Llywodraeth Cymru / Welsh Government

A487 New Dyfi Bridge

Environmental Statement - Volume 3: Appendix 9.7

Ripirian Mammal Survey Report

Final Issue | 15 July 2016

Contents

1 Introduction

1.1 Background

Ove Arup and Partners Ltd was commissioned by Alun Griffiths (Contractors) Ltd to undertake ecological surveys to inform an Environmental Impact Assessment (EIA) of the proposed A487 New Dyfi Bridge scheme on land to the north of Machynlleth, Mid-Wales, located at National Grid Reference SH747017.

The proposed A487 New Dyfi Bridge scheme (The Scheme) consists of a new viaduct structure across the floodplain and a river bridge to cross the Afon Dyfi approximately 480 m upstream of the existing Pont-ar-Ddyfi. The length of the Scheme is approximately 1100 m with approximately 720 m being on structures.

This report summarises the findings of a desk study on otters and water voles near to and on site and also on the field surveys undertaken on site for these species.

1.2 Description of the Scheme

The Scheme consists of a new section of single carriageway road. The typical carriageway width would be 9.3 m (excluding verges), which would consist of two 3.65 m wide lanes, with a 1 m hard strip on either side or the carriageway.

For most of its route, the Scheme will be elevated across a generally flat floodplain and at its highest point (on the river bridge) it will be some 10-11 m above ground level.

At the northern end of the scheme the alignment ties into the existing A487 in the area of the completed Ffridd Gate Improvement and the existing A487 will be renumbered as the A493, joining the new A487 alignment via a ghost island ‘tee’ junction.

The Scheme crosses the River Dyfi and floodplain on a structure, connecting via a short embankment to the existing A487 north of the Cambrian Line Railway Bridge over the A487 on the edge of Machynlleth. A simple priority junction is provided at the southern end of the scheme connecting the proposed works with the existing A487.

The existing A487 will be de-trunked between the two tie in points with the new scheme. The Pont-ar-Ddyfi and the section of the existing A487 to the south of the river will be restricted to Non-Motorised Users (NMUs) only.

1.3 Survey objectives

The objective of this survey and report was to establish the presence or likely absence of the European otter *Lutra lutra* and the water vole *Arvicola amphibius*, and to highlight potential ecological constraints to the development. This report identifies the presence of important habitat areas for both species. Where appropriate, recommendations are made for further surveys to inform the development of the scheme.

1.4 Study area

The site is located at National Grid Reference (NGR) SH 74693 01756 immediately north of Machynlleth, Mid Wales as shown in **Figure 1**. The Application Site comprises a mixture of grazed pasture with hedgerows, a river and broadleaved woodland. The Afon Dyfi divides the Application Site with woodland to the north and grazing pasture to the south of the river. To the south lies the railway, industrial units and residential estate.

1.5 Legislation

Otters are protected within the UK as a European Protected Species. Water voles are fully protected under Schedule 5 and Section 9 of the Wildlife and Countryside Act 1981. Further details of the legislation are provided in **Appendix A**.

2 Methodology

The approach and broad methodology of the surveys is based on the standard methodology and guidance for otters and water voles.

Desk study data for both species are included within the Desk Study and Extended Phase 1 Habitat Survey report for the project (Ove Arup & Partners, 2015).

2.1 Desk Study

A biodiversity information request was submitted to the Biodiversity Information Service for Powys and Brecon Beacons National Park (BIS), and report obtained on 10th August 2015. The area is also within the search area of the North Wales Environmental Information Service (Cofnod) and a report was obtained on the 11th September 2015. The biodiversity information request included records within 5km of the Application Site for otter and water vole.

In addition, the Phase 1 Habitat Survey report provides further information on statutory and non-statutory designated sites within 2km of the Application Site.

2.2 Survey Methodology

All surveys were undertaken by experienced ecologists familiar with the ecology and field signs of both otter and water vole. The fieldwork was carried out between July to September 2015 and from March to May 2016.

Surveying for field signs was carried out by hand searching of the banks and any features that could have the potential to be used by the two species. Information was recorded using standard recording sheets in the field using tablet computers, which had Global Positioning System (GPS) mapping capability. The GPS was used to record the location for each recording sheet completed. Field signs or features relevant to the survey were photographed, with a GPS location attached to the digital image. An individual recording sheet was used for each survey of a waterbody.

Waterbodies included within the survey were within the chosen survey boundary with appropriate distance buffer around the proposed development site. Due to the nature of the scheme a survey for field signs for otter was undertaken 500m either side of the proposed footprint of the new road, this follows guidance from Scottish Natural Heritage (SNH, 2008).

In those instances where the waterbody was dried up or inaccessible, the ditch length was walked and checked and a recording sheet was completed. Where possible binoculars were used to check areas that could not be accessed.

