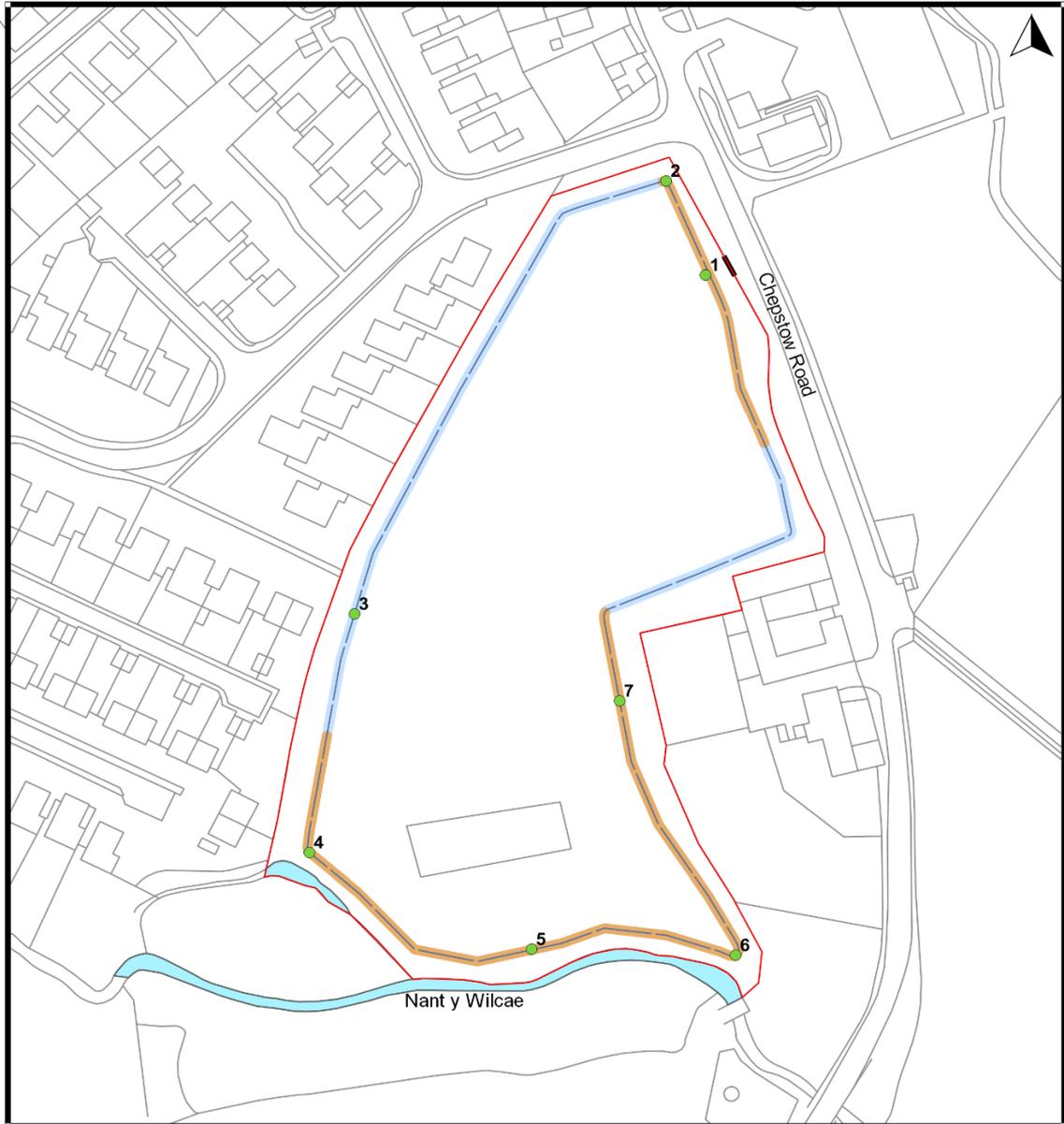
Appendix IV: Bat Transect Results

Figure 4: Bat transect results 2014 – CH



Key
 Survey boundary indicated in red
 Numbers indicate individual recording numbers referred table 3 and the location of the surveyor when it was recorded
 X = Fallen Tree
 Orange = Areas of High Bat Activity
 Blue = Areas of Moderate Bat Activity

Figure 5: Bat transect results, 2017 – GD



Bat Transect Results		Site name: Land off Chepstow Road, Raglan	
Legend Site boundary Nant y Wilcae Gate Bat transect route ● Stopping points Moderate bat activity High bat activity		Project reference: GEN5513	
		Map scale: 1: 1500	
		Source: © Crown copyright and database rights (2017) Ordnance Survey (100055034)	

This Ecological Survey Report has been produced by the Just Mammals Consultancy LLP for Monmouthshire County Council solely. It may not be used by any person for any other purpose other than that specified without the express written permission of the Just Mammals Consultancy LLP. Any liability arising out of use by a third party of this document, for purposes not wholly connected with the above, shall be the responsibility of that party, who shall indemnify the Just Mammals Consultancy LLP against all claims, costs, damages, and losses, arising out of such use.

Unless specifically assigned or transferred within the terms of agreement, the consultant asserts and retains all Copyright, and other Intellectual Property Rights, in and over the Ecological Survey Report and its contents.

We confirm that in preparing this Ecological Survey Report we have exercised reasonable skill and care, taking into account the project objectives, the agreed scope of the work, prevailing site conditions, the degree of manpower and resources allocated to the project, and in compliance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.

This Ecological Survey Report is valid for a period of two years from September 2017.

Just Mammals Consultancy is an ecological consultancy based in Mid-Wales. Specialising in legally protected mammal, reptile and amphibian species, but providing a wide range of ecological services, it provides appropriate expertise on behalf of a range of clients.

Clients include government departments, local and regional authorities, development agencies, commercial and industrial enterprises as well as statutory nature conservation organisations, wildlife trusts and other charitable bodies.

Please visit our web site www.justmammals.co.uk to see the full range of services we offer and some of the projects we have undertaken in the past.



Natural Problem Solvers

Just Mammals Consultancy LLP, Suite 131-136, Plas y Ffynnon, Cambrian Way, Brecon LD3 7HP Tel: 01874 623616