Due to the cross-over between water vole and otter survey methods, the two surveys were combined. The field survey involved surveying waterbodies that were identified from Ordnance Survey data and previous site walkovers. For the purposes of this survey waterbody type is defined as:

- **River** – Major natural watercourse which is always in flow but and does not dry out, and are also subject to flooding events;
- **Stream** – Minor natural watercourse which is usually in flow but can dry out in places, and are also subject to flooding events;
- **Ditch** – Minor man-made drainage channel which dries out on a regular basis e.g. field ditches/reens;
- **Pond** – Natural stagnant watercourse which usually holds water permanently; and,
- **Ephemeral pool** – Natural low lying areas that hold water on a temporary basis, usually in the winter, and are also subject to flooding events.

Surveying was avoided for at least three days after heavy rain, since this can serve to obscure signs of activity.

2.2.1 Otters

The survey methods adopted for otters was adapted from authoritative sources and best practice survey guidelines (Chanin, 2003; Crawford 2003).

2.2.1.1 Habitat Suitability Assessment

Assessment of the habitat suitability indicates how likely otters are to use a site given the present habitat condition. Otters are tolerant of a wide range of habitat conditions and may use habitat for a number of reasons (e.g. shelter, foraging and passing through to other more suitable habitats).

Habitat suitability assessments were carried out at each waterbody/watercourse visited with sites subsequently defined as being of high, moderate or low suitability based on the following criteria:

- Proximity of site to habitats meeting the species' requirements for shelter, foraging and breeding;
- Degree of modification to waterbody/watercourse potentially resulting in negative impacts upon otters, e.g. canalisation or realignment;
- Levels of site disturbance, e.g. proximity to Public Right of Way, farm vehicle access tracks or road traffic;
- Levels of visible pollution potentially impacting upon prey species; and,
- Potential for otters to use culverts, bridges and dry watercourses for foraging, commuting and dispersal.

Although otters are a riparian mammal they will travel overland to reach other waterbodies. Otters prefer to shelter where there is little disturbance and some cover provided by bankside vegetation. They will use terrestrial vegetation as corridors and for breeding (e.g. holts) and this habitat requirement was included in the habitat suitability assessment through searching in vegetation up to ten metres from the waterbodies.

Habitat features with potential benefit to otter in terms of shelter, foraging and breeding requirements were identified at each site; for example nearby woodland

(especially floodplain woodlands), mature trees, fallen trees, dense scrub, bank substrate suitable for creating places of shelter, pools and marshes.

Modification of the watercourses was considered as a factor that may detrimentally impact on habitat suitability. Modifications, such as canalisation or realignment, may reduce channel naturalness, biodiversity and thus abundance of otter prey items.

Disturbance is a major factor that may deter otters from using sites with even the highest suitability. Examples of disturbance factors include farm traffic, road traffic, cattle trampling and close proximity to a Public Right of Way that will encourage dog walking. Hydrology is another important factor. Otters are known to use a variety of freshwater habitats including main rivers, ponds, reens and ditches.

As a general rule it is considered here that larger, deeper watercourses with a moderate to fast flow will provide a more plentiful food source. Nevertheless, small streams and ditches are also important foraging habitats since fish can be easier to catch.

Ponds and reservoirs also provide potential foraging areas; especially in times of flood. In addition, pollution was also considered as a factor of habitat suitability (as recommended by Chanin, 2003).

Habitat suitability was measured according to the above criteria and defined as high, moderate, low or negligible as outlined in **Table 1**.

Table 1: Habitat Suitability Criteria

Habitat Suitability	Shelter Requirements	Food Supply	Modification & Disturbance	Hydrology	Pollutants
High	Many suitable habitat features adjacent to watercourse.	Suspected presence of abundant prey; particularly fish species.	Minor man-made modification of watercourse habitat and disturbance from the public e.g. dog walking.	Watercourse with fast to moderate flow velocity and more than 1 m deep.	'Good' or above chemical or biological water quality.
Moderate	Several suitable habitat features adjacent to watercourse.	Suspected presence of sufficient prey; particularly fish species.	Intermediate man-made modification of watercourse habitat or disturbance from the public e.g. frequent dog walking.	Watercourse with slow to moderate flow velocity or less than 1 m deep.	'Fair' chemical or biological water quality.
Low	Few suitable habitat features adjacent to the watercourse.	Suspected scarcity of prey.	Major man-made modification of watercourse habitat and disturbance by	Watercourse with slow to moderate flow velocity and less than 1m deep.	'Fair' or below chemical or biological water quality.

Habitat Suitability	Shelter Requirements	Food Supply	Modification & Disturbance	Hydrology	Pollutants
			the public e.g. frequent dog walking.		
Negligible	No suitable habitat features.	No prey species present.	Major man-made modification of watercourse habitat and disturbance by the public e.g. frequent dog walking.	Dry with no indication of a waterbody present on site.	Low water quality with indications of pollution.

2.2.1.2 Presence / absence survey

The field signs that were searched for included: spraints, anal jelly, holts, laying–up sites, bank slides, runs, tunnels, prey remains and footprints. Features that have high potential to be attractive to otters were examined, including: suitable bridges, bases of large trees, dense vegetation, crossings, confluences of waterbodies, culverts and boulders.

Resting areas for otters are usually referred to as either a holt (usually a hole in the ground covered by vegetation or under the roots of a bankside tree) or a couch (an uncovered laying up or nest like structure).

2.2.2 Water voles

The survey method for water voles was based on the best practice survey guidelines in the Water Vole Conservation Handbook (Strachan, Moorhouse, & Gelling 2011). Banks of waterbodies were surveyed from a minimum of two metres from the waters' edge.

2.2.2.1 Habitat Suitability Assessment

The assessment of habitat suitability indicates how likely water voles are to use a site given the present habitat conditions. Habitat suitability was assessed from observing the features of each waterbody, with consideration to the ecology and habitat requirements of water voles.

The best sites for water voles according to Strachan, Moorhouse & Gelling (2011) are those that have a highly layered bank-side vegetation with tall grasses and stands of willow herb, loosestrife, meadowsweet or nettles, often fringed with think stands of rushes, sedges and reed. Each water vole utilises a series of burrows, which can extend 5-6 metres from the edge of the bank into the terrestrial habitat.

Water voles require dense growth of herbaceous bankside and emergent vegetation, and the promotion of scrub or planting of trees is detrimental to them (Chanin, 2003).

Habitat suitability assessments were carried out at each waterbody/watercourse visited with sites subsequently defined as being of high, moderate or low suitability based on the following criteria:

- Rate of water flow;
- Bank profiles;
- Degree of shading from overhanging trees;
- Extent of suitable emergent and bankside herbaceous vegetation in providing shelter, food and nesting material;
- Degree of cattle poaching (i.e. extent of damage to banks resulting from trampling by cattle);
- Levels of site disturbance, e.g. proximity to public rights of way, farm vehicle access tracks or road traffic;
- Potential for the waterbody to dry out;
- Suitability of bank substrates for burrowing; and,
- Water quality.

Examples of habitat suitability assessments are as follows:

High Quality

Typical high quality water vole habitat is a slow-flowing watercourse, less than 3m wide and 1m deep with moderately steep banks, minimal shading by trees and shrubs and luxuriant growth of emergent and bankside herbaceous vegetation to provide shelter and an abundance of food and nesting material.

Moderate Quality

Moderate quality water vole habitat would consist of a combination of the features associated with both high and low habitat suitability. For example, the flow and bank type may be suitable; however heavy grazing by livestock may reduce the cover of herbaceous vegetation and trample suitable habitat for burrowing.

Low Quality

Factors which indicate that a habitat is of a low suitability for water vole include heavy shading by overhanging trees and/or shrubs reducing the cover of emergent and bankside vegetation and thus the availability of water vole food plants. Other factors that indicate habitat of low suitability include widely fluctuating water levels, seasonal drying out of the watercourse channel and banks that are unsuitable for burrowing.

Negligible

A negligible habitat suitability would be where there is either no waterbody present for example, a ditch which has completely overgrown and would not hold water. An example of this would be a ditch which has a double hedge and is no longer managed and therefore the waterbody has filled in. Settlement pools or ditches which are visibly polluted and low water quality and obviously their purpose is to act as a buffer to collect polluted material from industry.

2.2.2.2 Presence / absence survey

At each waterbody a search for the following field signs was undertaken: droppings, latrines, feeding stations, burrows, footprints. Droppings are the most distinctive field sign to indicate recent use of a waterbody by water voles (Strachan, Moorhouse, & Gelling 2011).

2.2.3 Kayak survey

The size and depth of the Afon Dyfi, and tributary the Afon Dulas, prevented the safe search of the bank by surveyors during the initial surveys. A kayak was therefore used as a floating platform from which to search for field signs of otter and water vole.

The survey were conducted on 8th March 2016 during a dry period with resulting low river water levels. This allowed the survey to be carried out safety and for the best chance of field sign detection.

2.2.4 Camera traps

Camera traps were installed at locations along the riverbank where either fresh field signs had been found or within habitats considered suitable for otters to utilise. The locations of where camera traps were set up are providing in **Table 2** below.

Table 2: Results of the camera trap deployment

Deployment / Collection Dates	Location description	GPS Latitude	GPS Longitude	Notes
29/07/2015 to 23/09/2015	Proposed river crossing point	52.601109	-3.847284	Slight clearing on south side of river near western end of river crossing. No field signs found.
29/07/2015 to 23/09/2015	Downstream of proposed bridge crossing point	52.601184	-3.847826	Looking over potential slide.
09/03/2016 to 14/04/2016	Downstream of retaining wall	52.601388	-3.849686	Probable otter resting place.
01/04/2016 to 14/04/2016	Potential confluence holt	52.600007	-3.842595	Likely holt due to size of hole in river bank and density of field signs observed.
01/04/2016 to 18/05/2016	By retaining wall	52.60133	-3.849613	Fresh spraint on rocks by water's edge.
14/04/2016 to 24/04/2016	Confluence under gorse	51.450197	-3.842618	More spraint and footprints found.

Video footage captured by the camera traps were individually analysed and species were identified that had triggered the camera to record.

2.3 Weather Conditions

Weather conditions were recorded at the beginning of each survey and the details are presented in **Table 3**.

Table 3: Details of weather conditions at time of survey

Date	Weather Conditions				
	Temp (°C)	Wind Speed (Bft)	Wind direction	Cloud cover (%)	Description of weather conditions
29/07/2015*	18	1	SE	40	Dry
19/08/2015	16	1	NE	100	Steady rain
08/03/2016	7	2	W	100	Dry
14/04/2016	15	1	NE	85	Sunny
15/04/2016	7	2	NE	100	Dry

*Initial Extended Phase 1 Habitat Survey fieldwork.

2.4 Limitations and assumptions

The findings presented in this study represent those at the time of survey and reporting, and data collected from available sources. Ecological surveys are limited by factors which affect the presence of flora and fauna, factors such as the time of year and natural behaviour of the animals. Nevertheless, these surveys were conducted at the optimal survey periods and using methodologies which were consulted with Natural Resources Wales (NRW) prior to commencement of the survey.

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

- Dense vegetation including vegetation growing in and adjacent to waterbody;
- Health and safety concerns with regard to situations such as dangerous animals (e.g. cattle, horses, dogs);
- Poaching of bankside occluding field signs; and,
- Steep banks and deep water (although where possible a kayak was used to overcome this constraint).

Habitat suitability is a subjective measure. The whole survey team was briefed with regard to these survey methods, in an aim to narrow differences in judgement between surveyors. Where a ditch was inaccessible due to dense vegetation, but the waterbody could be viewed, it was possible to make an assumption with regard to suitability for the two riparian mammal species. Where the vegetation was so dense that we were unable to view the waterbody, then an informed assessment could not be made.

The southern side of the survey area was entirely on a floodplain. Due to the periodic flooding of the land in the areas to the south of the river, some of the waterbodies only held water during the wetter months of the year. Therefore, not all of the waterbodies would hold water for the entire year. In some instances the field ditches did not hold water at the time of survey, but this does not mean that at another time of year that waterbody would not be suitable for water voles or otters. All waterbodies found during the survey were surveyed for signs of the two riparian mammal species.

3 Baseline environment

3.1 Desk study

The Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau Special Area of Conservation (SAC) lies 4.3km from the site. The SAC is a European designated site, with the otter designated as an Annex 2 species, present as a qualifying feature, but not a primary reason for site selection.

The Dyfi Site of Special Scientific Interest (SSSI) is located approximately 3.9km to the south-west of the site, and otters are included in the citation as an additional interest on the site.

The biodiversity information search produced numerous records of otter along the River Dyfi within the immediate vicinity of the Scheme and along the Afon Dulas, Pantperthog, including sightings and field signs records. There are records of field signs 394m west and 834m north of the scheme on the Afon Dyfi. There are two records of road casualties 1.6km north of the scheme on the A487, a record 1.9km south of the site and numerous records of field signs, holts and lay ups 2.5 – 2.8km north near Pantperthog and south along the Aber Dyfi. There are numerous records of road casualties and field signs within the wider 5km search area, along the Afon Pennal, the Afon Crewi and at Coed Ty Gwyn.

There are no desk study records for water voles within the 5km search area.

3.2 Field surveys

Twenty six waterbodies were surveyed within the study area for the potential to provide suitable habitat for otter and water vole. The results of the habitat suitability assessment and whether otter and water vole signs were found and deemed to be present/absent are provided in **Table 4** below. The waterbody locations and presence/absence field signs are shown in **Figure 1**.

Table 4: Habitat Suitability Assessment and Presence/Absence Results

Waterbody Number (Name) *	Type	Habitat Suitability		Presence/Absence	
		Otter	Water Vole	Otter	Water Vole
1 (Afon Dyfi)	River	High	Negligible	**Present**	Absent
2 (Afon Dulas)	River	High	Negligible	**Present**	Absent
3	Pond	Low	Low	Absent	Absent
4	Ephemeral Pool	Negligible	Low	Absent	Absent
10	Ditch	Low	Low	Absent	Absent
11	Ditch	Medium	Low	Absent	Absent
12	Ditch	Negligible	Low	Absent	Absent
19	Pond	Low	Low	Absent	Absent
21	Ephemeral Pool	Negligible	Low	Absent	Absent

Waterbody Number (Name) *	Type	Habitat Suitability		Presence/Absence	
		Otter	Water Vole	Otter	Water Vole
29	Ephemeral Pool	Negligible	Low	Absent	Absent
31	Ephemeral Pool	Negligible	Low	Absent	Absent
32	Ephemeral Pool	Negligible	Low	Absent	Absent
39	Ephemeral Pool	Negligible	Low	Absent	Absent
41	Pond	Low	Low	Absent	Absent
43	Ephemeral Pool	Negligible	Low	Absent	Absent
45	Ephemeral Pool	Negligible	Low	Absent	Absent
46	Ditch	Low	Low	Absent	Absent
47	Ephemeral Pool	Negligible	Low	Absent	Absent
48	Stream	Medium	Low	Absent	Absent
49	Stream	Medium	Medium	Absent	Absent
50	Stream	Medium	Low	Absent	Absent
51	Ditch	Negligible	Negligible	Absent	Absent
52	Ditch	Negligible	Negligible	Absent	Absent
53	Ditch	Low	Medium	Absent	Absent
54	Ditch	Low	Medium	Absent	Absent
55	Ephemeral Pool	Low	Medium	Absent	Absent

* Only waterbodies scoped in with riparian mammal potential during initial Extended Phase 1 Habitat Survey fieldwork were surveyed - numbers are consistent with other species surveys and not chronological.

3.2.1 Otter

Two of the waterbodies assessed were considered to have high potential for otter (the Afon Dyfi and its tributary to the north-east, the Afon Dulas), four are considered to have medium potential, eight are considered to have low potential and twelve waterbodies as having negligible potential to support otter.

Otter field signs were only found on the Afon Dyfi of the waterbodies surveyed, as detailed in **Table 5**.

Table 5: Otter field signs and sightings during the survey period

Date	Waterbody number (name)	Field sign	GPS latitude	GPS longitude	Notes
29/07/2015	1 (Afon Dyfi)	Sighting of adult otter seen swimming close to bank on opposite side of river.	52.600573	-3.851895	Recorded during Extended Phase 1 habitat survey
29/07/2015	1 (Afon Dyfi)	Possible otter layup site with confirmation of otters in the area in month of July from fishermen.	52.600573	-3.851895	Recorded during Extended Phase 1 habitat survey

08/03/2016	1 (Afon Dyfi)	Possible otter holt.	52.601482	-3.849539	Extended Phase 1 target note – Kayak survey
08/03/2016	1 (Afon Dyfi)	Otter footprints found on southern bank of the Dyfi, downstream of Dyfi Bridge. Larger and smaller, probably adult and cub.	52.599329	-3.861293	Extended Phase 1 target note
14/04/2016	1 (Afon Dyfi)	Fresh spraint on rocks by water's edge.	52.60133	-3.849613	Riparian mammal survey
14/04/2016	1 (Afon Dyfi)	More spraint and footprints found.	51.450197	-3.842618	Riparian mammal survey
14/04/2016	1 (Afon Dyfi)	Potential otter laying up site in bank above water level.	52.604334	-3.843107	Riparian mammal survey

The Afon Dyfi has a tidal influence, has a fast flow and floods periodically. The depth of water in the main channel is approximately two metres with shallows along the edges with shingle beds and beaches.

Field signs found along the Afon Dyfi included several otter footprints, laying up sites and a sighting of an adult otter swimming in the river approximately 300m downstream of the Millennium Bridge. Adult and juvenile footprints were also found downstream of the existing A487 Dyfi Bridge.

A potential otter holt was also found during the kayak survey at the confluence point where the Afon Dulas tributary joins with the Afon Dyfi. Due to the connectivity of the Afon Dulas to the Afon Dyfi it is thought highly likely that otter also use the tributary (hence positive status in Table 4).

The potential otter resting places, including the potential holt, found during the presence/absence surveys were subsequently monitored with camera traps. This is reported in Section 3.2.1.1 below.

3.2.1.1 Camera traps

Otter was recorded at one of the camera trap locations (Location 1). Details of the observations made of otters are summarised in **Table 6** and images shown in **Plate 1** to **Plate 2**. The potential resting place locations are also shown in **Figure 1**.

Table 6: Otter observations from camera trap footage.

Location number (description)	Date	Time	Observation	GPS Latitude	GPS Longitude
1 (Potential confluence holt)	14/04/2016	20:58	Otters tail in corner of image. Otter travelling up the bank.	52.600007	-3.842595
1 (Potential confluence holt)	14/04/2016	23:45	Otter.	52.600007	-3.842595

1 (Potential confluence holt)	15/04/2016	05:07	Otter walking under the camera trap.	52.600007	-3.842595
1 (Potential confluence holt)	15/04/2016	05:08	An otter scampering past the camera towards the river.	52.600007	-3.842595
1 (Potential confluence holt)	16/04/2016	04:12	An otter digging in front of the camera.	52.600007	-3.842595
1 (Potential confluence holt)	16/04/2016	21:21	Otter walking in front of camera.	52.600007	-3.842595
1 (Potential confluence holt)	17/04/2016	21:59	Otter digging and walking in front of the camera.	52.600007	-3.842595
1 (Potential confluence holt)	18/04/2016	00:07	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	18/04/2016	00:08	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	18/04/2016	00:57	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	19/04/2016	00:29	Otter digging in front of the camera, and sniffing the camera.	52.600007	-3.842595
1 (Potential confluence holt)	19/04/2016	23:45	Otter digging in front of the camera.	52.600007	-3.842595
1 (Potential confluence holt)	19/04/2016	23:48	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	19/04/2016	23:48	Otter walking in front of camera.	52.600007	-3.842595
1 (Potential confluence holt)	19/04/2016	23:55	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	20/04/2016	21:25	Otter digging and running away.	52.600007	-3.842595
1 (Potential confluence holt)	21/04/2016	23:25	Otter sprainting.	52.600007	-3.842595
1 (Potential confluence holt)	22/04/2016	03:12	Otter digging.	52.600007	-3.842595
1 (Potential confluence holt)	22/04/2016	21:09	Otter sprainting.	52.600007	-3.842595
1 (Potential confluence holt)	22/04/2016	21:37	Otter digging.	52.600007	-3.842595
1 (Potential confluence holt)	22/04/2016	23:18	Otter.	52.600007	-3.842595
1 (Potential confluence holt)	23/04/2016	21:42	Otter walking and digging in front of the camera.	52.600007	-3.842595
1 (Potential confluence holt)	23/04/2016	23:24	Otter walking in front of the camera.	52.600007	-3.842595
1 (Potential confluence holt)	24/04/2016	01:07	Otter digging in front of the camera.	52.600007	-3.842595

An adult otter was captured digging and using the site in front of the camera at the potential holt (Location 1), adjacent to the confluence on the 9th April 2016 (Plates 1 and 2). The otter is seen moving in and out of the hole in the river bank and as such this evidence confirms this location is an active holt. The otter is thought to be a male dog otter due to the size, sturdy shoulders and thick tail.

Plate 1: Otter captured digging on camera 09/04/2016 Time: 23:45.

Plate 2: Otter captured on camera 09/04/2015 Time: 00:29.

The confirmed otter holt is located approximately 400m upstream of the proposed crossing of the Afon Dyfi on the north bank of the Afon Dyfi near to the confluence of the Afon Dulas.

Potential resting places were also recorded immediately downstream of the retaining wall supporting the existing A487 on the north bank. The closest approximately 60m from the proposed crossing (Location 2). Camera monitoring of the feature (overhanging tree roots) near the retaining wall, revealed no use by

otters over a period of one month. It is therefore considered unlikely that this is being used as a resting place by otter but it has potential to be used.

3.2.2 Water vole survey

Of the twenty six waterbodies surveyed for water voles, four were considered to be of medium suitability for water vole, eighteen recorded as low suitability and four considered to be of negligible suitability.

However, no water voles or field signs of water voles were recorded during the surveys.

4 Conclusions

4.1 Conclusions

4.1.1 Otter

The Afon Dyfi provides good commuting and foraging opportunities for otter, and there are sites suitable for laying up and resting along the northern river bank, within the woodland. The southern river bank is less likely to be used due to disturbance by walkers, cyclists and anglers.

This is confirmed by the otter sighting and the confirmed otter (likely male) using the holt at Location 1. Furthermore, adult and juvenile otter prints were found downstream of the existing A487 Dyfi Bridge. As a result of this, it is thought that a breeding territory is present on site. This is support by the existing desk study records present within the vicinity of the proposed scheme.

The effects on the population of otters found on site will need to be considered and this will be reported in the Environmental Statement.

4.1.2 Water vole

No signs of water vole were recorded on site. This is understandable due to the lack of desk study records. Furthermore, it is likely that the repeated flooding affects the populations of small mammals, including water vole, within the survey area.

References

[1] Scottish National Heritage (2008) Otters and Development. Scottish Widlife Series (Online publication).

[2] Chanin, P. (2003). Ecology of the European Otter. Conserving Nature 2000 Rivers, Ecology Series No 10. EN, CCW, EA, SEPA, SNH & SNIFFER.

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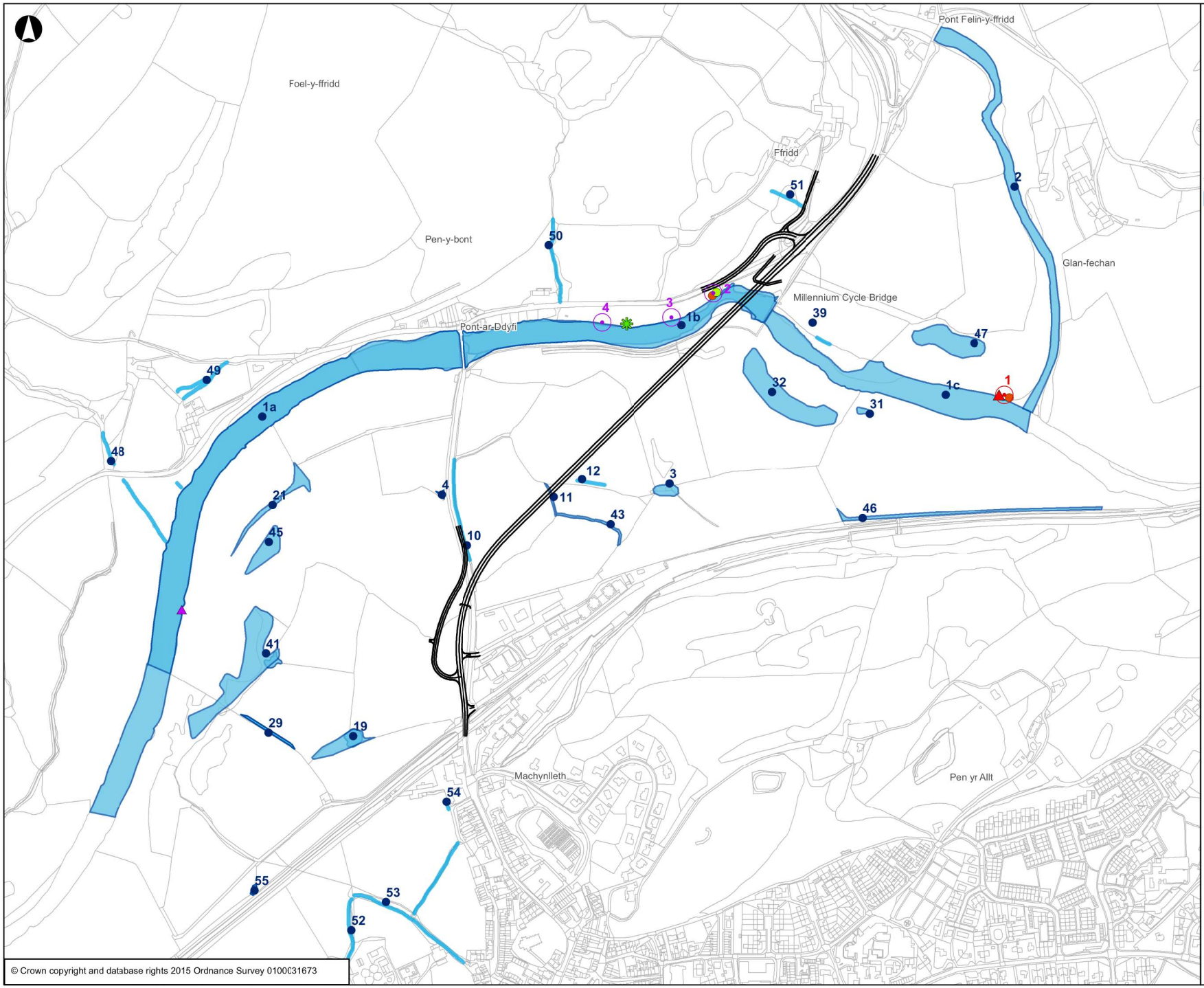
Figures

Figure 1 Riparian Mammal Survey Results

A3



Legend

- Confirmed holt
- Potential Resting Place
- Otter footprints (adult)
- Otter footprints (juvenile)
- Otter sighting
- Anal jelly
- Otter spraint
- Proposed Scheme
- Waterbody

* Waterbody surveyed for riparian mammals (only waterbodies scoped in with riparian mammal potential were surveyed - numbers are consistent with other species surveys and not chronological)

Metres

0 80 160 320

Rev	Date	By	Chkd	Appd
P01.3	12/07/16	AH	PW	JP

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Welsh Government

Project Title

A487 New Dyfi Bridge

Drawing Title

Figure 9.30
Riparian Mammal Survey Results

Scale at A3 **1:6,000**

Role Specialist Designer - Environmental

Suitability S0 - Initial non-contractual

Arup Job No **244562-00** Rev **P01.3**

Name **900237-ARP-ZZ-ZZ-DR-YE-00041**

Appendix A

Legislative context

A1 Legislative context

A framework of international, European, national and local legislation and planning policy guidance exists to protect and conserve wildlife and habitats. This is described in the following sections.

A2 Statutory Designated Sites

A network of nationally designated sites has been established through the designation of Sites of Species Scientific Interest (SSSI) under the Wildlife and Countryside Act 1981 (as amended). The protected afforded by the Act means it is an offence to carry out or permit to be carried out any operation listed within the notification without the consent of the Statutory Nature Conservation Organisation[1] (Natural Resources Wales).

The protection afforded to SSSIs is used to underpin the designation of areas at a European Level. European Sites comprise:

- Special Areas of Conservation (SAC) designated under the Conservation of Habitats and Species Regulations 2010 (as amended) (known as the Habitats Regulations);
- Special Protection Areas (SPA) designated under the Wildlife and Countryside Act.

Wetlands of International Importance (Ramsar Sites) declared under the Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 are normally also notified as SSSIs but are only considered European Sites as a matter of UK and Local Government Policy.

The Habitats Regulations transpose the requirements of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) in to law within England and Wales, while the Wildlife and Countryside Act transposes Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive) in the law within England and Wales. Equivalent legislation exists to transpose these directives in the law within Scotland and Northern Ireland.

The Habitats Regulations require that consideration is given to the implications of plans and projects (developments) on European Sites are considered. Specifically Regulation 61(1) states:

"*A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which –*

> *(a) is likely to have a significant effect on a European site or European marine site (either alone or in combination with other plans or projects), and*

[1] Section 28 of the Wildlife and Countryside Act 1981 (as substituted by Schedule 9 of the Countryside and Rights of Way Act 2000).

(b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.".

The formal consideration of effects on European Sites is therefore undertaken by the determining authority such as the Local Planning Authority.

Local Nature Reserves can be given protection against damaging operations through powers within the National Parks and Access to the Countryside Act 1949 (as amended). However this protection is usually conveyed through inclusion of protection within local planning policy relating to these sites and other non-statutory sites such as Sites of Importance for Nature Conservation.

A3 European Protected Species

The Habitats Regulations convey special protection to a number of species which are listed in schedule 2 of the Regulations and are referred to a European Protected Species (EPS):

- All UK resident bat species;
- All whale and dolphin species;
- Large blue butterfly (*Maculinea arion*);
- Common dormouse (*Muscardinus avellanarius*);
- Pool frog (*Rana lessonae*);
- Sand lizard (*Lacerta agilis*);
- Fisher's estuarine moth (*Gortyna borelii lunata*);
- great crested newt (*Triturus cristatus*)
- common otter (*Lutra lutra*)
- wild cat (*Felis silvestris*);
- Lesser Whirlpool Ram's-horn Snail (*Anisus vorticulus*)
- Smooth snake (*Coronella austriaca*);
- Sturgeon (*Acipenser sturio*);
- Natterjack toad (*Bufo calamita*); and
- All marine turtles.

Regulation 41 makes it an offence to:

a) Deliberately capture, injure or kill any wild animal of a EPS;

b) Deliberately disturb wild animals of such a species;

c) Deliberately takes or destroys the eggs of such a species;

d) Damages or destroys a breeding site or resting place of such an animal.

Disturbance in the context of the offences above is disturbance which is likely to impair the ability of the animals to survive, to breed or reproduce, to nurture their young, to hibernate, to migrate; or to affect significantly the local distribution of the species.

Licences can be granted by the relevant SNCO for developments (sometime referred to as EPS Licences or Derogation Licences) providing the purposes of the licence is for "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment".

A4 UK Protected Species

The Wildlife and Countryside Act 1981 provide protect to both EPSs and other species including wild birds, water voles and reptiles.

All wild birds, their nests and eggs are protected with some rare species afforded extra protection from disturbance during the breeding season (these species are listed in Schedule 1 of the Act). It is illegal to take any wild bird or damage or destroy the nests and eggs of breeding birds. There are certain exceptions to this in respect of wildfowl, game birds and certain species that may cause damage.

Water vole receive protection under the Wildlife and Countryside Act 1981 which prohibits the killing, injuring or taking by any method.

All native reptile species in the UK are subject to partial protection from intentional or reckless killing or injury only.

Badger and their setts are protected under the Protection of Badgers Act 1992 which makes it an offence to kill, injure or take a badger, or interfere with a sett.

A5 Other Legislation Relating to Species

The Natural Environment and Rural Communities (NERC) Act 2006 includes a duty on all public authorities to have regard to the conserving of biodiversity in the exercise of their functions. This duty applies to government bodies, local authorities and statutory undertakers. The Act also requires lists to be published of Habitats and Species considered to be of Principle Importance for the conservation of Biological diversity. These are referred as Section 41 habitats and species in England and Section 42 habitats and species in Wales after the sections of the Act which require the publication of lists in each devolved area.